

## ❖ SPORT AND PERFORMANCE

### COMPARATIVE ANALYSIS OF THE START REACTION TIMES IN SPRINT OR HURDLES EVENTS IN VARIOUS AGE GROUPS

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#### ABSTRACT

According to the up to the present data, the reaction time is the interval of time between the application of a stimulus to the receptors of the sensory systems and the detection of a behavioral response.

#### Purpose

The main aim of the present paper is to point out the comparative analysis of the reaction times in male and female athletes in sprint and hurdles events at two major national competitions: the finals of the University National Indoor Championships, Bacau 2010 (a competition for students, young and senior athletes) and the National Contest *Dorin Melinte Memorial*, Bacau 2010 (for juniors).

#### Methods

This paper presents a comparative overview of the reaction times registered by the official start system (*Alge timing StartJudge SJ*) in different events (flat sprint, hurdles), a time comparison between girls and boys, and the comparison of the best reaction times in two age groups (senior and junior athletes). Registered reaction times (rounds, finals) at both competitions: 125. Subjects included in the analysis: 197.

**KEYWORDS:** track and field, sprint events, reaction times, reaction speed.

#### INTRODUCTION

The reaction time (also called the latent time of motor reaction) is specific to the discriminatory ability and efficiency of afferent systems under various stimulation conditions.

According to the available data, the reaction time is the interval of time between the application of a stimulus to the receptors of the sensory systems and the detection of a behavioral response

The behavioral response is represented by the perceivable reaction of an individual.

Reaction time depends on the number of stimuli and their signification, on their intensity and frequency, on the functional state of sensory systems and on the dispositional factors.

According to some specialists in the field of psychology (A. Jensen, 2006), the reaction time is an index of processing speed. The processing speed is considered to be an index of processing efficiency of the involved sensory systems.

At present, there are various researches which investigate the relationship between the reaction time and the quantity of information extracted from the stimulatory environment.

Throughout the years, the research studies have established that the reaction time is fastest when there is only one possible response (simple reaction time) and slower when there are more options of response (choice reaction time). According to Hick's law, choice reaction time increases in proportion to the logarithm of the number of response alternatives. This law (named after the British psychologist William Edmund Hick or Hick-Hyman law, according to Ray Hyman)

describes the period of time necessary for a person to make a decision as a result of the available alternatives.

From the physiological point of view, the reaction time (reaction speed, latency time) consists of five elements (Zațiorschi, Matveev quoted by A. Dragnea, 2002 and T. Bompă, 2002): stimulus occurrence, excitation at the receptor level, transmission of codified excitation to the central nervous system, analysis of codified excitation and its re-codification for elaborating the response, the effectual signal, signal transmission through motor tracts, from the central nervous system to the muscle, and the muscle stimulation in order to perform the work.

A. Nicu et al. (1993) state that this complete cycle of codified excitation is of 200 m/s on the average, and 50% out of this value is performed at the central level for the message analysis and synthesis and for elaborating the response.

Athletes' reactions as well as common people's reactions can be simple or complex. According to T. Bompă and A. Dragnea (2002), a simple reaction is the conscious and correct response to a pre-established signal, previously known, which occurs instantaneously, suddenly (for instance, the sound of the starting gun).

There is clear distinction between the reaction time and the reflex response time (unconscious response to a stimulus, for example the reflex response to the tendon tap).

In athletics, the simple reaction time is analyzed in relation to the crouch starting position in sprint events by using the specific electronic devices which measure both the simple reaction at a previously known start sound (the startgun) and the attempt “to cheat” the start

("false", wrong start). According to the IAAF regulations, a start is considered to be false if the athlete starts faster than the 100/1000 of a second after start.

The visual motor reaction in sprinters is of 150-200 m/s (this value is of 200-300 m/s in common people); when an acoustic signal is used this time is 110-140 m/s in athletes, and 170-200 m/s in non-athletes.

#### Objective of research

The main aim of the present observational research was to emphasize the differences between the start reaction times related to two categories of athletes: juniors and youth- seniors.

#### Subjects of research

The research involved 173 male and female athletes who participated in the sprint events (60m flat and 60m hurdles) at two traditional competitions: University National Indoor Championships, Bacau 2010 and the National Contest *Dorin Melinte Memorial*, Bacau 2010. The table no.1 presents the participating subjects classified according to gender criteria, specific event and competition.

#### Research tools

The false start analysis system *Alge timing StartJudge SJ* consists of: starting blocks with attached motion sensors, startgun Arminius 9 mm STP, printer P5", microphone SM8, central unit "Start Judge Controller SJC", amplifier PA888.

#### RESULTS OF RESEARCH

For the 173 athletes who participated in both competitions there were recorded only 125 reaction times (heats and finals), which means a percentage of 72.25% of the total number of possible recorded times.

We present the descriptive analysis of the recorded times for our research subjects in the above-mentioned sports competitions.

#### 1. University National Indoor Athletics Championships, Bacau 2010

##### Recorded times in Women's 60m hurdles

Seven female sprinters (students) were present in the 60m hurdles race, and all of them succeeded in registering their starting reaction times. Due to the fact that there were only 7 athletes registered for that event, the organizers decided to send them directly into the final race.

The female sprinters in the hurdle event at the University National Indoor Championships 2010 recorded the following start times: 0,202s / 0,204s / 0,202s / 0,212s / 0,192s / 0,188s / 0,211s.

Thus the average time for the female athletes, all of them university students and practicing athletics, is of **0.202 seconds**.

##### Times recorded in Men's 60m hurdles

As far as the reaction times of male athletes (university students) in the hurdles event are concerned, the values are as follows:

- 60 m hurdles heats: 0,241s / 0,196s / 0,199s / 0,136s / 0,230s / 0,182s / 0,151s / 0,184s /

0,216s / 0,154s. The average value: **0.189 seconds**.

- 60m hurdles finals: 0,204s / 0,275s / 0,190s / 0,190s / 0,216s / 0,212s / 0,211s. The average value: **0.214 seconds**. These starting reaction times were recorded after a false start; the poor values were due to the fact that all athletes avoided the disqualification.

Only 7 instead of 8 sprinters participated in the final race; two out of 10 sprinters competed *hors concours* (HC) and one athlete abandoned after the start (but his reaction time was recorded).

As a rough value, the average of the reaction times (17 heat and final times) in hurdles sprinters is of **0.199 seconds**.

##### Times recorded in Women's 60m flat

As far as the reaction times of the female athletes (students) in the flat event are concerned, the values are as follows:

- Heat I – 7 sprinters: no impulse / 0,217s / 0,190s / 0,225s / 0,271s / 0,185s / no impulse. The average value: **0.217 seconds**;
- Heat II – 6 sprinters: no impulse / no impulse / no impulse / 0,210s / 0,175s / 0,212s. The average value: **0.199 seconds**;
- The average values of the 8 recorded times in both heat races is of **0.211 seconds**.

Taking into account the times of the women's 60m flat final (university students: 0,199s / no impulse / 0,195s / 0,229s / 0,232s / 0,164s / 0,168s / 0,168s), the average time is of **0.194 seconds**.

The values recorded in the heats and in the final races (15 reaction times) show a rough arithmetic mean of **0.203 seconds**.

##### Times recorded in men's 60m flat

The recorded reaction times (male students) in the 60 m flat heats are as follows:

- Heat I – 7 sprinters: 0,271s / 0,188s / 0,211s / 0,195s / 0,193s / 0,161s / 0,180s. The average time: **0.199 seconds**;
- Heat II – 7 sprinters: 0,236s / 0,165s / 0,211s / 0,237s / 0,211s / 0,193s / 0,188s. The average time: **0.205 seconds**;
- Heat III – 8 sprinters: 0,292s / 0,183s / 0,203s / 0,219s / 0,149s / 0,189s / 0,150s / 0,218s. The average time: **0.200 seconds**;
- The average values of all 22 recorded times: **0.202 seconds**.

The values of the recorded reaction times of the eight 60m sprinters (male students) in the final race are as follows: 0,160s / 0,205s / 0,181s / 0,203s / 0,186s / 0,183s / 0,155s / 0,142s. The arithmetic mean of the recorded times in the final is of **0.177 seconds**, which is a good value if we take into account that these reaction times were recorded after one false start.

The values recorded in the heats and in the final races (30 reaction times) indicate a rough arithmetic mean of **0.195 seconds**.

## II. "Dorin Melinte" Memorial 2010

### Times recorded in Girls' 60m hurdles

From a total number of six girl athletes (one born in '94 - Juniors II; three athletes born in '95- '96 - Juniors III; two sprinters born in '97 age - Children I) who were present at the two starts, one start was repeated after the girls' reaction before the gun start ("false start"), only one girl (Junior III) succeeded in recording her reaction time by means of the starting blocks. The other five girls did not exert enough force against the starting blocks.

The times recorded by the girl sprinter, Junior III, are: 0.153 s and 0.175s (the 2<sup>nd</sup> start). The average is of **0.164 seconds**.

The conclusion is that the athletes of the junior age category either did not develop enough force specific to the crouch position or did not learn an effective modality to start the race (a start that maximizes the support of the blocks).

### Times recorded in Boys' 60m hurdles

Five athletes (71.43%) out of seven sprinters (3 born in '91-'92 - Juniors I and 4 born in '95-'96 - Juniors III) who participated in the 60m hurdles and succeeded to record their reaction times at start.

The times recorded by the *junior hurdles sprinters* are as follows: 0,138 s / 0,159 s / 0,208 s / 0,146 s / 0,195 s. The average time (related to the 5 recorded times) of the junior athletes analyzed within this research is of **0.169 seconds**.

The other two athletes (Juniors III) either did not develop enough impulse specific to the crouch position or did not learn an effective modality to start the race (a start that maximizes the support of the blocks).

### Times recorded in Girls' 60m flat

From a total number of 46 girls present at start (two sprinters born in '91-'92 - Juniors I, one sprinter born in '94- Juniors II, 20 sprinters born in '95-'96 - Juniors III and 23 born in 1997 and after - Children I and II) who could have been recorded 46 reaction times, only *10 girl athletes* (21.7%) have triggered the sensors for the starting reaction.

Three out of these ten sprinters were Children I, a fact which indicates that in comparison with other girl juniors they have an improved starting method even if their reaction times were slightly poorer (0,214s / 0,216s / 0,244s).

The other 36 junior athletes (78.26%) did not record their reaction times in blockstarts.

The recorded times for the girl juniors and girl-children in the *60m flat race* are: 0,228s / 0,178s / 0,203s / 0,234s / 0,188s / 0,214s / 0,216s / 0,185s / 0,197s / 0,244s. The average values (computed by taking into account the 10 reaction times recorded) is of **0.209 seconds**, which is not a very appropriate one for this kind of sprint events.

The other 36 girl sprinters either did not manifest the ample driving force in blockstarts or did not acquire

the crouch starting position which implies a strong setting and push against the blocks at the auditory signal.

### Times recorded in Boys' 60m flat

Total: *61 participating athletes* in 9 series:

- 13 athletes born in '91-'92 - Juniors I category
- 15 athletes born in '93-'94 - Juniors II category
- 24 athletes born in '95-'96 - Juniors III category
- 9 athletes born in '97-'98 - Children I category

#### Juniors I

From a total number of 13 sprinters ('91-'92 age category - juniors I) presented at the 60m hurdles race start and from a total of 13 possible recorded times, *12 athletes* recorded their starting reaction times.

The recorded times of the *junior I sprinters in the 60m flat race*: 0,202s / 0,247s / 0,160 s / 0,184s / 0,248 s / 0,175s / 0,169s / 0,195s / 0,166s / 0,170s / 0,147s / 0,175s.

These values point out an average value (computed by taking into account the 12 recorded times) of **0.186 seconds** for the junior I athletes presented at the 60m flat race start and analyses in the present paper.

#### Juniors II

Only *12 athletes* out of 15 sprinters ('93-'94 age category - juniors II) present at the start of the 60m hurdles event have recorded their reaction times.

The recorded times of the juniors II in the *60m hurdles race*: 0,209s / 0,214s / 0,210s / 0,162s / 0,220s / 0,195s / 0,166s / 0,146s / 0,203s / 0,274s / 0,174s / 0,214s.

The average value of the Juniors II participants in the 60m flat event is of **0.199 seconds** (computed by taking into account the 12 available times)

#### Juniors III and Children I

There were 33 sprinters (born in '95-'98 - juniors III and children I) at the 60m hurdles race start but only *15 athletes* (45.45%) have triggered the sensors for the starting reaction.

The recorded times of the juniors III and children I in the *60m flat race* are as follows: 0,214s / 0,192s / 0,279s / 0,215s / 0,165s / 0,146s / 0,174s / 0,175s / 0,153s / 0,206s / 0,209s / 0,298s / 0,243s / 0,257s / 0,199s.

The average value of the juniors III and children I in the 60m flat event and analyzed in our research (from a total of 15 reaction times) was of **0.208 seconds**.

Twenty-two out of 61 sprinters who were present at start (one junior I, three juniors II, and 18 juniors III and children I), which means a percentage of 36.06%, either did not develop enough start impulse from the blocking starts, either did not acquire the effective starting technique (a start which maximizes the impulse from the block pads)

The general average value of all times recorded by the „Alge timing StartJudge SJ” system in the 60m flat event is of **0.198 seconds**.

Analyzing the relationship between the total number of subjects and the recorded times (Table use the block starts and thus to record their reaction times.

Unlike the students, the children and juniors (I, II, III) have a lower percentage in recording their reaction time by using the blockstarts. In our opinion, this fact can be explained by the lack of competition experience and the lack of training as far as the effective crouch starting position performing is concerned.

Analyzing the best reaction times in the two investigating categories (Table no.3) and the average values (Table no.2), it can be noticed that the values recorded by the junior participants are close to the values recorded by the university students, and sometimes the juniors' results are even better than students' results (girls' 60m hurdles; boys' 60m flat).

#### CONCLUSIONS

The descriptive and comparative analysis of the recorded values leads to the conclusion that despite the fact that there were recorded some good results, the junior athletes still need a training for improving their starting reaction and the crouch starting techniques (the presence of many “no impulse” values indicate either not enough propulsion following the auditory signal or not enough

#### Table no. 1

Repartition of subjects' reaction times in both sports competitions

Event	University National Indoor Championships		“Dorin Melinte” Memorial - Juniors		Total	
	Subjects	Recorded times (heats, final)	Subjects	Recorded times (heats, final)	Subjects	Times
W 60 m hurdles	7	7	6	2	13	9
M 60 m hurdles	10	17	7	5	17	22
W 60 m flat	14	15	46	10	60	25
M 60 m flat	22	30	61	39	83	69
	53	69	120	56	173	125

#### Table no. 2

Average values recorded in the four events at the two studied competitions

Event	Best value University National Indoor Championships	Best value “Dorin Melinte” Memorial - Juniors	Difference
W 60 m hurdles	0.202s female students	0.164 girl Juniors	0,038 s
M 60 m hurdles	0.199s male students	0.169 boy Juniors I	0,030 s
W 60 m flat	0.203s female students	0.209 girl Juniors	0,006 s
M 60 m flat	0.195s male students	0.198 boy Juniors	0,003 s

#### Table no. 3

Fastest reaction times in the two competitions

Event	Best value University National Indoor Championships	Best value “Dorin Melinte” Memorial - Juniors	Difference
W 60 m hurdles	0.188s female student	0.153 girl Junior III	0,035 s
M 60 m hurdles	0.136s male student	0.138 boy Junior I	0,002 s
W 60 m flat	0.164s female student	0.178 girl Junior II	0,014 s
M 60 m flat	0.149s male student	0.147 boy Junior I	0,002 s

no.1), it can be noticed that the participants at the university student competition (youth-senior age category) have succeeded in a percentage of 100% to

strength developed at the lower limbs level or strength values which are incorrectly used from the technical point of view).

As far as the values recorded in the youth-senior athletes (university students) are concerned, these athletes have taken advantage of the impulse from the block starts (the motion sensors were triggered) but their reaction times are not quite good, with few exceptions (the situation is the same with the junior athletes).

The analysis of all values related to the competition performances (heat times, final times) pointed out the fact that the training methodology of sprint-hurdles athletes must be improved, especially concerning their physical training, psychological training and reaction time.

#### BIBLIOGRAPHY

- BOMPA, T., 2002, Periodizarea: teoria și metodologia antrenamentului**, Ex Ponto Publishing House, Bucharest (translation CNFPA);
- DRAGNEA, A.,C., TEODORESCU, S., M., 2002, Teoria Sportului**, FEST Publishing House, Bucharest;
- JENSEN, A. 2006, Pontaj minte: cronometrie mentală și diferențele individuale**, Elsevier Publishing House, Amsterdam;
- NICU, A., ET AL., 1993, Antrenamentul sportiv modern**, Editis Publishing House, Bucharest.

## COMPARISON OF SOME ANTHROPOMETRIC CHARACTERISTICS OF ELITE BADMINTON AND TENNIS PLAYERS

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### ABSTRACT

The purpose of this study was to investigate the comparison of anthropometric parameters of elite badminton and tennis players. The sample of this study is consisting from 30 elite tennis and badminton players who participate the study voluntarily.

As a result of this study, a significant statistical difference between badminton and tennis players is observed only in terms of calf variable which is one of the circumference width variables. In terms of length measures, a significant difference is not observed between the mean values of badminton and tennis players at the significance level of 0.05. However, a significant difference is observed in terms of bust and forearm lengths at the level of 0.10. A statistically significant difference is found between the mean values of the players in terms of biacromial, bitrochanteric and femoral epicondular diameters which are diameter measure variables. It also observed that tennis players have larger mean values in biacromial and femoral epicondular diameter and badminton players have larger mean values in bitrochanteric diameter measures. As a result, it can be said that the wider hip and calf breadths of badminton players results from the excess of jumping movements in badminton game and the continual movements of badminton players by toe tips in a close area. The wider biacromial diameter and longer whole arm length in tennis players can be associated with reaching actions in tennis game due to the wide court. We may also claim that, due to frequent forearm activities in badminton, the players have shorter forearm lengths than tennis players and this gives an advantage of better working lever for the amount of strenght spent.

**KEYWORDS:** Anthropometry, Badminton, Tennis.

### INTRODUCTION

Badminton is a sports branch which can be played easily and savorily by all people from several ages, which does not drives the player to violence, which also can be used for a recreation and fitness purposes (R. C. Memedov and R. Kale, 1994). On the other hand tennis is not only a sports branch which is so popular but also has new point of views. On one hand it is a kind of sport which is a popular spare time activity and many people can exercise and this sport also became a remarkable revenue source provider (P. Unierzyski, 1995).

When the countries and teams which have reached an upper level in sports branches, studies which is being carried out in the light of programs prepared more scientifically and by more informed people (C. Açıkada and E. Ergen, 1986). In most countries the science people not only try to show sportsmen profiles of their countries by studies but also they provide data which may dominate other countries' studies (S. Muratlı, 1997). The performances and physical characteristics of elite sportsmen which perform in different sports branches may vary and as well anthropometric and basic motoric differences may be distinctive for branches in talent identification (Australian Sports Commission, 1998). The studies which seek for how the structural features affect the performance in the selected sports branch are limited (B. Durmaz et al.,

1995; A. Farkas et al., 1989; J. A. Mazza et al., 1992).

The purpose of this study is to identify the physical profiles of the elite badminton and tennis players which are similar sports in visuality and play characteristics; and to introduce some anthropometric differences between these sports branches.

### MATERIAL AND METHOD PARTICIPANTS

The research group is consisted of 30 elite badminton and tennis players who grant to get involved in the study. The measures of the involved player's variables were made while they were not wearing t-shirts, shorts and shoes.

### DATA COLLECTION METHOD

The measures of the 30 player who were involved into the study were made by an expert anthropologist of Gazi University School of Physical Education and Sport physiology laboratory. In order to provide the measure reliability, each measure was repeated for two times and the mean values were used in the study. The characteristics measured values and demographic information of the subjects were recorded in the data form which was prepared formerly.

**DATA ANALYSIS**

SPSS 17.0 package program was used in the study to analyze the data. Firstly, descriptive statistical

400 values were calculated according to the profiles and measure variables of the subjects. Kolmogorov-Smirnov normality tests were used for the selection of the parametric and nonparametric test which will be used for significance of the difference between mean values. At the end of these tests it was observed that chest circumference, waist circumference, bust

**RESULTS**

In this part, results of the statistical analysis concerning the findings of the subjects are given.

length, humerus epiconduler diameter, femoral epiconduler diameter variables have not the normal distribution. Thus, nonparametric Mann-Whitney U test was used for variables and parametric t test was used for other variables. Before the t test, equality of the group variances was calculated by F test and it was observed that the hypothesis on equality of group variances was supported except for bitrochanteric diameter variable. The t test was carried out under these assumptions.

**Table 1. Kolmogorov-Smirnov Normality Tests**

Badminton				Tennis			
Variables	Statistic	n	p	Variables	Statistic	n	p
Body Weight	0.134	15	0.200	Body Weight	0.192	15	0.140
Biceps Cir.	0.202	15	0.102	Biceps Cir	0.149	15	0.200
Waist Cir.	0.147	15	0.200	Waist Cir.	0.170	15	0.200
Chest Cir.	0.225	15	0.390	Chest Cir.	0.142	15	0.200
Hip Cir.	0.178	15	0.200	Hip Cir	0.266	15	0.005
Calf Cir.	0.183	15	0.188	Calf Cir	0.168	15	0.200
Lower Body Length.	0.120	15	0.200	Lower body Length.	0.174	15	0.200
Bust Length.	0.131	15	0.200	Bust Length.	0.234	15	0.027
Arm Length.	0.253	15	0.098	Arm Length.	0.156	15	0.200
Forearm Length.	0.164	15	0.200	Forearm Length.	0.170	15	0.200
Biacro. Cir.	0.149	15	0.200	Biacro. Cir.	0.171	15	0.200
Hum. E. Cir.	0.178	15	0.200	Hum. E. Cir.	0.230	15	0.032
Bitroc. Cir.	0.141	15	0.200	Bitroc. Cir.	0.191	15	0.145
F. Ep. Cir.	0.152	15	0.200	F. Ep. Cir.	0.222	15	0.044

**Table 2. Levene Test For Equality of Group Variances**

Variables	F	P
Body Weight	0.556	0.462
Length	0.849	0.365
Waist Circumference	1.689	0.204
Chest Circumference	0.010	0.920
Biacromial Diameter	1.572	0.220
Bitroc. Diameter	17.635	0.000

**Table 3. Descriptive Characteristics of Subjects**

Variables	Branch	n	$\bar{x}$	ss
Age (year)	Badminton	15	21.67	3.52
	Tennis	15	21.07	3.53
Body Weight (kg)	Badminton	15	71.97	6.03
	Tennis	15	74.58	3.48
Spors Age (year)	Badminton	15	10.00	3.21
	Tennis	15	12.80	3.96
Training Frequency (w/day)	Badminton	15	5.20	0.78
	Tennis	15	5.93	0.46
Daily Exercise Duration (hour)	Badminton	15	2.13	0.35
	Tennis	15	2.28	0.45

Information concerning the players who are involved in the study are given in the Table 3.

**Table 4. Descriptive Statistics and Statistical Tests for Circumference Widths of Elite Badminton and Tennis Players**

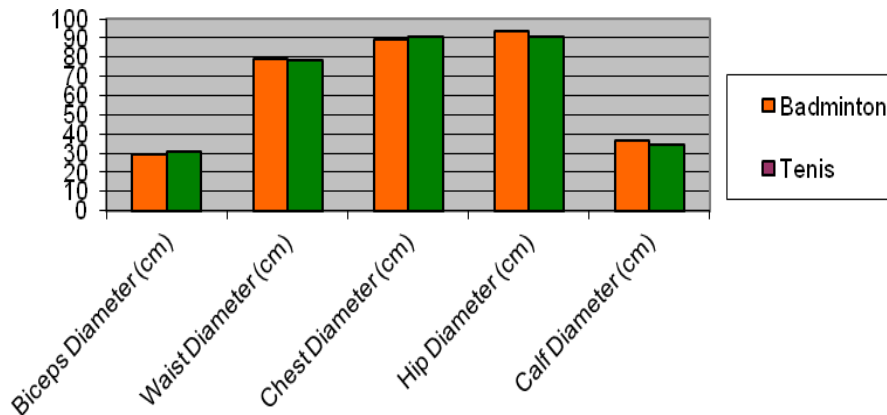
Variables	Branch	n	$\bar{x}$	ss	t	p
Biceps Circumference (cm)	Badminton	15	29.23	2.92	-1.776	0.091
	Tennis	15	30.71	1.37		
Waist Circumference (cm)	Badminton	15	79.07	2.21	0.592	0.559
	Tennis	15	78.63	1.83		
Calf Circumference (cm)	Badminton	15	36.68	1.48	3.397	0.001
	Tennis	15	34.40	1.68		

			Mean Rank	Mann-Whitney U	P
Chest Circumference (cm)	Badminton	15	13.77	86.500	0.285
	Tennis	15	17.23		
Hip Circumference (cm)	Badminton	15	17.40	84.000	0.250
	Tennis	15	13.60		

Descriptive statistics and statistical test results are given in the Table 4. When the measures of the circumference width are examined, a significant difference is found only in the measures of the calf circumference between the two branches ( $p < 0.05$ ). It

is observed that the calf circumferences of the badminton players are larger than the tennis players. Additionally, the differences between the mean values of hip circumference are found significant at the level of 0.10.



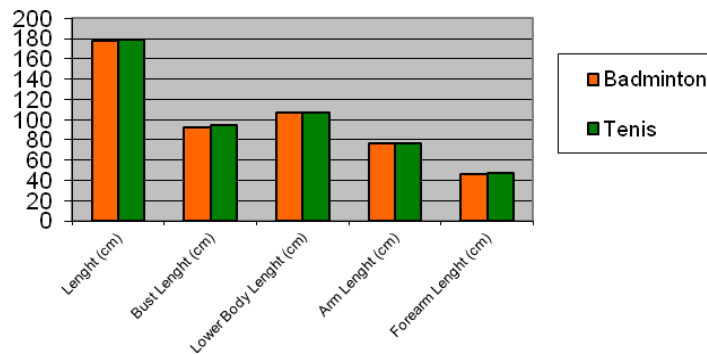
**Figure 1. The Mean Values of Circumference Width of The Tennis and Badminton Players**

**Table 5. Length Measures of Badminton and Tennis Players - Descriptive Statistics and Statistical Test**

Variables	Branch	n	$\bar{x}$	ss	t	p
Length (cm)	Badminton	15	177.43	5.51	0.148	0.342
	Tennis	15	179.50	6.20		
Lower body Length (cm)	Badminton	15	107.25	3.66	-0.154	0.884
	Tennis	15	107.06	3.38		
Arm Length (cm)	Badminton	15	76.77	2.58	-1.87	0.878
	Tennis	15	76.92	2.74		
Forearm Length (cm)	Badminton	15	45.82	1.64	0.967	0.072
	Tennis	15	47.10	2.06		
			Mean Rank		Mann-Whitney U	P
Bust Length (cm)	Badminton	15	12.53		68.000	0.067
	Tenis	15	18.47			

Descriptive statistics and statistical test results concerning length measures of the players are given in the Table 5. When the data obtained from each group is compared, a statistically significant

difference is not seen. However, the mean values of forearm lengths are different at the significance level of 0.10.



**Figure 2. The Mean Values of Length Variable of Badminton and Tennis Players**

**Table 6. Descriptive Statistics and Statistical Tests for Circumference Measures of Elite Badminton and Tennis Players**

Variables	Branch	n	$\bar{x}$	ss	t	p
Biacromial Diameter (cm)	Badminton	15	38.85	1.18	-4.349	0.000
	Tennis	15	41.52	2.05		
Bitrochantheric Diameter (cm)	Badminton	15	32.16	1.11	6.710	0.000
	Tennis	15	27.59	2.36		
			Mean Rank		Mann-Whitney U	P
Humerus Epiconduler Diameter (cm)	Badminton	15	14.80		102.000	0.683
	Tennis	15	16.20			
Femoral Epiconduler Diameter (cm)	Badminton	15	19.43		53.00	0.013
	Tennis	15	11.57			

When the Table 6 is examined, it can be said that there is a statistically significant difference between

the biacromial and bitrochantheric diameters. While badminton players have larger bitrochantheric



diameters and tennis players have larger biacromial diameters.

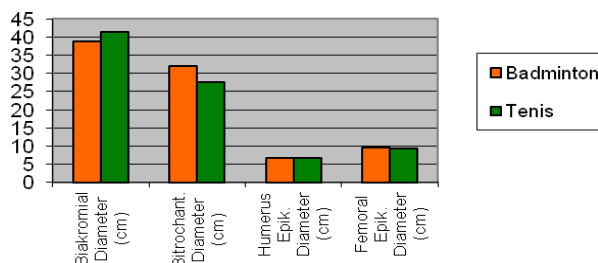


Figure 3. The Mean Values of Diameter Measures of Badminton and Tennis Players.

### DISCUSSION

Looking at the mean values of age, length and body weight of elite badminton players who are involved in this study, it is seen that the mean age is  $21.67 \pm 3.52$ , the mean length is 177.43cm, the mean body weight is  $72.04 \pm 5.57$ kg and the mean sports age is  $10.00 \pm 3.21$  years. In the study of which Arslanoğlu and friends have analyzed the badminton matches in the 2008 Beijing Olympics, they have observed that the mean age is  $27.12 \pm 4.02$ , the mean length is 178.98cm and the mean body weight is  $73.47 \pm 7.59$ kg (Arslanoğlu & et al, 2008). For the tennis players who are involved in this study, it seen that the mean age is  $21.07 \pm 3.53$ , the mean length is 179cm, the mean body weight is  $74.58 \pm 3.48$ kg and the mean sports age is  $12.80 \pm 3.96$  years. In the study made by Gelen and his friends, again for the tennis players, it is seen that the mean age is  $18.30 \pm 3.02$ , the mean length is 183.40cm and the mean body weight is  $73.20 \pm 7.16$ kg (E. Gelen et al., 2006).

When the measures of the circumference widths of the subjects are examined; there is a significant difference only in the measures of calf circumference between the two branches ( $p < 0.05$ ). The calf circumferences of the badminton players are  $36.68 \pm 1.48$  cm. The calf circumference of the tennis players is  $34.40 \pm 1.68$  cm; thus it can be said that the calf circumferences of the badminton players are larger than the tennis players. When a study on the literature is carried out; in the study of Gelen and Friends, it was observed that the calf circumference of the tennis players is  $37.00 \pm 3.85$ cm (E. Gelen et al., 2006). As the thickness of calf skin curl is smaller in badminton players and as the calf circumference width is larger, it can be concluded that the muscle density of badminton players is larger on this part of the body than the tennis players. The cause of this circumstance is interpreted to be the jumping action in badminton play and continuous movement on the tiptoes of the badminton player in a smaller place.

When the length measures of the players were examined, a significant difference was not observed statistically between the two branches. It is observed

that the length, bust and lower body lengths of the badminton players are respectively:  $177.43 \pm 5.51$  cm,  $92.69 \pm 2.93$  cm and  $107.25 \pm 3.66$  cm. Arm and forearm lengths are respectively:  $76.77 \pm 2.58$  cm and  $45.42 \pm 1.64$  cm. For the tennis players; respectively:  $179.50 \pm 6.20$  cm,  $94.52 \pm 2.81$  cm,  $107.06 \pm 3.38$  cm and the arm and forearm lengths are:  $76.92 \pm 2.74$  cm and  $47.10 \pm 2.06$  cm.

According to the diameter measures of the subject; significant differences between the two branches is found in biacromial diameter, bitrochanteric diameter and femoral epicondular diameter ( $p < 0.05$ ). For the badminton players; the biacromial diameter is  $38.85 \pm 1.18$  cm, bitrochanteric diameter is  $32.16 \pm 1.11$ cm, and femoral epicondular diameter is  $9.56 \pm 0.27$ cm. For the tennis players; it is observed that the biacromial diameter is  $41.52 \pm 2.05$ cm, bitrochanteric diameter is  $27.59 \pm 2.36$ cm, and femoral epicondular diameter is  $9.28 \pm 0.30$ cm.

### CONCLUSIONS

In conclusion, significant statistical differences in measures of calf diameters between two branches exist and calf circumferences of the badminton players are greater than the tennis players. According to the diameter measures; it is observed that tennis players have larger shoulders and thinner waists and there is a significant difference in biacromial, bitrochanteric and femoral epicondular diameter measures between the two sports branches.

### Bibliography

- AÇIKADA, C., ERGEN E., 1986,** *Yüksek Performansta Bir Başka Nokta; Bedensel Yapı. Bilim ve Teknik Dergisi*; 2: 39.
- ARSLANOĞLU, E., ARSLAN Y., ŞENEL Ö., 2009,** *2008 Pekin Olimpiyat Oyunları Badminton Müsabakalarının analizi ve 2004 Olimpiyatlarıyla Karşılaştırılması*, Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, 7 (2): 77-84.
- AUSTRALIAN SPORTS COMMISSION, 1998,** *The National Talent Identification and Development Program*, Talent Search, Phase 2, Testin Manu.
- DURMAZ, B., ÖZÇALDIRAN, B., DOĞAN, B., VAROL R., 1995,** *The Anthropometric Characteristics of Preadolescent Boy Swimmers and Their Relationship with Performance*, Journal of Ege Physical Medicine of Rehabilitation, 1 (3): 151-154.
- FARKAS, A., MOHACSI, J., MESZAROS, J., 1989,** *Four Styles of Swimming Performance and Anthropometry of Child Swimmers*, In: Oseid S. editors: Children and Exercise XIII. Illinois, Human Kinetics Books: 129-134.
- GELEN, E., VE ARK. 2006,** *1. ve 2. Ligdeki Tenisçilerin Fiziksel Uygunluk Özelliklerinin Karşılaştırılması*, Fırat Üniversitesi Sağlık Bilimleri Dergisi, 20 (2): 119-127.
- MAZZA, J. A., COSOLITO, P. Y., ALARCON, ET AL., 1992,** *Somatotype Profile of South American Swimmers*. In: Mc Claren D, Reilly T, Lees A. Biomechanics and Medicine in Swimming, E&FN Spon; London: 371-378.
- MEMEDOV, R. C., KALE R., 1994,** *Uçan Tüytop Badminton*. İstanbul: Başak Ofset.
- MURATLI, S., 1997,** *Çocuk ve Spor*, Bağırhan Yayınevi, Ankara.
- UNIERZYSKI P., 1995,** *Influence of Physical Fitness Specific to the Game of Tennis, Morphological and Psychological Factors on Performance Level in Tennis in Different Age Groups*. Science and Racket Sports, E&FN Spon, London: 61-68.

## INVESTIGATION OF PROBLEM SOLVING SKILLS IN 13-15 YEARS OLD MALE BASKETBALL PLAYERS IN TERMS OF SEVERAL VARIABLES

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### ABSTRACT

**Purpose.** The aim of this study was to determine problem solving skills of 13-15 years old male basketball players who are the candidates for the national team and to investigate the differences in terms of personal variables.

**Methods.** In this study; 102 athletes who were selected from 3400 (candidates for the national team) athletes attended voluntarily in Turkey.

In this research; "Problem Solving Inventory" which was improved by Heppner ve Peterson (1982) for determine to problem-solving skills and 'personal information form', to be used as a data collection.

In the analysis of data, the percentage and frequency values by taking the t-test and one-way analysis of variance (ANOVA) was used and  $p < 0.05$  significance level between.

**Results.** According to sports in the variable "self-confident approach", according to family income variable "estimator approach, self-confident approach and planned approach" is being determined, father education level variable according to the "evaluator approaches and self-confident approach", according to the mother's education level variable "estimator approach and self-confident approach" were found. Other lower wage scales, according to the variable to get paid from clubs, "estimator approach", and ( $p < 0.05$ ) significant differences were found.

**Conclusions.** In conclusion, problem-solving skills of basketball according to the general literature has been found to be moderate. Also in the results, problem solving subscale of the property of their mean scores differ by age and location variables have been identified.

**KEY WORDS:** Problem solving, basketball, athlete

### INTRODUCTION AND AIM

Starting from the time of birth, humans try to deal with the problems waiting to be solved such as eating, protection and enabling the continuity of the generation. With the social structure, which continuously develops and becomes complicated, development of the technology and varying needs, the humans begin to face gradually increasing and difficult problems.

A problem refers to the barrier in front of the existing powers an individual collected to achieve a certain objective (A. Bingham, 1998). According to D. Cüceloğlu, (1991), problem is a conflict situation where an individual encounters a frustration in achieving a goal (D. Cüceloğlu, 1991).

A situation which is not considered as a problem for an individual can be considered as a problem for another. Human life becomes meaningful with the problems and solving these problems (A. Üstün and B. Bozkurt, 2003)

Problem solving is the process of overcoming the difficulties encountered while achieving a goal. It is a skill that should be learnt or possessed; it also should be continuously developed (A. Bingham, 1998). When an individual encounters a difficulty or a condition he/she has to overcome, he/she activates all of the sources he/she has and reviews his/her previous information to obtain some hints and ideas to solve the problem. The success of a person in problem solving depends on his/her problem solving skill (M. Ağır, 2007). Problem solving skill is an important skill in life

which influences all parts of our lives; it is involved in all activities from simple ones to complicated ones. Thanks to the problem solving skills he/she acquired, an individual is able to lead a positive or negative life with his/her correct or wrong decisions (D. Gülşen, 2008). A human is a whole with his/her physical and psychological entity. Previous studies revealed that the people who were able to establish proper relationships between their physical and psychological aspects were successful in problem solving (E. Greenberger et al., 1971; P.P. Heppner et al., 1985; P.P. Heppner et al., 1987. A.M. Nezu, 1985; C.J. Clark, 2002; M. Mc Murran, 2007). Sport is an important factor in establishing a proper relationship between the physical and psychological entity. Sport means creating an environment of success which would eliminate the problems and disagreement with the body (M. Volkamer, 2009). Either one of environmental or psychological factors have a higher or lower role depending on the circumstances, however none of these factors cause a success or failure in sports alone (S.S. Gürçay, 1998). It can be suggested that an athlete who can make right decisions and make these decisions in the shortest time has an advantage of achieving a success in sports. In conclusion, problem solving skills of an athlete is considered as an important factor in achievement.

Some of the problems the individuals face can be solved by simple procedures and actions; some of them can be solved by an intensive thinking and some of them can be solved with the abilities they have (D.

Gülşen, 2008). It can be suggested that this is also valid for the athletes. The values and behaviors, type of thinking and abilities of the students in physical education and sports have an important role in problem solving. On the pitch, sports hall, ring or mat, an athlete should be able to take a position and move according to the position of the rival player and to the positions and moves of his/her teammates.

In light of this information, the aim of this study was to determine problem solving skills of 13-15 years old male basketball players who are the candidates for the national team and to investigate the differences in terms of personal variables.

### MATERIAL AND METHOD

A total of 102 athletes selected from 81 provinces of Turkey who were candidates for the national team volunteered to take part in the study.

The study used Problem Solving Inventory developed by Heppner and Peterson (1982). The inventory was adapted into Turkish by Şahin, Şahin and Heppner (1993) (P.P. Heppner and C. Peterson, 1982; N. Şahin et al., 1993). The inventory consisted 35 items in 6-point Likert type scale. While responding the questions, the participants marked each item according to the frequency specified in the items.

Statements in 6-point Likert-type inventory: "I always act like this," "I very often act like this," "I often act like this," "I sometimes act like this", "I rarely act like this," "I never act like this". One part of the items consists positive statements; one part of the items consists negative statements. The scale gives total scores and the scores for sub-scales. The responds are given 1-6 scores. Items 9, 22 and 29 are excluded from the scoring. The scoring is calculated over 32 items. The items 1, 2, 3, 4, 11, 13, 14, 15, 17, 21, 25, 26, 30 and 34 are inversely scores. Range of score from the inventory is 32-192.

High scores received from the scale indicate that the individual perceives himself/herself inadequate in problem solving. Receiving lower total scores is considered as a positive problem solving perception of the individual. In scoring of the sub-scales, as the scores received from the sub-scales measuring positive-desired problem-solving types decreased (thinking approach, self-confident approach, evaluative approach, planned approach) it was considered that the related types of approaches were used more frequently. On the other hand, as the scores received from the sub-scales measuring negative-ineffective problem solving skills decreased (impetuous approach and avoidant approach ) it was considered that the related types of approach were used less frequently (D. Ferah, 2000).

### RESULTS

Table 1 indicates that of the group 27 (26.5%) were 13 years old, 64 (62.7%) were 14 years old, 11 (10.8%) were 15 years old. Of the group, 10 (9.8%) were playing basketball for 1-2 years; 32 (60.8%) were playing basketball for 3-5 years; 30 (29.4%) were playing basketball for 6-8 years. Of the group, 20 (19.6%) had a family income of 300-1000 \$; 48 (47.1%) had a family income of 1000-2000 \$; 23 (22.5%) had a family income of 2000-3000 \$ and 11 (10.8%) had a family income of higher than 3000 \$. Of the participants the fathers of 15 (14.7%) were primary school graduates; the fathers of 46 (45.1%) were high school graduates and the fathers of 41 (30.4%) were university graduates. Of the participants the mothers of 30 (29.4%) were primary school graduates, the mothers of 41 (40.2%) were high school graduates and the mothers of 31 (30.4%) were university graduates. Of the group 17 (16.7%) reported that they were paid by their clubs, 85 (83.3%) reported that they are not paid by their clubs. When the position distribution of the group was analyzed, it was observed that 18 (17.6%) were guards, 29 (28.4%) were forwards players and 55 (53.9%) were Post-Pivot.

**Table 1. Demographic Data of the Study Group**

Değişkenler		Numeral	%
Age	13	27	26,5
	14	64	62,7
	15	11	10,8
Sport Year	1-2	10	9,8
	3-5	62	60,8
	6-8	30	29,4
Family Income ( Dollars)	300-1000	20	19,6
	1000-2000	48	47,1
	2000-3000	23	22,5
	3000+	11	10,8
Father-Education	Primary School	15	14,7
	High School	46	45,1
	Universty	41	40,2
Mother-Education	primary school	30	29,4
	High School	41	40,2
	Universty	31	30,4
Income	Yes	17	16,7
	No	85	83,3
Position	Guard	18	17,6
	Forvet	29	28,4
	Post-Pivot	55	53,9

**Table 2. ANOVA Test Results of PSI Sub-Dimension Scores of the Basketball Players according to the Age Variable**

	Age	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	13	27	30,48	6,38	Intergroup	5,77	2	2,88	,074	,929	
	14	64	30,75	6,38	In-group	3878,74	99	39,17			
	15	11	30,00	6,43	Total	3884,52	101				
Thinking Approach	13	27	13,70	4,75	Intergroup	,86	2	,43	,020	,980	
	14	64	13,70	4,75	In-group	2120,98	99	21,42			
	15	11	14,00	4,19	Total	2121,85	101				
Avoidant Approach	13	27	10,11	4,93	Intergroup	54,89	2	27,44	1,43	,243	
	14	64	11,56	4,20	In-group	1892,96	99	19,12			
	15	11	12,36	3,85	Total	1947,85	101				
Evaluative Approach	13	27	8,40	3,54	Intergroup	8,62	2	4,31	,467	,628	
	14	64	8,17	2,89	In-group	914,17	99	9,23			
	15	11	7,36	2,41	Total	922,79	101				
Self-Confident Approach	13	27	17,88	6,18	Intergroup	35,96	2	17,98	,502	,607	
	14	64	18,98	5,66	In-group	3547,28	99	35,83			
	15	11	19,81	7,30	Total	3583,25	101				
Planned Approach	13	27	10,00	4,04	Intergroup	34,29	2	17,14	1,169	,315	
	14	64	10,51	3,74	In-group	1452,53	99	14,67			
	15	11	8,63	3,80	Total	1486,82	101				

Significant at \*p= 0,05 level

As indicated in Table 2, ANOVA test results did not significantly vary for each sub-dimension according to age variable of the basketball players.

**Table 3: ANOVA Test Results of PSI Sub-Dimension Scores of the Basketball Players according to the Sport Year Variable**

	Group	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	1	10	31,60	3,56	Intergroup	77,65	2	38,82	1,010	,368	
	2	62	31,08	6,59	In-group	3806,86	99	38,45			
	3	30	29,26	5,98	Total	3884,52	101				
Thinking Approach	1	10	14,10	4,20	Intergroup	13,931	2	6,96	,327	,722	
	2	62	13,95	4,64	In-group	2107,92	99	21,29			
	3	30	13,16	4,66	Total	2121,85	101				
Avoidant Approach	1	10	10,90	4,79	Intergroup	3,809	2	1,90	,097	,908	
	2	62	11,19	4,59	In-group	1944,04	99	19,63			
	3	30	11,53	3,92	Total	1947,85	101				
Evaluative Approach	1	10	7,50	2,91	Intergroup	18,14	2	9,07	,993	,374	
	2	62	8,48	2,98	In-group	904,65	99	9,13			
	3	30	7,66	3,13	Total	922,79	101				
Self-Confident Approach	1	10	19,90	6,50	Intergroup	221,51	2	110,75	3,262	,042	1-2 1-3
	2	62	18,75	5,79	In-group	3361,73	99	33,95			
	3	30	17,46	5,69	Total	3583,25	101				
Planned Approach	1	10	10,90	3,98	Intergroup	66,17	2	33,08	2,306	,105	
	2	62	10,66	3,66	In-group	1420,65	99	14,35			
	3	30	8,93	3,97	Total	1486,82	101				

Significant at \*p= 0,05 level

Groups: 1: 1-3, 2: 4-6, 3: 7\*

Table 3 indicates that "Self-Confident Approach" sub-dimension scores of the basketball players significantly vary according to sport year variable [ $F_{(2-99)} = 3,262$ ;  $p < .05$ ]. It was found that the scores of the basketball playing who were doing sport for 1-3 years ( $\bar{x} = 12,90$ )

were lower those of the basketball players who were doing basketball for 4-6 years ( $\bar{x} = 18,75$ ) and lower than those of the basketball players who were doing sport for more than 7 years ( $\bar{x} = 17,46$ ).

**Table 4. ANOVA Test Result of the PSI Sub-Dimensions of the Basketball Players according to Family Income Status Variable**

	Grup	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	1	20	31,40	6,21	Intergroup	91,05	3	30,35	,784	,506	
	2	48	31,16	6,78	In-group	3793,46	98	38,70			
	3	23	29,00	5,91	Total	3884,52	101				
	4	11	30,00	3,60							
Thinking Approach	1	20	12,90	4,71	Intergroup	135,89	3	45,29	2,235	,089	
	2	48	13,79	4,49	In-group	1985,96	98	20,26			
	3	23	12,86	4,90	Total	2121,85	101				
	4	11	16,81	2,96							
Avoidant Approach	1	20	12,85	4,31	Intergroup	71,90	3	23,96	1,252	,295	
	2	48	10,70	4,69	In-group	1875,95	98	19,14			
	3	23	10,82	3,67	Total	1947,85	101				
	4	11	11,72	4,36							
Evaluative Approach	1	20	10,00	3,79	Intergroup	142,26	3	47,42	5,954	,001	1-2
	2	48	7,20	2,38	In-group	780,53	98	7,96			
	3	23	7,73	2,63	Total	922,79	101				
	4	11	7,72	2,53							
Self-Confident Approach	1	20	21,90	6,05	Intergroup	363,57	3	121,19	3,689	,015	1-2
	2	48	17,41	5,71	In-group	3219,68	98	32,85			
	3	23	17,82	5,38	Total	3583,25	101				
	4	11	16,09	5,20							
Planned Approach	1	20	11,60	3,84	Intergroup	153,73	3	51,24	3,767	,013	1-3 1-4
	2	48	9,54	3,26	In-group	1333,08	98	13,60			
	3	23	9,08	3,84	Total	1486,82	101				
	4	11	8,63	3,20							

Significant at \*p= 0,05 level

**Groups: 1:** Low, **2:** Moderate, **3:** High, **4:** Very High

As indicated in Table 4, "Evaluative Approach" sub-dimension scores of the basketball players significantly varies according to the family income level variable [ $F_{(3,98)} = 5,954$ ;  $p < ,05$ ]. It was found that the scores of the basketball players with low income level ( $\bar{x} = 10,00$ ) were higher than those who had a moderate family income level ( $\bar{x} = 7,20$ ).

There was a significant relationship between the "Self-Confident Approach" sub-dimension scores of the basketball players according to family income level variable [ $F_{(3,98)} = 3,689$ ;  $p < ,05$ ]. It was found that the scores of the basketball players with a low family income

level ( $\bar{x} = 21,90$ ) were higher than those having moderate ( $\bar{x} = 17,41$ ) family income level.

"Planned Approach" sub-dimension scores of the basketball players significantly varied according to family income [ $F_{(3,98)} = 3,767$ ;  $p < ,05$ ]. It was found that the scores of the basketball players with low income level ( $\bar{x} = 11,60$ ) were higher than those of the basketball players with high ( $\bar{x} = 9,08$ ) and very high ( $\bar{x} = 8,63$ ) income level.

**Table 5: ANOVA Test Results of PSI Sub-Dimension Scores of the Basketball Players according to the Variable of Father's Educational Level**

	Grup	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	1	30	30,43	5,43	Intergroup	85,84	2	42,92	1,119	,331	
	2	41	31,60	7,12	In-group	3798,67	99	38,37			
	3	31	29,41	5,51	Total	3884,52	101				
Thinking Approach	1	30	14,20	4,64	Intergroup	34,65	2	17,32	,822	,443	
	2	41	13,02	4,44	In-group	2087,19	99	21,08			
	3	31	12,22	4,73	Total	2121,85	101				
Avoidant Approach	1	30	11,73	4,01	Intergroup	20,68	2	10,34	,531	,590	
	2	41	11,41	4,70	In-group	1927,17	99	19,46			
	3	31	10,61	4,37	Total	1947,85	101				
Evaluative Approach	1	30	9,56	2,82	Intergroup	86,94	2	43,47	5,149	,007	1-2 1-3
	2	41	7,43	3,04	In-group	835,85	99	8,44			
	3	31	7,70	2,79	Total	922,79	101				
Self-Confident Approach	1	30	21,30	5,70	Intergroup	269,00	2	134,50	4,018	,021	1-2
	2	41	17,75	5,80	In-group	3314,24	99	33,47			
	3	31	17,70	5,83	Total	3583,25	101				
Planned Approach	1	30	11,50	3,49	Intergroup	78,66	2	39,33	2,765	,068	
	2	41	9,41	3,69	In-group	1408,16	99	14,22			
	3	31	9,90	4,11	Total	1486,82	101				

Data in Table 5 indicated that "Evaluative Approach" sub-score scores of the basketball players significantly varied according to the variable of father's educational level [ $F_{(2,99)}=5,149$ ;  $p<,05$ ].

It was found that the scores of the basketball players whose fathers were primary school graduates ( $\bar{x} = 9,56$ ) were higher than those of the basketball players whose fathers were high school graduates ( $\bar{x} = 7,43$ ) and university graduates ( $\bar{x} = 7,70$ ).

"Self-Confident Approach" sub-dimension scores of the basketball players significantly varies according to the variable of father's education [ $F_{(2,99)}=4,018$ ;  $p<,05$ ]. It was found that the score of the basketball players who mothers were primary school graduates ( $\bar{x} = 21,30$ ) were higher than those whose mothers were university graduates ( $\bar{x} = 17,70$ ).

**Table 6: ANOVA Test Results of PSI Sub-Dimensions of the Basketball Players according the Variable of Mother's Educational Status**

	Group	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	1	15	31,80	6,37	Intergroup	140,83	2	70,41	1,862	,161	
	2	46	31,47	6,23	In-group	3743,68	99	37,81			
	3	41	29,17	5,97	Total	3884,52	101				
Thinking Approach	1	15	15,20	2,90	Intergroup	38,39	2	19,19	,912	,405	
	2	46	13,56	5,33	In-group	2083,46	99	21,04			
	3	41	13,39	4,14	Total	2121,85	101				
Avoidant Approach	1	15	13,06	3,34	Intergroup	93,56	2	46,78	2,498	,087	
	2	46	11,56	4,48	In-group	1854,28	99	18,73			
	3	41	10,26	4,44	Total	1947,85	101				
Evaluative Approach	1	15	9,40	2,92	Intergroup	78,36	2	39,18	4,594	,012	1-3
	2	46	8,65	3,33	In-group	844,42	99	8,53			
	3	41	7,12	2,36	Total	922,79	101				
Self-Confident Approach	1	15	22,13	6,42	Intergroup	383,15	2	191,57	5,927	,004	1-3
	2	46	19,58	5,73	In-group	3200,10	99	32,32			
	3	41	16,65	5,34	Total	3583,25	101				
Planned Approach	1	15	11,66	4,63	Intergroup	79,74	2	39,87	2,805	,065	
	2	46	10,56	3,39	In-group	1407,07	99	14,21			
	3	41	9,19	3,82	Total	1486,82	101				

Significant at \* $p=0,05$  level **Groups: 1: Primary School, 2: High School, 3: University**

As indicated Table 6, "Evaluative Approach" sub-dimension scores of the basketball players significantly varied according to the variable of mother's education [ $F_{(2,99)} = 4,594; p < .05$ ]. It was found that the scores of the basketball players whose mothers were primary school graduates ( $\bar{x} = 9,40$ ) were higher than those whose mothers were university graduates ( $\bar{x} = 7,12$ ).

"Self-Confident Approach" sub-dimension scores of the basketball players significantly varied according to the variable of mother's education [ $F_{(2,99)} = 3,689; p < .05$ ]. It was found that the scores of the basketball players whose mothers were primary school graduates ( $\bar{x} = 22,13$ ) were higher than those whose mothers were university graduates ( $\bar{x} = 16,65$ ).

**Table 7: t-Test Results of the PSI Sub-Dimension Scores of the Basketball Players according to the Variable of Receiving Economic Support from their Clubs**

Subdimensions	Economic Support	N	$\bar{X}$	S	sd	t	p
Impetuous Approach	Yes	17	30,64	6,76	100	,036	,972
	No	85	30,58	6,12			
Thinking Approach	Yes	17	12,94	5,93	100	-,781	,437
	No	85	13,89	4,29			
Avoidant Approach	Yes	17	11,17	4,58	100	-,090	,928
	No	85	11,28	4,37			
Evaluative Approach	Yes	17	10,00	3,10	100	2,866	,005*
	No	85	7,77	2,88			
Self-Confident Approach	Yes	17	20,23	4,93	100	1,101	,273
	No	85	18,49	6,12			
Planned Approach	Yes	17	11,11	4,24	100	1,109	,270
	No	85	9,98	3,74			

As indicated in Table 7, "Evaluative Approach" sub-dimension scores of the players significantly vary according to the variable of receiving economic support from their clubs [ $t_{(100)} = 2,866; p < .05$ ].

It was found that the scores of the basketball players who were paid by their clubs ( $\bar{x} = 10,00$ ) were higher than those who were not paid by their clubs ( $\bar{x} = 7,77$ ).

**Table 8: ANOVA Test Results of the PSI Sub-Dimension Scores of the Basketball Players according to the Variable of Positions**

	Group	N	$\bar{X}$	s	Variance Resource	ST	sd	SA	F	p	Different
Impetuous Approach	1	18	29,77	5,34	Intergroup	29,14	2	14,57	,374	,689	
	2	29	31,34	5,01	In-group	3855,37	99	38,94			
	3	55	30,47	7,02	Total	3884,52	101				
Thinking Approach	1	18	13,83	4,73	Intergroup	6,91	2	3,45	,162	,851	
	2	29	14,10	4,81	In-group	2114,93	99	21,36			
	3	55	13,50	4,48	Total	2121,85	101				
Avoidant Approach	1	18	10,00	4,18	Intergroup	47,67	2	23,83	1,242	,293	
	2	29	11,00	3,96	In-group	1900,18	99	19,19			
	3	55	11,81	4,63	Total	1947,85	101				
Evaluative Approach	1	18	8,72	2,27	Intergroup	13,24	2	6,62	,721	,489	
	2	29	7,65	2,76	In-group	909,54	99	9,18			
	3	55	8,21	3,35	Total	922,79	101				
Self-Confident Approach	1	18	17,66	5,59	Intergroup	89,29	2	44,64	1,265	,287	
	2	29	20,20	4,96	In-group	3493,95	99	35,29			
	3	55	18,40	6,48	Total	3583,25	101				
Planned Approach	1	18	10,38	3,97	Intergroup	3,42	2	1,71	,114	,892	
	2	29	9,89	3,69	In-group	1483,40	99	14,98			
	3	55	10,25	3,92	Total	1486,82	101				

Significant at \*p= 0,05 level

Groups: 1: Guard 2: Forward, 3: Post-Pivot

As indicated in Table 8, ANOVA Test results revealed that the scores of the basketball players did not significantly vary according to the variable of the positions for each sub-dimension of the inventory (PSI).

**DISCUSSION AND CONCLUSION**

This study aimed to determine problem solving skills of the 13-15 years old basketball players and to identify whether the problem solving skills of the

players varied according to the variables of age, sport year, family income, educational status of the parents, receiving economic support from the club and positions they play.

There was no significant difference between the problem solving sub-dimension scores of the basketball players according to age variable (Table 2;  $p > .05$ ). It can be suggested that the ages of the basketball players did not affect their problem solving skills and that when the players face a problem they exhibited a similar approach. S. Taylan (1990), S. Çam (1995), A. Yurttaş and A.



Yetkin (2001), T. Tanrikulu (2002), G. İnce and C. Şen (2006), H.S. Çağlayan (2007) carried out studies in different groups and found no significant difference between problem solving skills and age variable. These findings supports the findings of the present study (S. Taylan, 1990; S. Çam, 1995; A. Yurttaş and A.Yetkin, 2001; T. Tanrikulu, 2002; G. İnce and C. Şen (2006), H.S. Çağlayan, 2007).

There was a significant difference in terms of the self-confident approach sub-dimension of the sport year variable of the basketball players (Table 3;  $p < .05$ ). Self-confidence in problem solving is related to the individual's perception of himself/herself as adequate (D.Gülşen, 2008). In this case, it can be suggested that as the time of doing sport and seniority level increased, the basketball players showed a self-confident problem solving behavior. The findings of H. Izgar (2004), H. Germi and H. Sunay (2006), D. Gülşen (2008), M. Efe et al. (2008), H. Demirtaş and D. Dönmez (2008) on different groups support the findings of the present study ( H. Izgar, 2004; H. Germi and H. Sunay, 2006; D. Gülşen 2008; M. Efe et al., 2008; H. Demirtaş and B. Dönmez, 2008).

There was a significant difference between the evaluative approach and self-confident approach sub-dimensions of the basketball players according to family income level (Table 4;  $p < .05$ ). This finding reveals that the basketball players with a high family income had a calmer attitude towards the problems; that they made evaluations about solving the problem; they thought on the results and had a self-confident approach. Income level of the family allows for different life areas for the children. In families with low income level, the conditions to support development of the children might not be provided. On the other hand, a wide range of environmental possibilities the families with high income level offer to their children encourage the children to think and act on these possibilities. And finally, when these children face a problem, they will be able to easily reach a solution by producing different ideas. The findings of M.B. Shure and G. Spivack (1982), Z. Kasap (1994), M.B. Kennedy (1998), Ş. Terzi (2003) H.S. Çağlayan et al. (2000), E. İsrail (2003) on different groups support the findings of the present study (M.B. Shure and G. Spivack 1982; Z. Kasap, 1994; M.B, Kennedy, 1998; Ş. Terzi, 2000; H.S. Çağlayan et al., 2000; E. İsrail, 2003).

There was a significant difference between the evaluative approach and self-confident approach sub-dimension of the basketballs according to the variable of mother's and father's educational level (Table 5-6;  $p < .05$ ). This finding indicates that the children of the parents with a high educational level adopt an evaluative and self-confident manner towards the problems. Mothers and fathers are important role models for the children. A child learns appropriate behaviors by observing and mimicking them ( H. Bacanlı, 2005). Parent's attitudes and offering adequate support helps the children to grow up as a self-confident and extraverted personality. Education also has a great contribution in exhibiting appropriate behaviors in

the family. In conclusion, it can be stated that the education of the parents who serve as a model for the problem solving approaches, have an influence on the problem solving skills of the children. The findings of S. Tümkaya and A. İflazoğlu (2000), H. Saygılı (2000), E. Eroğlu (2001), S. Terzi (2003), A. Gültekin (2006), H. Demirtaş and B. Dönmez (2008), E.O. Karabulut (2009) on different groups support the findings of the present study (S. Tümkaya and A. İflazoğlu, 2000; H. Saygılı 2000; E. Eroğlu, 2001; Ş. Terzi, 2003; A. Gültekin, 2006; H. Demirtaş and B. Dönmez, 2008; E.O. Karabulut 2009).

There was a significant difference in evaluative approach sub-dimension according to the variable of receiving economic support from their clubs (Table 7;  $p < .05$ ). Based on this finding, it can be suggested that the basketball players who were receiving economic support from the club produced solutions for the problems they encounter without thinking properly; they produce solutions without evaluating the results and that having financial gain have an effect on this attitude.

There was no significant difference in the sub-dimension of the inventory according to the variable of position where the basketball players play (Table 8;  $p > .05$ ). Based on this finding it can be suggested that, since basketball is a team-game and the athletes have a team spirit, they show the same approach when they encounter problems. The findings of G. İnce and C. Şen (2006), D. Gülşen (2008) on different groups support the findings of the present study (G. İnce and C. Şen, 2006; D.Gülşen, 2008).

In light of these findings, the following suggestions were presented:

- Instead of preventing the children in sports, activities can be organized to encouraging the children for sports.
- Activities can be organized for the families, athletes, trainers and general society to enhance problem solving skills in social life and in sports.
- Considering the importance of psychological preparation in sports, the activities of the sport psychologists can be enhanced in sport clubs.
- Considering that there can be differences between the problem solving skills of the basketball players, the athletes from other sports and non-athletic young people, similar studies can be carried out on these groups.

## REFERENCES

- AĞIR, M., 2007, *Üniversite Öğrencilerinin Bilişsel Çarpıtma Düzeyleri ile Problem Çözme Becerileri ve Umutsuzluk Düzeyleri Arasındaki İlişki*. Doktora Tezi İstanbul Üniversitesi İstanbul.
- BACANLI, H., 2005, *Gelişim ve Öğrenme*. Nobel Yayın Dağıtım; Ankara
- BINGHAM, A., 1998, *Çocuklarda Problem Çözme Yeteneklerinin Geliştirilmesi*. Oğuzhan AF (Çev) M.E. Basımevi İstanbul,

- CLARK, C.J., 2002**, *Problem Solving and Personality Factors of Two at-Risk Collage Population*. PhD. Thesis. West Virginia University
- CÜCELOĞLU, D., 1991**, *İnsan ve Davranışı: Psikolojinin Temel Kavramları*. Remzi Kitabevi İstanbul
- ÇAĞLAYAN, H.S., 2007**, *Beden Eğitimi ve Spor Yüksekokulu Öğrencilerinin Öğrenme Biçimleri İle Problem Çözme Becerileri Arasındaki İlişkinin İncelenmesi*. Doktora Tezi Gazi Üniversitesi Ankara.
- ÇAM, S., 1995**, *Öğretmen Adaylarının Ego Durumları İle Problem Çözme Becerisi Algısı İlişkinin İncelenmesi*. Psikolojik Danışma ve Rehberlik Dergisi. 6: 37-42.
- DEMİRTAŞ, H., DÖNMEZ, B., 2008**, *Ortaöğretimde Görev Yapan Öğretmenlerin Problem Çözme Becerilerine İlişkin Algıları*. İnönü Üniversitesi Eğitim Bilimleri Dergisi 9(19):177-198.
- EFE, M., ÖZTÜRK, F., KOPARAN, Ş., 2008**, *Bursa İlindeki Faal Futbol Hakemlerinin Problem Çözme ve Atılganlık Düzeylerinin Belirlenmesi*. Spormetre Dergisi. 6 (2): 49-59.
- EROĞLU, E., 2001**, *Ailenin Çocuklarda Problem Çözme Yeteneğinin Gelişmesi Üzerine Etkisi*. Yüksek Lisans Tezi Sakarya Üniversitesi Sakarya.
- FERAİ, D., 2000**, *Kara Harp Okulu Öğrencilerinin Problem Çözme Becerilerini Algılamalarının ve Problem Çözme Yaklaşım Biçimlerinin Cinsiyet, Sınıf, Akademik Başarı ve Liderlik Yapma Açısından İncelenmesi*. Yüksek Lisans Tezi Hacettepe Üniversitesi Ankara.
- GERMİ H., SUNAY H., 2006**, *Gençlik ve Spor Genel Müdürlüğünde Görev Yapan Spor Yöneticilerinin Problem Çözme Becerilerinin Değerlendirilmesi*. 9.Uluslararası Spor Bilimleri Kongresi 3-5 Kasım, Muğla Üniversitesi, Muğla.
- GREENBERGER, E., O'CONNOR, J., SORENSEN, A., 1971**, *Personality, Cognitive and Academic Correlates of Problem Solving Flexibility*. *Devel Psyc* [serial online] 1971. [20.04.2008]; 4(3). Available from URL; <http://psycnet.apa.org/index.cfm?fa>
- GÜLŞEN, D., 2008**, *Farklı Lig Düzeyinde Oynayan Futbolcuların Oynadıkları Mevkilere, Öğrenim Durumu ve Spor Yaşlarına Göre Problem Çözme Becerilerinin İncelenmesi*. Yüksek Lisans Tezi Çukurova Üniversitesi Adana
- GÜLTEKİN, A., 2006**, *Psikolojik Danışma ve Rehberlik Öğrencilerinin Problem Çözme Becerilerinin İncelenmesi*. Yüksek Lisans Tezi Atatürk Üniversitesi Erzurum
- GÜRÇAY, S.S., 1998**, *Aile ve Arkadaşlardan Alınan Sosyal Destek, Bireyler Arası İlişkilerde Yeterlik ve Karar Verme İlişkileri*. *Psik Danış ve Rehb Derg* 2(9): 7-16.
- HEPPNER, P.P., PETERSON, C., 1982**, *The Development and Implication of a Personal Problem- Solving Inventory*. *Jour of Coun Psyc* 29(1): 66-75.
- HEPPNER, P.P., ANDERSON, W.P., 1985**, *The Relationship Between Problem-Solving, Self-Appraisal and Psychological Adjustment*. *Cogn Ther and Res* 4: 415-425.
- HEPPNER, P.P., KAMPA, M., BRUNNING, L., 1987**, *The Relationship Between Problem Solving Self- Appraisal and Indices of Physical and Psychological Health*. *Cogn Ther and Res* 11(2):155-168.
- IZGAR, H., 2008**, *Headteachers Leadership Behavior and Problem Solving Skills: A Comperative Study*. *Soci Behav and Pers* [serial online] 2008 [12.03.2009] 36(4) Available from: <http://apps.isiknawledg.com>.
- İNCE, G., ŞEN, C., 2006**, *Adana İlinde Deplasmanlı Ligde Basketbol Oynayan Sporcuların Problem Çözme Becerilerinin Belirlenmesi*. *Spormetre Beden Eğit ve Spor Bil Derg* 4(1): 5-10.
- İSRAEL, E., 2003**, *Problem Çözme Stratejileri, Başarı Düzeyi, Sosyo-Ekonomik Düzey ve Cinsiyet İlişkileri*. Yüksek Lisans Tezi Dokuz Eylül Üniv. İzmir.
- KARABULUT, E.O., 2009**, *Beden Eğitimi ve Spor Yüksekokulu Öğretmenlik Bölümü Öğrencilerinin Problem Çözme Becerileri ile Kişilik Özelliklerinin Belirlenmesi ve Karşılaştırılması*. Doktora Tezi Gazi Üniv. Ankara.
- KASAP, Z., 1997**, *İlkokul 4. Sınıf Öğrencilerinin Sosyo- Ekonomik Düzeye Göre Problem Çözme Başarıları ile Problem Çözme Tutumu Arasındaki İlişki*. Yüksek Lisans Tezi Marmara Üniversitesi İstanbul.
- KENNEDY, M.B., 1998**, *Social Problem Solving and Adjustment In Adolescence The Influence of Moral Reasoning Level, Scoring Alternatives and Family Climate*. *Jour of Clin Chil Psyc* 17(1): 73-83.
- MC MURRAN, M., DUGGAN, C., CHRISTOPHER, G., HUBAN, D.N., 2007**, *The Relationships Between Personality Disorders and Social Problem Solving in Adult. Personality and Individual Differences* [serial online] 2007 ;42: 145-155. Available from; <http://cat.inist.fr/?aModele=afficheN&cpsi dt=18402687>
- NEZU, A.M., 1985**, *Differences in Psychological Distress Between Effective and Ineffective Problem Solvers*. *Jour of Coun Psyc* 42: 42-48.
- SAYGILI, H., 2000**, *Problem Çözme Becerisi İle Sosyal ve Kişisel Uyum Arasındaki İlişkinin İncelenmesi*. Yüksek Lisans Tezi Atatürk Üniversitesi Erzurum.
- SHURE, M.B., SPIVACK, G., 1982**. *Interpersonal Problem Solving in Young Children: A Cognitive Approach to Prevention*. *American Jour of Com Psyc* 10 (2):341-355.
- ŞAHİN, N., ŞAHİN, N.H., HEPPNER, P.P., 1993**, *Psychometric Properties Of The Problem Solving Inventory In a Group of Turkish University*

- Students. Cogn Ther and Rese* 17(4): 379–396.
- TANRIKULU, T., 2002,** *Yetiştirme Yurtlarında ve Aile Ortamında Yaşayan Ergenlerin Bilişsel Yapıları (Olumsuz Otomatik Düşünceler) ve Problem Çözme Becerileri Açısından İncelenmesi.* Yüksek Lisans Tezi Marmara Üniversitesi İstanbul.
- TAYLAN, S., 1990,** *Heppner'in Problem Çözme Envanterinin Uygulama, Güvenlik ve Geçerlilik Çalışmaları.* Yüksek Lisans Tezi Ankara Üniversitesi Ankara
- TERZİ, Ş., 2003,** *Altıncı Sınıf Öğrencilerinin Kişilerarası Problem Çözme Beceri Algıları .* Türk Eğt Bil Derg 1(2): 221-232.
- TÜMKAYA, S., İFLAZOĞLU, A., 2000,** *Çukurova Üniversitesi Sınıf Öğretmenliği Öğrencilerinin Otomatik Düşünce ve Problem Çözme Düzeylerinin Bazı Sosyo- Demografik Değişkenlere Göre İncelenmesi.* Çukurova Üniversitesi Sos Bil Derg 6(6): 143–158.
- ÜSTÜN, A., BOZKURT, E., 2003.** *İlköğretim Okulu Müdürlerinin Kendilerini Algılayışlarına Göre Problem Çözme Becerilerini Etkileyen Bazı Mesleki Faktörler.* Kastamonu Eğit Bil Derg 11(1): 13–23.
- VOLKAMER, M., 2009.,** *Was is "Sport"? Versuch Einer Definition [internet].* (13.11.2009 okundu) Available from: <http://www.tumuenclan.de/spopoed/lehre/spieltheor/volkamer.pdf>
- YURTTAŞ, A., YETKİN A., 2003.** *Sağlık Yüksekokulu Öğrencilerinin Empatik Becerileri ile Problem Çözme Becerilerinin Karşılaştırılması.* Atatürk Üniv. Hemş YO Dergisi 6(1): 5-10

## STUDY REGARDING THE VERBAL AND NONVERBAL COMMUNICATION DURING THE TRAINING OF THE ROMANIAN NATIONAL SKI JUMPING TEAM

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### ABSTRACT

Building and maintaining a real team, meaning a united and perfectly harmonized collective, as the interests and activities are concerned, is one of the basic problems of a coach, whose activity is situated at the same level of importance as the training lesson and the competition, which are major concerns for every tactician.

The main objective of this research is a study regarding the verbal and nonverbal communication between coaches and athletes, as one of the main factors for attaining the proposed results. Starting from the unanimously known fact that the communication is a process through which two entities (E - emitter and R - receiver) exchange formal messages in a common code by using one or more transmission channels, the information flux functioning, at the same time in both ways, each of the participants playing alternatively the role of emitter and receiver, I have verified through this study the quality between the emitter (coach) and receiver (athlete) during the trampoline training process.

We must mention the fact that, unlike other sports branches in which the coach and the athlete can communicate in a direct manner, from a small distance, when the ski jumps are concerned, the athlete is permanently situated at a great distance from the coach, being on the trampoline, in flight or on the climbing mechanism, whereas the coach is obligated to verbally communicate with the athlete through a walkie-talkie or a previously common established gesture code (nonverbal communication). This type of coach-athlete communication, specific to ski-jumping, can be very dangerous during the training process, if certain conditions are not respected, the greatest risk being that the information transmitted by the coach to be distorted, or even wrongly received by the athlete, this having negative consequences on the training process. By using the specific instrument of the inquiry method – the formal interview, I have succeeded during this research to discover the main inconvenient processes of this type of verbal and nonverbal communication, and together with the coaches and the athletes, to elaborate a set of compulsory conditions in order to cancel these processes.

**KEY WORDS:** verbal communication; nonverbal communication; ski jumping.

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### Introduction

The sportive training, as an instructional-educational process, has a bilateral character because it presupposes the intervention of a specialist – the coach – who conducts and leads the training activity and the actions of the athlete, the latter being the beneficiary of the activity, practicing in order to master his/her skills.

The coach-athlete interaction is determined by the direction of activity, which depends on the personality of the coach, on one hand, on the personality of the athlete, on another, and of the pedagogical situations that are created between coach and athlete. A system with “*entries and exits*”, the communication – understood as a part of the psychological and social life, must be presented as being essentially necessary for human relations.

Norbert Sillamy (1965) insists on the feedback of the communication. When the information is transmitted, an action on the receiver and a retroactive effect on the transmitter are produced (Sillamy N., 1965). Thus, **the communication** constitutes “*all of the psychological and physical processes through which one person is put in relation with one or more persons, for attaining certain objectives*” (Flament C. 1969).

Starting from the unanimously known fact that the communication is a process through which two entities (E - emitter and R - receiver) exchange formal messages in a common code by using one or more transmission channels, the information flux functioning, at the same time in both ways, each of the participants playing alternatively the role of emitter and receiver, I have verified through this study the quality between the emitter (coach) and receiver (athlete) during the ramp training process. We must mention the fact that, unlike other sports branches in which the coach and the athlete can communicate in a direct manner, from a small distance, when the ski jumps are concerned, the athlete is permanently situated at a great distance from the coach, being on the ramp, in flight or on the climbing mechanism, whereas the coach is obligated to verbally communicate with the athlete through a walkie-talkie or a previously common established gesture code (nonverbal communication).

This type of coach-athlete communication, specific to ski-jumping, can be very dangerous during the training process, if certain conditions are not respected, the greatest risk being that the information transmitted by the coach to be distorted, or even

wrongly received by the athlete, this having negative consequences on the training process.

**Research methods:** study of specialized literature; observation; investigation – formal interview.

#### MATERIAL AND METHOD

**The subjects:** are represented by the four coaches of the National Ski Jumping Team (group A and group B) and eight of the athletes in these groups (4 athletes in group A and 4 athletes in group B).

#### RESULTS

Following the analysis of the specialized literature, corroborated with the formal interviews of the four coaches and eight athletes, we have succeeded together to elaborate a set of compulsory conditions in order to improve the verbal and nonverbal communication between the ski jumping coaches and athletes.

This set of compulsory conditions was built having the following in view:

1. The conditions for an optimal communication;
2. The characteristics of communication;
3. The complete scheme of the constitutive factors of the communication;
4. The specific language of the communication;
5. Communication through walkie-talkie;
6. The functions of the nonverbal communication;
7. Communication in three dimensions.

#### The conditions for an optimal communication

For a communication to be optimal, it needs to respect certain conditions:

1. the content consistency of the message must be offered by the quantity of information comprised in the message and to be significant for both parties (**it is recommended that the message to be short (succinct) but to contain also the right information and at the same time, the message must be understood by both parties (coach and athlete);**
2. the expressiveness of the communication has to be elaborated and ensured through para-verbal elements (**this is essential in the case of ramp jumps, because of the relatively large distance between coach and athlete);**
3. the communicated information must be intelligible (**we must be very careful when communicating through walkie-talkie at the meteorological conditions – wind – the communication must not be deteriorated by the external stimuli (over imposed sounds, radio malfunctions etc.);**

**The characteristics of communication** are found in the educational field and they suggest a series of concrete actions the coach can perform in order to improve the sportive interaction.

**Several directions can be considered for the coach to meditate upon, for learning and applying them responsively.**

In my opinion, **the coach must report himself to an active talking partner and produce this partner. Also, he must constantly ensure on the use of the same code by the partners (verbal and nonverbal language) during communication. He must let the athlete the freedom to emit the answer at his own time, to launch and to read messages through multiple channels, to attenuate the effect of internal and external noise sources any time it is possible.**

*“A characteristic of any inter-human communication is that it is at the same time communication (it says something) and meta-communication (it qualifies what has just been said).”* (Mucchielli, Alex in Ezechil, Liliana, 2002, p.55).

#### The complete scheme of the constitutive factors of the communication

Through communication changes of significations are operated, it presupposes a speaker and a listener, a means of communication that is known by both and, not in the least, a subject to talk about.

#### The complete scheme of the constitutive factors of the communication includes:

1. a transmitter (emitter) who transmits a message (coach / athlete);
2. the message refers to a context (referent), a thing or an idea (e.g.: the performance of a motor act);
3. the message is composed of elements of a code that has to be shared by the two partners, directly, or indirectly, in contact (e.g.: the use of a language known by the coach and by the athlete).

#### The specific language of the communication

The elements of the „specific ski jumping language” communication language we consider to be:

1. **The vocabulary**
  - a. All of the existent Romanian (and English) terms;
  - b. All of the terms used by the ski jumping specialists;
2. **A repertory of terms used in ski jumping**
  - a. Their specific expressions and idioms;
  - b. The grammatical form and structure.
3. **Communication through walkie-talkie**

The walkie-talkie is the most frequent means of communication used in the ski jumping training process.

#### An effective use of the walkie-talkie must have in view, in our opinion:

1. **preparing the message:** meaning to try and detach ourselves from the problems existing up to that point and defining the subject of the conversation. During a walkie-talkie conversation, we should include only 2-3 main ideas;
2. **preparing ourselves for the walkie-talkie**

**call:** we must think about our tone and attitude. We should speak more slowly than usual, but we must not necessarily use a higher tone;

3. **a correct transmission of the message:** we must avoid the words and phrasings that are not known by the athlete and we must present the message as clearly as possible;
4. **listening the speaker:** we should listen very carefully what the athlete is saying (in our case), and if he pauses, we must not interrupt him, we should leave him time to think and start over the conversation;
5. **conclusion of the conversation:** at the end of the conversation, we should reiterate (in a short and concise manner) our conclusion. The conversation must always end in a friendly manner, regardless its results.

#### The functions of the nonverbal communication

In order to analyze the functions of nonverbal communication, we think we should the answer to the question: **Why coaches use this type of language?**. We should see what are the intentions, reasons and aims of this form of communication.

Having in mind the five functions of the nonverbal communication identified by Paul Ekman, we try to analyze these functions from our point of view:

1. **repetition** – we say „yes” and we nod our heads up and down in the moment in which we want to communicate to the athlete that the performed motor act is correct; we say to the athlete that the angle of take-off from the ramp must be of 30 - 38<sup>0</sup> and we complete with gestures this angle, so that the athlete would better understand our message;
2. **substitution** – replacing the verbal messages – a sad face can tell us that the athlete is not feeling well or is not in the mood for training;
3. **completion** – the collaboration between coach and athlete during the transmission of messages, leading to a better decoding;
4. **accentuating/moderating** – emphasizing the verbal messages, amplifying or diminishing the words that were said: when we raise our arm and show the fist; when we reprimand an athlete, our facial expression can show that we are very upset;
5. **contradiction** – transmitting signals which are in opposition with the verbal messages; we say that we are glad the athlete performed correctly what we asked, but we look the other way when we shake his/her hand.

#### Communication in three dimensions.

Communication means not only sending messages but also receiving them. In general, the coaches are recognized for their skills and the transmission is not listening. But coaches need to know not only convey the message clear and understandable,

but also to listen to understand what athletes they send back.

1. Communication is verbal and nonverbal messages. Hostile gestures, facial expressions of joy, movement of intimidation and acts of kindness make up nonverbal communication. It is estimated that over 70% of communication is nonverbal, which reinforces the claim that what you say is not nearly as important as what you do.
2. Most people tend to control excessive verbal messages, but not those non-verbal. Because coaches are observed mostly by athletes, administrators, public, they should be particularly careful in communicating by gestures, posture and facial expressions.
3. Communication has two parts: content and emotion. Content is the substance of the message and expressed verbally, emotion is what you feel content and expressed relative to nonverbal. Rising competition is causing the coach to control the content and emotional charge of the message. Coaches are trained to send messages rather than to receive, to express verbal than nonverbal particular, to control the message in content more than the emotion. But, by effort and practice can develop the ability to listen nonverbalul and emotional skills.

#### CONCLUSION

By using the specific instrument of the inquiry method – the formal interview, I have succeeded during this research to discover the main inconvenient processes of this type of verbal and nonverbal communication, and together with the coaches and the athletes, to elaborate a set of compulsory conditions in order to cancel these processes, adapting also the „Decalogue of communication” elaborated by Gh. Dumitriu and I. Damian (2002):

#### DECALOGUE OF THE ATHLETE/COACH COMMUNICATION:

(adapted after *Consiliere psihopedagogică* (course), Dumitriu, Gh., Damian, I., 2002)

1. **You cannot not to communicate;**
2. **Communication presupposes self-knowledge;**
3. **Communication presupposes a realization of the other person's needs;**
4. **Communication means listening;**
5. **Communication presupposes the understanding of verbal and nonverbal messages;**
6. **To communicate means to realize feed-backs;**
7. **To communicate means to understand the processes of a relation;**

8. To communicate means to know how to express your feelings;
9. To communicate presupposes the acceptance of conflicts;
10. To communicate presupposes a try to solve the conflicts.

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#### References

FLAMENT C., 1969, *Psychologie experimentale*, vol.

*IX „Psychologie sociale”*, P. Fraisse, J. Piaget, PUF;

DUMITRIU, GH., DAMIAN, I., 2002, *Consiliere psihopedagogică* (suport de curs). Universitatea din Bacău;

MUCCHIELLI, A., 2002, în Ezechil, Liliana, *Comunicarea educațională în context școlar*, Editura Didactică și Pedagogică, București, p.55.

SILLAMY, N., 1965, *Dictionnaire de la Psychologie*. Larousse.

## CONTRIBUTIONS TO OPTIMIZING THE FORCE CONVERSION TRAINING IN SPRINT EVENTS AT JUNIOR CATEGORY: 16 – 18 YEARS OLD

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#### ABSTRACT

The capacity of manifesting the greatest force with maximal execution speed means mastering the physical quality of power which depends on the efficacy of the force training. Sprinting athletes cannot maximize their motor actuating potential, so as to raise performance, without converting the maximal force (non-refined, non-specific) in specific force, such as power ( $P = FxV$ ), speed, agility and muscular resistance. Any rise of power must be the result of having improved either the force, or the speed, or a combination between the two. The force distribution into periods is guided so that after the conversion period, the sportsmen might attain the performance peak in the main sports competitions. For the success of this process, there concur two decisive factors: the duration of the phase and the specific methods resorted to, in transforming, synthesizing the force pluses in force specific to the event.

**KEY WORDS:** force, power, speed, bio-motor actuating quality, explosive force, conversion.

#### INTRODUCTION

During the conversion, the trainings aim at raising to a small extent the power, there being essential the transformation (conversion) of the energy in technique and tactics. Speed stands in its turn for one of the „beneficiaries”.

#### MATERIAL AND METHOD

The **purpose** of the conversion trainings is to recruit the greatest possible number of motor unities at the highest contracting level, in a very short while. The conversion synthesizes the power and muscular resistance pluses, makes them competitive and gives them specificity, turning into the *physiological basis of performance in the competing phase*. This phase has two important factors, which ensure its success: *duration* and *specific methods*, which determine the transformation of the specific force gains into speed. Through training the „nervous system”,

there are brought about and along neural modifications, with effects upon the muscles. (A. Muraru, 2005).

- the specific methods for achieving the conversion are: isotonic method, plyometric method, dynamic method of force applying through throwing (ballistic), the method of contra-resistance. There must be considered the following methodical indications of application:
  - there is necessary a strict training specific for the rapid and explosive manifestations
  - the training will be conceived so as to strictly satisfy the requirements of the respective event, stimulating as faithfully as possible the prevailing skills. We have been arguing this way: the more the specific power effort

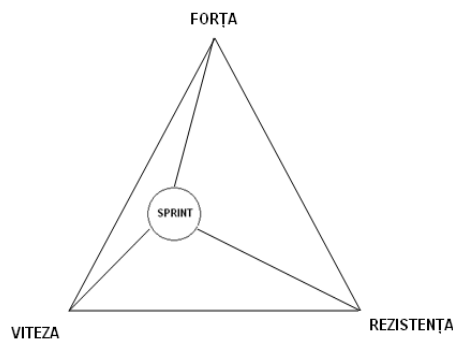
focuses on the strictly involved muscles, the coordination is more efficient, the skills are more precise, have fluency, are more rapid.

- the trainer will be using the energy during this period strictly for the technical and tactical training, and less for power.
- there is recommended the lowest number of exercises, provided that they should be closely connected to the envisaged skill (2-3 dynamic exercises in a few series, however with maximal efficiency).
- the entire program will be carried through rapidly and explosively, so as to recruit a great number of motor units at the highest contraction frequency. We only nurture a single purpose: the explosive contraction of the muscle.
- the requirements are: the rise in rapidity, the explosive application of force; and the muscle preparation, so as to rapidly react within event-requested motions.

***Force training, important component of the physical training for sprint; and the relation: force - power – speed (V. Tudor, I Crişan , 2007)***

In the physical training of the sprint events, an important component is represented by the force training. The bio-motor actuating quality, **force**, is envisaged as part of a system that includes speed, resistance, mobility and coordination.

The relation of this quality is the following:



*The prevailing composition among the bio-motor actuating qualities for the sprint (T. Bompa, 2006)*

We define force as a characteristic, as a feature, as a property of the locomotory apparatus, which, through the shift of its segments, following the muscular contraction brought along by the activity of the nervous system, overcomes external resistances, the weight and the inertia, within several parts of the body.

This biological definition is being completed with the mechanical notion of force, which stands for the product between the weight and the acceleration  $F=m \cdot a$ , the second Law of Mechanics according to Newton). This is, in essence, the cause of the modification in the motion state of a body or even in its shape, is the result of the acceleration variation, which, in its turn, is the speed variation within time unit. According to the second principle of mechanics, motion variation is directly proportional to the imparted force.

Therefore, if we want this motion variation to be greater, in the sense of obtaining the maximal speed, we have to take into consideration: the weight of the body (centre of weight ) the acceleration of the body, its inertia, the speed that the force manifests itself with, in time and space, other external forces.

As regards the classification of force, we mention the following types:

- general or special force (for certain muscular groups);
- explosive force (detent/explosion), which is the maximal force achieved in minimum of time through sudden contraction of the muscular groups;
- dynamic force (isotonic contraction) and static one (isometric);
- force in regime of speed or in regime of resistance.

Any motion of the human body is conditioned by a certain force. This force may have variegated forms of manifestation, which concretize in:

- **general force**, which reflects the overall capacity of the body to overcome various resistances based on the contraction of the main muscular groups (at the same time or successively). For instance lifting bar bells, body lifting in one's arms etc.;
- **specific force** standing for the capacity of overcoming some kind of resistance during frequent motions, especially based on involving some groups of muscles, which are



of the utmost interest, in the sprint action. For instance, the pushing force in running, the detachment force in jumping etc.

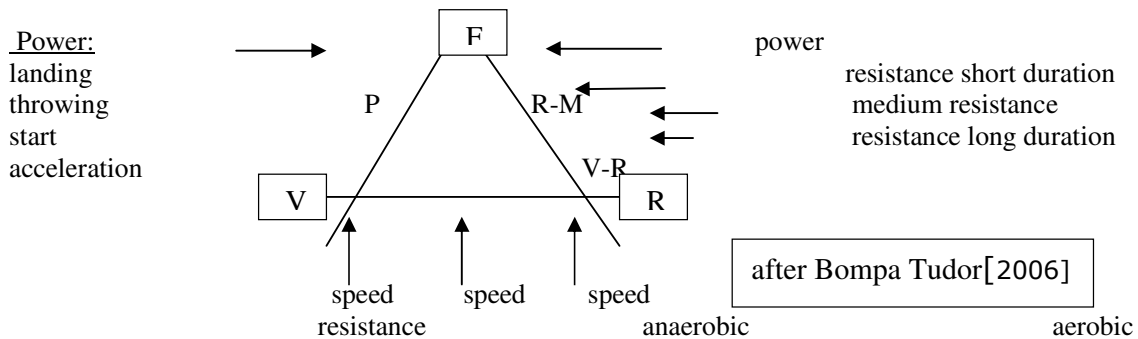
From the physiological standpoint, the force of a muscle depends on:

- the number of muscular fibers participating in the contraction;
- the direction whereto fibers exercise their pressure;
- the surface of transversal section of the muscle. During the exercise of a force effort, there is necessary the strain of a great number of muscular groups of the body. To this purpose, there are muscles which function in opposite reaction (antagonist). The muscular strains only have a positive effect when they involve and drive the agonist and synergic muscles, and the antagonist ones relax.

During an intense physical effort, there is called for the contraction of an increased number of muscular fibers, therefore the percentage of active fibers rises to 40-70% and only during an effort of maximal intensity, the percentage of fibers within a muscle in simultaneous contraction, it rises to 75%. In this case, only 25%

of the fibers relax, which leads to a great muscle strain, and fatigue occurs soon. However, a muscular effort is achieved not only by the muscles, but also by the nervous structures in the brain and in the spinal marrow. The starting force is a sub-category of the explosive force, the capacity of entailing and driving a maximal number of motor actuating units ever since the beginning of the contraction, determining a high initial force ((B. C Rață, 2008). The rapid force refers to the movements wherein manifold repetitions of accelerations occur and it characterizes the sprint and the jumps.

According to the stress is laid on the execution speed of the force, which is similar to power. To put it otherwise, it is the „dominant - speed in a force process” (T Bompă, 2006. „explosive force”, which is the „capacity of achieving the greatest rise of force in the shortest time”. It depends on the contraction speed A.F.T. (rapid fibers), on their number and on the contraction force of the fibers (T. Bompă, 2006) Our attention has been drawn by a theoretician in the field, whose opinion we have agreed upon, when we say that force is the clear expression of the speed, under conditions of maximal resistance and coordination.



Taking into consideration that “*power*” is the main ingredient of all sports wherein the force-yielding level and especially the force, speed and agility-utilization level, being defined as: *force yielding level, product force multiplied with speed, volume of work carried through within the unit of time, rate whereto muscles may yield force.* “<sup>1</sup> in the field under research, we will discuss upon the situations specific to athletics and in particular to sprint (100m, 200m, 400m) wherein power must rise so that performance might improve and the sportsman might become more rapid and more agile. We

will subsequently present a sharing out of the force in the annual thematic plan and in the stage plan in order to grasp the importance of this quality in the economy of the other components of sportive training:

- **Start power** – technically manifests through applying with strength and rapidity the force on the soil, being a limitative factor in sprint running, which is necessary when aiming at rapidly overcoming inertia and entering into maximal speed in the shortest possible time. We methodically work with:

- one's own weight or supplementary loads
- exercises of rapid detachment and landing on one or both feet
- rise then progressive diminution of the load as we approach competition
- **Acceleration power** – limitative factor of speed; stands for that capacity pertaining to the sportsman of attaining maximal acceleration. They depend in their turn on the sprint speed (acceleration), on the power and rapidity of the muscular contraction, which determines the arms and the legs to achieve the greatest frequency of the stride, the shortest phase of contact with the soil and the greatest pushing in the soil towards the advancing position. Their capacity of acceleration depends on the force of the arms and of the legs.
- **Power resistance** – limitative factor; at every step, the sprinter bears twice his weight, during each contact with the soil. Therefore, there is called for the capacity to repeat at maximal level and with double load. There is also called for a strong will to overcome the fatigue rapidly installing and for maximal concentration during each execution.
- **Reactive power** – the capacity to control the landing and to still enjoy power so as to execute another movement, generating a force for jumping after the landing, “reactive”. It depends on the jump height, on the sportsmen's body weight and on the power of his/her feet. The control and the absorption of the shock is given by the height of the detachment from the soil. A fall from 80-100 cm. induces within the ankles some loads six-eight times the body weight (at sprint, approximately two-three times). There must be involved and driven the muscles which best chamfer the shock and reduce the forces of impact with the soil, during the landing, knowing that landing entails an eccentric contraction. Unless we work specifically, there occur accidents, as there appear greater pressures than the number of active fibers, which causes the elastic tissue of the tendon to undergo very powerful stress. There are recommended

eccentric contractions and plyometric exercises.

***The conversion to power, obtaining maximal speed in the pre-competitive stage and the specific methods***

Sportsmen cannot maximize their motor actuating potential so as to raise performance, without converting the maximal force (non-refined, non-specific) into specific force, such as power ( $P = F \times V$ ), speed, agility and muscular resistance. “Any rise of power must be the result of having improved either the force, or the speed; or a combination between the two.”

The force sharing out is guided so that after the *conversion stage*, the sportsman might reach the performance peak in the main competitions. For the success of this process, there intervene two determinant factors: duration of the phase and specific methods used in order to *transform, synthesize the pluses of maximal force in force specific to the event*. During the conversion, the trainings aim at raising to a small extent the power, there being essential the transformation (conversion) of the energy into technique and tactics. Speed is in its turn one of the „beneficiaries”.

The purpose of the conversion training is to recruit the greatest possible number of motor units at the highest level of contracting, in a very short while. The conversion synthesizes the pluses in power and muscular resistance, renders them competitive and provides them specificity, turning into the *physiological basis of competition in the competing phase*. This phase displays two important factors ensuring its success: *duration and specific methods* which determine the transformation of the specific force gains into speed. Through involving and driving the “nervous system”, there are brought about neural modifications with effects upon the muscles.

*The specific methods* for achieving the conversion are: *isotonic method, plyometric method, dynamic method of throwing instrumented applying force (ballistic), method of contra-resistance*. There must be considered the following *methodic indications for the application*:

- there is necessary a strict training specific for the rapid and explosive manifestations;
- the training will be designed so as to strictly meet the requirements of the respective event, stimulating as faithfully as possible the prevailing skills. We argue this way: the more the specifically power-targeted effort addresses

the strictly involved muscles, the more the coordination is efficient and the skills are precise, fluent and rapid.

- the trainer will use during this period the energy strictly for the technical and tactic training; and less for power.

- there is recommended the smallest number of exercises, provided they are closely connected to the targeted skill (2-3 dynamic exercises, in a few series, however with maximal efficiency).

- the entire program will be gone through rapidly and explosively, so as to recruit a great number of motor units at the highest contraction frequency. We have a single purpose: the explosive contraction of the muscle.

- the requirements are: the rise of rapidity, the explosive application of force and the muscle training so as to rapidly react in event required movements.

Exercises for the reactive power (M. Pradet, 2000)

The specific of these exercises consists in keeping on, immediately after the initial jump, with another jump or plyometric movement; or with rapid running. We illustrate as follows:

Training 1: Plyometric (jumps on two feet forwards and laterally) 8 series over 9 fences lifted at 15 – 40 cm

Training 2: Plyometric: penta-jump 6x; jumps from/on boxes 10x3: 25 – 40 cm distance among them 60 cm

Exercises for the start powerThe essential quality which determines the initial phase of action – often dictating the final result – is the sportsman's capacity to recruit the highest possible number of rapid fibers at the beginning of an explosive movement. In the start position at the sprint, the elastic elements in the muscles store kinetic energy, which acts much like a spring when the pistol gives the start signal. We methodically work with:

- one's own weight or supplementary loads
- exercises of detachment and rapid landing on one or both feet, followed or not by acceleration 10 – 15m
- rise then progressive diminution of the load as we approach the competition 4-6 series, 8-16 repetitions, with 4-5 minutes pause

Exercises for the acceleration power (Rață B. C., 2008). Training has been advancing from free exercises with load (waistcoat, gauntlet, dumb bells) up to plyometrics and series of jumps on both feet or alternatively 6 -8 series with 2-3 minutes pause. There were carried out special

trainings for running in swivel. The training was guided according to many of the principles submitted by the theoretician T. Bompa (2006) in his works referring to force development.

#### ***Results of the research and their interpretation***

We wish to concretize these few theoretical aspects through a case study. The chosen subject is the sportswoman Zanfirescu Maria Ana, component of the national lot of juniors, Balkan junior vice-champion – II at relay race of 4x100m (Bar, Serbia 2008). On individual level, during the competing year 2008, she obtained the following results:

400mp – 59.00 – 3<sup>rd</sup> place C.N.J II – gymnasium

100 mp – 12.30 – 2<sup>nd</sup> place at C.N.J II-in the open

200 mp - 25.57 – International Championship

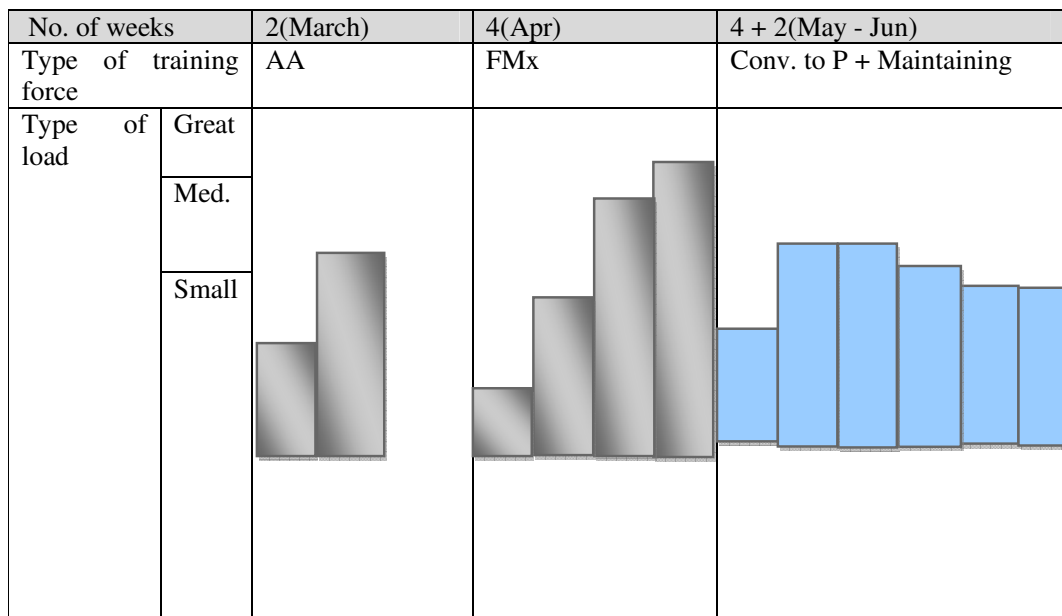
After a year of polyvalent athletic non-specific training, there came out several results, in a few running events, which suggested and proved that the sportswoman might successfully practice one of these events. There were also of significance the data collected from the National Competition of Sports Medicine from Bucharest, which helped at orienting her towards sprint and prolonged sprint.

Strictly referring to the force training, the trainer submitted his optics of approaching this bio-motor actuating quality, starting from a few genetic premises and from the motor actuating heritage already existing.

Considering the 15-17 year-old-aged girls' morpho-functional characteristics, force training is interesting and challenging at the same time. The training was based on the study of the specialized theoretical materials and on the practical application of the processed data. There may be noted the approach of the force within the context of the system of qualities, never dissociated. There was taken into consideration the maturation level and the fact that we cannot apply tough, troublesome training on this level, because of the risk of over-strain and of bringing about the child's refusal to perform greater tasks. The conversion phenomenon, which is one of the determinant factors in the methodology of the physical training, on high performance level, has been carefully analyzed. We know that once with the age, the speed tends towards a maximum which stabilizes. The plus or the maintenance depend in a certain stage on the level of the progressive development of the other qualities, which are force, resistance, coordination, suppleness. We

consider that junior-ship period is very fertile, in order to create the premises for progress, towards high performance. We refer strictly to the high speed - explosive power - training, specific to senior sprinters. The sportswoman mentioned she had felt nervous strain and pressure during the training and that she was compelled to become aware of the greatest possible number of motions on the background of maximal strain and fatigue. Another aspect perceived and worked upon was the one of

muscular coordination - "play between the antagonists and the agonists, and the capacity of possibly conscientiously straining and relaxing". These aspects helped both the trainer and the sportswoman to nurture a clear vision upon the disposition and the sharing out on yearly level of the means - inclusively of the force ones. Conversion to power, obtaining maximal speed in the pre-competitive - competitive II stage and guiding the training towards accomplishing the peak of sports shape and disposition.



The variations of the loading model in order to obtain the peak of sports shape and disposition for the sprint

**Registering information** – The notations used for describing the program are  $\frac{\text{încărcătura}}{\text{nr.de.repetări}}$  *serii* (loads / no. of

repetitions) (example:  $\frac{80}{10}^4$ ). The load will be calculated in percentages from 1RM, consequently the sportsmen have to be tested especially during the preparation phase, at the beginning of every macro-cycle.

Table 1 - Settling the tests

CONTROL EVENT:	Standing long jump	20 double quick steps	Jump with standing detachment over a fence (landing in the sand or on the mattress)
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Circuit exercised at the beginning of the pre-competitive period (the last week of April).

**Tests and Interpretation of the Results**

There was considered to be edifying the power measurement of the standing detachment from the soil and the record of the maximal height during the fence clearing through jump with crouched landing. (exercise also used as training means) as it requires start power, coordination, concentration, determination, courage. There were recorded the following results:

TEST1:23.04.2008	2,25m	44,20m	85cm
TEST2:22.05.2008	2,45m	45,70m	100cm

During the pre-competitive and competitive period, when the athlete runs almost at maximal speed, there are used exercises which stimulate both the anaerobic capacity and the tolerance to lactate, resorting to repetitions of 60, 100, 150m. We may follow the manifestation of the motion speed, through calculating the difference between the running sequences on 30 – 60m. If the time on fractions (in the case of the repetitions on 150 – 200m) is close, we may consider to have achieved a satisfactory rise of speed under resistance regime, and if the time during the last fraction is higher (with ~0,25”) it may be the result of a lack of adaptation, of an error in the effort distribution.

The recorded rises prove the improvement of the dynamic force on the level of the inferior limbs and the achievement of the conversion in speed. We motivate the smaller progress in the event “20 double quick steps” through the complexity of the motion from the point of view of the effort structure and physiology, the neural-muscular resistance component being present in its turn to a small extent, the rate of progress in this event being positively correlated with the progress at 400m (3,27 – 3,28%).

The greatest progress was achieved during the “fence clearing“, a newly introduced exercise in the structure of the training. Learning the technique of the motion, together with the development of power, explains this progress (15%). Table 2. Results - RUNNING

EVENT	10	20	40	30	50	80	15	30	35
	0	0	0	m	m	m	0	0	0
	m	m	m				m	m	m
RATE OF PROGRE SS	2,4	1,93	3,27	4,34	4,54	4,08	2,53	3,69	3,65
	%	%	%	%	%	%	%	%	%

Analyzing the progress recorded in the running events, there may be confirmed the fact that one of the general performance objectives for the competitive year under study was creating the sportswoman’s possibility to successfully cope, during the competitions, with a wide range of events (100; 200; 400mp and 400mg).

### Conclusions and recommendations

1. Noticing the strictly ascending trajectory of the sportswoman’s performance curve, whose case was studied above, we conclude that the *training, especially, the force targeted one, was correctly led.* 2. Force, specifically human bio-motor actuating quality, has grown into a dimension of human personality. This may be the reason for its being one of the most coveted qualities. There is called for passion so as to approach the development of this quality, so much longed for by teen-agers. 3. Without in-depth study and coherence during teaching, the training may reach the point of becoming harmful. 4. Force training may play a performance-stimulating and stirring up role, under normal conditions of the sportsman’s state, even during moments of stagnation or falling-off.

### Recommendations:

Proportional disposal of the training methods in the stage of conversion according to the formula below:

- force training: 6 – isotonic; 7 – plyometric
- speed and technique training: 20  
The greatest part of the energy will be kept for the technical and tactic training, and a much smaller portion for the power training.
- The strict individualization of the load during the force training, the selection of the means according to the sportsmen’s particularities.

**References:**

- BOMPA, T.**, 2006, *Teoria și metodologia antrenamentului periodizarea*” [Theory and Methodology. Sharing Out], Tana Publishing House, Bucharest .
- RAȚĂ B. C.**, 2008, *Alergarea de viteză – biomecanică și metodică*” [Speed Running – Biomechanics and Methodics], Edit.PIM, Iași.
- MURARU, A.** 2000, *Ghidul antrenorului*” [Trainer’s guide], CNFPA, vol I – IV, Bucharest 2005
- PRADET, M.** 2000, *Pregătirea Fizică* [Physical Training], MTS- CCPS, SDP no.426-428, Bucharest.
- TUDOR V., CRIȘAN I.** 2007, *Forța aptitudine motrică*, Force Motor Actuating Force – BREN Publishing House

## RESEARCH ON THE EMPATHY SITUATIONS OF THE TRAINERS ACCORDING TO DIFFERENT PROFESSIONS

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**ABSTRACT**

In this study, it has been aimed to determine empathic skill levels of trainers and see whether or not empathic skill levels differ with regard to personal variables. The research staff consisted of 30 trainers, 30 class teachers, 30 bankers working in customer services, 30 policemen, 30 lawyers and 30 doctors excluding psychiatry, in total 180 people. In the study, introductory information form was used as to determine socio-demographic features of the subjects and The Scales of Empathic Skill-B Form developed by U. Dökmen (1989) was used as to evaluate empathic skill.

At the end of the study, a meaningful relation has been found between empathic skills and marital status. Regarding empathic skills of trainers, bankers, class teachers, policemen, lawyers and doctors excluding psychiatry; it has been found that empathic skills of class teachers, lawyers and bankers are much higher in comparison to the empathic skill of trainers, policemen and doctors.

**KEY WORDS:** Empathy, Trainer, Doctor, Police, Teacher.

**INTRODUCTION**

Empathy is the process of individual’s understanding other’s feelings and thoughts truly, feelings other’s emotions and conveying this situation to him (R.J. Tamborini et al., 1990). Empathy’s happening completely depends on some factors: To put yourself into other’s place, to consider events from other’s viewpoint, to understand truly and feel other’s feelings and thoughts, to express that you understand him (R. Koestner et al., 1990). We can arrange some advantages of showing empathy as in: Empathy is an important skill for cognitive, ethical development and psychological health.-Empathy is to express the relation and clarity among people.-Empathy help relations, communication increase and stops conflicts.-Empathy increases the chance of being successful in daily and work life.-Empathy make the person get on well with different one or others from different culture (D. Goleman, 2003).

According to H.M. Davis, (1994), People who have skill of showing empathy are more successful in interpersonal relations. People feel that they are being understood and cared about when others show empathy

to them. Being understood and cared about by others comfort the individual. So the individual feeling that he isn’t being judged or criticized feel relaxed. Empathy isn’t only an activity that is useful for the one being showed empathy but also important for the one showing empathy. People having empathic tendency and skills experience less conflicts with others and loved and wanted more (U. Dökmen, 1989). It is argued that empathy is a skill that sharpens critical thinking and visualization beside it is one of the center components of the emotional intelligence. Including both cognitive and emotional dimension, empathic behavior’s cognitive dimension expresses understanding how others feel and its emotional dimension expresses emotional communication with others (K. Cotton, 2001). People sometimes prefer to show their feelings in several ways rather than words. To understand what others feel, firstly it is necessary to understand body language telling many things implicitly including posture, intonation which are non-verbal expressions. This kind of perception is seen more in sports (L. Wispe, 1996). Being a sub-section of sports and exercise science trying to find answers to the questions related to human behaviors in sports

environment, sports psychology (D.L. Gill, 1986) is from the sections that trainer communicating directly to the athlete should know. While a trainer is trying to train many athletes for the performance, he should know their personal features, internal worlds, their exposure levels to stress (L. Wispe, 1996).

In the light of these data, the aim of this study is to examine empathic skill levels of trainers according to the different professions.

Konya in 2009.

## METHOD

The population of the study is consisted of 30 trainers, 30 class teachers, 30 bankers from customer services, 30 polices, 30 lawyers and 30 doctors excluding psychiatry, 210 people in all working in

**Table 1: The demographic features of the subjects**

Variables		n	%
gender	male	71	% 39.7
	female	109	% 60.3
age	21-31	65	% 36.0
	32-41	88	% 49.7
	42-52	27	% 14.3
marital status	married	132	% 74.2
	unmarried	48	% 25.8
number of child	1 child	41	% 37.7
	2 children	47	% 42.3
	3 children	23	% 18.3
total		60	%100

As data collection tool, the scale of empathic skill b-form developed by Dokmen was used in order to determine the emphatic skill levels of the subjects. The scales of empathic skill b-form is based on 6 problems.12 empathic reactions for each of these 6 problems, 72 reactions in all , are presented to the subject in written. The form of the subject who marks one of the 6 irrelevant sentences in the scale isn't evaluated. Empathic skill score's being high refers to a high empathic communication skill, its being low refers to a low empathic communication skill. The maximum score is 219 and the minimum score is 66 that one can take in The scales of Emphatic Skill B-Form. The validity and reliability of The Scales of Empathic Skill-B Form was done by U. Dökmen, (1989). The scale

was applied to a group of 80 people twice with 3-week interval; the repetition reliability of the scale done over the scores of 64 subjects was found 91.

Statistical analysis; percentage and frequency values were taken depending on the variables in the data analysis, ANOVA test and t test were used.

## RESULTS

As seen in table 2, no significant difference has been found between the number of child and empathic skills ( $p>0.05$ ). When the average values were examined, the empathic skill levels of trainers who have one child have been found to be higher than the ones who have 2 and 3 children.

**Table 2: Examining the empathic skill levels according to the variables of the number of child**

number of child	N	avarage	Std. Dev.	f	p
1 child	41	139.12	16.17		
2 children	47	136.19	15.78		
3 children	23	131.66	15.33	1.362	0.252

As seen in table 3, a significant relation has been determined between empathic skill and marital status ( $p<0.05$ ). In comparisons carried out, the empathic skill level of married trainers has been found to be higher than the ones unmarried.

**Table 3: examining emphatic skill levels according to the marital status variable**

marital status	N	average	Std. Dev.	t	p
married	132	135.61	15.22		
unmarried	48	129.39	12.59	6.401	0.01

As seen in table 4, no significant difference has been found between empathic skills of the subjects and their professions ( $p>0.05$ ). But when the average values were examined, the highest empathic skill level is of class teachers (136.40) and the average of trainers (132.43) has been found to be low.

**Table 4: The analysis of the relation between empathic skills of the subjects participated in the research and their professions.**

Jobs	N	average	Std. Dev.	f	p
Trainer	30	132.43	14.36		
Banker	30	136.26	18.0		
Teacher	30	136.40	16.39		
Doctor	30	131.53	15.92		
Police	30	131.66	14.77		
Lawyer	30	135.43	7.22	0.732	0.600
Total	180	133.95	14.79		

## DISCUSSION AND CONCLUSION

In this study where empathic skills of trainers were investigated according to the different professions, empathic skills were examined according to the gender, age, marital status, number of child, kind of profession variables.

No significant relation has been found between gender and empathic skill but empathic skills of females have been determined to be higher than males'. According to a research by B. Murray, (1998), women are more successful than men in showing empathy. Besides, men may be as successful as women through education. In another study, girls have been found to have higher empathic skill than boys. The empathic skills of female teacher candidates have been found to be higher than males'. This finding shows similarity with the findings of the research (N. Eisenberg et al., 2001; S. Schireman and V.K. Gundy, 2000).

According to the age variable, the empathic skills of the subjects in 32-34 age group have been found to be higher than other age groups. The empathic skills of the students were examined according to the age groups and university group has been found to have higher empathic skill than high school group (Hatcher et al., 1994). In a different study, it has been determined that the empathic tendency of students doesn't change through psycho-drama empathic skills increase through education (U. Dökmen, 1989).

When empathic skills were examined according to the variable of number of the child, the subjects having one child has been found to have higher empathic skills than the ones having 2 and 3 children. In a study about empathy, empathy has been determined to have a negative relationship with anger and aggression, but to have a positive relationship with well social behaviors (J. Strayer and W. Roberts, 2004).

A significant relation has been found between empathic skill and marital status ( $p<0.05$ ). The empathic skills of married subjects have been found to

be higher than unmarried ones. Empathy is seen as a sign of moral development and it is reported that more empathic children are less aggressive, more helpful and have more developed moral beliefs. The researches show that empathy is related to well social behaviours such as sharing and helpfulness, internalizing the moral values and making and keeping good friendships. Empathic skills' being low is associated with problematic behaviours especially aggressiveness (V. Del Barrio et al., 2004). Examined according to the job variable, empathy skill level has been found to be high in class teachers, bankers and lawyers but low in trainers, police and doctors excluding psychiatry. The teacher candidates taking 12-week Human Relations and Communication lesson have been found to have higher problem-solving and empathic skill levels than the ones not taking this lesson (T.F. Karahan et al., 2006). Teachers who can't show empathy cause students' motivation decrease by focussing mostly on whole group, subject and schedule and neglecting students' feelings. Empathic tendency has been determined to increase the relationship with roommates (P. Kremer, 1991) and academic performance (E. Jackson, 1986). In a study done over the relation between empathy, anxious and conflict tendency, the individuals having more conflicts in interpersonal relations were found to have low empathic tendency and on the other hand individuals having low conflicts were found to have higher empathic tendency (M. Pişkin, 1989). The ones having inherently a low communication level were found to learn empathy slower than the ones having a high one (R.F. Dalton and L.M. Sundblad, 1998). Borke also stressed in his study that interpersonal interaction and communication increased with empathy (F. Öztürk et al., 2004). J.A. Brown et al., (2007) found in their studies that the students having a good economical condition had higher empathic skills. S. Keen, (2006), found that the ones reading more books had higher social awareness and empathic skills. D.J. Solove, (2006), found that the



people who read more were more empathic and more successful in tests about social awareness and understanding.

**In conclusion**, in this study where the empathic skills of trainers were examined according to the different professions, class teachers and bankers have been found to have high empathic skills and doctors, trainers and police have been found to have low empathic skills. Considering that empathy is a teachable skill, it is thought that in-service training programs are necessary to develop trainers' empathic skills.

## REFERENCES

- BROWN, J.A., SAUTHER, J.A., LITTVAY, L., 2007**, *Attitude and Change: Conditioning in the Business School Environment*. <http://www.fma.org/SLC/Papers/AttitudeandChange>.
- COTTON, K., 2001**, *Developing Empathy In Children and Youth, School Improvement Research Series*, online: [www.lyrics.com](http://www.lyrics.com).
- DALTON, R.F., SUNDBLAD, L.M., 1998**, *Using Principles Of Social Learning In Training For Communication Of Empathy*, *Journal Of Counseling Psychology*, 54: 12.
- DAVIS, H. M., 1994**, *Empathy : A Social Psychological Approach*, WCB, Brown Publishers, Madison, Wisconsin, 3-163: 176-201.
- DEL BARRIO V., ALUJA A., GARCÍA L.F., 2004**, *Bryant's Empathy Index for children and Adolescents : psychometric properties in the Spanish Language*. *Psychology Rep.* 95 (1): 257-62.
- DÖKMEN, Ü., 1989**, *Measuring empathy through a new model and developing it with psycho-drama*. *Journal of Ankara University Education Sciences*, 21 (1-2), 155-190.
- EISENBERG, N., ZHOU, Q.V., KOLLER, S., 2001**, *Brazilian Adolescents' Prosocial Moral Judgment and Behavior : Relations to Sympathy, Perspective Taking, Gender Role Orientations, and Demographic Characteristics*, *Child Development*, 72 (20): 518-534 .
- GILL, D.L., 1986**, *Psychological Dynamics of Sports*. Champaign: Human Kinetics Publishers.
- GOLEMAN, D., 1996**, *Why is emotional intelligence more important than IQ?* Istanbul: existence publications.
- HATHCHER, S.L., NADEAU M.S., WALSH, L.K., REYNOLDS, M., GALEA, J., MARZ K., 1994**, *The Teaching of Empathy For High School and College Students: Testing Rogerian Methods With The Interpersonal Reactivity Index*. *Adolescence*, 29, 116: 961-974.
- JACKSON, E., 1986**, *Internal Empathy, Cognitive Labeling, and Demonstrated Empathy*, *Journal of Humanistic Education and Development*, 24, 3: 104-115.
- KARAHAN, T.F., SARDOĞAN, M.E., GÜVEN, M.Ç., ÖZKAMALI, E., DICLE, A.N., 2006**, *The effect of Human Relations and Communication Course on the Conflict Resolution and Empathic Skill Levels of Prospective-Teachers' Education*, 23: 127-136.
- KEEN, S., 2006**, *Empathy and the Novel*. Member Publications. Oxford.
- KREMER, P., 1991**, *Two Approaches to Teaching Accurate Empathy to Undergraduates: Teacher Incentive and Self-Directed*, *Journal of College Student Development*, 32: 69-75.
- KOESTNER, R., FRANZ, C., WEINBERGER, J., 1990**, *The family origins of empathic concern: A 26-year longitudinal study*, *Journal of Personality and Social Psychology*, 58(4): 709-717.
- MURRAY, B., 1998**, *Does Emotional Intelligence Matter In The Workplace?* *American Psychological Association*, 29, 7.
- ÖZTÜRK, F., KOPARAN, Ş., HAŞIL, N., EFE, M., ÖZKAYA, G., 2004**, *Examining empathy situations of trainers and referees*. *Journal of Sportsmeter Physical education and Sports Sciences*, 2 (1): 19-25.
- PIŞKIN, M., 1989**, *The relation between empathy, anxiety and conflict tendency*. *Journal of Ankara University Education Sciences*, 2, 8: 112-131.
- SCHIERMAN, S., GUNDY V.K., 2000**, *The personal and Social Links Between Age and Self-reported Empathy*, *Social Psychology Quarterly*, 63 (2): 152-174.
- SOLOVE, D.J., 2006**, *Does Reading Literature Give You More Empathy?* *Concurring Opinions*, 23.
- STRAYER, J., ROBERTS, W., 2004**, *Empathy and Observed Anger and Aggression in Five-Year-Olds*, *Social Development*, 13, 1: 1-13.
- TAMBORINI, R.J., STIFF, C.H., 1990**, *Reacting to Graphic Horror: A Model of Empathy and Emotional Behavior*, *Communication Research*, 17, 5: 616-640.
- WISPE, L., 1996**, *The Distinction Between Sympathy and Empathy: To Call Forth A Concept, A Word Is Needed*, *Journal Of Personality and Social Psychology*, 50, 2: 12.

## RELATION BETWEEN FAT DISTRIBUTION AND PULMONARY FUNCTION IN TRIATHLETES

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### ABSTRACT

**Purpose.** The aim of this study is to determine relationship between body composition and pulmonary function in triathletes. 15 male subjects were participated in this study at the racing period of the 9<sup>th</sup> Triathlon World University Championship in 2008.

**Methods.** Participants averaged  $21.60 \pm 2.50$  years of age,  $176.10 \pm 9.57$  of height and  $67.07 \pm 9.18$  weight. Pearson Product correlation coefficient technique was used to determine the relationship between body composition (Tanita BC 418 Body Composition Analyzer) and pulmonary function (Cosmed Pony FX Spirometer, Italy) in triathletes.

**Results.** The results revealed that there was a significant positive correlation between FVC (Force Vital Capacity) , FEV (Force Expiratory Volume), PEF (Peak Expiratory Flow), VC (Vital Capacity), MVV (Maximal Voluntary Ventilation) and height, weight, FFM (Fat Free Mass) , TBW (Total Body Water), Trunk FFM (Trunk Free Fat Mass), FMM (Predicted Muscle Mass) Moreover, the results also showed that there was a significant positive correlation between FEV/FVC (%) and age, VC, FAT %. ( $p < 0.05$ ;  $p < 0.01$ ). On the other hand, the results demonstrated that there was a negative correlation, but not significant, between Fat % (Body fat Percentage), FM (Fat Mass) and FVC, FEV, PEF, VC, MVV. The results also showed that there was a negative correlation, but not significant, between FEV/FVC (%) and age, height, weight, FFM, TBW, Trunk FFM, Trunk FMM. ( $p < 0.05$ ,  $p < 0.01$ ).

**Conclusions.** It could be concluded that if the the FM rate of the triathletes increase, the parameters of pulmonary function can decrease. If the FMM rate of the triathletes increases, their pulmonary function parameters also enhance.

**KEY WORDS:** Triathlon, Pulmonary Function, Body Composition

### INTRODUCTION

Triathlon is an endurance sport that involves the exercises in the order of swimming, cycling and running (G.Sleivert,1996;N.Hill,1991). The aerobic capacity which is the most important criterion for endurance performance is defined as first the transfer of oxygen into blood by the pulmonary system, its distribution into active muscles together with blood and the ability of these muscles to use oxygen during physical work. From a physiological (W.E. Amonette,2002) point of view, it can be stated that the most important factors that affect the triathlon performance are MaxVO<sub>2</sub>, ventilatory threshold, lactate threshold and economy of movement (B.Knechtle,2008;G.Sleivert, 1996).

Elite triathletes are generally tall, of average to light weight and have low levels of body fat, a physique which provides the advantages of large leverage and an optimal power to surface area or weight ratio(V.Bunc,1996). Body Composition constitute of muscles, bones, fat mass and body fluids. The ratios of these parameters and their relationship with other physiological elements are the most important criteria that affect performance (H.Steven, 2005). From time to time triathlon exercise can reach a point that can push the limits of the human body. It (B.Knechtle,2007) is known that the genetic factor constitute a large portion of achievement in sports. It is suggested that the respiration functions depend on genetic (age, gender, height) and non-genetic (level of

training) factors in terms of performance and that the genetic factors have an effect of 47%, and in the case of non-genetic factors, an effect of 53% (C.Bouchard, 1997)

In many studies performed, it was observed that the percentage and distribution of body fat have a significant effect on the pulmonary functions(S.Helena,2001; LC.Collins, 1995; R.Lazarus,1998). While increasing body fat percentage decreases the activity of the respiratory muscles, it causes a general decrease in the dynamic compatibility of lungs, and in lung capacity (J.M. Jimenez, 2003). In numerous investigations, it was suggested that the increasing fat percentage especially in the upper body are more effective in this decrease ( HL. Barlett,1983;HL.Barlett,1984 LC.Collins, 1995).

The physiological events that take place during maximum oxygen consumption are the introduction of oxygen into the pulmonary system, its transfer to blood from here and its use in muscles.

The aim of this study is to investigate the effects of percentage and distribution of body fat of elite triathlon athletes in Turkey on the respiration parameters.

### METHOD

The investigation has been carried out on 15 male athletes volunteers who attended the 9th University World Triathlon Championships. The

average age was determined as  $21.60 \pm 2.50$ , height as  $176.10 \pm 9.57$  cm, and body weight as  $67.07 \pm 9.18$  kg. Body compositions were analyzed by Tanita BC 418 Body Composition Analyzer and pulmonary functions by Cosmed Pony FX Spirometer before attending the race and breakfast.

The statistical analysis was carried out by SPSS 10.0 package software. After the completion of defining statistics by taking average and standard deviations, bivariate correlation test (Sperman) was applied so as to determine the effect of body composition on respiratory parameters. According to the level  $P < 0.05$  and  $p < 0.01$ , the results were evaluated as inverse correlation for the values that came out negative and as direct (positive) correlation for those that came out positive.

## DISCUSSION AND CONCLUSION

In this study where the correlation between the body composition and pulmonary capacities of the triathletes have been investigated, it has been determined that as the body fat percentage increases, pulmonary functions decrease and accordingly, as height, weight FFM, TBW, Trunk FFM, Trunk MM increases, pulmonary functions increase in direct proportion.

It is known that height and age have an effect on pulmonary capacities as a result of genetic factors. It was suggested that as age and height increases, pulmonary functions also increase in direct proportion (S. Koziel, 2007). Similarly, in this study it was found that a positive correlation exists between age and VC, height and all pulmonary functions taken.

Since no correlation was observed between respiration parameters and BMI in this study, a positive correlation was identified between Trunk muscle mass, TBW, Trunk FFM and FFM. In terms of anthropometry, respiration functions are significantly related to the power of abdominal muscles and upper body fat percentage (JM. Jimenez, 2003; Dc. Chinn, 1996) In the literature, it was shown that pulmonary functions are under the influence of muscularity and fat distribution rather than body weight (JM. Jimenez, 2003; DC. Chinn, 1996; R. Lazarus, 1998). In the study, a negative correlation between pulmonary functions and Trunk Fat %, Trunk FM, Fat % and FM can be said to exist, although it is a statistically non-significant one. Many studies confirm the results of this study. Jimenez, in 2003, studied the effect of body weight on pulmonary functions in men within the age range of 20 to 29, actively engaged in sports. Although a direct correlation between

## RESULTS

As seen in Table 2, A positive correlation was found between FVC, FEV, PEF, VC and MVV values and height, weight, FMM, TBW, Trunk FFM, Trunk Muscle Mass, and between FEV/FVC (%) and FAT % and also between age and VC  $p < 0.05$ ,  $p < 0.01$ . Moreover, while a negative correlation exists between Fat % and Fat Mass, and FVC, FEV, PEF, VC, MVV and also between FEV/FVC(%) and age, height, weight, FFM TBW, Trunk FMM, Trunk MM, it was determined that this correlation is not significant in terms of statistics.

pulmonary functions and, BMI and body weight could not be found, a negative correlation was stated to exist with respect to upper body fat percentage. He suggested that this was caused by the influence of upper body fat percentage on the mechanics of the respiratory muscles (JM. Jimenez, 2003). Similar results were found by Lazares *et al* in a study carried out on 930 people from both genders within the age range of 18 to 78, where it was also revealed that as upper body fat percentage and waist circumference increase, the respiration parameters decrease (R. Lazarus, 1998).

In this study, a positive correlation was observed between body weight and FVC, FEV, PEF, VC, MVV parameters and in the case of the comparison of body weight with FEV/FVC% a negative correlation was observed, however it was determined to be a statistically non-significant one. In the literature, it was reported that if the increase in body weight is caused by the increase in the amount of fat in the upper body, this especially decreases the effectiveness of FEV, FVC and FEV/FVC % capacities (IM. Carey, 1999; ML. Wang, 1996).

In triathlon, one of the sports branches in which oxygen consumption capacity is the most effective, when the physical and anthropometric features of the athletes are considered, it was observed that they are tall, have high muscle mass and low fat percentage (T. Reilly, 2005). As stated in the literature, especially low upper body fat percentage and high muscle percentage directly increase respiration capacity. In this regard, we can say that triathletes should not be judged by their general body fat percentage and their performance is positively affected by their low upper body fat percentage and high muscle percentage.

**Table 1: Average and Standard**

Deviations (X±SD)

Parameters	X±SD
Age (year)	21,60±2,50
Height (cm)	176,10±9,57
Weight (kg)	67,07±9,18
BMI (kg/m <sup>2</sup> )	21,62±1,97
FAT %	10,83±6,03
FM (kg)	7,14±3,61
FFM (kg)	59,93±9,94
TBW (kg)	43,88±7,27
Trunk fat %	9,89±5,53
Trunk FM (kg)	3,55±1,85
Parameters	X±SD

Trunk FFM (kg)	32,42±5,09
Trunk MM (kg)	31,14±4,96
FVC (lt)	5,38±0,82
FEV (lt)	4,61±0,62
FEV/FVC %	85,60±5,52
PEF	9,30±1,76
VC(lt)	5,04±0,94
MVV (lt)	185,01±34,55

FVC (Force Vital Capacity), FEV (Force Expiratory Volume), MVV (Maximal Voluntary Ventilation), VC (Vital Capacity), PEF (%25-75 Force Expiratory Flow), BMI (Body Mass Index), FAT %, FM (Fat Mass), FFM (Free Fat Mass), TBW (Total Body Water), Trunk fat %, Trunk FM (Trunk Fat Mass), Trunk FFM (Trunk Free Fat Mass), Trunk MM (Trunk Muscle Mass)

**Table 2. The Correlation Between Body Composition and Pulmonary Functions of the Triathletes**

Parameters	FVC (lt)	FEV(lt)	FEV/FVC(%)	PEF	VC(lt)	MVV(lt)
Age (years)	,607	,457	-,572	,320	,754*	,231
Height (cm)	,818**	,740*	-,462	,692*	,731*	,682*
Weight (kg)	,750*	,825**	-,083	,872**	,670*	,791**
BMI (kg/m <sup>2</sup> )	,191	,400	,437	,527	,141	,428
FAT %	-,466	-,282	,645*	-,315	-,539	-,290
FM(kg)	-,304	-,111	,615	-,144	-,393	-,122
FFM (kg)	,804**	,802**	-,300	,858**	,762*	,775**
TBW (kg)	,804**	,802**	-,301	,858**	,762*	,775**
Trunk fat %	-,241	-,112	,460	-,169	-,351	-,074
Trunk FM (kg)	-,056	,054	,353	-,017	-,176	,090
Trunk FFM (kg)	,797**	,798**	-,295	,850**	,770**	,739*
Trunk MM (kg)	,800**	,790**	-,299	,850**	,773**	,741*

\*\* Correlation is significant at the 0.01 level (2-tailed). \* Correlation is significant at the 0.05 level (2-tailed)

## References

- AMONETTE, W.E., DUPLER, T.L., 2002 "The Effects of Respiratory Muscle Training on VO<sub>2</sub>Max, The Ventilatory Threshold and Pulmonary Function". J Exerc Physiol. 5 (2), 48-55,
- BARLETT HL, BUSKIRK ER., 1983, Body composition and the expiratory reserve volume in lean and obese men and women. Intl J Obes 7:339-43
- BARLETT HL, MANCE MJ, BUSKIRK ER., 1984, Body composition and expiratory reserve volume in female gymnasts and runners. Med Sci Sports Exer 16:311-15
- BOUCHARD C, MOLINA, R.M, PERESE L., 1997, Genetics of Fitness and Physical Performance, Human Kinetics USA , pp250
- BUNC V, HELER J, HORCIC J, et al., 1996, Physiological Profile of Best Czech Male and Female Young Triathletes, J Sports Med Phys Fitness Dec; 36(4):265-70
- CHINN DJ, COTES JE, REED JW., 1996, Longitudinal effects of change in body mass on measurements of ventilatory capacity. Thorax; 51:699-704.

- CAREY IM, COOK DG, STRACHAN., 1999, *The Effects of Adiposity and Weight Change on Longitudinal Study of Adults*, Int J Obes DP. 23:979–985.
- COLLINS LC, HOBERTY PD, WALKER JF., et al, 1995, *The Effect of Body Composition on Pulmonary Function Tests*. Chest;107:1298–302
- KNECHTLE B, KNECHTLE P, SCHÜCK R, et al, 2007, *Effects of a Deca Iron Triathlon on Body Composition*, Int J Sports Med; 29(4): 343-351
- HILL N., JACOBY C., FARBER H. W., 1991, *Effect of an Endurance Triathlon on Pulmonary Function*. Med. Sci. Sports Exerc., Vol. 23, No. 11, pp. 1260-1264
- HELENA S., ELENA Z., 2001, *Relation Between Body Composition, Fat Distribution, and Lung Function in Elderly Men*, American Journal of Clinical Nutrition, Vol. 73, No. 4, 827-831
- JIMÉNEZ MONCADA JOSÉ ,, 2003, *Body Fat Predicts Forced Vital Capacity in College Males*, European Journal of Sport Science, vol. 3, issue 2 by Human Kinetics Publishers and the European College of Sport Science p 1-11
- LAZARUS R, GORE CJ, BOOTH M, et al., 1998, *Effects of Body Composition and Fat* Forced Expiratory Volume Decline in a Distribution on Pulmonary Function in Adults. Am J Clin Nutr;68:35–41
- KNECHTLE B, SALAS O FRAÏRE JL et al., 2008, *Effect of a multistage ultra-endurance triathlon on body composition: World Challenge Deca Iron Triathlon 2006*, Br J Sports Med 42: 121-125
- KOZIEL S, STANLEY J. ULIJASZEK S., et al, 2007, *The Effects of Fatness and Fat Distribution on Respiratory Functions*, Annals of Human Biology, January–February; 34(1): 123–131
- SLEIVERT G, ROWLANDS DS, 1996, *Physical and Physiological Factors Associated with Success in the Triathlon*, Sports Med. Jul;22(1):8-18.
- STEVEN H, 2005, *Human Body Composition, 2nd ed.*, Human Kinetics, USA, P15,16
- WANG ML, MCCABE L, HANKINSON JL., et al, 1996. *Longitudinal and Cross-Sectional Analyses of Lung Function in Steelworkers*. Am J Resp Crit Care Med 153:1907-13.
- REILLY T, SECHER N, SNELL P., et al, 2005, *Physiology of Sports*, Taylor& Francis Group Published USA, P 190-193

## THE RELATION AMONG THE SETTER POSITION SETTER HEIGHT AND GAME RESULT IN ELITE WOMEN VOLLEYBALL

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**Objective.** The setter has an important role in the game result in terms of not only the playing position but also the physical characteristics. In this study, the relationship between the variable of win-lost points of the team as the setter in 6 different positions, setter height, and starting position of the setter and the variable of game result is examined.

**Methods.** The study is carried out with the data obtained from the records of match analysis concerning 164 plays and 82 matches of 8 teams which were entitled to play in the playoffs from 12 teams of Turkish Women Volleyball League 1.

**Results.** In accordance with the obtained findings, a statistically significant difference between the setter height and the game result is obtained. In addition, there is a significant difference between the win-lost points of team and front or back position of the setter. The same relationship for medium and tall setters is not so significant statistically. Nevertheless, it is observed that the difference between the points which team win or lose when the setter is back player and the points which team win or lose when the setter is front player is statistically significant. A significant relationship between the setters' starting position and the game result is obtained at the level of 0.10. Besides, a significant relationship is observed between the total average win-lost points when the setter is front and back player at the level of 0.10. It is also detected that the average win-lost points when the setter is a back player is greater than the average win-lost points when the setter is a front player.

**Conclusions.** These findings show that considering the setter's starting position together with the setter's height will have a significant effect on the play while creating new tactics.

**KEYWORDS:** Volleyball, setter position, setter height, game result.

### INTRODUCTION

It is certain that team performance shall be improved by scientific supports in the sport volleyball

which is watched and played by millions of people in more than 200 countries in the world. Within this

scope, detection of the determinative factors of team performance is so important not only in providing exercise effectiveness but also in developing game strategies and building up team compositions.

Today in volleyball in which the competition is so strong, teams collect detailed statistics concerning matches by game analyzing programs and build up new tactical plans for games based on these data. Teams set their offence and defence strategies by considering their players' physical properties. (H.G. Eom and R.W. Schuts, 1992a; H.G. Eom and R.W. Schuts, 1992b).

The setter is a promoter and has an important role in the team structure (K.S. Lenberg, 2004; L. Sawula, 1998). The setter has an important effect on the game result due to physical properties, technical-tactical features and also the position played (A. Selinger, 1986; P. Over, 1992). In accordance with the game rules, the players shall turn clockwise according to the starting position and the setter shall play in six different positions on the play area (L. Alexandros and K. Panagiotis, 2010). The starting position also determines whether the setter in the front or back position. Any studies examining the effects of setter position and setter height on the game result and the effect of setter position on win-lost points cannot be found in the literature concerning volleyball.

## RESEARCH METHODS AND PROCEDURES RESEARCH SAMPLE AND DATA

This study was made by using the game data of the season 2008-2009 of Turkish Women Volleyball League 1. 164 observation data of 82 matches of 8 teams which were entitled to play in the playoffs among 12 teams are used, as each observation refers to play of one team in one match. These 164 observations are consisted of 108 league, 40 playoff, 12 Turkish Cup and 4 Champions Cup games. The total observation number in the analysis is 328. The reason is that, the position variable is located for two times on the data sheet as back and front positions.

17 setters had played in the league of 2008-2009 in total. Data concerning the variables of starting positions of the setters, win-lost points of the team in each position of the setter and game result were collected from the reports of game analysis. Setters' heights are collected from the official web site of the Turkish Volleyball Federation (Team Info, 2008). For the games in which more than one setter had played, the average height of the setters is calculated. The heights of the setters are categorized in three different classes. Setters between 170 and 179 cm are short setters (SS), setters between 180 and 185 cm are medium setters (MS) and setters between 186 and 190 cm are tall setters (TS).

## STATISTICAL ANALYSIS

5 variables in total are used in the study: Game result, win-lost point difference for each setter position,

setter as a front or back player, starting position of setter, setter height.

The validities of the below hypothesis are tested:

a) There is a significant relationship between setter height and game result.

b) There is a significant relationship between starting position of setter and game result.

c) There is a significant difference between setter as a front or back player and difference in win-lost point in terms of heights.

d) Differences in win-lost points differ significantly with the setter position.

As both of the variables are categorical in the test of hypothesis a) and b), the significance of the relationship is made by Pearson  $\chi^2$  test statistics. For the significance of the difference between the averages of groups in the hypothesis in c) and d), two-sample independent t test and ANOVA are used. In order to decide whether the test concerning the significance of the difference between the groups should be parametric or non-parametric, it is detected whether the sample data has a normal distribution or not. In this sense, Shappiro-Wilk W test statistics is used for normality tests. It is observed that the variables have normal distribution and by this reason parametric t tests and ANOVA are used for the differences in group averages. Prior to the analysis concerning t test and ANOVA, the homogeneity of group variances is detected by F test and thus, t test or ANOVA are carried out in accordance with the result of F test.

## PEARSON CHI-SQUARE

This statistic is used to test the hypothesis of no association of columns and rows in tabular data. Note that chi-square is more likely to establish significance to the extent that the relationship is strong, the sample size is large, and/or the number of values of the two associated variables is large. Chi-square is calculated by finding the difference between each observed and theoretical frequency, squaring them, dividing each by the theoretical frequency, and taking the sum of the

results as follows  $\chi^2 = \sum_{i=1}^I \sum_{j=1}^J \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$  where  $O_{ij}$  = an

observed frequency and  $E_{ij}$  = an expected (theoretical) frequency, asserted by the null hypothesis.

## TWO SAMPLE T TEST

The two-sample *t*-test is used to determine if two population means are equal. The two sample t test for unpaired data is defined as: The hypothesis are defined as  $H_0 : \mu_1 = \mu_2$   $H_1 : \mu_1 \neq \mu_2$  and the test statistics *t* is

calculated as  $t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S_1^2/n_1 + S_2^2/n_2}}$  where  $n_1$  and  $n_2$  are

the sample sizes,  $\bar{X}_1$  and  $\bar{X}_2$  are the sample means, and  $S_1^2$  and  $S_2^2$  are the sample variances. Reject the null hypothesis that the two means are equal if  $t < -t_{\alpha/2, \nu}$  or  $t > t_{\alpha/2, \nu}$ . If equal variances are assumed, then  $\nu = n_1 + n_2 - 2$ .

### NORMALITY TESTS

The Shapiro-Wilk test calculates a  $W$  statistic that tests whether a random sample,  $x_1, x_2, \dots, x_n$  comes from a normal distribution. Small values of  $W$  are evidence of departure from normality and percentage points for the  $W$  statistic, obtained via Monte Carlo simulations. The  $W$  statistic is calculated as

$W = \left( \sum_{i=1}^n a_i x_{(i)} \right)^2 / \sum_{i=1}^n (x_i - \bar{x})^2$ , where the  $x_{(i)}$  are the ordered sample values and the  $a_i$  are constants generated from the means, variances and covariances of the order statistics of a sample of size  $n$  from a normal distribution. The percentage of  $W$  statistics and  $a_i$  values are generated by A.V. Pearson and H.O. Hartley (1972).

### ONE-WAY ANOVA

The procedure known as the *Analysis of Variance* or *ANOVA* is used to test hypotheses concerning means when we have several populations. ANOVA is a general technique that can be used to test the hypothesis that the means among two or more groups are equal, under the assumption that the sampled populations are normally distributed.

In an analysis of variance the variation in the response measurements is partitioned into components that correspond to different sources of variation. The goal in this procedure is to split the total variation in the data into a portion due to random error and portions due to changes in the values of the independent variable(s).

The total variation (not variance) is comprised the sum of the squares of the differences of each mean

$\bar{X}_i$  with the grand mean  $\bar{X}_{GM}$ :  $SS_{total} = \sum_{j=1}^p (\bar{X}_j - \bar{X}_{GM})^2$

where  $\bar{X}_{GM} = \sum_{i=1}^N x_i$  and the  $p$  is the number of different groups.

There is the between group variation and the within group variation. The whole idea behind the analysis of variance is to compare the ratio of between group variance to within group variance. If the variance caused by the interaction between the samples is much larger when compared to the variance that appears within each group, then it is because the means aren't the same.

The variation due to the interaction between the samples is denoted  $SS_b$  for Sum of Squares Between

groups:  $SS_b = \sum_{j=1}^p n_j (\bar{X}_j - \bar{X}_{GM})^2$ , where  $n_j$  is the size

of  $j$  group. The variance due to the interaction between the samples is denoted  $S_b^2$  for Mean Square Between

groups:  $S_b^2 = \frac{SS_b}{p-1}$

The variation due to differences within individual samples, denoted  $SS_w$  for Sum of Squares Within

groups:  $SS_w = \sum_{j=1}^p (n_j - 1) S_j^2$

Each sample is considered independently, no interaction between samples is involved. The degrees of freedom is equal to the sum of the individual degrees of freedom for each sample. Since each sample has degrees of freedom equal to one less than their sample sizes, and there are  $k$  samples, the total degrees of freedom is  $p$  less than the total sample size:  $df = N - p$ .

The variance due to the differences within individual samples is denoted  $S_w^2$  for Mean Square Within groups. This is the within group variation

divided by its degrees of freedom:  $S_w^2 = \frac{SS_w}{N - p}$

The  $F$  test statistic is calculated by dividing the between group variance by the within group variance:

$F = \frac{S_b^2}{S_w^2}$ . The degrees of freedom for the numerator is

$p-1$  and the degrees of freedom for the denominator is the  $N-p$ .

The decision will be to reject the null hypothesis if the test statistic from the table is greater than the  $F$  critical value with  $p-1$  numerator and  $N-p$  denominator degrees of freedom (E.K. Roger, 2008).

### FISHER - HAYTER MULTIPLE COMPARISON TEST

A variety multiple comparisons procedure have been developed to test null hypothesis about contrasts. This test is appropriate for testing all pairwise contrasts among  $p$  means. It control the probability of making one or more Type I errors for the collection of tests at or less than  $\alpha$ . The Fisher-Hayter approach will be more powerful than the Tukey approach

The Fisher-Hayter multiple comparison test is a two step procedure. The first step consists of using the ANOVA  $F$  test the omnibus null hypothesis  $H_0: \mu_1 = \mu_2 = \dots = \mu_p$  at  $\alpha$  level significance. If the  $F$  test is not significant, the omnibus null hypothesis is not rejected it is concluded that none of pairwise

contrasts differ from 0. In contrast, each of pairwise contrasts is tested using the Fisher-Hayter test statistics.

The Fisher-Hayter test requires three assumptions: Random sampling or random assignment of participants to the treatment levels, the  $j = 1, \dots, p$  populations are normally distributed, and the variances of the  $j = 1, \dots, p$  populations are equal (Hayter, 1986).

The Formula for the test statistics is

$$qFH = \frac{\bar{X}_{.j} - \bar{X}_{.j'}}{\sqrt{\frac{MSWG}{2} \left( \frac{1}{n_j} + \frac{1}{n_{j'}} \right)}} \text{ where } \bar{X}_{.j} \text{ and } \bar{X}_{.j'}$$

are means of random samples from normal populations, *MSWG* is the denominator of the *F*

statistic from an ANOVA, an  $n_j$  and  $n_{j'}$  are the sizes of the samples used to compute the sample means (A.J. Hayter, 1986; E.K. Roger, 2008).

**RESULTS**

In this part, statistical analysis results concerning examination hypothesis are given. 17 setters in total had played in the season of 2008-2009 of the Turkish Women Volleyball League 1 where the examination data were collected. Only one of these teams had 3 setters; the other teams had 2 setters. Lengths of these setters are given in Table 1.

**Table 1. Lengths of setters (cm)**

	T1	T2	T3	T4	T5	T6	T7	T8
S1	181	175	178	174	186	187	183	183
S2	190	173	186	183	173	172	179	178
S3	-	-	-	-	-	-	-	184
Mean	185.5	174	182	178.5	179.5	179.5	181	181.7

T: Team S: Setter

It was detected by Pearson Chi-square statistics whether there is a significant relationship between setter length and game result as both of the parameters

are categorical. Statistical test results are given in Table 2.

**Table 2. The association between setter height and game result**

Setter Height	Game result		
	Lost	Win	Total
Short	56	52	108

As  $p = 0.024 < 0.05$ , it is seen that there is a significant relation between setter length and game result.

The results of relation analysis between setter's starting position and game result which is based on

**Table 3. Relationship between setter starting position and game result**

Setter Starting Position	Game result		
	Lost	Win	Total
P1	76	56	132
P2	20	14	34

As  $p = 0.08 < 0.10$ , then although there is not a significant relation between setter height and game result at the level of 0.05, it can said that the relation exists at the level of 0.10.

In order to decide on the test selection concerning whether there is a difference in win-lost points

Medium	64	46	110
Tall	44	66	110
Total	164	164	328

Pearson  $\chi^2(2) = 7.4936$   $p = 0.024$

Pearson Chi-square are given in Table 3. P1, P6 and P5 refer to back positions and P4, P3 and P2 refers to front positions.

P3	10	10	20
P4	2	6	8
P5	24	36	60
P6	32	42	74
Total	164	164	328

Pearson  $\chi^2(2) = 9.8405$   $p = 0.08$

according to the setter position and under the setter height constraint; Shappiro-Wilk *W* normality test was carried out for the variable of win-lost point and the results are given in the Table 4.

**Table 4. The normality tests for win-lost points by setter position and setter height**

Setter height	Setter Position	Obs	W	z	p
Short	Back	54	0.97	0.45	0.32



	Front	54	0.98	-0.55	0.70
Medium	Back	55	0.98	-0.25	0.60
	Front	55	0.98	-0.79	0.78
Tall	Back	55	0.97	0.05	0.47
	Front	55	0.98	-1.44	0.92
No height constraint	Back	164	0.99	-0.58	0.72
	Front	164	0.99	0.50	0.30

As all the probability values  $p(Z > z)$  concerning Shappiro-Wilk  $W$  statistics are greater than the significance level of 0.05, the null hypothesis of "distribution of the variables is normal" cannot be rejected. Thus, two-sample independent t test can be used for significance test for the difference between the group averages.

However, before performing the two-sample independent t test, variance ratio tests by  $F$  statistics was carried out concerning the necessity of under which equal or non-equal group variances estimations this test should be performed. The results are given in Table 5.

**Table 5. Variance ratio tests**

Setter height	Alternative Hypothesis	$F$	$2*Pr(F < f)$
Short	Ha: ratio≠1	0.765	0.334
Medium	Ha: ratio≠1	1.093	0.744
Tall	Ha: ratio≠1	1.150	0.608
No height constraint	Ha: ratio≠1	1.002	0.986

As  $2*Pr(F < f) > 0.05$ , the null hypothesis that the group variances are equal cannot be rejected at the 0.05 significance level. As the hypothesis which declares that the group variances are equal cannot be disclaimed, for the short setters, two-

sample t test with equal variances concerning the significance of the difference between the differences in win-lost points observed while the setter plays in a front or back position was performed and the results are given in Table 6.

**Table 6. Two sample t test for difference between two groups' win-lost points**

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Back	164	2.87	0.82	10.54	1.25	4.50
Front	164	1.17	0.82	10.53	-0.44	2.80
Combined	328	2.02	0.58	10.55	0.88	3.17
diff		1.70	1.16		-0.58	3.99

$H_0 = \text{mean}(1) - \text{mean}(2)$  Ha: diff > 0  $t = 1.461$   
 $p(T > t) = 0.072$

It can be said at the level of 0.10 that there is a significant difference between the win-lost points of the team in favour of back position while the setter plays in a front or back position.

**Table 7. Two-sample t test for difference between back-front groups' win-lost means, given setter height is short**

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Int.]	
Back	54	4.42	1.31	9.66	1.78	7.06
Front	54	.296	1.50	11.04	-2.7	3.31
Combined	108	2.36	1.01	10.53	.35	4.37
diff		4.12	1.99		.17	8.08

$H_0 = \text{mean}(1) - \text{mean}(2)$  Ha: diff > 0  $t = 2.06$   $P(T > t) = 0.020$

There is a significant difference between the win-lost points while the setter plays in a front or

back position for short setters. The average win-lost point while the setter plays in a back position

is significantly greater than the average win-lost points while the setter plays in a front position as

$$p(T > t) = 0.0205 < 0.05$$

**Table 8. Two-sample t test for difference between two groups' win-lost points, given setter height is medium**

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Int.]	
Back	55	.25	10.81	1.45	-2.6	3.17
Front	55	-.07	10.33	1.39	-2.8	2.72
Combined	110	.09	10.52	1.00	-1.8	2.08
diff		.32	2.01		-3.6	4.32

H0 = mean(1) - mean(2) Ha: diff > 0 t = 0.16

p(T > t) = 0.435

There is not a significant difference in win-lost points while a medium height setter play in a front or back position. As  $p(T > t) = 0.435 > 0.05$ , the

average win-lost points when the setter in a back position is not significantly greater than the average win-lost points when the setter in a front position.

**Table 9. Two sample t test for difference between two groups' win-lost points, given setter height is tall**

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Int.]	
Back	55	3.98	1.45	10.79	1.06	6.90
Front	55	3.29	1.35	10.06	0.56	6.01
Combined	110	3.63	0.99	10.39	1.67	5.60
diff		0.69	1.99		-3.2	4.63

H0 = mean(1) - mean(2) Ha: diff > 0 t = 0.347

p(T > t) = 0.364

There is not a significant difference in win-lost points while a tall setter play in a front or back position. , Although the average win-lost points when the setter in a back position is greater than the average win-lost points when the setter in a front position, as  $p(T > t) = 0.435 > 0.05$ , the advantage of this difference in favour of back position is not significantly greater.

One way ANOVA was used for both positions to determine whether there is a significant difference between the win-lost points according to the setter height when the setter is a back or front position.

The results of the analysis are given in Table 10 and Table 11.

**Table 10. ANOVA table for setter length at back position**

Source	SS	df	MS	F	p
Between groups	574.93	2	287.46	2.64	0.074
Within groups	17556.6	161	109.04		
Total	18131.5	163	111.23		

Bartlett's test for equal variances:  $\chi^2(2) = 0.8551$  Prob> $\chi^2 = 0.652$

Fisher-Hayter pairwise comparisons. Studentized range critical value(.1, 2, 322) = 2.33

Group vs group	Group means	Mean diff	FH-test
Short vs medium	4.42	0.25	4.17
Short vs Tall	4.42	3.98	0.44
Medium vs Tall	0.25	3.98	3.72

\*significant at 0.10 level

There is a significant difference at the level of 0.08 between the win-lost points according to the

height variable when the setter plays in back position. Post hoc analysis was made by Fisher-

Hayter test in order to observe between which height there exists a difference; and it seen that at

the level of 0.10, the differences between short and medium and medium and tall are significant.

**Table 11. ANOVA table for setter length at front position**

Source	SS	Df	MS	F	p
Between groups	373.55	2	186.77	1.70	0.18
Within groups	17708.31	161	109.98		
Total					

Bartlett's test for equal variances:  $\chi^2(2) = 0.48$  Prob> $\chi^2 = 0.78$

Fisher-Hayter pairwise comparisons. Studentized range critical value(.1, 2, 322) = 2.33

Group vs group	Group means	Mean diff	FH-test
Short vs medium	0.29	-0.07	0.36
Short vs Tall	0.29	3.29	2.11
Medium vs Tall	-0.07	3.36	2.38*

\*significant at 0.10 level

When the same analysis made with the setter in front position, F test resulted that there is not a significant difference between the groups. However, as the Prob>F=18 value is relatively small, post hoc analysis was carried out and it is observed that there is a significant difference in win-lost points between the heights of medium and tall at the level of 0.10.

## DISCUSSION

It observed that the statistical analysis results significantly support the hypothesis asserted in connection with relations among setter position, setter length, game result and win-lost points.

Although, the setter length was not said to be an important factor in winning the match formerly in volleyball practices, today it is paid attention especially on lengths together with other features to become advantageous in net front (Z. Ran, 1989).

The analysis results given in Table 2 support the rightness of this tendency. The relation between the setter height and winning the game can be expressed especially by tall setters easily.

Although it is commonly preferred to start the game in P1 position in volleyball matches, the tendency to start in P5 and P6 positions are increasing in recent years. The starting position distribution given in Table 3 shows that it is started to game at P1 position mainly; P6 and P5 positions follow the P1 position. Statistical analysis has given results in favour of this tendency. For instance, the number of lost matches when it was started at P1 position is

greater than the number of lost matches when it was started at P6 and P5 positions. Thus, the relation between both of the variables have found significant at the level of 0.10.

The results which are given in Table 6 which indicates that there is a significant difference between win-lost points when the setter is at a front or back position at the level of 0.10, also shows that the team is more successful when the setter is at back position. This result is on the same wavelength with the study (J.M. Palao, J.A. Santos, A. Urena, 2004; J.M. Palao, J.A. Santos, A. Urena, 2005). The analysis carried out for the win-lost points when the setter at a front or back position in the detail of lengths (Table 7, 8 and 9), indicated that there is a significant difference between the average win-lost points in favour of back position when only the short setters play at a front or back position.

## CONCLUSIONS

A statistically significant relation between setter height and game result, setter's starting position and game result have been detected. As there is a significant difference between the win-lost points of the team when the short setter plays at a front or back position, this difference was not found statistically significant for the medium and tall setters. Besides, it is detected that the number of win-lost points of the team when the setter is a back player is significantly different from the number of win-lost points of the team when the setter is a front player. It is also observed that as there is a significant difference between the

average of win-lost points when the setter is a front or back player, the average of win-lost points when the setter is a back player is greater than the average of win-lost points when the setter is a front player.

## BIBLIOGRAPHY

- ALEXANDROS, L., PANAGIOTIS, K. 2010,** *Association Between The Line-Up Of The Players And The Efficiency Of The Serving Team In Volleyball. International Journal of Performance Analysis in Sport*, 10(8), 1-8.
- EOM, H.J., SCHUTZ, R.W. 1992a,** *Statistical analysis of volleyball team performance. Research Quarterly for Exercise and Sport*, 63(1): 11-18
- EOM, H.J., SCHUTZ, R.W., 1992b,** *Transition play in team performance of Volleyball: A Log Linear Analysis. Research Quarterly for Exercise and Sport*, 63(3): 261-269.
- HAYTER, A.J., 1986,** *The maximum familywise error rate of Fisher's least significant difference test. Journal of the American Statistical Association*, 81, 1000-1004.
- LENBERG, K.S. (Edt.), 2004,** *Coaching Volleyball Offensive Fundamentals And Techniques*, 2.nd ed. Monterey, Coaches Choice.
- OVER, P., 1992,** *Set in Jump*, Volley Tech, 3 (92) 11-15.
- PALAO, J.M., SANTOS, J.A., URENA, A., 2004,** *EFFECT OF team level on skill performance in volleyball. International Journal of Performance Analysis in Sport*, 4(2), 50-60
- PALAO, J.M., SANTOS, J.A., URENA, A., 2005,** *The effect of the seter position on the spike in volleyball. Journal of Human Movement Studies*. 48(1), 25-40
- PEARSON, A.V., HARTLEY, H.O., 1972,** *Biometrica Tables for Statisticians, Vol 2*, Cambridge, England, Cambridge University Press.
- RAN Z., 1989,** *How to train the setter. Volley Tech*, 2 (89), 5-13.
- ROGER, E. KIRK, 2008,** *Statistics: An Introduction*, Thomson, Wadsworth, USA, p.414-415.
- SAWULA, L., 1989,** *Training The Setter The Women's Game. Volley Tech*, 2 (89), 14-21.
- SELINGER, A., 1986,** *Power Volleyball*, 1st Ed. New York, St. Martin's Pres.
- SHAPPIRO, S.S., Wilk M.B., 1965,** *An analysis of variance test for normality (complete samples)*, *Biometrika*, 52, 3 and 4, 591-611.
- TEAM INFO., 2010,** *TVF. Redrived.01.02.2010 from the Word Wide Web: <http://www.volleybol.org.tr/sistem/tarihce/2008-2009> Aroma Ligleri/ 1.lig bayan kadro (in Turkish).*

## ALTERATION IN BODY COMPOSITION OF FEMALE PLAYERS IN A THIRD LEAGUE VOLLEYBALL BOUT

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### ABSTRACT

**Purpose:** In this study, we aimed to investigate the effects of single bout of volleyball on body composition in female players of third league.

**Methods:** Nineteen professional female players that play volleyball in two clubs in Turkish Third League were enrolled in the study. Prior to one league match (pre-exercise) bioelectric impedance analyzes (BIA) were performed using a bioelectric impedance analyzer. After the final period (3rd set) of match was ended, bioelectric impedance analyzes were repeated (post-exercise) in female players of two teams that are named as Diyarbakirspor and Diskispor. Seventeen bio-impedance parameters of body composition were measured. The results of each team before and after match were compared. Because the parameters measured by bioelectrical impedance analysis related to body water affected by water drinking during a match we investigated only some electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate.

**Results:** The results of the study showed that basal metabolic rate decreased in the Diskispor Team after the match ( $p < 0.05$ ). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ( $p > 0.05$ ). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ( $p < 0.05$ ).

**Conclusion:** In conclusion, some bioelectrical parameters can be an indicator of the performance of the sportsman in teams.

**KEYWORDS:** Volleyball, sports, exercise, body composition, bioelectric impedance

### PURPOSE

Contemporary sports imply huge training volumes, with thus an increasing danger of overloading. The timely detection of the state of overloading in the organism as a whole or in skeletal muscles presents a difficult and complicated problem (A. Ferretti, P. Zeppilli, 2003; S. Cerit, M. Z. Akdag, S. Dasdag, Y. Karakoc, M. Celik, 2009). In the last decades, the sport of volleyball has become popular all over the world. During the normal conditions or exercise, body water and electrolyte balance are essential to optimal physiological function and health (S. Cerit, M. Z. Akdag, S. Dasdag, Y. Karakoc, M. Celik, 2009; L. E. Armstrong, and Y. Epstein, 1999).

Bioelectric impedance analyze (BIA) is commonly used in clinical settings and field studies for estimating body composition parameters such as total extracellular, intracellular water compartments, fat mass, body mass, resistance, reactance, body capacitance and basal metabolic rate. However, it is possible to measure some electrical properties of matter such as resistance, reactance, phase angle, body capacitance and basal metabolic (S. Cerit, M. Z. Akdag, S. Dasdag, Y. Karakoc, M. Celik, 2009; S. Dasdag, M. Z. Akdag, M. S. Celik, 2008; <http://www.biodyncorp.com/product/450/450.html>

., 2007). The application of the bioelectric impedance analysis (BIA) method is growing in popularity because it is safe, noninvasive, rapid, portable, inexpensive, easy to use, and amenable for laboratory, clinical, and field assessment of human body composition. Recently, great advances were made in the art of accurately measuring the electrical properties of matter (A. L. Lafargue, L. B. Cabrales, R. M. Larramendi, 2002). However, giving the definition of some BIA parameters such as resistance, reactance, phase angle, body capacitance and basal metabolic rate would help to understand physics of BIA.

Resistance and reactance are terms from physics which are part of the complex field of materials and their effects on electricity. Resistance is the ratio of electrical potential (voltage) to the current in a material. A material with low resistance conducts well, while a material with high resistance conducts poorly. Phase angle is proportional to the ratio of reactance and resistance. Phase angle is an indicator of cellular health and integrity. Body capacitance is the total energy storage capacity of the body cell mass compartment. Basal metabolic rate (BMR) is the number of calories metabolized at rest during 24 hours.

As it is known, approximately seventeen parameters can be measured by bioelectrical impedance analysis. However, most of the

parameters are related to body water affected by water drinking during a match. Because of difficulties to prevent drinking water during a match analysis the parameters affected by water intake were not evaluated in this study. Therefore, the purpose of this study is to investigate some of the electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate in two third league volleyball team

#### METHOD

Nineteen professional female players that play volleyball in two clubs in Turkish third league League were enrolled in the study. Informed consent was taken from each subject and, Helsinki Recommendations was regarded. These subjects were questioned about the performance and the health problems. Physical parameters such as age and height were noted. Prior to one league match (pre-exercise) bioelectric impedance analyzes were performed using a portable bioelectric impedance analyzer (Bioimpedance Analyzer, BIA 450, BIODYNAMICS, USA). After the final period (3rd set) of match was ended (post-exercise), bioelectric impedance analyzes were repeated for all subject that they participated in a period of match by substitution with each other. Just before impedance analyzes, subjects were weighed and then they lied face up on a bench in a supine position. Two pairs of sensor electrodes (ecg pads) were placed on the subject's right hand and wrist, and right foot and ankle. A cable was

connected between the analyzer and the sensor electrodes. Using the analyzer's keypad, the patient's gender, age, height, and weight (determined at this time) are entered. 50 kHz alternating electric current was applied to current electrodes and, bioelectric impedance parameters were recorded by means of voltage electrodes in accordance with the manufacturer's instructions (S. Cerit, M. Z. Akdag, S. Dasdag, Y. Karakoc, M. Celik, 2009; <http://www.biodyncorp.com/product/450/450.html>, 2007). When a test was performed, a printout was generated. From the recorded parameters, body mass index ( $\text{kg}/\text{m}^2$ ), body capacitance (pF), resistance (Ohm), reactance (Ohm), body cell mass (kg), extracellular mass (kg), lean body mass (kg), fat mass (kg), and basal metabolic rate (cal) were evaluated. All players had free access to water intake at the break times of match.

#### RESULTS

The results of the study showed that basal metabolic rate decreased in the Diskispor Team after the match ( $p < 0.05$ ). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ( $p > 0.05$ ). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ( $p < 0.05$ ). The results of two teams are given in Table 1 and Table 2.

**Table 1.** The results of Diskispor Team Before and after the match

Diskispor Team					
Parameters		N	MEAN	SD	P
Phase angle	Before match	10	6,33	0,6	<b>P&gt;0,05</b>
	After match		6,23	0,6	
Body capacitance (pF)	Before match	10	574,1	74,44	<b>P&gt;0,05</b>
	After match		564,7	71,67	
Resistance (Ohm)	Before match	10	616,27	44,32	<b>P&gt;0,05</b>
	After match		625,97	47,75	
Reactance (Ohm)	Before match	10	6872	5,71	<b>P&gt;0,05</b>
	After match		69,74	5,76	
Basal metabolic rate (Cals)	Before match	10	1276,5	131,09	<b>P&lt;0,05</b>
	After match		1254,6	136,84	

**Table 2.** The results of Diyarbakirspor Team Before and after the match

Diyarbakirspor Team					
Parameters		N	MEAN	SD	P
Phase angle	Before match	9	6,7	0,42	P>0,05
	After match		6,6	0,52	
Body capacitance (pF)	Before match	9	618,66	50,48	P>0,05
	After match		611,66	56,36	
Resistance (Ohm)	Before match	9	604,82	33,22	P>0,05
	After match		596,26	30,79	
Reactance (Ohm)	Before match	9	72,03	7,24	P<0,05
	After match		69,11	6,74	
Basal metabolic rate (Cals)	Before match	9	1559,55	190,42	P>0,05
	After match		1560,11	198,67	

## DISCUSSION AND CONCLUSION

In the human body, low resistance is associated with large amounts of fat-free mass. High resistance is associated with smaller amounts of fat-free mass. Reactance is the effect on an electrical current caused by a material's ability to store energy. Reactance is seen as a time delay between an applied electrical potential and current. A material that stores energy readily has high reactance, and causes a large delay in the current. A material that stores energy poorly has low reactance and causes a small delay in the current. In the human body, high reactance is associated with large amounts of body cell mass (intracellular mass). Low reactance is associated with smaller amounts of body cell mass. Phase angle is an indicator of cellular health and integrity. Research in humans has shown that the relationship between phase angle and cellular health is increasing and nearly linear. A low phase angle is consistent with an inability of cells to store energy and an indication of breakdown in the selective permeability of cellular membranes. A high phase angle is consistent with large quantities of intact cell membranes and body cell mass. Body capacitance is the total energy storage capacity of the body cell mass compartment. A high capacitance is an indicator of large quantities of intact cellular membranes. A low capacitance indicates lower quantities of intact cellular membranes. Capacitance is determined by the number and quality of cell membranes contained within the body cell mass compartment. Basal metabolic rate (BMR) is the number of calories metabolized at rest during 24 hours (S. Cerit, M.

Z. Akdag, S. Dasdag, Y. Karakoc, M. Celik, 2009; S. Dasdag, M. Z. Akdag, M. S. Celik, 2008; <http://www.biodyncorp.com/product/450/450.html>, 2007).

In our study, because the parameters measured by bioelectrical impedance analysis related to body water affected by water drinking during a match we investigated only some electrical parameters of BIA such as resistance, reactance, phase angle, body capacitance and basal metabolic rate. However, the results of the study showed that basal metabolic rate decreased in the Diskispor Team after the match ( $p < 0.05$ ). Other bioelectrical parameters such as resistance, reactance, phase angle, body capacitance were not found to be significant in Diskispor Team ( $p > 0.05$ ). However, only the reactance was found significant in the Diyarbakirspor Team, which is the winner of the match ( $p < 0.05$ ). In conclusion, some bioelectrical parameters can be an indicator of the performance of the sportsman in teams.

## REFERENCES

- ARMSTRONG, L. E., EPSTEIN, Y., 1999**, *Fluid-electrolyte balance during labor and exercise: concepts and misconceptions*. Int. J. Sport Nutr.; 9: 1-12.
- CERIT, S., AKDAG, M. Z., DASDAG, S., KARAKOC, Y., CELIK, M., 2009**, *Alteration in Body Composition of Elite Professional Female Players in a Premier League Volleyball Bout*. Journal of International Dental and Medical Research. 2, 1: 33-36.
- DASDAG, S., AKDAG M. Z., CELIK M. S., 2008**, *Bioelectrical parameters of people exposed to radiofrequency in workplace and*

houses provided to workers. *Biotechnol. and Biotechnol. Eq.*, 22: 859-863.

**FERRETTI, A., ZEPPILL, P., 2003, Volleyball: description, injuries, physiology, training.** Available at: <http://www.sportsci.org/encycl/drafts/Volleyball.doc>;

**LAFARGUE, A. L., CABRALES, L. B., LARRAMENDI, R. M., 2002, Bioelectrical**

*parameters of the whole human body obtained through bioelectrical impedance analysis.* *Bioelectromagnetics*, 23: 450-454.

**<http://www.biodyncorp.com/product/450/450.html>(2007), Handbook of BIA 450, Biodynamics Corp..**

## STUDY ON THE CHARACTERISTICS OF ATTENTION IN VOLLEYBALL

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### ABSTRACT

#### Objectives

Identifying /analyzing the characteristics of attention in volleyball and emphasizing their importance according to the tasks assigned to game positions.

#### Research methods

The analysis of the specialized literature, the pedagogical observation method, the psychological tests method, statistical-mathematical methods of interpreting the data, the graphical representation method.

**Describing the subjects and the tests:** The experimental research was conducted on the senior female athletes from the volleyball team of the Știința Bacău Club, during August 2007 - May 2008. The experiment group was made of 12 female volleyball players - at a senior training level - out of which 4 outside hitters, 3 middle hitters, 2 setters, 2 opposite hitters and 1 libero. The tests used in this research were: to determine the attention styles - the Attentional and Interpersonal Type Test (Nideffer, 1976), and to determine the distributive and concentrated attention - the Labyrinth and the ADS tests. (Distributive attention, signals).

#### Results

The results obtained after the research show a high level of attention in all players and a specificity of attention styles for certain positions.

#### Discussions and conclusions

Attention is an important psychological skill and is very necessary in volleyball. Of the quality of this psychological skill and of its mastery, specific to game positions, it depends a successful performance of volleyball game actions.

**KEY WORDS:** volleyball, attention practices, characteristics

### INTRODUCTION

Attention is the function of orientation and concentration of the psychological activity, selectively, on certain objects, phenomena, persons, or situations, with the purpose of perceiving and knowing them for a better organization of the behavior. (M.Epuran, 2008)

Since the volleyball environment is very dynamic, it is important for each player to have very good attention skills. The dynamic nature of open sports as volleyball athletes require a lot attention because many stimuli acting simultaneously in a very short time units. Since the relative motion begins, so clear visual perception deteriorates rapidly and the time to capture information related to teammates, ball, opponents and spatial parts decreases greatly. The focus on landmarks necessary to solve the task of playing is better, the higher quality opponents predict movement or direction of moving the ball, and such a decision is favored good game.

Attention - was identified by Nideffer,1976, quoted by J.C. Reeser and R. Bahr,2003, as having 4 styles:

- "Broad internal;
- Broad external;
- Narrow internal;
- Narrow external."

"The volleyball players generally use the broad external style to read, recognize and identify the game situations. They learn to broaden the focus (zoom out), such as when a central player in blocking trying to read and scan to identify potential opponents forwards, then narrows its focus outside the (zoom in) to accurately read and focus on a specific attacker (narrow external). When the central player mentally identify potential opportunities to block (internal focus), which allows selection of optimal motor program based on the possibilities they have each player. Finally occurs



execution engine selected (contact with the ball) and the correct positioning of hands, which requires a concentration of attention (internal narrow). " (I.Ahrabi-Fard, S.Huddleston, 1991). The context it is important to note that volleyball players use to monitor everything going on volleyball all four styles of attention.

Volleyball players must learn to anticipate events in those circumstances, situations based on probability analysis of the situation and current conditions in comparison with experiences in such circumstances.

Those players who can properly extrapolate a game situation and its end is based on the preconditions are more likely to make, quickly organize an action plan immediately.

For example, the best defensive players can be distinguished and show they are able to quickly process visual information that identifies the game with or without blocking forwards nuisances, and based on these data, to anticipate where the ball will reach volleyball after attack and / or service, and to position themselves in the best position to make a good acquisition.

Some researchers have suggested the existence of optimal visual decoding strategies that can help the athletes in making decisions during the game by improving the attention focus. (F.Allard, J.L.Starkes, 1980; I.Ahrabi-Fard, S.Huddleston, 1991, J.L.Starkes et al. 1995)

### RESERCH HYPOTHESIS

The level of quality for the attention influences the success of game actions in volleyball and there is a relation between the attention style and the positions in volleyball.

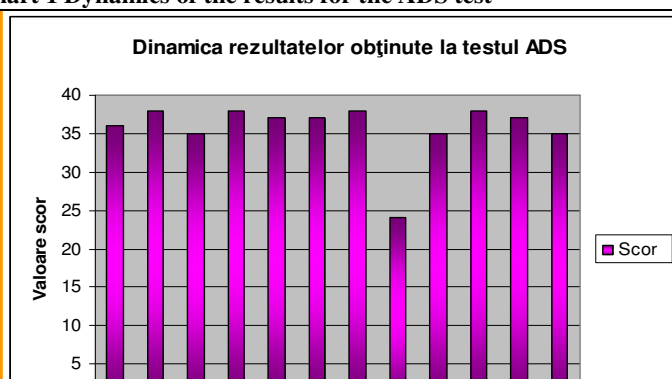
### Research methods and procedures (subject, methods applied test)

The methods we used during this research were: the analysis of the specialized literature, the pedagogical observation method, the psychological tests method, statistical-mathematical methods of

**Table 1 Results test ADS**

No.	Name	ADS	
		+	-
1	H.C.	36	4
2	N.A.	38	2
3	I.R.	35	5
4	M.S.	38	2
5	T.M.	37	3
6	A.G.	37	3
7	H.M.	38	2
8	M.N.	24	16
9	P.R.	35	5
10	E.R.	38	2

**Chart 1 Dynamics of the results for the ADS test**



interpreting the data, the graphical representation method.

The experimental research was conducted on the senior female athletes from the volleyball team of the Știința Bacău Club, during August 2007 - May 2008. The experiment group was made of 12 female volleyball players - at a senior training level - out of which 4 outside hitters, 3 middle hitters, 2 setters, 2 opposite hitters and 1 libero. The tests used in this research were: to determine the attention styles - the Attentional and Interpersonal Type Test (Nideffer, 1976), and to determine the distributive and concentrated attention - the Labyrinth and the ADS tests. (Distributive attention, signals).

Following testing of attentional skills, we applied a program of mental training to improve their skills for a period of 6 months using exercises specific to volleyball and to the positions in which they were playing.

As players at this level have a piece of great tactical and technical knowledge and experienced competitive, being at a time of maximum expression of performance, specializing in post game was well learned, the experiment continued with the implementation of new working methodologies of the whole teams to improve quality of care styles and attentional skills in general.

### RESULTS, DISCUSSIONS, CONCLUSIONS

The results obtained after the research show a high level of attention in all players and a specificity of attention styles for certain positions.

Attention is an important psychological skill and is very necessary in volleyball. Of the quality of this psychological skill and of its mastery, specific to game positions, depends a successful performance of volleyball game actions.

The results obtained after the attentional skills testing:

For the ADS test (distributive attention), the tested players obtained an average of 35.66 positive answers, and 4.34 negative answers of the total 40 test items. (Table 1)

11	A.S.	37	3
12	M. B.	35	5
	Average	35.66	4.34



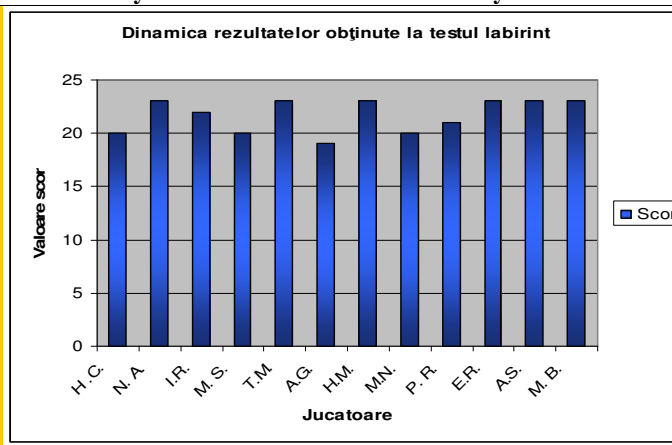
The analysis of these results shows that 11 players have a very good level of distributive attention with scores ranging from 35 to 40; one player has a score of 24, which indicates that we have an average distributive attention. (Chart 1)

At the Labyrinth test, the players obtained scores ranging from 23 and 19, with an average value of 21.66. (Table 2) These values lead us to say that the concentrated attention for all of the tested players has a good level. (Chart 2)

Table 2 Results test Labyrinth

No.	Name	Positive	Negative
1	H. C.	20	5
2	N. A.	23	2
3	I. R.	22	3
4	M. S.	20	5
5	T. M.	23	2
6	A. G.	19	6
7	H. M.	23	2
8	M. N.	20	5
9	P. R.	21	4
10	E. R.	23	2
11	A. S.	23	2
12	M. B.	23	2
Average		21.66	3.33

Chart 2 Dynamics of the results for the Labyrinth test

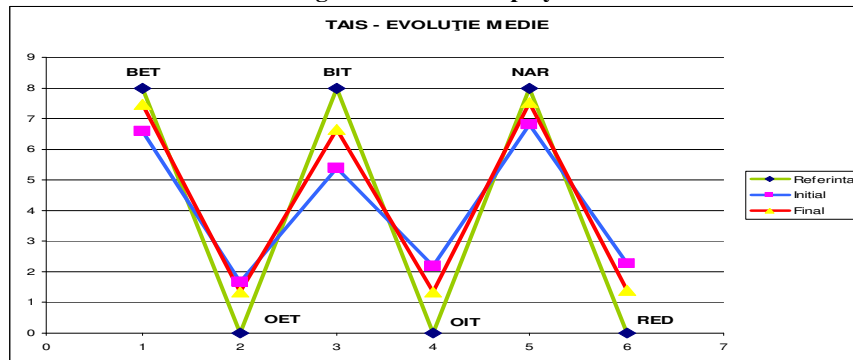


In the case of the Attentional and Interpersonal Type Test (Nideffer, 1976) we did a baseline test to diagnose which is the Players prior to the training program to improve attentional skills and a final test after 6 months.

in the application of our training programs for improving the style of care (Chart 3). Although some players (MB, AG, MN, PR) style alert level is not as ideal set of new graphics, is positive progress of players and that this feature can be enhanced by continuous and constant exercises.

After analyzing data centralization and TAIS, we can say that all Players have made obvious progress

Chart 3. The average evolution of all players at the TAIS test



After analyzing the final test results TAIS I noticed the following aspects of the values obtained from test and posts held by players.

Players from area 2 (Coordinator) maximum scores are obtained by player AS at the BET , BIT and NAR, and the minimum by player NA at the BIT and OIT. In the case of the two players we can see a difference in quality for the attention style in favor of player AS, in comparison with NA. This is due, in our opinion, to a greater game experience as a main player of AS. (Chart 4)

Players from area 2 (Universal) the highest score achieved by the NAR the player HC and the lowest score by the same player in OIT. Both players recorded close scores at the BET, OET, BIT. (Chart 3)

Analyzing the common points of the Area 2 Coordinator and Players Universal stands out that they

have similar large values in the following styles of attention NAR, BET and OET.

Chart 1

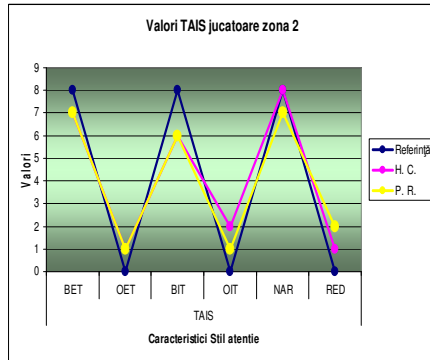
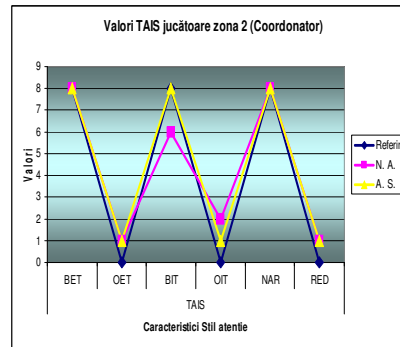


Chart 4



Players in the area 3 is seen the highest score obtained by player HM at the NAR and OIT and lowest values are obtained by player MB at the BIT and RED. For all players we can say that higher scores are for the style NAR and BET and lowest scores are for OIT and RED. We can also say that here also the largest player with competitive experience obtained the best scores on attention styles (Chart 5).

Players of area 4 Second to be noted that the indicator NAR maximum score was obtained for all the Players and also the highest score is obtained on OIT by player TM. The lowest values are obtained from OIT by player MS and at OET by player ER. Overall best values for all the players of area 4 are obtained for styles of attention BET, NAR and RED (Chart 6).

Chart 5

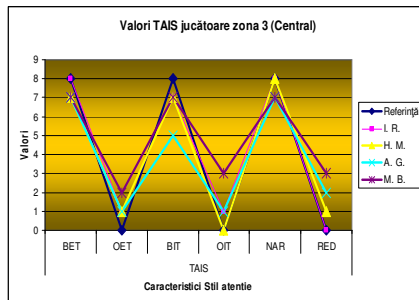
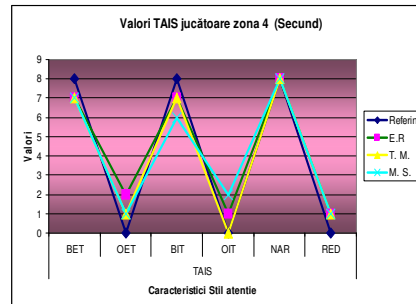


Chart 6



In the case of the Libero, we tested a position player on the high scores obtained BET attention to style and BIT and low NAR and RED. (Chart 7) (Chart 7)

Chart 7

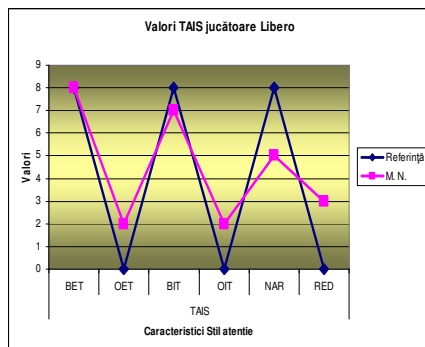
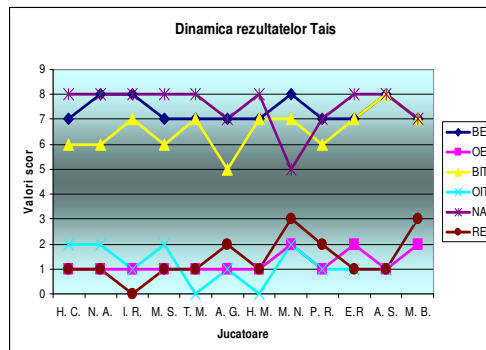


Chart 8



After analyzing the final results obtained by all Players at the TAIS test, the following stand out in Chart 8:

- For the NAR attention style were obtained maximum scores by 8 players, the Libero player obtaining the lowest score on this indicator.
- For the BET attention style were obtained maximum scores by 4 players including Libero player, all the rest players with high scores do not fall below margin of good values.
- For the BIT attention style one player (Coordinator) has obtained the maximum score, other players have achieved average scores, the lowest value being obtained by a player on the Central position.
- The RED attention style has produced a single maximum score by player IR on the Central position, two average scores obtained by players MB (Central) and MN (Libero) and high values obtained the other 9 players.
- For the OED attention style was not obtained maximum scores, but 9 players have achieved high scores.
- For the OIT attention style maximum scores were obtained by 2 players TM (Second) and HM (Central), these players are also the most experienced in the team. The other players have achieved high and average scores.

#### CONCLUSIONS:

Regarding the attention styles of volleyball players in relation to their positions, we draw the following conclusions:

- The Setter (area 2): presents high scores for the BET, BIT and NAR attention styles;
- The Middle hitter (area 3): presents high scores for the broad external BET and the narrow external;
- The Libero: presents high scores for the BET and BIT;
- The Outside hitter (area 4): presents high scores for the BET, RED and NAR attention styles;
- The Opposite hitter (area 2): presents high scores for the BET, BIT and NAR attention styles;

It is also noted that the higher values of skills of attention to all three tests applied are recorded by the players who have more experience in competitions.

Attention focus narrow external and large internal or narrow internal and narrow external, all actions necessary in the execution of the game, specifically tailored to each position and capacity to anticipate the need for a game opponent, the ball trajectory and timing with teammates are key factors involved the successful execution of the action game of volleyball.

The proposed training program, through concentration exercises, and demonstrated improved practice efficiency while maintaining focus on tasks for game competition and improving the prediction due to processing information during the game by focusing on essential evidence necessary to decide playing in time,

thereby preventing loss of competition points at critical moments leading to greater efficiency and Players in tactical and technical components.

#### References

- AHRABI-FARD, I., HUDDLESTON, S., 1991, *The attentional demands of volleyball*, *Coaching Volleyball Journal* 6
- ALLARD, F., STARKES, J.,L., 1980, *Perception in sport: volleyball*, *Journal of sport psychology* 2,
- BOMPA, T.O., 2003, *Performanța în jocurile sportive*, Editura Ex Ponto, București
- CIOCAN, D., 2008, *Studiu constatativ – abordare sociologică în vederea proiectării și programării cercetării privind determinarea capacității psihice în jocul de volei*, *Volumul Conferinței științifice internaționale: „Creativity and competition, european attributes of scientific and sporting manifestation”*, Ed. Academica, Galați, pag 56-61
- CRESPO, M., REID M., QUINN A. 2006, *Tennis psychology: 200+ practical drills and the latest research*, ITF Ltd, Spain
- EPURAN, M., 1996, *Psihologia sportului de performanță. Reglarea și autoreglarea stărilor psihice la sportivi*. București, A.N.E.F.S.
- EPURAN, M. 2002 *Antrenament mental, Consecte, note, sinteză*, SDP 453-454, București.
- EPURAN, M., HOLDEVICI, I., TONIȚA, F., 2008 *Psihologia sportului de performanță : teorie și practică, ediția a 2-a*, Editura FEFS, București
- GOLU, M. 2007, *Fundamentele psihologiei, ediția a V-a*, Ed. Fundației România de mâine, București
- GOULD, D., WEISS M., WEINBERG R. 1981, *Psychological characteristics os successful and less successful Big Ten wrestlers*.*Journal of Sport Psychology*, 3
- JARVIS, M. 1999, *Sport Psychology*, Ed. Routledge,
- KLUKA, D. 1997, *Observational skills: qualitative analysis for competitive excellence*, *The Coach*, 3, 24-27
- LAGENKAMP, H., GASSE M. 200, *Application of sports psychology to volleyball*, in *Handbook of sports medicine and science – Volleyball*, Edit. Blackwell Publishing, 211
- MILLER, R.J., 2005, *The volleyball handbook*, Human Kinetics
- NETTLETON, B. 2001, *Decision making in sport*, *Sports Coach*, Vol. 24, no 2, Australian Sports Commission.
- REESER, J. BAHR, R. 2003, *Handbook of sports medicine and science – Volleyball*, Edit. Blackwell Publishing

SMITH, D., BAR-ELI MICHAEL 2007 *Essential readings in sport and exercise psychology. Human Kinetics*

STARKES ET ALL., 1995, *A new technology and field test of advance cue usage in volleyball,*

Research Quarterly in Exercise and Sport 66 (2), 162-167

WEINBERG, R.S., GOULD D., 2007, *Foundation of Sport Psychology*, Human Kinetics, 2008.

## DETECTION OF TECHNICAL MISTAKES IN THE PROCEDURE OF BASKET SHOT FROM A STANDING POSITION, IN THE BASKETBALL BASIC COURSE BY APPLYING VIDEO ANALYSIS

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### ABSTRACT

The article underlines the importance of the programs of video analysis in the objective detection of technical mistakes within the basic course in Basketball. It is based on an extensive experimental study on optimising the technical component in basketball, and also general aspects regarding the process of professional training in the faculties of sports and physical education for the basic course in the subject of basketball.

**PURPOSE.** Detection of technical mistakes in the procedure of basket shot from a standing position, in the basketball basic course by applying video analysis

**METHODS.** The methods and techniques of scientific research in the present article are as follows: bibliographic documentation, the method of pedagogical observation, video analysis method, the method of the biomechanical analysis of spatial parameters (trajectory of the movement of segment articulation), the method of the constative experimental study, the statistical-mathematical method, the graphical and table method. The specialised video analysis for the basket shot from a standing position was performed by the "Physics ToolKitt" - version 6.0 program, and focused on the trajectory of the segment articulations in 5 movement points (ankle, knee, hip, shoulder, fist).

**RESULTS.** The presentation and interpretation of data provided by the specialised program of video analysis, which confirmed the research hypothesis, will be exemplified in the execution of a student, randomly selected out of the 10 participants. Evincing the technical mistakes was performed by processing the data from the specialised program of video analysis, also completed by direct observational analysis of each sequence.

**CONCLUSIONS.** The ability of the program to also carry out the biomechanical analysis of certain spatial parameters (segment trajectory) contributed to evincing the main moments in performance and the detection of technical mistakes improving the progress of technical student training in this throwing procedure.

**KEY WORDS:** video analysis, spatial parameters (trajectory segment trajectory), basket shot from a standing position, technical training, technical mistakes.

### INTRODUCTION

In the basic course for basketball, obvious difficulties were noticed in the optimisation and effectiveness of the technical training components, in the context of implementing the higher learning system reform. Thus, the reduced number of classes, crowded and inefficiently compartmentalised curricula in point of game contents, as well as the lack of modern methodology in learning, consolidating, assessing, objectively correcting the technical mistakes required real solutions in this direction. On the basis of the practical and methodological experience acquired by specialists in this field, there have always been concerns with the typology and causality of the technical mistakes in sports games (A. Popescu, 1954, V.V. Belinovici, 1959, A. Hrișcă, C. Negulescu, D. Colibaba-Evuleț, 1977, R.W. Christina, D.M. Corcos, 1999, C. Hânsa, 2003, A. Păcuraru, L. Călin, G. Prisecaru, 2004, A. Păcuraru, P. Ghervan, A. Acsinte,

2006, C. Ciorbă, I. Comarnițchi, 2007, D.L. Ciocoiu, 2009, D.L. Ciocoiu, C. Ciorbă, 2009, C. Preda, M. Niculescu, 2009).

### RESEARCH HYPOTHESIS

It was presumed that the application of specialised video analysis in the basic course in Basketball will increase the efficiency of the methodological approach of learning-consolidation-assessment of the technical procedure called basket shot from a standing position, by gaining knowledge of the moments composing the movement and by objectively detecting technical mistakes.

### RESEARCH OBJECTIVES

1. Analysis and generalisation of data in specialised literature.

2. Identification of the main moments in execution and common technical mistakes for the given procedure.

3. Ascertaining the efficiency of the video method in technique analysis and mistake detection in teaching basketball for the given procedure.

4. Experimental argumentation of the efficiency of the video method for the given procedure within the component of technical training of the students at the Faculty of Sports and Physical Education in the basic course for the subject Basketball.

**METHODS**

The methods and techniques of scientific research in the present article are as follows: bibliographic documentation, the method of pedagogical observation, video analysis method, the method of the biomechanical analysis of spatial parameters (trajectory of the movement of segment articulation), the method of the constatative experimental study, the statistical-mathematical method, the graphical and table method.

The research activity took place in the Faculty of Sports and Physical Education and the Phoenix Sports High school club in Galati. The subjects were 10 students in the Faculty of Sports and Physical Education, selected on the basis of the average grades between 7,40-7,84 obtained in testing the technical procedures, and 3 high performance athletes in the Phoenix club Galați.

**RESULTS**

The presentation and interpretation of data provided by the specialised program of video analysis, which confirmed the research hypothesis, will be exemplified in the execution of a student, randomly selected out of the 10 participants.

Determining the trajectory of the movement of segment articulation in executing the procedure of basket shot from a standing position for the executing student is shown in Figure. 1-2 and table 1, providing the possibility to observe the position indicator on the horizontal ( $Xm$ ) and vertical ( $Ym$ ) axis.

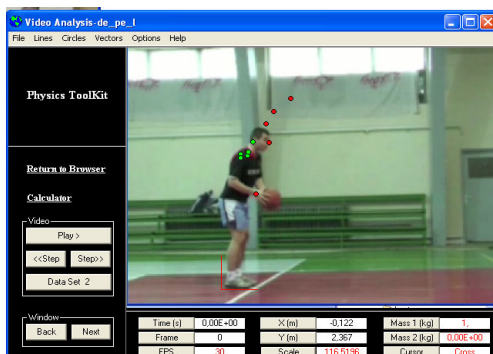


Figure 1. The movement points at the level fist and shoulder articulation- student execution

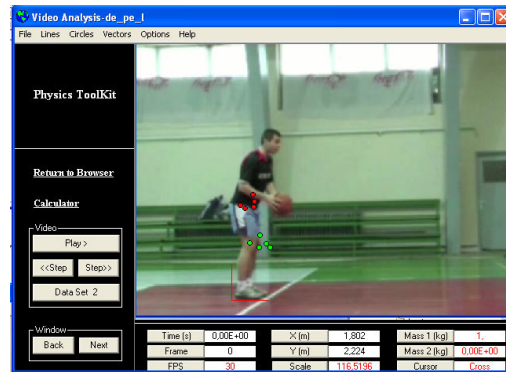


Figure 2. The movement points at the level of the the hip and knee articulation - student execution

Table 1 Data and coordinates during student evolution

- a) for the fist
- b) for the shoulder
- c) for the hip
- d) for the knee
- e) for the ankle

a.

Time	The data coordinates for the fist in all five moments					
t(s)	X1(m)	Y1(m)	R1	Dx1(m)	Dy1(m)	D1(m)
0,00E+00	0,322	0,944	0,997	0,00E+00	0,00E+00	0,00E+00
3,30E-02	0,443	1,452	1,518	0,122	0,508	0,522
6,70E-02	0,415	1,638	1,689	0,093	0,694	0,7
1,00E-01	0,486	1,759	1,825	0,164	0,815	0,832
1,33E-01	0,644	1,888	1,995	0,322	0,944	0,997

b.

Time	The data coordinates for the shoulder in all five moments					
t(s)	X2(m)	Y2(m)	R2	Dx2(m)	Dy2(m)	D2(m)
0,00E+00	0,179	1,337	1,349	0,00E+00	0,00E+00	0,00E+00
3,30E-02	0,179	1,302	1,314	0,00E+00	-0,036	0,036
6,70E-02	0,243	1,323	1,345	0,064	-0,014	0,066
1,00E-01	0,25	1,359	1,382	0,072	0,021	0,075
1,33E-01	0,293	1,459	1,488	0,114	0,122	0,167

c.

Time	The data coordinates for the hip in all five moments					
t(s)	X1(m)	Y1(m)	R1	Dx1(m)	Dy1(m)	D1(m)
0,00E+00	0,079	0,887	0,89	0,00E+00	0,00E+00	0,00E+00
3,30E-02	0,122	0,858	0,867	0,043	-0,029	0,052
6,70E-02	0,2	0,873	0,895	0,122	-0,014	0,122
1,00E-01	0,207	0,923	0,946	0,129	0,036	0,134
1,33E-01	0,193	0,987	1,006	0,114	0,1	0,152



d.

Time	The data coordinates for the knee in all five moments						
	t(s)	X2(m)	Y2(m)	R2	Dx2(m)	Dy2(m)	D2(m)
0,00E+00	0,164	0,536	0,561	0,00E+00	0,00E+00	0,00E+00	
3,30E-02	0,25	0,493	0,553	0,086	-0,043	0,096	
6,70E-02	0,35	0,493	0,605	0,186	-0,043	0,191	
1,00E-01	0,315	0,529	0,616	0,15	-7,15E-03	0,15	
1,33E-01	0,257	0,608	0,66	0,093	0,072	0,117	

e.

Time	The data coordinates for the ankle in all five moments						
	t(s)	X1(m)	Y1(m)	R1	Dx1(m)	Dy1(m)	D1(m)
0,00E+00	0,093	0,1	0,137	0,00E+00	0,00E+00	0,00E+00	
3,30E-02	0,107	0,1	0,147	0,014	0,00E+00	0,014	
6,70E-02	0,122	0,122	0,172	0,029	0,021	0,036	
1,00E-01	0,122	0,129	0,177	0,029	0,029	0,04	
1,33E-01	0,122	0,15	0,193	0,029	0,05	0,058	

The graphical representation of segment trajectory in the 5 essential points of the student's movement allowed the inclusion of the global execution into a synthetic, easily observable form (Figure 3).

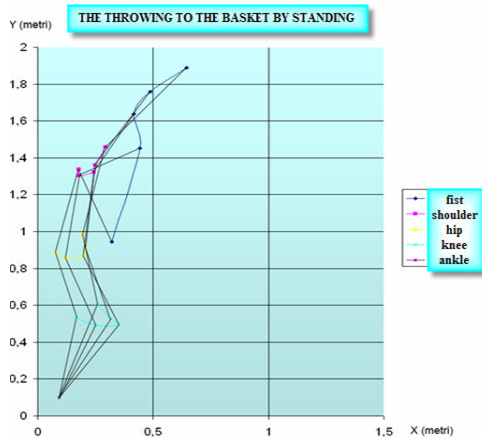


Figure 3. Graphical representation of segment trajectory in the 5 points of the given technical procedure - (student execution)

The identification of the main moments in the execution of the procedure under study is focused on: **M1**- initial position (fundamental); **M2**- ball positioning in asymmetric hold, **M3**- action of the legs (the action of the lower limbs), **M4**- action of the arm and palm (the throwing upper limb); **M5**- ball trajectory and throw/shot proper.

For the objective detection of technical mistakes, the student's execution was compared to the execution of a high performance athlete, taken as a model. The comparative analysis of the execution of the procedure under study was made by superposing the two initial positions (student and athlete)

wherefrom the segment displacement was effected during the execution ( Figure 4).

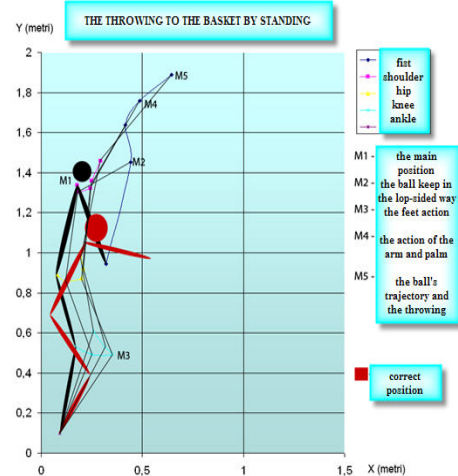


Figure 4. Comparative analysis of the evolution of segment trajectory in the given procedure (student execution)

Evincing the technical mistakes was performed by processing the data from the specialised program of video analysis, also completed by direct observational analysis of each sequence. The common technical mistakes seen during the acquisition of the sequential stages of the technical procedure were synthesised in figure 5.

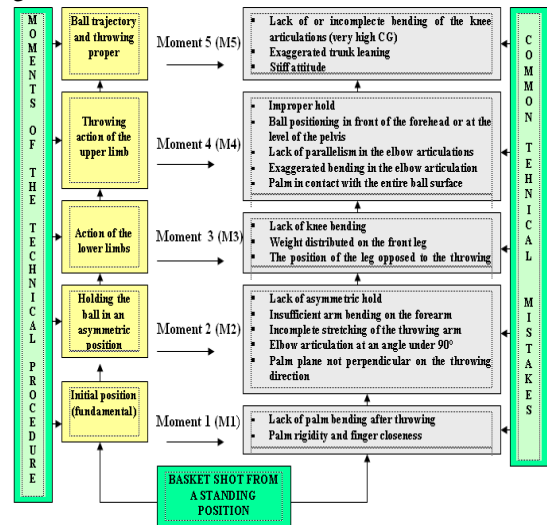


Figure 5. Common mistakes in the technical execution of the basket shot from a standing position

## DISCUSSION AND CONCLUSION

♦All of the above lead to the conclusion that the video method was applied and put to good use in teaching the procedure under study (basket shot from a standing position) as an observational instrument and also as a diagnosis tool in its acquisition by the students in the basic course of basketball.

•The ability of the program to also carry out the biomechanical analysis of certain spatial parameters (segment trajectory) contributed to evincing the main moments in performance and the detection of technical mistakes improving the progress of technical student training in this throwing procedure.

•The combined use of the video and traditional methods was a safe way to effectiveness in the methodological path of learning-consolidation-assessment-detection-prevention-correction, providing objective solutions for the teacher and also for the students in the given procedure.

•The experimental argumentation of the effectiveness of the video analysis method for the procedure under study within the basic course curriculum in Basketball was solved and proven through an ample experimental study focusing on optimising the technical training component. Thus, the experimental group, also comprising the sample taken as analysis subject for the present research, registered a higher quality level in the execution of technical procedures (7,09), due to forming a motor background specific to the game, according to the experimental methodical approach, as compared to the witness group (6,75).

#### REFERENCES

- BELINOVICI, V.V., 1959**, *Procesul învățării în educația fizică*, Tineretului Cultură Fizică și Sport, 260-264.
- CHRISTINA, R.W., CORCOS, D.M., 1999**, *Coaches guide to teaching sport skills-1998* (traducere), *Manualul antrenorului pentru instruirea sportivilor*, C.C.P.S., București,; 5(III-IV): 123.
- CIOCOIU, D. L., 2009**, *The technical training of the students at Sport and Physical Education Faculty at Basketball basic course applying the video analysis*, Doctoral disertation, USEFS, Chișinău, 95-106.
- CIOCOIU, D.L., CIORBĂ, C., 2008**, *Aplicarea analizei biomecanice a parametrilor spațiali pentru procedeul de aruncare la coș din dribling în cadrul disciplinei "Baschet" curs de bază*, Analele Universității "Dunărea de Jos", Fascicula XY, Educație Fizică și Management Sportiv, Galați, 22-25.
- CIOCOIU, D.L., CIORBĂ, C., 2009**, *The biomechanics analysis of the articulation trajectory fist and shoulder in the technical procedure "throwing to the basket from jump*, *Materialele Conferinței Științifice Internaționale*, Zigotto Publishing House, 29-30 mai, Galați, 191-194.
- CIORBĂ, C., COMARNIȚCHI, I., 2007**, *Testarea obiectivă a nivelului însușirii procedeele tehnice din jocul de baschet la nivelul treptei gimnaziale*, *Revistă științifico- metodică*, Chișinău: 4 (9)18-21.
- HÂNSA, C., 2003**, *Pregătirea profesională a studenților facultăților de educație fizică și sport în baza principiului concentric modular în cadrul disciplinei "Baschet"*, Autoreferat teză doctorat, I.N.E.F.S., Chișinău, 27 .
- HRIȘCĂ, A., NEGULESCU, C., COLIBABA – EVULET, D., 1977**, *Curs de baschet. Tehnica și tactica individuală*, M.E.I-I.E.F.S., București, 7-179.
- PĂCURARU, A., CĂLIN, L., PRISECARU, G., 2004**, *Metodica baschetului și voleiului școlar*, Editura Fundației Universitare "Dunărea de Jos", Galați, 21-24.
- PĂCURARU, A., GHERVAN, P., Acsinte A., 2006**, *The technique and technical mistakes in the sporting games*, *The Anals of Dunărea de Jos Universitatea "Dunărea de Jos"*, Fascicle XV ,Physical Education and Sport Management, Galați, 60-63.
- POPESCU, A., 1954**, *Baschet. Tactică și antrenament*, Editura Cultura Fizică și Sport, București, 223- 225.
- PREDA, C., NICULESCU, M., 2009**, *The optimization of the training process by introducing the use of new helping apparatus peculiar in learning playing volleyball*. Innovation and creation in the field of physical activity, sources of human performance" Zigotto Publishing House, May 29 th-30 th, Galați, 389-391.
- PREDA, C., NICULESCU, M., 2009**, *Study in programming the technical training for beginning female volleyballers by introducing supporting devices*. Annual international Conference Physical Education, Sport and Health held Nov 20th-nov 22nd in Pitești, Romania. Scientific report series Physical Education and Sport,; 13 (1-2009), 279-281.

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## STUDY ON INVOLVEMENT IN LEARNING TECHNOLOGY COMPONENTS PSIHOMOTRICITY TO PLAY TENNIS

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### ABSTRACT

In the game of tennis training, there is an emphasis on developing psihomotricity components and their implications in learning basic technique. Should be involved especially in this age to have good results at junior, senior and youth.

### Purpose

In the training should be insisted on each component psihomotric as: 1. - Coordination 2. - Static and dynamic balance, 3. - Sense chinesteziac 4. side 5. - Ambidextrie 6. - Speed of response, 7. - Body schema.

**Methods** Statistical-mathematical, test method, experimental methods.

### Results

Following the analytical work on the game of tennis technique we can say that psihomotricity elements are integrated into all aspects and the techniques investigated. Their share of show but not equal, in descending order it is: coordination, balance, sense chinesteziac, speed of response, ambidextrie, side, body scheme.

Places order of importance psihomotricity components in the percentages obtained the learning

- ❖ 2.11% Place 1 coordination
- ❖ 1.475% Place 2 balance
- ❖ Place 3 sense chinesteziac 1.025%
- ❖ 0.856% Place 4-speed response
- ❖ 0.675% Place 5 ambidextrie -
- ❖ 0.575% Place 6 laterality
- ❖ 0.463% body schema Place 7

### Conclusions

Operational structures (drills) which include the development and training specific components psihomotricity age 8 -10 years, converted into learning programs (training), are able to address more effectively the proposed instructional objectives. Future programs should be designed to include models of operational structures belonging to each component of psihomotricity content.

**KEY WORDS:** psihomotric, tennis, beginner.

### INTRODUCTION

Increased efficiency in learning the basic technique is subject to the development of motor qualities, technical, tactical, mental, and degree of processing components antrenabilitate psihomotric (laterality, body scheme, dynamic coordination - total and segmental - coordination, coordination, perceptual - motor balance, ambidextria, spatial and temporal orientation, speed of movement, ideomotricitate), all of which must be tailored to age and individual peculiarities. (M.Ciucurel, C Ciucurel., 2002; M Ciucurel.,, 2001).

### Purpose

Be In The training should psihomotric I insisted on each component: 1. - Coordination 2. - Static and dynamic balance, 3. - Sense chinesteziac 4. side 5. - Ambidextrie 6. - Speed of Response, 7. - Body scheme.

### Hypothesis

We believe that if operational structures (years), including development and training components specific psihomotric age 8 to 10 years, will be selected and converted into learning programs (training), they are likely to deal more effectively

instructional objectives proposed. (D Colibaba E., I. Bota, , 1998).

### Procedures and methodes

Statistical-mathematical methods, test method, experimental methods.

### Procedures

In this sense, our programs will be designed to include models of operational structures belonging to each component of psihomotric content:

- ❖ operational structures that improve coordination;
- ❖ operational structures that are associated with improved balance;
- ❖ operational structures that are associated with improved perceptions of temporal, spatial (field orientation etc.).
- ❖ operational structures that reference ambidextrie;
- ❖ operational structures that are associated with improved sense chinesteziac;
- ❖ operational structures which refer to the side;
- ❖ operational structures that refer to body scheme;

- ❖ operational structures that are associated with improved reaction rate. (Horghidan, V., 2000)

**Tests:**

**Test 1 „Speed - balance – guidance”** (C. Catanescu, 1995)

**Description:** 2 points: A and B, with 6 m apart. The child goes from point A to point B in beep, B executes a pirouette in 360°, then travel to face the point A, which closes the timer. This test determines: reaction speed, balance and orientation in the field.

**Assessment:** is conducted against time, in seconds.

**Test 2: „Keeping the ball on a racket”**

► **Description:** The child tries to keep the ball on the racket, ball ricoșând of hooks.

► **Assessment:** one test record. Record number of successes.

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**Test 3: „How many catch 10”** (Catanescu, C., 1995)

► **Description:** The child is facing the wall, the teacher is placed in the rear and left front side of it, where the child starts catching 10 balls in the right hand one succeeds. The same year, the teacher being placed on the right, where launching 10 balls, which he catches with his left hand. Record fails to catch many of the 10 sets. ► **Rating:** there is a single test.

Test 4: „Route Application”

► **Description:** we have a circle that traces are 2 feet, which is placed athlete. In front of a mattress, mattress beyond, an inclined plane, then a bank located at 30cm height gym from the ground. Child see the route, it is ready, place the feet on the two traces of the circle, is blindfolded and route through to completion.

► **Assessment:** Record time after jumping from the second bank.

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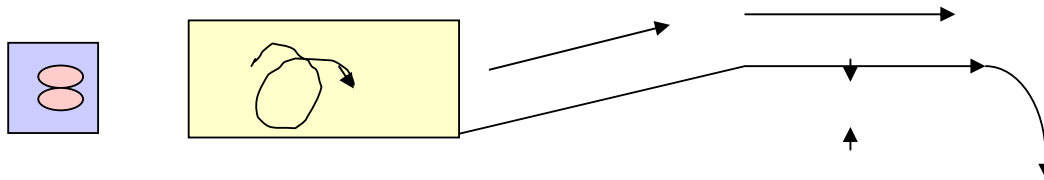


Figure no. 1 Route Application

**Test 5: „Test for orientation in space”** (T Hoskins., 2003).

► **Description:** Jumping on a design 2 feet on the floor marked gyms (or asphalt), and viewed repeatedly before. When you start jumping, the

subject is blindfolded. Try to jump from zone 1 to 2 of 2 in 3, and Zone 3 in 4 and 5 by far (4 left, 5 right), then near 6, the following areas 7, 8, 9 and 10 to or zigzag movements, according to the design.

► **Assessment:** It highlights as follows: each square represents the point reached and duplicated.

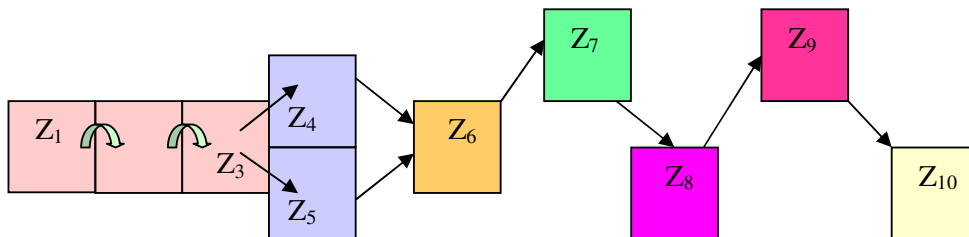


Figure no. 2 Test for orientation in space”

**Location and conditions for research**

The experiment was conducted on a sample of 24 working children (12 girls belonging to the control group and 12 in the experimental group), the latter being chosen after scores on tests of motor and psihomotrice preliminary study. Subjects were selected from four schools in Pitesti: No School. 2, No School. 3, No School. 4, School No. 16.

The experiment was conducted over a period of two years (2006 - 2008), the land of

Prundu Arpechim and of Gheorghe Doja - in summer and winter in raspberry bubble.

In the table below are recorded the highest scores obtained by the 30 children who are part of the sample in question, divided randomly into two groups, control and experiment. Thus our research will only have 12 children, of those 30 that have the highest combined score on the 5 samples psihomotrice („speed - steady guidance”, „many catch 10 „keeping the ball on a rocket2, „Route Application „ „Application for orientation in space travel”.

Table no. 1 Presentation skills test scores obtained from psihomotric

N.P.	Evaluation T1.	Evaluation T2.	Evaluation T3.	Evaluation T4.	Evaluation T5.	Total points accumulated
	Speed orientation balance	Maintain the ball on the racket	How many catch from 10	Route Application	Space orientation	Sum points
A.N.	1	4	5	4	4	18
V.B.	3	4	4	4	4	19
N.A.	3	5	5	2	7	22
N.C.	1	2	9	5	5	22
C.A.	0	6	3	7	6	22
D.A	4	8	1	4	5	22
P.A	1	6	4	7	4	22
G.V.	7	3	4	5	5	24
M.T.	4	7	6	3	4	24
C.V.	3	4	9	4	4	24
D.A.	0	7	5	7	5	24
M.V	0	5	9	4	6	24
.						
D.A.	5	4	4	8	4	25
T.I.	0	5	6	8	6	25
P.M.	4	4	4	6	7	25
A.A.	3	5	5	6	7	26
Z.C.	4	8	6	4	4	26
B.M.	1	8	8	3	7	27
R.D.	4	3	8	7	5	27
A.A.	3	9	6	4	5	27
A.R.	4	9	2	6	7	28
M.T.	5	6	6	8	6	29
C.R.	3	10	6	4	6	29
D.R.	0	9	9	8	3	29
M.G	7	6	8	5	5	31
.						
C.M	7	6	8	5	6	32

.						
<b>T.B.</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>9</b>	<b>6</b>	<b>32</b>
<b>S.O.</b>	<b>6</b>	<b>9</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>32</b>
<b>M.A.</b>	<b>7</b>	<b>6</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>33</b>
.						
<b>Z.G.</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>9</b>	<b>6</b>	<b>34</b>

Following the analytical work on the game of tennis technique we can say that psychomotricity elements are integrated into all aspects and the techniques investigated. Their share of show but not equal, in descending order it is: coordination, balance, sense kinesthetic, speed of response, ambidexterity, side, body schema.

Places order of importance psychomotricity components in the percentages obtained the learning

- ❖ 2.11% Place 1 coordination
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- ❖ 0.575% Place 6 laterality
- ❖ 0.463% body schema Place 7

Table no. 2 - Share psychomotric components

Procedee tehnice	Pondereea componentelor psihomotricității						
	Coordination	Balance	Sense kinesthetic	Side	Ambidexterity	Reaction speed	Body schema
<b>Fundamental position</b>	<b>0,27</b>	<b>0,25</b>	<b>0,11</b>	<b>0,085</b>	<b>0,06</b>	<b>0,125</b>	<b>0,028</b>
<b>Right shot</b>	<b>0,29</b>	<b>0,27</b>	<b>0,2</b>	<b>0,07</b>	<b>0,095</b>	<b>0,095</b>	<b>0,08</b>
<b>Left shot</b>	<b>0,35</b>	<b>0,27</b>	<b>0,2</b>	<b>0,085</b>	<b>0,115</b>	<b>0,145</b>	<b>0,075</b>
<b>Right volley</b>	<b>0,3</b>	<b>0,17</b>	<b>0,13</b>	<b>0,075</b>	<b>0,11</b>	<b>0,026</b>	<b>0,085</b>
<b>Volley left</b>	<b>0,27</b>	<b>0,25</b>	<b>0,2</b>	<b>0,07</b>	<b>0,08</b>	<b>0,07</b>	<b>0,08</b>
<b>Service</b>	<b>0,32</b>	<b>0,14</b>	<b>0,09</b>	<b>0,095</b>	<b>0,12</b>	<b>0,17</b>	<b>0,065</b>
<b>Return service</b>	<b>0,31</b>	<b>0,125</b>	<b>0,095</b>	<b>0,095</b>	<b>0,095</b>	<b>0,225</b>	<b>0,05</b>
	<b>2,11</b>	<b>1,475</b>	<b>1,025</b>	<b>0,575</b>	<b>0,675</b>	<b>0,856</b>	<b>0,463</b>

## CONCLUSIONS

Operational structures (drills) Which includes the development and specific training components psychomotricity Age 8 -10 Years, converted into Learning Programs (training) is Able to address more Effectively the proposed instructional Objectives. Future Programs should Be designed to include models of the operational structures belonging to each component of psychomotricity content.

Regarding testing psychomotric level, achieved through five assessment tests, dynamic scores eloquently captures the results achieved through the table no. 2. It appears that the 12 children selected for the experimental group, obtained scores ranging between 27-34 points.

After obtaining the scores for the two issues concerned psychomotric motive and I realized an accumulated scores, and thus we selected group of 12 children sampled experimentally.

Table no. 3 - The sum of the scores level psihomotric

Name and surname	Sum scores level psihomotric
R.D.	27
A.A.	27
A.R.	28
M.T.	29
C.R.	29
D.R.	29
M.G.	31
C.M.	32
T.B.	32
S.O.	32
M.A.	33
Z.G.	34

Final results obtained show a value close in terms of test scores obtained at the level of driving, compared to psihomotric for the 12

children selected. Psihomotric profile scores have a slight downward trend compared to the driving score.

#### REFERENCES

- CĂTĂNESCU, C. 1995**, *Tennis*, Edit. University of Pitesti , 41-50.
- CIUCUREL M., CIUCUREL C. 2002**, *Highlights in assessing psihomotricității*, Citius, Altius, Fortius, 2 :15-22
- CIUCUREL, M., 2001**, *Evaluation psihomotricității in school*, Paideia-journal of psycho-pedagogical and methodical, 2 :78-83

**COLIBABA E., D, BOTA, I. 1998**, *Games. Theory and Methodology* ", Ed Bold Bucharest 74-80.

**HORGHIDAN, V. 2000**, *Issue Psihomotricității*, Edit. Globus, Bucharest. 24-31

**HOSKINS T., 2003**, *The Tennis Drill Book* - 245 conditioning drills for technique, match tactics and Edit. Human Kinetics Canada. 25-33

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<http://www.tenniscoach.com/mebers/>

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## STUDY ON SENSORY-MOTOR CAPACITY ASSESSMENT IN JUNIOR TENNIS PLAYERS

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### ABSTRACT

We plan to conduct an assessment of sensory-motor ability to enhance technical performance parameters aimed at the game of tennis to beginners.

### Purpose

We want to identify and evaluate the sensory-motor capacity to increase efficiency of learning elements and specific techniques to junior tennis game.

**Methods** Statistical-mathematical, Bonardell test.

### Results

In terms of performance parameters for the test record for assessing sensory-motor coordination (test Bonardell complex reactions) may be made the following observations:

- ❖ increased the number of correct answers for both the experimental group significantly increased performance being delivered to the experimental group, in the context of an aging effect for the control group;
- ❖ decreased number of errors in the experimental group;
- ❖ decreased number of omissions of psychomotor tasks in the experimental group;
- ❖ increased rate of accuracy for both the experimental group significantly increased performance being delivered to the experimental group, in the context of an aging effect for the control group.

### Conclusions

Upcoming programs for learning the game of tennis technique in early stage should be designed to cover operational structure models with content belonging to the level of development and education of sensory-motor ability at this level.

**KEY WORDS:** sensory-motor, tennis, beginner.

### INTRODUCTION

In the training of tennis game, focuses on development not psihomotricității components and their implications for learning basic technique. Should be involved especially in this age to have good results in the juniors, seniors and youth. (Japanese Tennis Association, 1998)

In the selection tests in tennis game does not take into account the role of learning components psihomotric driving acts and actions and that their expression is subject to processes of maturation of the nervous system and the number of motor skills that the individual masters. (J Kemp., & M.F., Vincent, 1968). Thus the degree of psihomotric training components being reduced to lower ages, baggage technical - tactical player of the future will be limited.

### PURPOSE

We want to identify and evaluated the sensory-motor capacity to increase efficiency of learning elements and specific techniques to junior tennis game.

### RESEARCH HYPOTHESIS

If we want to identify and develop components to increase efficiency psihomotric learning specific elements and techniques of tennis, then you need to do an analytical study of these processes and to identify which indicators psihomotricității (coordination, balance, ambidextrie, perceptions chinestezice, side, body scheme, reaction speed, etc.).

psihomotricității components makes or facilitates the development and effective learning technique.

### PROCEDURES AND METHODS

Statistical-mathematical, Bonardell test.

Bonardell complex reaction test assesses sensory coordination - motor fair, accurate and timely. Sensory-motor coordination is the ability to combine individual motor movements depending on the links established between them and the components of an image after pre temporary relationships - the first in document imaging engine components and simultaneity between individual movements. Good coordination capacity is manifested by: precision, accuracy, ease and fluency in psycho-motor synchronization operations. Coordination difficulties are apparent through time errors discrepancy between the information processing engine and instrument making, individual movements nesincronizare errors, errors of order (inversions or substitutions between movements) Commutativity errors (perseveratii previous movements, interference between movements). (V.Horghidan, M.Epuran., M. Marolicaru, 1997)

Sample description. Proof is presented in readable form and apply individually. Subject is presented with response devices (desktop, pedals, levers) and shall notify the general purpose of short psychological test: "With this evidence I see how you can act quickly and correctly and how well you can

coordinate your movements. Monitor screen is drawn on a gray background, four black squares. Two squares are arranged in the upper half (left - left hand, right - right hand) and the lower half of the screen (left-foot left, right - right foot). From time to time, the black surface of this square is changed into red, a phenomenon that the appearance of stimuli. Are presented in random order, hand-foot pair of stimuli, position the left-right, top-down (sample background includes 44 sequences). Response is required to issue type reaction task is to press the matter as soon as the button on the pedal lever and the corresponding pair of stimuli on the screen. (N Martin., 2007).

The sample consists of three phases: - phase adaptation (presented in the training and practicing all modalities of response) - year (it runs a program with 30% of sample background items) - proof of fund - which consists of three identical programs which runs in succession default risk and under different conditions:

**Speed 1:** Slow scroll the background sample (duration of exposure to stimuli of 3 seconds and a random interval training in range 1 ... 4 seconds) is a weighted risk involved;

**Speed 2:** Speed increased by running the sample background (duration of exposure to stimuli of 2.5 seconds and a random interval training in range 1 ... 3 seconds) is a high risk involved;

**Autotempo:** test substance is administered to the rhythm of each subject (the following sequence occurring when the appropriate accessories to hold the current stimulus).

Notice the four black square positioned left / right, up and down, and two by two. At one point, given some color will change to red square. For each red square need to issue a response with levers or pedals as follows: the squares of the lever pull up left / right depending on their position and to pull the pedal down squares left / right all depending on their position. Remember how to pull for each square that are the basic movements to solve the task (to practice the movements). During pregnancy you combine these movements in terms of number and position of the squares appeared. For example: if a red square appears top left and bottom right a red square will have to pull the lever in the left hand button and simultaneously press the right pedal (is practicing some combination of movements). Red squares have a limited time. If you act properly and in time red is a break away immediately. Each wrong answer will be indicated by the word error. You can not correct the error. During the test do so to act timely and appropriately. (S Pyke., C Elliott, , & , B.Pyke, 1974).

**At the end of the sample are shown following parameters** - number of responses correctly issued; total issued incorrect answers; total number of unprocessed items (omissions); accuracy rate, defined as the percentage ratio of (number of possible correct answers - the number of omissions), and (number of possible correct responses + number of errors); **Working Time sample - autotempou** average response time average latency time measured in hundredths of seconds); efficiency index (autotempou sample), defined as the percentage ratio between the number of correct answers and working time. (S Pyke., C.Elliott, & B., Pyke, 1974)

In addition to assessing psychomotor behavior and its evolution in terms of tempo slow, fast and autotempou, psychomotor test covers the organization and adaptability of the subject. Psychomotor organization is expressed in the ability to resist negative influences derived from:-restrictive conditions limiting the time required to achieve ongoing efficiency of operations, the inhibitory effect, frustrating and dysfunctional product error situation. Self is defined in this context that voluntary control ability and continuous monitoring of their responses as required by the situation. Self is manifested by difficulties in issuing responses perseverare precipitated / delayed / wrong. Such errors can be due to impaired psychomotor coordination (especially under time pressure), reduced alertness, weak self-control and / or difficulty adjusting their dynamics with dynamic load (side too alert / precipitates, slow reactions / inert - reflected in the production of significant number of errors / omissions).

## RESULTS

Parameters on performance test record for fine manual dexterity assessment (Exhibit „Bonardell sinus) may be made the following observations: - increased speed of the task for both experimental groups, being significantly more pronounced increase in performance for the experimental group, in the context of an aging effect for the control group;

decreased the total number of errors and error correction for both groups, this trend being significantly more pronounced for the experimental group, remember, and in this case there is a maturing effect;

decreased the average error correction, but no final differences noted between the two experimental groups; - **coefficient of error** - evenwithin individual performance in the experimental group increased between the two experimental times, comparing the two groups in final testing phase we could not get a big enough difference to be statistically significant.

Table no. 1- Test sinus Bonardell - fine manual dexterity

Parameter	Group	Test	Statistical indicator		Performance level	Difference Initial - Final	Difference between groups at final test (d.f. =22)
			Media	Ab.std			
Runtime: speed vs. working in the task. psychomotor slowness	GC	initial	144,92	30,010	medium	GC: p=0,001	T.F. t = 2,142 p = 0,044 d = 0,89
		final	124,75	36,412	medium		
	GE	initial	145,75	30,775	medium	GE: p< 0,001	
		final	95,42	30,411	medium to high		
No. sound vs. error. Poor workload completion	GC	initial	19,92	6,230	medium	GC: p= 0,004	T.F. t = 3,623 p= 0,002 d = 1,50
		final	17,50	4,622	medium		
	GE	initial	20,08	5,680	medium	GE: p< 0,001	
		final	10,92	4,274	medium to high		
The total time error: error correction vs. rapidly. persistence in error	GC	initial	9,87	2,325	medium	GC: p= 0,014	T.F. t = 4,239 p< 0,001 d = 1,76
		final	8,09	2,072	medium		
	GE	initial	9,92	2,321	medium	GE: p< 0,001	
		final	4,27	2,327	medium to high		
The mean error: vs. speed. slow error correction	GC	initial	0,52	0,140	medium	GC: p=0,148	T.F. t = 1,579 p= 0,129 d= 0,66
		final	0,48	0,146	medium		
	GE	initial	0,50	0,13	medium	GE: p= 0,006	
		final	0,37	0,18	medium to high		
The coefficient of error: accuracy vs.. uncertainty in the task	GC	initial	0,0729	0,028	medium	GC: p= 0,830	T.F. t = 1,252 p = 0,224 d = 0,52
		final	0,0717	0,034	medium		
	GE	initial	0,07	0,027	medium	GE: p= 0,002	
		final	0,05	0,039	medium to high		

Note that for both groups the average performance of sinus sample was significantly lower compared to initial testing of final testing, which equals the performance. This is due in part and bio-psychological development of children's natural, within two years of testing (aging effect).

To shade the interpretation of these results we used independent sample t test, which shows the average performance difference between groups in final testing phase. The average performance for the experimental group was 95.42 seconds, well below the average performance for

the control group (124.75 seconds). The difference between the two groups is statistically significant at a threshold of 0.05 ( $t = 2.142$ ,  $df = 22$ ,  $p = 0.044$ ). Coefficient value of effect size (Cohen  $d = 0.89$ ) indicates a large difference between the averages compared. Effect of training program implemented for the experimental group is an important one. Also, the null that the average population is outside the confidence limits (0.932, 57.735) again emphasizes the significance of the difference between media groups compared. We present below tables t test for difference analysis.



**Table no. 2 Descriptive Statistics (final test). Sinus sample – runtime**

GROUPS	N	Average	Standard deviation	Standard error of the mean
Martor	12	124,75	36,412	10,511
Experimental	12	95,42	30,411	8,779

**Table no. 3 T-test for two independent samples. Sinus sample – runtime**

Independent samples T test (variances equal)					
t	df	p	difference between average	confidence interval difference between the average	
				lower limit	upper limit
2,142	22	0,044	29,333	0,932	57,735

We present below the chart type Boxplot for difference analysis.



**Test chart No.1 sinus - execution time - final test**

**BIBLIOGRAPHY**

**HORGHIDAN, V. 1997,** *Psycho-diagnosis methods*, Edit. Didactic and Pedagogic, Bucharest, 21-30

**JAPANESE TENNIS ASSOCIATION 1999,** *On Court Assessment Test*. Unpublished paper, Johnson, N. (1973). SS system., 42-44

**KEMP, J. & VINCENT, M.F., 1968,** *Kemp-Vincent rally test of tennis skill. RQES*, Vol 39 (4). 38-41

**MARTIN, N. 2007,** *Psihodiagnoza skills and intelligence*. Ovidius University Press,

Ovidius, Constanta, 2007 and test manual - RQ Plus battery Psiselteva (sample is part of the test system Psiselteva - Cluj), 51-62.

**EPURAN, M., M. MAROLICARU,** *Research methodology tangible activities* (support course). Babes - Bolyai University in Cluj-Napoca, Faculty of Physical Education and Sport, 24-30

**PYKE, S. Elliott, C, & PYKE, B. 1974,** *Performance testing of tennis and squash players*. British J. of Sports Med .. 8 (2), 80-86.

## CONTRIBUTIONS OF FORCE DEVELOPMENT IN WOMEN'S VOLLEYBALL TEAM DINAMO BUCHAREST, DIVISION A1

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### ABSTRACT

Establishing training model is determined by the game model and competitive model in which it participates. Both are produced by taking the main aspects of competition, generally the last competition (Cojocaru, A and Cojocaru, M. 2009, p. 45). Volleyball is based on sound development of strength and power, and understanding the mechanics and physics of strength training and incorporate these principles into your training program will boost the competitiveness of athletes.

**The main purpose** of this paper is to highlight the main aspects of content preparation means dezvoltarewa Force and the newly specialists serve as documentary material.

In order to solve these problems we proposed the need to verify in practice training models, with well defined tasks, which led to the hypothesis set out, namely (1) development of operational models that contain scientifically standardized means of preparation, will determine an effective training process at every level of education and (2) the high level of performance nationally and internationally relatively low, requires the establishment of operational models for methodical training throughout the annual cycle, which guarantees obtaining indices training equal to those of the international media.

**The object of this study** was to develop strength of players from CS Dinamo Bucharest in the period from 16/07/2009 to 28/09/2009. This was the preparatory period of development. This experiment was conducted in 4 stages namely:

- ☞ stage systematic selection and training of operational resources;
- ☞ initial testing - control rules;
- ☞ application training model: model preparation period ;
- ☞ final testing – application control rules.

Data processing methods to achieve the desired objectivity of the process of preparing assessments, we operate under a complex system of assessment of level of development of motor qualities (Cojocaru, A., Ionita M. 2008, pag.31-32). Testing and verification of potential driving is done on the basis of 8 samples of physical capacity test known as "Standard Fitness Test, required of achieving at least 480 points according to the Scoreboard of the Romanian Federation of Volleyball.

**Conclusions** confirmed the hypotheses set forth and always surprised that the quantity and quality of training, expressed in volume and intensity parameters, their dynamics throughout the annual cycle of training, shall be as general and specific indicators (technical training and development motor qualities), in line with existing working conditions (as methodical FRVolei line), and careful study of factors such means as training volume and intensity, guiding the preparation process with as many objective, improvement of development methodology and specific physical preparation, have a decisive role in achieving a higher quality training and allow development of a unified methodological lines;

**KEY WORDS: force, volleyball, team, play.**

### INTRODUCE

After his invention, volleyball was consolidated as a fully-fledged sport, with a theory developed and scientifically. The dialectical unity of theory and practical work remember that volleyball is an activity of scientific practice. Scientific nature of theory is provided as an integral part (design) of plant science activities.

Volleyball specific scientific issues is often driven by practical activity, in various applied research that responds to current high, especially methodical order.

Establishing training model is determined by the game model and competitive model in which it participates. Both are produced by taking the main

In order to solve these problems we proposed the need to verify in practice training models, with tasks:

aspects of competition, generally the last competition Cojocaru, A and Cojocaru, M. 2009, p. 45). Volleyball is based on sound development of strength and power, and understanding the mechanics and physics of strength training and incorporate these principles into your training program will boost the competitiveness of athletes.

Therefore, further improve the physical qualities necessary if the player expects his more rapidly, execute jumps in force, be agile and strong legs (Bompa, T. 2003, pp, 106-107).

### The purpose and research hypotheses

The main purpose of this paper is to highlight the main aspects of training content and resources to serve the newly specialists as documentary material.

- Selection and systematic means;
- Quantification of scientific knowledge based on collective capacity;
- Systematize operations;
- Directions to optimize training;
- Verification objectives.

The present paper-work starts from the following hypotheses:

- Development of operational models that contain scientifically standardized means of preparation will lead to more effective training process at each level of training.
- The high level of performance nationally and internationally relatively low, requires the establishment of operational models for methodical training throughout the annual cycle, which guarantees equal preparation to obtain indices with those of international media.

**RESEARCH METHODS**

- Bibliographic study method.
- Observation method.
- Method call.
- Statistical-mathematical method.

The object of this study was composed of CS Players team Dinamo Bucharest. Working conditions are good, I mean that is a proper gym, and the material is good. Force development were used force apparatus room.

I realized during the survey work was conducted from 16.07.2009 to 28.09.2009. This period was a preparatory development.

This experiment was conducted in 4 stages namely:

- ↻ systematic phase selection and training of operational resources;
- ↻ testarea inițială – aplicarea normelor de control;
- ↻ application training model: model preparation period;
- ↻ final testing - control rules.

To better monitor the progress in training, but also to calculate the load every 3 weeks, testing for maximum lifting should be done in weeks every 4 weeks.

Below we show the loading scheme for stages of preparation (fig 1).

Phase	Preparatory		
Underphase	General	Specific	Undercompetition
The purpose of preparation	Accommodation	Accumulation	Stabilization and reaching top sporting form
Schema de încărcare			
	Microcycles		

Fig. 1

Nr. crt.	Name and first name	Position	Age	Height (cm)	Weight (Kg)	Attack	Block
1	A. S.	Setter	24	173	60	275	255
2	M.D.	Setter	33	175	62	288	273
3	H.L.	Middle blocker	35	190	79	310	305
4	MA.	Middle blocker	28	186	68	310	300
5	D.Z.	Middle blocker	22	190	65	310	298
6	H.A.	Receiver	26	182	63	285	275
7	I.R.	Receiver	30	185	65	285	275
8	B.E.	Receiver	30	180	65	279	276
9	I.R.	Receiver	28	178	65	283	275
10	C.R.	Universal	28	183	66	298	280
11	C.C.	Universal	26	182	59	286	274
12	N.I.	Libero	29	167	58	281	272

Table nr. 1 Somatic index-driven dynamics of female athletes

**DATA PROCESSING METHODS**

For findings on the preparation objectification, we operate under a complex system of assessment of level of development of motor qualities (Cojocaru, A., Ionita M. 2008, pag.31-32). Testing and verification of potential driving is done on the basis of 8 samples of physical capacity test known as "Standard Fitness Test, required of achieving at least 480 points according to the Scoreboard of the Romanian Federation of Volleyball.

- 1 - achieve the highest point jump;
- standing with one hand,
- to push with one hand (attack);
- jump with two hands (block).

Value of the jump is calculated as:

$$\frac{\text{inaltimejucatorului} \times \text{sariturbloca} + \text{inaltimefile} + \text{saritura} + \text{aeinaltimefile}}{\text{inaltimefileului}} \times 100$$

Note: net height = 2,24m.

2 - lateral displacement 3m - index value resulting from infringements made number 1 minute;

3 - flexibility in the frontal plane - the index is expressed by the number of centimeters reached;

4 - dorsal flexion of the trunk of sleep - resulting index raises the number of trunk legs flexed knees reaching conducted in 2 rounds x 1 minute 15 seconds rest;

5 - with detached triple long jump and landing on two feet - the index expresses the length traveled by jumping chained;

6 - running speed on the distance of 20 m.

Sanoke	Index sample		Scal score		International media index samples	The general index of volleyball	
	Initial	Final	Initial	Final		Initial	Final
1	0,89	0,98	0,89	0,98	<b>1,15</b>	2,34	2,78 <b>international media is 3,85</b>
2	40,16	46,75	0,00	0,00	<b>0,30</b>		
3	11,25	13,5	0,40	0,45	<b>0,80</b>		
4	70	80,6	0,30	0,40	<b>0,60</b>		
5	7,35	7,85	0,45	0,55	<b>0,45</b>		
6	3,97	3,61	0,30	0,40	<b>0,55</b>		

Table nr. 2 Table summary

**CONCLUSIONS**

Paper assumptions were largely confirmed in that optimization training in an annual cycle of:

- Given the high level of team performance nationally and internationally relatively low, it is necessary to proceed to establish methods for operational models throughout the annual cycle of training, ensuring training to obtain indices equal to those of the international media;
- Volleyball operational models for annual training cycle must contain information about the value of primary somatic indices (age, height, weight, scale), data on the value of physical training and standards expressed in control samples, all compared with international averages;
- Quantity and quality of training, expressed in volume and intensity parameters, their dynamics throughout the annual cycle of training, shall be as general and specific indicators (technical and quality driven development), in line with existing working conditions (as methodical line Romanian Federation of Volleyball);
- Careful study of factors such means as training volume and intensity, guiding the preparation process with as many objective, improvement of development methodology

and specific physical preparation, have a decisive role in achieving high quality training and allow the development of a line unitary method;

- Tags force training, and not only makes getting good results. Compared with the average international index control samples, the value obtained in control samples, supported by selected athletes tend to be closer and closer to the requirements of this.

**BIBLIOGRAPHY**

- BAROGA, L.**, 1984, *Educarea calităților fizice combinate* – Editura Sport-Turism, Bucuresti.
- BOMPA, T.**, 2003, *Performanța în jocurile sportive: teoria și metodologia antrenamentului*, Editura Ex Pronto, București.
- COJOCARU, A., COJOCARU, M.** 2009, *Antrenament și performanță*, Editura Bren, București
- COJOCARU, A., IONIȚĂ, M.** 2008, *Volei – aprofundare*, Editura Fundației României de Mâine, București.

## STUDY ON EXPLOSIVITY PLIOMETRICAL AND NONPLIOMETRICAL CHARACTERISTICS IN CHILDREN 8-9 YEARS OLD

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**ABSTRACT**

Physical training is a decisive structural aspect of sports training and important content that makes the tactical and technical performance ability. Specificity increasingly pronounced biomechanical structures promoted by close of proof, means of influence, but also by the size appropriate physical and mental stress, looking decisive to the development of specific motor ability. Anaerobic metabolism and Visco-elastic properties of the component muscle in situations of "stiffness" (high tone and fast-acting capacity) and all modes of expression of force in relation to speed and storage capacity and re-elastic component of muscle are factors determinants in most sports. (S. Zanoni, 1984)

**KEYWORDS:** muscle training, explosivity, pliometric, strength Bosco test.

### INTRODUCTION AND RESEARCH OBJECTIVE

The purpose of the paper is to highlight features in content explosivity pliometrical and nonpliometrical muscle training in children 8-9 years. Measurement and quality evaluation in neuromuscular explosive effort is non-specific lower level using a simple movement, vertical jump on two feet. One can appreciate and conduct orientation training for speed or power in relation to power - speed, but the overall control of the movement phases. The combination of explosive power, strength and

coordination is carefully monitored and trained in all sports great efforts are made to find the most appropriate means of training and testing, highly specific and accurate measurement as the initial level of the achieved Following specific training and validation progress forecast (Bosco C 1999) Existing international statistics from thousands of tests on the protocol Bosco allow comparisons between the same athletes practicing sports, the levels of age, class or level of skill and gender. Forecasts can be compared with existing models for children, juniors, seniors but also national groups on sports. (Bosco C, Komi P.V.,

1982) Measurement and quality evaluation in neuromuscular explosive effort moves through a simple, non-specific, vertical jump, can focus on preparing the muscle force-velocity relationship but also the general control of phase structure movement jump. Leg muscles, isolated by the arms folded position, with hands on hip, can characterize the whole conduct of the Athlete Driving tested by relatively high ratio that it has in relation to muscular total whole-body muscles, but also by analyzing phase and kinematic characteristics and dynamic impulses and soil detachment. (C.Bosco, P Mognoni., IF, Luhtanen 1993).

**Hypothesis:** We believe that the role of muscle training to develop specific strength, requires first understanding the mechanisms of muscle action and highlighting characteristics of pliometric or The Bosco Protocol evaluates 6 different jump types and calculates a variety of parameters:

Designation	Jump Type	Description
I SJ	Squat Jump	Single jump starting from knees bent at 90 degrees
	SJbw	Squat jump with an additional load of up to one body weight
II CMJ	Countermovement Jump	Single jump starting with straight legs with a natural flexion before takeoff
	CJbref	Series of 5 jumps with bent knees, used as reference to compare with CJb (15..60s)
III CJs	Cont. Jump straight leg	Series of 5 jumps with straight knees
IV CJb	Cont. Jump Bent Legs	Series of 15..60s jumping with knees bent

**Bosco Protocol** can evaluate the following by its componenets:

- Explosivity tests, detachment force, **non – pliometric SJ and pliometric CMJ**
- Hip force tests, CJbref, CJb

**RESULTS**

**Squat Jump (SJ)**

**Description** - Single jump with knees bent at 90 degrees. Performance in a squat jump describes jumping ability and explosive (maximal) *force production of the lower extremities*

**The Squat jump (SJ)** presupposes doing a vertical jump from a semiflexed knees position, 90°, arms

**Squat Jump (SJ)**

Kistler Quattro Jump Bosco Protocol Version 1.0.9.2

Name: Thomas Alexandrescu

Date: 3/10/2009 1:28:00 PM

Bilateral Deficit: n/a %

Legend #	Leg	hf [cm]	hc [cm]	Pavg [W/kg]
<b>Best</b>	<b>Both</b>	<b>26.5</b>	<b>-15.4</b>	<b>6.2</b>
<b>Avg.</b>		26.5	-15.4	6.2
<b>Stdev.</b>		0.0	0.0	0.0

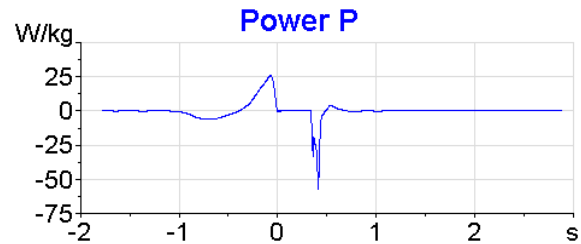
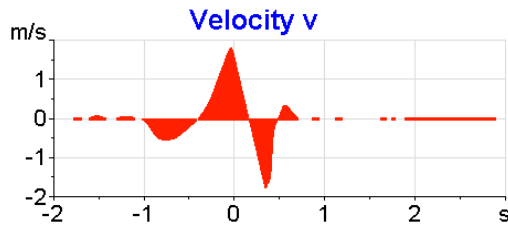
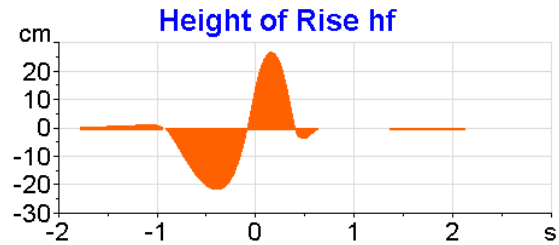
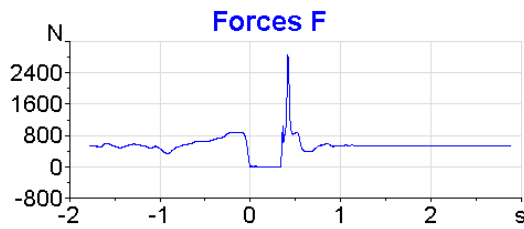
nonpliometric explosivity on children 8-9 years at the first stage of selection and muscle training in sports performance

**Research methods and procedures**

For performance evaluation of children selected for performance sports apply as a method of investigating the characteristics of muscle explosivity (VF) testing method, the Protocol Bosco applied force measuring platform type Kistler Quattro Jump 9290AD. The equipment is located in Pitesti CCPU testing equipment was carried out on a group of children 8-9 years selected for swimming practice at CSM Pitesti. It examines the evolution of the subject you as the representative for the group studied but performance and proper browsing of all tests

**The Quattro Jump Bosco Protocol**

bended, palms on thehip. The lack of arm action makes the performance 10 cm shorter and that is why the results offered for orientation are apparently poorly justified, between 24 cm – 38 cm for females and 26 cm – 45 for male performances. The SJ describes the ability to jump and the explosive (maximal) force of feet, the ability of neuro-locomotive recruit, the quantity of fast fibre.



**Measured parameters:** hf - maximum height of jump in flight, 26.5 cm  
 hc - lowest center of mass of Squat, - 15.4, defines the position of Squat  
**Pavg** - average muscle power, 6.2 W / kg, (Concentric) average (P (t)), since the v (t) becomes positive until take-off. **Bilateral deficit%** - was executed only jumping on both feet

**Counter Movement Jump (CMJ)**

Description: the single jump starting with straight legs and performing a natural flexion before take-off. In the counter movement jump during the breaking phase elastic energy is stored in the muscles and tendons and

**Counter Movement Jump (CMJ)**

Kistler Quattro Jump Bosco Protocol Version 1.0.9.2

Name: Thomas Alexandrescu

Date: 3/4/2009 1:30:25 PM

Bilateral Deficit (Pavg): n/a %

Fast Twitch Fibres (est.): 11.1 % FT

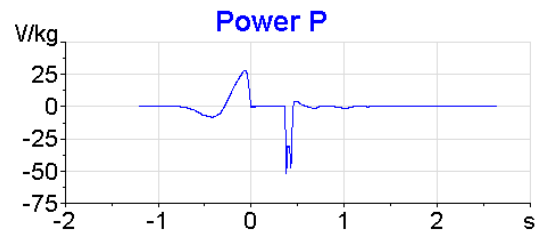
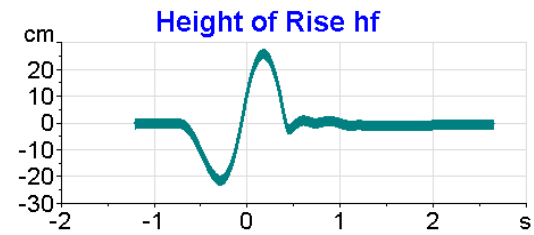
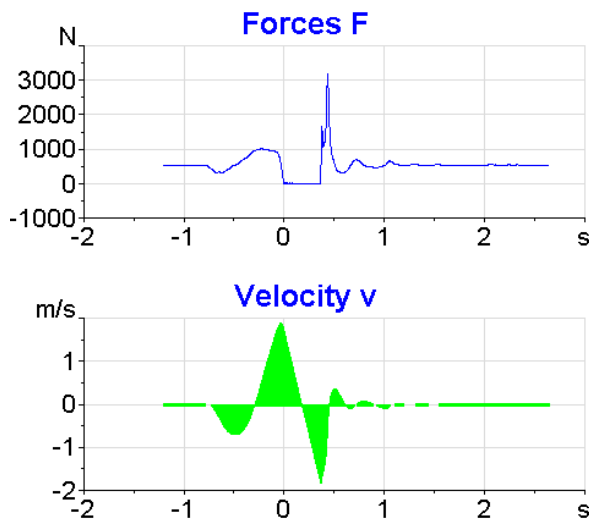
Effect of Prestretch: -1.5 %

(reuse of elastic energy)

Legend	#	Leg	hf	hc	Pavg
	Fi		[cm]	[cm]	[W/kg]
			[BW]		
<b>Best</b>	<b>2</b>	<b>Both</b>	<b>26.1</b>	<b>-21.1</b>	<b>16.2</b>
	<b>0.78</b>	<b>Avg.</b>			26.1
21.1	16.2	0.78	<b>Stdev.</b>		
	0.0	0.0	0.0	0.00	

then utilised in the following propulsion (concentric) phase.

**The Counter Movement Jump (CMJ)** presupposes doing a vertical jump which is identical to the Squat Jump test, but with take-off from standing. An energetic flexion is executed, followed by an extension and a vertical jump. The differences between the two tests correspond to the sport players' „elastic” aptitudes. The CMJ describes the evaluation of the explosive (maximal) force FV of feet and the quality of reusing the muscular elasticity, the neuro-motric recruiting capacity, the ability to use the visco-elastic force from inside the muscular tissue.



**Measured parameters:**hf - maximum height of jump in flight, 26.1 do not improve the outcome by using momentum and muscle elasticity in native mode by comparison with SJ  
**hc** - lowest center of mass of Squat, -21.1Pavg - average muscle power, 16.2 W / kg  
**FI** - 0.78 Bw (relative to body weight is the force instantaneous transition from eccentric to the concentric contraction when the power is positive).**Bilateral deficit** - left, right, was executed jump on both legs  
**FT** (Fast Twitch Fiber)% - 11.1%, and is estimating the percentage of fast fibers responsible for the issuance of **Continous Jump Straight Legs (CJs)**

Kistler Quattro Jump Bosco Protocol Version 1.0.9.2

Name: Thomas Alexandrescu

Date: 3/4/2009 1:33:35 PM

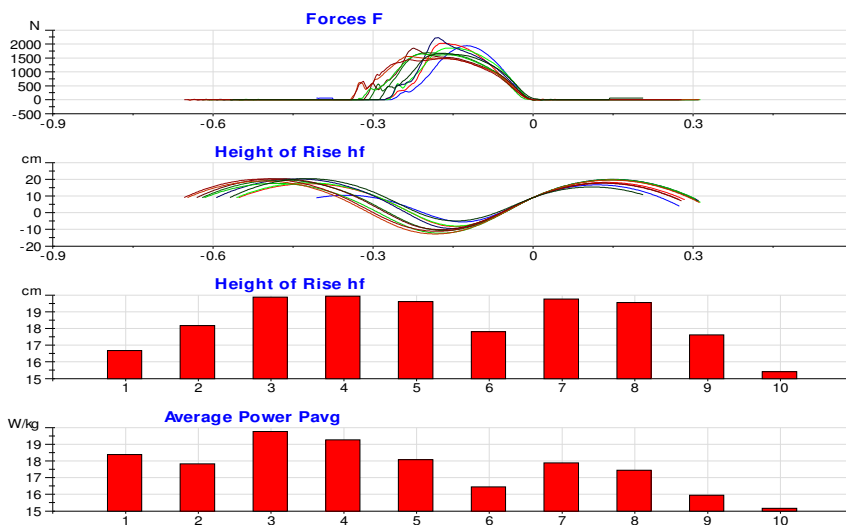
Leg Equilibrium Index: 1.35 Norm: 2.3

**FV** (Bosco algorithm was shown to hundreds of records based on the report SJ - CMJ and muscle biopsies on age, sex, type of training) 25% = medium.**Muscle elasticity - (Effect of prestretch)** - 1.5%, very weak and is the contribution made by muscle elasticity and elastic energy reuse 11% optimal, 20% Excellent

**Continuous Jump with Bent Legs**

*Description* A series of approximately 5 jumps with knees bent during the contact phase, used as reference to compare with the CJB over 15..60s. This jump is performed to set a baseline reference for other continuous jump trials.

Legend #	hf [cm]	Pavg [W/kg]	tcont. [s]	k [kN/m]
<b>Best_ 3</b>	<b>19.9</b>	<b>19.8</b>	<b>0.272</b>	<b>12.48</b>
<b>Avg.</b>	18.4	17.6	0.304	10.49
<b>Stdev.</b>	1.6	1.4	0.032	2.78



**Measured parameters:**hf - maximum height from the center of mass rises in flight



**hc** - lowest center of mass of Squat. **Pavg** - average muscle strength W / Kg

**FI** - Instant Power. **Tcont** - contact time with soil

**Continuous Jump with Bent Legs (CJb)**

**Continous Jump Bent Legs (CJb)**

Kistler Quattro Jump Bosco Protocol Version 1.0.9.2

Name: Thomas Alexandrescu

Date: 3/4/2009 1:35:20 PM

Duration: 24.13 s

No. Jumps: 27

Speed Endur. Index: 82.3 %

Voluntary Effort Index: 100.5 %

Fatigue Index hf: 81.3 %

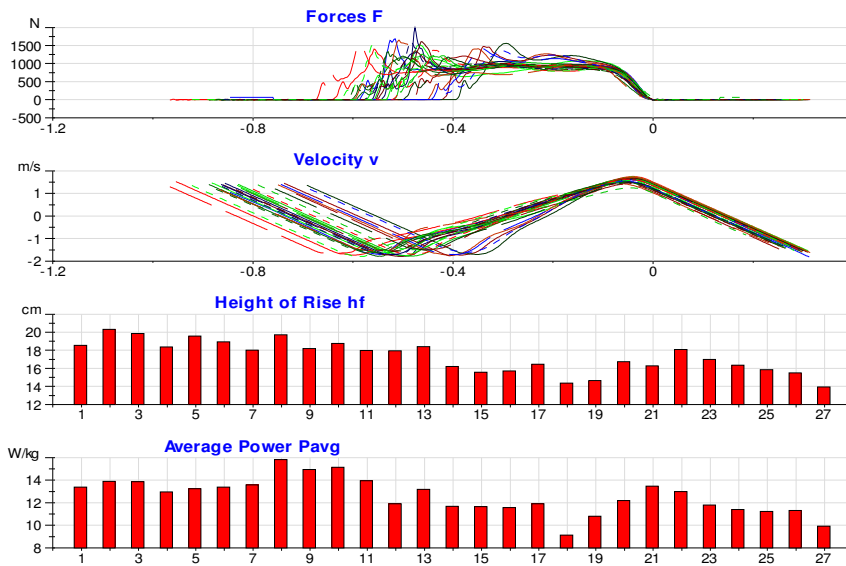
Fatigue Index Pavg: 82.6 %

Legend # hf hc Pavg Fi

tcont.

**Description:** a series of 15..60s jumping with knees bent. CJb evaluates the mechanical power of the lower extremities.

	[s]	[cm]	[cm]	[W/kg]	[%BW]
<b>Best</b>	<b>2</b>	<b>20.3</b>	<b>-23.1</b>	<b>13.9</b>	<b>0.74</b>
	<b>0.642</b>				
<b>Avg.</b>	0.545	17.3	-18.5	12.6	0.85
<b>Stdev.</b>	0.070	1.8	3.2	1.6	0.22



**Measured**

**hf** - maximum height from the center of mass rises in flight

**hc** - lowest center of mass of Squat

**Pavg** - average muscle strength W / Kg

**FI** - Instant Power

**T contact** - contact time

**Duration** - Total time

**Number** of jumps --

**parameters:**

**Speed indicator strength** - the ability to develop maximum power versus time - CJb hf / hf CJbref

**Indicator of voluntary effort** - maximum performance relationship imposed by 5 jumps

**Index of tiredness - (hf)** - Comparison between the first and last 5 jumps 5 per h

**Index tired - (P avg)** - Comparison between the first and last 5 jumps 5 per P avg

**Jump Summary**

Kistler Quattro Jump Bosco Protocol Version 1.0.9.2

Date of Printout: 3/17/2010 11:43:40 PM

Protocol Configuration File (MTC):

**Squat Jumps (SJ and SJbw)**

#	Name	Date	hf SJ [cm]	hf SJbw [cm]	Bosco Ind. [%]
1	Alexandrescu, Thomas	3/4/2009	26.5	n/a	n/a
Avg.			26.5		
Stdev.			0.0		

**Countermovement Jump (CMJ)**

#	Name	Date	hf [cm]	Fi [% BW]	Pavg [W/kg]	Effect of Prestretch [%]	Fast Twitch Fibres [%FT]
1	Alexandrescu, Thomas	3/4/2009	26.1	0.78	16.2	-1.5	11.1
Avg.			26.1	0.78	16.2	-1.5	11.1
Stdev.			0.0	0.00	0.0	0.0	0.0

**Continuous Jump (CJs and Cjbref)**

#	Name	Date	CJs			Cjbref		
			hf [cm]	Pavg [W/kg]	k [kN/m]	hf [cm]	Pavg [W/kg]	Leg Equ. Index
1	Alexandrescu, Thomas	3/4/2009	19.9	19.8	12.48	22.1	14.7	1.35
Avg.			19.9	19.8	12.48	22.1	14.7	1.35
Stdev.			0.0	0.0	0.00	0.0	0.0	0.00

**Continuous Jump (Cjb)**

#	Name	Date	Cjb Overview				Cjb 0..15s	
			Speed Endur. Ind. [%]	Voluntary Effort Index [%]	Fatigue Index hf [%]	Fatigue Index Pavg [%]	hf [cm]	Pavg [W/kg]
1	Alexandrescu, Thomas	3/4/2009	82.3	100.5	81.3	82.6	18.2	13.3
Avg.			82.3	100.5	81.32	82.59	18.2	13.3
Stdev.			0.0	0.0	0.00	0.00	0.0	0.0

**Continuous Jump (Cjb 15..60s)**

#	Name	Date	Cjb 15..30s		Cjb 30..45s		Cjb 45..60s		Average	
			hf [cm]	Pavg [W/kg]	hf [cm]	Pavg [W/kg]	hf [cm]	Pavg [W/kg]	hf [cm]	Pavg [W/kg]
1	Alexandrescu, Thomas	3/4/2009	15.9	11.4	n/a	n/a	n/a	n/a	17.3	12.6
Avg.			15.9	11.4					17.3	12.6
Stdev.			0.0	0.0					0.0	0.0

**DISSCUSIONS CONCLUSION**

Among the most important features and nonpliometric and pliometric explosivity characteristics we present the following indicators Effect of Prestretch (Re-Use Elastic Energy) (EP) indicate muscle elastic energy Reuse CMJ and SJ ratio indicates how much is the benefit produced by prestretch (CMJ compared to SJ) Effects of training stimuli will to increase capacity to learn and reuse of elastic energy muscle close to optimal values recommended.

AT athlete presents lower values devoid of ability to reuse elastic energy in muscle and poorly performing vertical separation of momentum in terms of execution pliometrics.

Fast Twitch Fibres Percentage (estimated) indicates the percentage of fast muscle fibers responsible for explosive force. Estimates indicate the percentage of fast fibers responsible for explosive strength development.

Estimated percentage of fast muscle fibers show a low value, below average due to lack of maturity and body couple found the process of growth and development, with an unstructured report age, gender, type of training.

Index Leg Equilibrium Equilibrium of the functional structure of the leg including three joints (hip, knee, ankle) and the lower and upper leg (thigh, calf) functional balance concerns Jump structure around the 3 main joints, ankle, knee, neuromuscular hip show that the operation of the upper leg muscles involved is in equilibrium with the lower the

neuromuscular function of the knee, ankle and lower limb is weaker than the hip and thigh.

From this we concluded that leg muscle strength-training to be directed primarily at developing the muscles that strengthen the knee and ankle joints as well as neuromuscular control capacity at this level.

Maximum explosive power without enthusiasm, nonpliometric is excellent, (SJ) for this age showing a great capacity for recruitment of neuromotor equivalent 118% of normal for age, sex, sports volleyball, level.

In terms of maximum explosive muscular power boost, pliometrics (CMJ) have a low capacity for elastic energy muscle to re-coordination of movement on a Visco-elastic component of EP (Effect of Prestretch) low 1.5%. Athlete has a structural imbalance slightly LE (Leg Equilibrium) for triple extension (1.95) on the lower part knee, leg, ankle and upper thigh hip strain component.

**REFERENCES**

- BOSCO, C., KOMI, P.V. 1982**, *Muscle elasticity in athlete, Exercise and Sport Biology* ed. By P.V. Komi, Champaine III, Human Kinetics Publisher pp 109 – 117, 1982
- BOSCO C., MOGNONI P., LUHTANEN I.F., 1993**, *Relationship between isokinetic performance and ballistic movement*, European Journal of applied Physiology 51, pp 357 – 364, 1993
- BOSCO, C., 1999**, *Strength assessment with the Bosco's test*, Italian Society of sport, Rome, 1999
- ZANON, S., 1984**, *Pliometrie der Spruenge*, der Lehre der Leichtathletik 25 pp 549 – 522, 1984

## STUDY ON DEVELOPMENT OF THE SWING IN THE PHYSICAL EDUCATION

DEACU MARCEL

Physical Education and Sporting Field

### ABSTRACT

**Purpose.** The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

**Methods.** In sporting training, it rarely occurs that only one quality dominates both effort and movement, this usually is the product or the combination of at least two driving qualities. There are situations when force and speed are equal, the combination of endurance and force produces muscular endurance; the result of combining endurance and speed is speed-resistance; agility is a combination of speed, power and coordination; agility and flexibility results in mobility. It is recommended that specific exercises are practiced, concurrent with the exercises specific to the development of the driving exercises. The development of the dominant driving qualities can have a positive or a negative transfer effect.

**Results.** There was significant differences, the biggest progress were made by the experimental group, and for the control group the progress was insignificant.

**Conclusions,** Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.

**KEY WORD:** swing, plyometric, leaps, anaerobic-alactacide power.

### INTRODUCTION

Generally, moving qualities represent a more interesting subject among specialists, the methodology of the development of these qualities, being the centre preoccupation of the experts from different sporting branches. During the driving act, the driving qualities influence each other and constantly depend on one another, and this leads to the so-called manifestation regime of the driving qualities. (O.T. Bompa, 2001).

This regime represents the differential way of manifestation of a driving quality, determined by the influence of one or more driving qualities, with which the first manifests in the same time or even entirely and represents functional combinations of speed, force, skill and stamina. The force and speed are found in a reverse proportion rapport: if the speed is bigger, the charge used is smaller. (O.T. Bompa, 2001). Sporting and physical education activities make up a direct stimulus, nearly exclusive for the morfo-functional development, and their absence can lead to situations harmful to health, of which dimensions are hard to anticipate. The mobility represents the key element for the tasks that target the instructive content of any physical education programme (D. Colibaba-Evulet, I. Bota, 1998).

In the physical education and sporting activity in the non-specialized universities we are interested in the exhausting effort which, through its parameters (intensity, volume, complexity), obliges their bodies to react intensive and generalized.

For this we chose that in our research we approach the conditional capacities, especially those combined of speed and strength, in physical education classes with the students of the Petroleum Gas University of Ploiești.

Through this process we followed the effects which resulted after applying the preparal program in the research, adressed especially to the development of the combined driving capacities, through plyometria. (M. Deacu, 2008)

### PURPOSE

The purpose of our research consists in the emphasizing of the efficiency of some methods of preparation for the improvement of the conditioned capacities, especially the ones combined of speed and force (the swing), of students who practice sporting games in the physical education lessons.

### HYPOTHESES

1. If we use the plyometric exercises during training, the raise of the swing of students who practice sporting games during the physical education lesson will be possible.
2. A higher manifestation of the maximum anaerobic-alactacide power during the sporting game will be realised based on the gatherings from the preparation program.

### Tasks

- Fixing some methodical priorities and the principles of the plyometric training;
- Fixing the tests;
- Elaborating a training program using the plyometric method;
- Fixing the development level of the the combined driving qualities of the subjects (initial and final testing);

- Arranging and grouping the gathered data necessary for the statistical-mathematical processing;
- Processing the obtained data and drawing the conclusions.

#### Research methods

- *Scientific documentation;*
- *The descriptive method – the observation;*
- *The experimental method;*
- *Processing and interpretation methods: the logical method, the statistics method, the grafical method.*

#### The content of the experiment

The experiment took place during the physical education lessons with the students of the *Petroleum Gas University of Ploiești* in the 2008 -2009 learning year.

The subjects of the research are 40 students from the *Petroleum Gas University of Ploiești*, 20 students belonging to the experimental group and the other 20 to the control group. The subjects of the experimental group were trained with the use of plyometric exercises during the physical education classes.

- **The applied tests** – *The Ion Grîntescu Test* to measure the height of the vertical jump, and to measure the maximum anaerobic-alactacid power the Sargent Test was used, with the following formula:

$P = \sqrt{4,95 \times G \times x \sqrt{D}}$ ; where P = power in kg/s, G = corporal weight, D = swing in cm. Three vertical jumps are performed (the best jump is considered). (V. Tudor, 2005). The estimation of the power was made in comparison with the values presented by dal Monte 1988(C. Bota, 2000).

For the technique not to influence the height of the jump, only one vertical jump without a big upsurge is recommended. This type of jump is called the „Sargent jump”, named after the man who analysed it from a biomechanic point of view. It is one of the most relevant proofs concerning the estimation of the swing at the lower limbs level, in a vertical plan. It is executed standing next to a 4 meter long wooden ruler, the performer stretches his arm up, leaves a mark on the ruler, then jumps with a small upsurge and makes another mark on the ruler.

The distance between the 2 marks is measured. To measure the height of the jump we used the Ion Grîntescu method.

The training program included the following exercises (M. Deacu, 2008):

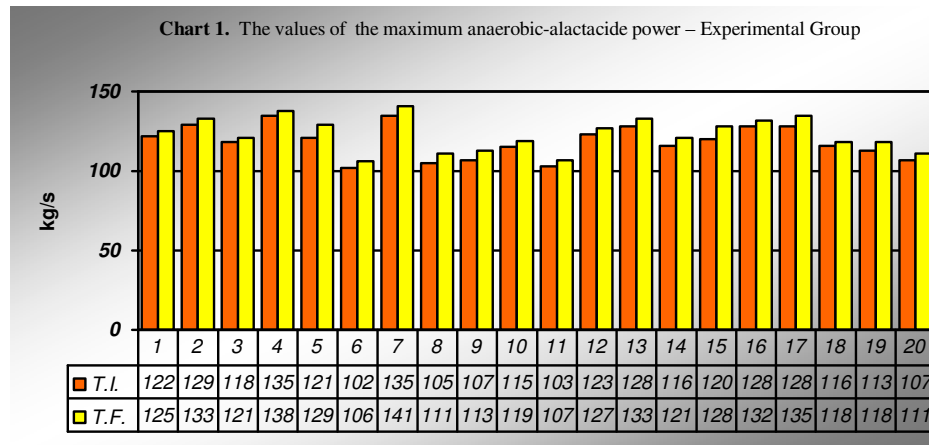
- **multiple or sequential jumps** – the on-the-spot jumps are combined with the from the spot horizontal jumps. These require a maximum effort utilised in a sequence. The distance must not be bigger than 30 meters;
- **in-depth jumps** – counter-movement jumps are used from a high crate, followed by counter-movement jumps off boxes, benches, low fences;
- **On the-spot jumps** – a jump in which the detachment and the landing is executed on the same spot. These jumps are of a somewhat small intensity, but they still have a short damping phase and require a fast comeback. The jump is executed sequentially, with a short damping phase between jumps;
- **from the spot horizontal jumps** – the maximum effort used when detaching from the ground horizontally or vertically is stressed;
- **exercices with boxes** – this type of exercises utilises jumps successive with the jumps in depth. These exercises depend on the height of the boxes. They have both horizontal and vertical components.

#### The obtained results

**Table 1.** The values of the maximum anaerobic-alactacide power – Experimental Group

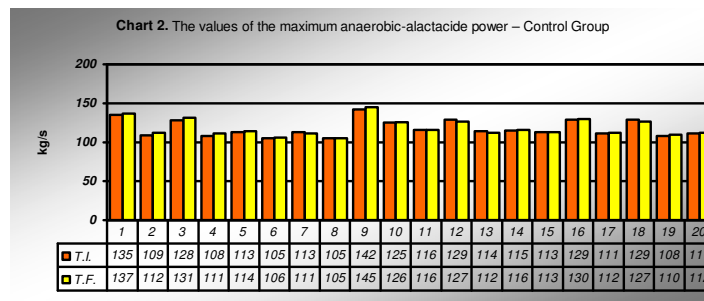
Nr.	Surname Forename	T.I.		T.F.		Stature (cm)	Weight kg
		Stature (cm)	Weight kg	$P = \sqrt{4,95 \times G \times x \sqrt{D}}$ kg/s			
1	Mihăiță A.	163	64	122- satisfactory	125- satisfactory	163	64
2	Duță M..	179,5	69	129- satisfactory	133- satisfactory	180	68
3	Burducea D.	183	79	118- satisfactory	121- satisfactory	183	78
4	Neațu A.	177	97	135- satisfactory	138- satisfactory	177	95
5	Ciutacu L.	175,5	74	121- satisfactory	129- satisfactory	180	74
6	Zamfir R.	175	64	102-weak	106-weak	175	64
7	Necula I.	182	67	135- satisfactory	141- satisfactory	182	67
8	Eftimie B.	165,5	64	105-weak	111-weak	166	64
9	Ghiță A.	172	57	107-weak	113- satisfactory	172	57
10	Manea D.	166	61	115- satisfactory	119- satisfactory	167	61
11	Călin A.	169	49	103- weak	107- satisfactory	169	49
12	Bostină A.	179,5	79	123- satisfactory	127- satisfactory	180	78
13	Frâncu B.	176	71	128- satisfactory	133- satisfactory	176	71
14	Gheonea I.	172	61	116- satisfactory	121- satisfactory	172	61
15	Negulescu I.	174,5	92	120- satisfactory	128- satisfactory	174,5	90
16	Matache C.	172,5	64	128- satisfactory	132- satisfactory	173	64
17	Lixandru L.	176	70	128- satisfactory	135- satisfactory	176	70
18	Niculae I.	175	80	116- satisfactory	118- satisfactory	175	79
19	Ghiță M. .	180,5	64	113- satisfactory	118- satisfactory	180,5	64

20	Marcu D.	177,5	56	107- satisfactory	111- satisfactory	177,5	56
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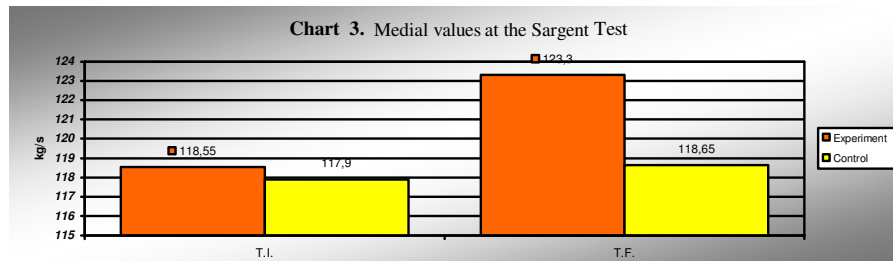
**Table 2.** The values of the maximum anaerobic-alactacide power – Control Group

Nr .	Surname Forename	T.I.		T.F.		Statur e (cm)	Weight kg
		Statur e (cm)	Weight kg	$P = \sqrt{4,95xGx\sqrt{D}}$ kg/s			
1	Ionescu D.	176	76	135- satisfactory	137- satisfactory	176	76
2	Toader C.	176	56	109- weak	112- weak	176	56
3	Alexandru B.	171,5	85	128- satisfactory	131- satisfactory	171,5	85
4	Dumitrescu C.	186	70	108- weak	111- weak	186	70
5	Iancu A.	174	60	113- satisfactory	114- satisfactory	174	60
6	Ioniță S.	173,5	62	105- weak	106- weak	174	62
7	Șarpe D.	181	79	113- satisfactory	111- weak	181	78
8	Marin D.	171,5	72	105- weak	105- weak	172	72
9	Gheorghita A.	175	89	142- satisfactory	145- satisfactory	175	89
10	Ionescu B.	169	96	125- satisfactory	126- satisfactory	169	95
11	Dinu B.	183	61	116- satisfactory	116- satisfactory	183	61
12	Marin A.	179,5	66	129- satisfactory	127- satisfactory	179,5	66
13	Ionescu M.	168,5	62	114- satisfactory	112- weak	169	62
14	Matei D.	166	61	115- satisfactory	116- satisfactory	166	61
15	Bălăceanu D.	166	52	113- satisfactory	113- satisfactory	166	52
16	Petre G.	174,5	69	129- satisfactory	130- satisfactory	174,5	69
17	Rosu V.	174,5	61	111- weak	112- weak	176	61
18	Stancu M.	188	103	129- satisfactory	127- satisfactory	188	100
19	Hlușcu C.	180	60	108- weak	110- weak	180	60
20	Pulbere N.	174	58	111- weak	112- weak	174	58



**Table 3.** The progress realised by each group – Sargent Test (kg/s)

Group	Sargent Test			
	T.I.	T.F.	D = T.F. - T.I.	D <sub>T.F.-T.I.</sub> (%)
Experimental	118,55	123,3	4,75	4
Control	117,9	118,65	0,75	0,63



The result of the Sargent Test for determining the maximum anaerobic-alactacid power is:

*The experimental Group*, at the final testing, registers a gain in power of 4% (4,75 kg/s) in comparison with the initial testing. Two students modified their grade from satisfying to weak.

*The Control Group*, at the final testing, registers a gain in power of 0,63% (0,75 kg/sec) in comparison with the initial testing. Two students modified their grade from satisfying to weak.

### CONCLUSIONS

➤ At the Sargent test which evaluates the maximum anaerobic-alactacid power, the biggest progress were made by the experimental group, and for the control group the progress was insignificant. On a whole, it can be appreciated that regarding the anaerobic-alactacid capacity of the subjects, there still is the possibility of improvement in a significant quantity through the use of plyometric exercises, which concludes to the fact that the functional reserves of young people are insufficiently explored.

➤ Following this research, the obtained results demonstrate that the plyometric method used during the physical training produces significant swing growth, the subjects of the experimental group having significant diminished values at the end of the training program.

### REFERENCES

- BOMPA, O. T., 2001**, *Developing the biomotor qualities*, Publishing Exponto, Romania, 108-126.
- BOMPA, O. T., 2003**, *Performance in sportive games – Theory and methodology of the training*. S.N.A.. Publishing Ex Ponto, Romania, 118-123.
- BOTA, C., 2000**, *Ergophysiology*, Publishing Globus, Romania, 133.
- COLIBABA-EVULEȚ, D, BOTA, I., 1998**, *Sportive games – Theory and method*, Publishing Aldin, Romania, 99-105.
- DEACU, M., 2008**, *Developing of motion qualities combined “force-speed” and „speed-force” through sportive games in the universital class of Physical Education*, Ph Thesis, Bucharest, I.O.S.U.D. A.N.E.F.S.
- TUDOR, V., 2005**, *Measurement and evaluation in physical culture and sports*, Publishing Alpha, Romania, 113-114.

## STUDY ON THE FREQUENCY OF WRIST PAIN CASES IN JUNIOR FEMALE GYMNASTS

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### ABSTRACT

Frequently encountered in the junior female gymnasts, the affections of the hand can represent the result of multiple micro traumas at which the hand is subjected during the artistic gymnastics training process, where, through the forces exerted at the articulation structure level and through the developed resistance, the joint structures are debased in time, being chronically subjected to this kind of stress. On the course of evolution of these affections the prehensibility is compromised, a complex function that is specifically human, and which has transformed the hand in an essential segment of the female gymnasts' body in making the elements technique at the four apparatus. The compromising of the global functionality of the hand (the prehensibility), represents a handicap that is tough to tolerate and compensate by the professional female gymnasts. Starting from these premises, we have developed the research *hypothesis* that accurate identification of wrist pain cases among junior gymnasts should provide much information that should constitute the starting point for an intervention improvement method.

The research methods used were: the study of the bibliographical material, the observation, the testing method, the statistical-mathematical method and the graphical representation method.

Our study wants to observe the frequency of wrist pain cases at junior female gymnasts inside a competitive institutional structure, the “Nadia Comănechi” High School of Onești. For the dynamic evaluation of the patients and the quantifying of wrist pain cases, we have used the five clinical parameters.

It has been observed from the beginning that the tested female gymnasts are situated, most of them, in the high seriousness class, at which the intensity of the clinical parameters has registered the highest point.

In this context, we consider to be useful a research on the ways of recovering of the injured athletes, providing a comfortable environment, and favoring the performances in artistic gymnastics.

**KEY WORDS:** wrist, pain, junior, female gymnasts.

### INTRODUCTION

Artistic gymnastics registers, during its evolution, a very high level of technicality, impressing by its difficulty, complexity, virtuosity and spectacular nature.

As a consequence of the technical progress, we observe more often than not cases of injuries, reoccurring old injuries and gymnasts that claim pains in different parts of the body.

Female gymnasts in particular use their fist in a less "usual" manner. The wrist is a critical link between top performance and athletic skills and it is used as a lever for the diversity of movements outside the gymnastics apparatus. Because it is subjected to pressure and highly repeating forces, it becomes a area that is vulnerable to injuries. (L. Teurlings, B. Mandlebaum, B. Starr, 1992).

According to certain specialized literature data, we can observe that the fist joint traumas are generated by the limited degree of this joint's range of motion, much to solicited during the artistic gymnastic techniques, taking into consideration the young age of the people initiated in this sport and the differences in bone growth. (P. Theis, 2000). Based on assimilated information, these causes of a natural and biological nature, can be eliminated only by stopping the training process. (T. Dobrescu, 2008). A good case for example is the European champion Steliana Nistor, who retired prematurely from the competitive activity

because of a necrosis in the left hand, a professional illness for athletes, encountered especially in gymnasts.

In artistic gymnastics, a sportive discipline known for its complexity, the hand can be used in prehensibility around a bar, or using the palm as support during the vaults, balance beam or floor exercises. In these cases there are important compression forces associated with torsion forces. (F. Fraisse, 2002). Acrobatic turns and the Tsukahara half-trunk twists have a 60° impact in the wrist dorsiflexion, and when it is combined with twists, it produces ulna deviations. In these cases, the dominant hand's wrist is much more affected (T. Dobrescu, G. Raveica, L. Manole, 2008).

According to certain statistics, the hand and wrist injuries represent 10-20% of the traumas encountered in the French athletes (P. Roure, 2001), of which 5% in male gymnasts and 3.85% in female gymnasts. The Swiss statistics institute classified the gymnastics among the first 6 sports regarding the number of injuries, emphasizing the large percentage of traumas occurred at the fist joint by 5.8% in 2003, and tripled in 2005 (19%), in comparison with other parts of the body.

### MATERIAL AND METHOD

This paper aims to identify the frequency of the hand affections cases and to assess the degree of pain



for this segment in the female junior gymnasts performing in artistic gymnastics.

On the course of evolution of these affections it is compromised the prehensibility, complex function that is specifically human, and which has transformed the hand in an essential segment of the female athletes' body in making the elements technique at the four apparatus. The compromising of the global functionality of the hand, (of the prehensibility), represents a handicap that is tough to tolerate and compensate by the professional female gymnasts.

At first the pain, due to the articular degenerative affection, on which it can be added the swelling, determines ulterior the limitation of mobility, the decrease of muscular force, the compromising of digital and digit-palm pinch, reverberating over the development of the training tasks and, implicitly, over the performances of the athletes.

Starting from these premises, we elaborated the *hypothesis* of the research, stating that the identification of the frequency of wrist pain in junior female gymnasts could multiple information that would constitute a starting point for an improving intervention.

The *research methods* we used were: study of the bibliographical material, observation, measurements and testing method, the statistical-mathematical method and the graphical representation method.

Our study aims to discover the presence and to assess the frequency of wrist pain cases in junior female gymnasts, inside a top performance institutional structure, the "Nadia Comaneci" high-school, in Onesti, using a group of 23 subjects.

For the dynamic evaluation of the patients and the quantifying of efficiency of the treatment that was applied, we used the following clinical parameters:

- spontaneous and provoked pain – at touching and mobilization, as well as the parameters associated with the pain that represent elements of the clinical picture;
- the swelling;
- the limitation of mobility in the wrist;

- the muscular force on the groups that action on the affected articulation;
- the limitation of global functionality – based on a questionnaire referring to the process of motor activities.

Therefore, because the parameter "pain" is subjective, hard to quantify, we appealed to the clinical parameters associated with the pain that depend on it, or determine it, to be able to evaluate in a quantitative way, the results we have obtained.

On the basis of noting every parameter after presence (0), inconsistency (1 point) or absence (2 points), it has been realized a clinical score of pain between 0-6 points.

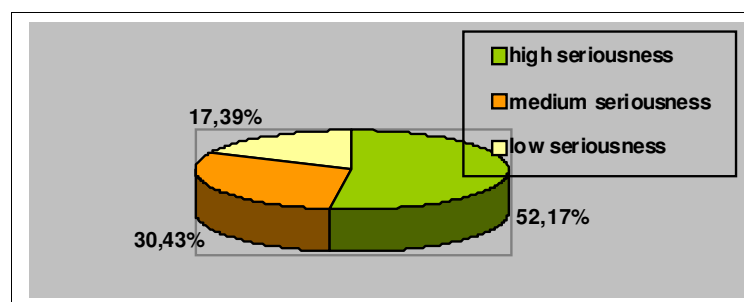
## RESULTS

Based on the initial clinical scores, the 23 cases could be situated from the beginning on classes of affection seriousness:

- for the clinical pain score we considered as highly serious the cases with a score between 0-2 points, medium seriousness between 3-4 points and low seriousness between 5-6 points, close to the normal, represented by the maximum score (6 points), in the case of the absence of the studied clinical signs;
- for the general clinical score we considered as highly serious the cases with a score between 0-5 points, medium seriousness between 6-10 points and low seriousness between 11-15 points, a score we obtained through the addition of all the mars from each of the studied clinical parameters.

Following the study, this allotment on classes of seriousness of pain was obtained:

- in concordance with the clinical score testing:
  - high seriousness – first class: 12 cases (52,17%);
  - medium seriousness – second class: 7 cases (30,43%);
  - low seriousness – third class: 4 cases (17,39%);



**Chart 1. Ranging the pain seriousness steps according to the clinical score-** in concordance with the general clinical score testing:

- high seriousness – first class: 10 cases (43,47%);
- medium seriousness – second class: 8 cases (33,78%);
- low seriousness – third class: 5 cases (21,73%);



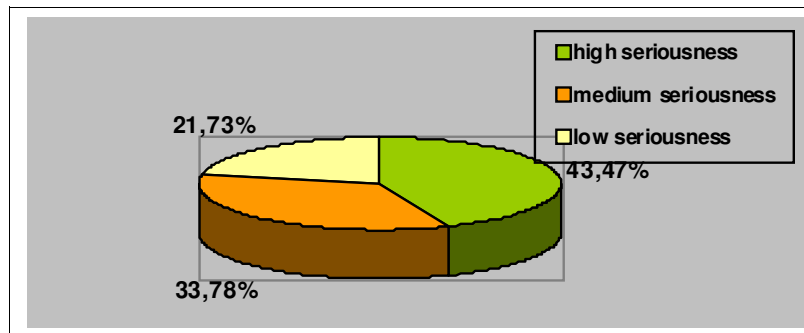


Chart 2. Ranging the pain seriousness steps according to the general clinical score

So it has been observed from the beginning that the tested female gymnasts are situated, most of them, in the high seriousness class, both for the clinical pain score and the general score.

## CONCLUSIONS

The chronic affections of the hand and the wrist pains are frequently encountered in the junior female gymnasts. They can represent the result of multiple micro traumas at which the hand is subjected during the artistic gymnastics training process, where through the forces exerted at the articular structure level and through the developed resistance, the joint structures are debased in time, being chronically subjected to this kind of stress.

In this context, we consider to be useful a research on the ways of recovering of the injured athletes and providing a comfortable environment, favoring the performances in professional gymnastics.

Our attempt proves to be a point of view in the casuistic of injuries for the artistic gymnastics and it has as purpose to preserve the talents, to increase athletes' performance and to insure their longevity.

## BIBLIOGRAPHY

- DOBRESCU T., 2008**, *Motor profile of the selection and orientation pattern in high performance aerobic gymnastic*, Analele Universității din Oradea, Fascicula EFS, Vol. 1, Ed. Oradea University, 57-61.
- DOBRESCU T., RAVEICA G. MANOLE L., 2008**, *Aspects regarding the causes of pain at the fist joint in artistic gymnastics*, Sport Medicine Journal – the Journal of Romanian Society for Sports Medicine Association, 13, 755 – 764.
- FRAISSE F., 2002**, *Pathologie de l'appareil locomoteur chez le jeune gymnaste*, Synoviale, nr.110, Paris, France, 1-3.
- ROURE P., 2001**, *Le poignet du gymnaste*, Colloque médical fédéral, Fédération française de gymnastique, 13 -16.
- TEURLINGS L., MANDLEBAUM B., STARR B., 1992**, *Wrist Pain in Gymnastics*, Technique Magazine, USA, 11-15.
- THEIS P., 2000**, *Potentiels et risques de la gymnastique artistique féminine*. Gymtechnic nr. 31, FFG, Paris, France, 3-9.

## OBSERVATIONS ON PREPARATION OF JUNIOR TEAM "D", F.C. BIHOR, NATIONAL CHAMPION IN FOOTBALL IN 2008/2009 SEASON

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### ABSTRACT

**PURPOSE.** The purpose of this paper is to improve the preparation of young footballers based on the experience of junior team D which won the Romanian championship, 2008/2009 edition. The researched subjects are players of FC Bihor team whose training and behaviour in play were followed during the championship.

**METHODS.** Based on the observation of the team's trainings and games, as well as of the testing results, there has been achieved an image of the junior team's training in the competition year 2008/2009.

**RESULTS.** Their morpho-functional and training indexes have been compared with the data from the specialty literature and it has also been their evolution between the beginning and the ending of the season (initial testing, final testing). In the statistical processing of data, t test was used dependent samples in order to determine the significance of difference.

**CONCLUSIONS.** In training the team, the age particularities and training level were respected and it allowed achieving performances in competition.

**KEY WORDS:** junior team, football, training.

### INTRODUCTION

To the D junior championship, players born in 1.01.1996 and younger take part. The championship takes place on county level and the superior phases (regional, semifinal and final) are organized by FRF. The matches are played on normal field, two halves of 30 minutes each and a 10 minutes break. Five substitutions can be made by each team.

*Morphological, functional, physiological and psychological particularities at the age of 12-13*

Boys of 12-13 years old are in a complex phase of growth: puberty, having as central phenomenon the sexual maturation produced by the increased flux of sexual hormones which determine the appearance secondary sexual characters concomitantly with deep somato-vegetative and psychic changes (M. Ifrim, 1986). The puberty period is characterized by an increased rhythm of growth and development of

organs, apparatuses and systems from the somatic area and those from the vegetative area.

*Locomotor apparatus*

The bones consolidate their functional structure becoming more resistant.

The development of thorax, during the first part of puberty, is slow (the age of narrow thorax), after which a more accentuated development follows.

The joints are poorly developed and the ligaments do not provide enough resistance to traction, to twisting.

The reaction and repetition velocity is developed, yet strength and resistance are far behind compared to the adult. Therefore, there are not allowed trainings with the purpose to obtain performances in the efforts of strength and resistance.

The growth in length of bones and elongation of muscles provide the aspect characteristic to puberty: tall and thin with narrow thorax, negative Erissmann index (M. Ifrim, 1986).

**Table 1.** Average values of some physical development indexes according to A. Nicu et al., (1994)

Age in years	Weight (Kg)	Height (cm)	Thoracic perimeter (cm)	
			Breathing in	Breathing out
12	39,51±7,05	150,12±7,74	75,49±5,5	69,63±5,51
13	44,61±8,25	156,94±8,6	78,85±5,81	72,2±5,63

**Table 2.** Values of weight and height for the age of 12-13 (M. Rădulescu, V. Cojocaru, 2003).

Age in years	Weight (Kg)	Height (cm)	IMC Kg/m <sup>2</sup>
12	44	153	18,79
13	51	161	19,67

*The nervous system* develops fast and the maturity of the analyzer's cortical area is reached. The function of analysis and synthesis of the cortex develops and the

process of internal inhibition increases. The formed conditioned reflexes disappear slower. The great plasticity of the central nervous system is maintained

although it has lost some of its vitality and efficiency due to hormonal perturbations which emphasize the reactive character of the nervous system, leading to instability of behaviour and affective state. During puberty, still persists the insufficiency of conditioned inhibition processes compared to the power of the excitation processes. Due to this fact, the movements of children at this age have a sudden character with low precision.

These particularities of the central nervous system, at children at puberty, influence directly the speed of motor skills formation and stabilization, favouring the occurrence of fatigue, weakening, in a certain extent, will and perseverance. On the other hand, the great plasticity of the cortex favours the initial elaboration of certain motor conditioned reflexes and even complex dynamic stereotypes, their stabilization and fixation requiring an increased number of repetitions and exercising. Due to the increased plasticity of the cortex, the cortical neurons accomplish quickly their energetic balance, fact which favours the mobility of the fundamental nervous processes.

*Cardio-vascular apparatus* – the blood flow regulation mechanisms are frequently disturbed (sympathetic predominance) and they are exaggerated in effort. Frequently, there can be encountered functional breaths in the heart, arrhythmia and crises of hypertension. At the age of 13, the heart volume is 250 cm<sup>3</sup>.

The cardio-vascular apparatus develops slowly during puberty. The arteries have a diameter proportionally bigger than those of an adult and the veins and the lymphatic system are well represented. The heart rate decreases by the end of puberty to 80 pulses per minute (M. Ifrim, 1986). The systolic volume increases, so at the age of 13, it has values of 40-45 ml. The cardiac flow also increases. Both values are still far from the values of an adult. Short and intense cardio-respiratory efforts are not indicated, soliciting too much the heart.

*The respiratory apparatus* develops intensely during puberty. The respiratory function is clearly ameliorated. The amplitude of respiratory movement increases (from 230 ml, actual volume at the age of 11, to 300 ml at 13), the respiratory frequency decreases (from 22 per minute at the age of 11, to 20 at the age of 13), the vital capacity increases and the tissual breathing – assessed according to maximum O<sub>2</sub> intake per minute – increases considerably (yet the maximum limits of aerobic capacity to effort are not reached, thus in resistance efforts, maximum results cannot be obtained). The vital capacity improves: at the age of 13 – 2900 cm<sup>3</sup> (D. Apolzan, 1996).

*Psychic particularities* – at puberty, significant changes occur in the psychic life as well. The perceptions become clearer and get selectivity character, space and time orientation is considerably improved, suffering the influence of thinking processes. In cognitive activities, the predominance of

the second signaling system is manifested. The child is able to operate with notions with an increasing degree of ABSTRACTization, manifests interest and curiosity for theory, for the explanation of phenomena belonging to reality. The capacity of focusing attention is ameliorated. It increases the interest for themselves, for their inner world, quite frequently there appear states of distrust in their own possibilities. The quality of will is developed, the desire of showing their abilities, of imposing their own decisions is manifested. Forms of self-education appear in order to cultivate the capacities considered ideal. Their “targets” move higher and higher although the reasons are still unstable. The sense of responsibility is intensely developed. The behaviour is characterized by exuberance, by participating to numerous and various activities. The need to move, to play is maintained, though it gets other significances. The rules of the game are respected, yet the purpose is to draw attention of people around them, to be appreciated, to assert themselves (M. Rădulescu, V. Cojocaru, 2003).

This is the age when they can learn the perfect technique. It is possible and it is indicated to appeal to understanding, to the explanation of elements and the implications of each motor act, of the meaning and necessity to respect the given advice. The movement must be taught with awareness, that is, clear, precise presentation of exercise principles. The attitude towards the child should be full of tact in order to fight the crises of shyness, anxiety, the fear of being ridiculous in front of the training group members, resulted from the incorrect execution of exercises. The trainer should carefully choose his words and phrases, he should be close to the children, he should make himself loved and the children should see in him a positive example, worth to be followed. Encouragement, praise, decomposition of complicated exercises into simpler elements which can be successfully executed, they all represent some concrete working procedures.

Puberty is the period when it is very important the issue of children selection according to physical and psychic skills. This is possible since the psychic skills and features are basically formed. After a working period of 4-5 years, a new selection stage appears (secondary selection) which should direct the children towards practicing the sport for which they show interest however which should also correspond to their skills (A. Nicu, 1993). This is a pedagogical principle, but also one of ethics because it eliminates the possibility of poor results in the chosen sport which could cause later on the disillusion of unfulfilled hopes.

The competition will reach its instructive-educational purposes and it will positively influence the personality and the sport results if the following aspects are taken into consideration:

- necessity to stimulate the desire to play, to compete with other teams;

- the participation to matches should be an occasion to encourage the child who learns faster under competition circumstances;

- to counter indicate the pressing intentions to win;  
- the loss of a match should not be an occasion for hostility and irony and the child should not be afraid if he has made a mistake during the match.

*Characteristics of training resulted from the age specifics*

Teaching and learning the game and its elements receive new aspects. It is the transition period from the methodology of young age to the one that starts to divide the instruction directions. At this age, the biological and social conditions are created for a constant activity in football, performance oriented.

Children at this age are capable to acquire an impressive motor content at a high qualitative level, sometimes similar to senior players.

The training factors are approached as a correlated whole but there are conditions that in order to learn the constituting elements of the game, they should be approached in a restricted correlated form, that is, one in the other's regime. There can be processed even elements of a single factor to consolidate some established effects and specific skills. However, because the preparation of training factors does not constitute a purpose in itself but means to improve the play, it is required that it should be the final form of testing and integration of analytically prepared elements. This should not exclude the training on factors, either grouped or isolated.

It is good to be a balance between the physical factor and the technical-tactical training. In what the physical qualities are concerned, they will be dealt with preferably through technical training and playing means; in order to improve general physical capacities or isolated development of one of these motor qualities, the physical factor can be acted upon also through specific means.

The parameters of effort, volume, intensity and complexity are to be specifically dozed. The effort volume increases compared to the preceding period. It comprises 4-5 training lessons per week and one match. Within a training lesson, the quantity of means is increased, the duration being of 90-120 minutes, with a weekly volume of about 500 minutes.

Development of resistance is favoured at this age by the growth process, the changes of height, weight as well as by the development of circulatory and respiratory apparatuses and of muscles. It is recommended the increase of the body's capacity to adjust to long lasting effort as basis for the amelioration of resistance. The main training means are the long runs and short intervals.

At the age of 12-13, the gesture frequency and reaction speed reach high values. The running speed depends on the degree of development of muscle strength and of the anaerobic capacity. As training means, all types of runs will be used. The speed and

handling-coordination indexes stop to increase around the age of 14. In order to fully use the genetic potential, it is necessary to continuously work for speed, based on the principle of simultaneous approach of training factors, all around the year. Attention will be paid to the education of reaction and rhythm as well as of indirect positive transfer upon speed of the repetition of technical-tactical means and of the work for spring.

The task, during this period, regarding force education is to strengthen the muscles, ligaments and joints. For children at the age of 12-13, force training should begin with the harmonious development of muscles. The purpose is to obtain robust, profiled muscles which should help the spine, the skeletal system in general. At this age, strength develops quickly. The priority order is:

- analytical development of the great group muscles in neuro-muscular regime;

- development of dynamic force, in speed regime, through a multilateral approach.

If the factors it depends upon are provided, strength is a quality quite easy to improve. Strength work out is a process already in progress but which requires a long time interval. During this age period, the principle of continuity and progressiveness must also be applied.

At this age, when accelerated growth in height and weight is manifested, when important hormonal changes take place, it is noticed deterioration of mobility and of muscle and ligament stretching capacity. A continuous training for mobility is required, especially for the spine and the coxo-femoral joint.

The coordinating capacities must be trained both isolated and interdependently with the conditioning qualities (speed, strength, resistance) and with their combinations.

The dominant of the age group 12-13 is the technical training in regime of tactics and superior physical training. Having this view upon the interference of factors, we can establish another training characteristic – *the technical factor is still predominant* – but the purpose will be the development and improvement of its physical and tactical components. Thus, the elements and technical actions will be repeated with superior indexes of speed, resistance and strength and will be placed in concrete tactical relations (I. Ionescu, M. Demian, 2007).

In approaching technique, attention will be focused on three important aspects:

- repetition of "ABC" of technique;

- preoccupation for a useful, fast technique, consequence of the relation with the physical component;

- tendency of multilateralism and applying technique with tactics.

Another issue of methodical importance is the rational dosage of instruction and playing efforts. It has been noticed that at the age of 12-13, the technical and playing skills break the balance of their concordance

with the children's morpho-functional development. The great plasticity and receptivity of the nervous system allows the acquiring and formation of many specific skills, in an appropriate technical structure. Technique is actually the way to use the ball in real playing conditions. The isolated technical gesture has no significance unless it allows the achievement of tactical tasks. Each training means should be characterized by an indispensable connection between technical gestures, perception of the playing area and the possible solutions in solving the problem created by teammates and opponents.

The objectives of technical training at the age of 12-13 are:

- increase of technical improvement degree;
- technical instruction subordinated to speed;
- modeling technical acts according to the play requirements;
- individualization of technical training in order to achieve the "polyvalent-independent" player, capable to accomplish the requirements of the position and not only;
- valorization of the acquired technical fund in the fundamental structures specific to the position and field areas.

The tactical factor receives importance in parallel with the physical and technical accumulations. An important role is that of the diversification and specialization of technical executions on tactical situations. At this age, the consolidation of individual and collective tactical elements is made in accordance with the development of capacity to choose the most indicated technical variants for the playing situations. The correct orientation in attack and defense situations, within the proposed playing system, must be the main characteristic of the tactical behaviour (I. Ionescu, M. Demian, 2007).

## CONTENT

For the 2008/2009 championship, the training of "D" junior team (12-13 years old) F.C. Bihor started with 21 players. With small exceptions, the components of the lot had already 4-5 years of organized training in football.

F.C. Bihor team participated in the "D" junior championship organized at county level by A.J.F. Bihor. In this championship, there were 12 teams. The matches were played in weekend and lasted 60 minutes (2x30 minutes).

In elaborating the training plan for the team the following aspects were taken into consideration:

- all players are pupils, so their training had to be synchronized with their school schedule;
- the players' age particularities require attention for the following aspects:
- it is the period in which work can be done well in order to develop handling, materialized in correct execution of the main technical procedures;

- they can work efficiently to develop reaction and execution speed;

- development of resistance and strength must be made carefully, the exercises being always followed by recuperation of the body's working capacities;

- the organization under the form of play of the exercises must be judiciously combined with the analytical and precise feature of the basic mechanism of the technical procedures.

The annual training plan for the 2008/2009 championship took into consideration the established data: tour: August 31 – November 9 2008; rematch: March 8 – May 17 2009.

The summer training period, July 12 – September 27, comprised the following stages:

1. readjustment to effort July 12 – July 20;
2. basic accumulation July 21 – August 3;
3. progressive getting in shape August 4 – august 30.

The general objectives during the training period were: increasing the effort capacity, gaining a superior level of basic motor qualities development, consolidation of technical skill, correction of deficient technical procedures.

Stage 1 – readjustment to effort – 9 days;

*Tasks:* undergoing medical control to assess the health state and effort capacity and progressive adjustment of the body to effort.

*Means:* running; gymnastics and stretching exercises; technical exercises (kicking and hitting with the head, taking the ball forward, trapping); games.

*Indications:* the effort volume, small at the beginning, progressively increases; small and medium intensity, 50% of the maximum capacity; pulse 120-130, 130-150, 150-170; training factors: technical-tactical 50%, physical 40%, theoretical 10%;

- number of trainings: 9, number of training hours: 14;

- the duration of the lesson increases progressively from 60 minutes to 90 minutes.

Stage 2 – basic accumulation – 14 days.

It was the stage in which, benefitting of a week training away and of the pupils' holiday, two trainings were made per day, the afternoon one being the technical-tactical one.

*Tasks:* progressive increase of effort capacity, improvement of basic psycho-motor qualities, exercising the basic technical procedures, repetition of technical-tactical skills, enriching the specialty knowledge.

*Means:* running (flat field, varied field), running with intervals, running with repetitions, mobility, gymnastics, stretching exercises (upper limbs, lower limbs, abdomen), technical-tactical exercises (combinations, finalizations), games (with theme, friendly games, testing games).

*Indications:* the effort volume will reach its highest value at the end of this stage; effort intensity increased progressively often working in the mixed area 60-80%

of the maximum capacity; puls 150-170, 170-180; training factors: technical-tactical 45%, physical 55% and theoretical 5%;

- number of trainings: 18, number of training hours: 26;

- number of friendly matches: 4, duration of the training lesson: 80-100 minutes.

Stage 3 – progressive getting into shape (pre-competitional) – 27 days.

*Tasks:* reaching a superior level of development of effort capacity, of basic and specific psycho-physical qualities and of execution of technical procedures, consolidation of playing tactics, rational organization of the play, elaborating the basic formation, gradual achievement of sportive shape.

*Means:* running with intervals, running with repetition, mobility and strength exercises, technical-tactical combinations, games (with theme, testing games, friendly games).

*Indications:* the effort volume decreases but remains at a superior level; high intensity – mixed and anaerobic area 70-80% and 80-95% from the maximum capacity; pulse; over 150, 150-170, 170-180, 180 and more; specific means have great importance; individual work and with the entire team; importance of training factors: physical 45%, technical-tactical 50%, theoretical 5%;

- number of training: 16, number of trainings: 26;

- number of friendly matches: 8, duration of the lesson: 90-100 minutes.

Competitional period August 31 – November 9 (11 stages):

*Objectives:* maintenance of sports shape, improvement of motor qualities based on the relative stability of sports shape; improvement of playing speed, consolidation of tactical combinations in attack, consolidation of playing relationships between players from close compartments, increase of combat in play, improvement of ball sending precision and kicking at the goal.

*Means:* running with repetitions, technical-tactical exercises, practicing the technical procedures, games with theme, school games.

*Indications:* the effort volume decreases; big and medium intensity when closing the official match; great importance of specific means; importance of training factors: physical 45%, technical-tactical 55%.

- number of trainings: 50, number of training hours: 66, number of friendly matches: 7, number of official matches: 11, duration of the training lesson: 90-100 minutes.

There were 5 trainings per week, in most weekly cycles being planed one friendly match in the middle of the week for homogenization.\

The transition period, November 10 – January 20, a long period determined by the character of the competition, was used at the beginning to continue the trainings as follows:

November 10 – December 22 active transition:

- indoor tours 9 matches, technical-tactical trainings 12.

December 23 – January 19 period for rest and recuperation.

*Tasks:* recuperation of the body after the competitional period, recuperation of the injured players, maintenance of the effort capacity at high levels.

*Means:* rational nutrition, active rest, unspecific effort: swimming, tennis, volleyball, handball, running.

*Indications:* the physical effort is not interrupted but is replaced with the unspecific one.

The winter training period January 20 – March 7, had the following stages:

1. readjustment to effort January 20 – January 31;

2. basic accumulation February 1 – February 15;

3. gradually getting in shape (precompetitional) February 16 – March 7.

Stage 1 – readjustment to effort – 12 days – preparation with one training per day.

*Tasks:* undergoing medical control in order to assess the health condition and the effort capacity, progressive adjustment of the body to effort.

*Means:* long running, gymnastics and stretching exercises, technical exercises (kicking and hitting with the head, taking the ball forward, trapping), games.

*Indications:* the effort volume, small at the beginning, progressively increases, small and medium intensity, 50% from the maximum capacity, pulse 120-130, 130-150, 150-170. importance of training: technical-tactic 45%, physical 45%, theoretical 10%

- number of trainings: 12;

- duration of the lesson increases progressively from 60 minutes to 100 minutes.

Stage 2 – basic accumulation – 16 days, as in the previous training it contained one week practice away with two trainings a day.

*Tasks:* progressive increase of effort capacity, improvement of basic psycho-motor qualities, exercising the basic technical procedures.

*Means:* long running (flat field, varied field), running with intervals, running with repetitions, mobility, gymnastics, stretching exercises, strength exercises (upper limbs, lower limbs, abdomen), technical-tactical exercises (combinations, finalizations), games (with theme, friendly games, testing games).

*Indications:* the effort volume will reach its highest value at the end of this stage; effort intensity increased progressively often working in the mixed area 60-80% of the maximum capacity; puls 150-170, 170-180; training factors: technical-tactical 40%, physical 40% and theoretical 5%;

- number of trainings: 21, number of training hours: 30;

- number of friendly matches: 4, duration of the training lesson: 80-100 minutes.

Stage 3 – progressive getting into shape (pre-competitive) – 19 days.

*Tasks:* reaching a superior level of development of effort capacity, of basic and specific psycho-physical qualities and of execution of technical procedures, consolidation of playing tactics, rational organization of the play, elaborating the basic formation, gradual achievement of sportive shape.

*Means:* running with intervals, running with repetition, mobility and strength exercises, technical-tactical combinations, games (with theme, testing games, friendly games).

*Indications:* the effort volume decreases but remains at a superior level; high effort intensity – mixed and anaerobic area 70-80% and 80-95% from the maximum capacity; pulse; over 150, 150-170, 170-180, 180 and more; specific means have great importance; individual work and with the entire team; importance of training factors: physical 40%, technical-tactical 55%, theoretical 5%;

- number of training: 10, number of trainings hours: 15;

- number of friendly matches: 8, duration of the lesson: 70-100 minutes.

Competitional period March 8 – May 17 (11 stages):

*Objectives:* maintaining the sportive shape, improving the motor qualities based on the relative stability of sportive shape, improvement of playing speed, consolidation of playing relationships between players from close compartments, increase of combat in play, improvement of precision in taking sending the ball and shooting at goal.

*Means:* running with repetitions, technical-tactical exercises, practicing the technical procedures, games with theme, school games.

*Indications:* the effort volume decreases; big and medium intensity when the official match is approaching; great importance of specific means; importance of training factors: physical 45%, technical-tactical 55%.

- number of trainings: 50, number of training hours: 66, number of friendly matches: 8, number of official matches: 11, duration of the training lesson: 90-100 minute.

There were 5 trainings per week, in most weekly cycle being planned one friendly match in the middle of the week in order to consolidate the playing tactics.

At the end of the championship, the team came on the first place and participated to the national phase which took place in several stages.

*The regional stage* took place in Oradea with the teams: Jiul Petroșani, L.P.S. Banatul Timișoara and C.S.S. Caransebeș between May 30 and June 2 2009. F.C. Bihor won against all these teams and was qualified.

*The semifinal tour* took place also in Oradea, June 10-14. F.C. Bihor won the sub-group against the teams

L.P.S. Satu Mare (0 – 0, on June 10) and Petrolul Moreni (4 – 0 on June 12) and played the decisive match with the winner the other sub-group Football School Gica Popescu.

F.C. Bihor - Football School Gica Popescu 3-1.

*The final* was played on June 22 2009 at Mogoșoaia with the team Farul Constanta, the winner of the semifinal tour in Iasi.

F.C. Bihor - Farul Constanta 1 – 1, during the regulation playing time and 4-3 after executing the departing kicks, F.C. Bihor team being declared national champion at this age group.

Training aspects

*The physical factor*

It was approached with priority during the training period, yet it was not neglected during the competition period. The work was focused on the development of aerobic resistance without exaggerating with long running. Development of speed was a constant concern due to the age specific. There were used sprint exercises on short distances (10, 20 m) but also exercises under the form of contests, relays, games. The dynamic force was worked with emphasis on the abdomen, back and legs muscles. There were used exercises to help the players defeat their own weight.

*The technical factor*

No training was carried on without a ball. The emphasis was laid on the consolidation of basic technical procedures by the use of analytical exercises, exercises with opponent (semi-active, active), exercises under the form of a game. It was emphasized the efficiency of using each technical procedure.

*The tactical factor*

It was the second year in which the team played on a field with regular football dimensions. As mentioned before, there were many friendly matches which allowed the consolidation of the playing relationships and allowed the team members to get used to the position tasks. The used playing system was 4 – 4 – 2, with zone defense which allowed best the cover of the field and the relationships between players. Sometimes the system became 4 – 3 – 3 by repositioning the center forwards and attackers.

## RESULTS

The morpho-functional and physical training indexes of the team components were determined at the initial testing (August 2008) and at the final one (May 2009) in order to see both their evolution and the comparison with data from the specialty literature referring to players of this age.

The analysis and interpretation of results was made with the help of SPSS software, variant 15. When processing the data, the descriptive analysis of these indexes was made.

**Table 3.** Tested indexes at the team's players

Crt nr.	Tested indexes	Initial testing		Final testing	
		M ± DS	Cv (%)	M ± DS	Cv (%)
1.	Weight (kg)	44,64 ± 5,95	13,32	49,45±6,98	14,11
2.	Height (cm)	157±7,33	4,67	162,9±7,68	4,71
3.	IMC (kg/m <sup>2</sup> )	18,04±1,25	6,92	18,53±1,36	7,34
4.	Vital capacity (cm <sup>3</sup> )	2090,48±262,5	12,56	2295,24±224,67	9,79
5.	Speed 50 m (sec)	9,34±0,62	6,64	7,96±0,31	3,89
6.	Pentajump (m, cm)	9,77±0,7	7,16	9,96±0,77	7,73

The t test for the difference between the averages of two dependent samples emphasized the significant differences ( $p < 0,05$ ) between the values obtained at the initial testing compared with those obtained at the final testing for the following morpho-functional and physical training indexes: weight, height, IMC, vital capacity and speed ( $p < 0,0001$ ,

table 4). Regarding the pentajump test, even if the values of the final testing were bigger, the difference was not significant ( $p > 0,05$ ).

In both testings, the players presented very good homogeneity which did not exceeded 14%, in most cases being under 10%.

**Table 4.** Comparison between the players' initial and final data (n=21)

Indexes	Standard deviation of difference between averages	Significance	
		t	p
Weight (kg)	1,94	-11,363	< 0,0001
Height (cm)	1,599	-16,99	< 0,0001
IMC (kg/m <sup>2</sup> )	0,6063	-3,725	< 0,001
Vital capacity (cm <sup>3</sup> )	174,57	-5,375	< 0,0001
Speed 50 m (sec)	0,678	9,112	< 0,0001
Pentajump (m, cm)	1,0085	-0,843	> 0,05

**Table 5.** The values of research subjects compared to data from the specialty literature

Nr. crt.	Indexes	Average values of the F. C. Bihor team	Values from the specialty literature (M. Rădulescu, V. Cojocaru, 2003)
1.	Weight (kg)	49,45	51
2.	Height (cm)	162,9	161
3.	Vital capacity (cm <sup>3</sup> )	2295,24	2500
4.	Speed 50 m (sec)	7,96	8,3

As it can be noticed in table 5, the average values of the team are situated near to the values in the specialty literature for players at this age, only the indexes of vital capacity being under average.

## CONCLUSIONS

The results obtained by the F.C. Bihor "D" junior team in the competition year 2008/2009 are the consequence of a quality training which allowed the players to valorize to the maximum their physical and technical-tactical qualities. The attentive selection and the combination of all training factors (physical, technical, tactical) in optimum proportion have led to results in competition but also to the training of players in accordance to the age requirements. The national phase which followed the championship at county level raised problems of planning the training, problems which were overcome by the team's trainer.

## BIBLIOGRAPHY

- APOLZAN D., 1996,** *Fotbal 2010*, editat de FRF, București, 105 – 114.
- BOMPA T. O., 2003,** *Performanța în jocurile sportive: Teoria și metodică antrenamentului*, Școala Națională de Antrenori, Editura Ex Ponto, Constanța.
- IFRIM M., 1986,** *Antropologia motrică*, Ed. Științifică și enciclopedică, București.
- IONESCU I., DEMIAN M., 2007,** *Succesul în fotbal Metodologia antrenamentului între 6 și 19 ani*, Editura Artpress, Timișoara, 61 – 86.
- MANNO R., 1996,** *Les bases de l'entraînement sportif*, Centrul de cercetări pentru probleme de sport, București.
- NICU A., 1993,** *Antrenamentul sportiv modern*, Editura Editis, București, 88 – 90.
- NICU A. et al., 1994,** *Studiu comparativ al potențialului biometric al elevilor din clasele V – VIII la a treia ediție a evaluării*, București, MTS, CCPS.
- POPA M., 2008,** *Statistică pentru psihologie Teorie și aplicații SPSS*, Iași, Editura Polirom, Iași, 298 – 301.
- RĂDULESCU M., COJOCARU V. (coord.), 2003,** *Ghidul antrenorului de fotbal – copii și juniori* – Editura Axis Mundi, București, 86 – 183.



## METHODOLOGY OF TRAINING FOR DEVELOPING YOUNG TENNIS PLAYERS (AGED 10 – 12 YEARS OLD)

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### ABSTRACT

**Objective:** This research is made to determine the implementation of the ITF (International Tennis Federation) Program for 12& under tennis players. This program focuses on the training and competitive needs of players at 12& under level group. The aim of the ITF is to support our National Associations’ program, in fact our research objective: to give the players the best coaching in order to help them to achieve a good standard of competitive play. In the same time we have apply a questionnaire for discover how the tennis players view their psychological characteristics.

**Method:** In the research we have establish the methodology of training – annual and monthly program. A typical period program is usually broken up into four phases (preparatory, pre-competition, competition, transition or active rest). After to apply our methodology of training we have establish the psychological profile for players. In this respect we have purpose a questionnaire for discover how the tennis players view their psychological characteristics. Data’s have been collected. The findings have been analyzed stastically by using frequency method.

**Discussions and Conclusion:** After the research which has been made to determine the methodology of training affecting the psychological profile for tennis players, it can be concluding that the session planner and the structure of the training session determined the sportsmen motivation.

**KEY WORDS:** Methodology training, Tennis players, Psychological profile

### INTRODUCTION

Competitions are probably the most important element in the program for 12 & under players. The most important thing at these ages is to give the players the opportunity of playing lots of matches by using system such as: round robins, feed –in consolation tournaments and shortened matches that give all young players the chance to experience the challenge of self-improvement through competition (D. Miley, 1998, C. Otis, 1999). Other ideas for providing a positive competitive philosophy and psychology at the 12 & under level could include the following (K. Davis, 1999, J. Brabenec, 1999, ITF, 1999): combine with other sports; provide other activities during the tournaments; make players play a minimum two singles matches a day, even if it is two pro sets. The ITF Competition Formats manual gives many examples of competition formats recommended for the 12 & under players. 12 & under age groups is shown like the following targets (G. Granitto, 1999): main goal (building up a philosophy and psychology of performance); format (team, single and double competition); competition system (round robin, feed-in consolation); scoring (two regular sets or shortened sets followed – if 1 set all by a tie-break –can adapt to different options depending on the competition system); remarks (furthermore, each team participates in other sports’ tournaments against the other player.

There should be a minimum of individual competition with a knock-out system).

### MATERIAL AND METHOD

The aim of this study is to determine the factors affecting the success and failure of the tennis players (10-12 years old) participating to National Championship in Romania and compete the team of the “Idu Club Tennis”, Mamaia, Constanta.

Data’s have been collected to achieve the goal of the research in two ways. Firstly, the literature related to the subject has been scanned and then a survey has been made to determine the factors affecting the success and failure sportsmen for the aim of the research. Data’s have been collected with sportsmen participating to the competition after we made the implementation of the coaching program. The weekly plans last for up to 7 days a give detailed information on the intensity, quantify and order of the training sessions. They are the basis for periodisation. These weekly plans (table 1) are also called micro cycles. Micro cycles allow concentration on one particular objective in individual sessions and reduce the monotony of training despite a high frequency of sessions. There are different types of micro cycles depending on the training phase. Our programmes for these subjects’ players consist of up approximately 3 training sessions and 1 competition session per week. However, this may be adapted to the characteristics of the players, the period of the season, and the goals the coach and players want to achieve

## FINDINGS

**Table 1:** Weekly programme for players of this age group

	Technical	Tactical	Physical	Mental
<b>Monday</b>	Topspin in ground strokes	Consistency from the baseline	Aerobic Endurance flexibility	100% effort
<b>Wednesday</b>	Serve and return fundamentals	Match situations/singles play	Multi-sport activity and coordination	Fun
<b>Friday</b>	The basic of winning volleys	Match situations/doubles play	Power /speed games flexibility	Self-confidence
<b>Sunday</b>	Club team competition under 10 or 12 years old. Singles, doubles and mixed doubles matches			

## DISCUSSION

After the implementation of the program in this study coach should be aware of the need for adequate rest days between competitions. In this age group, team competitions are emphasized. During this type of competition coaches should ensure that their players play not only singles but also doubles and mixed doubles matches.

In the study we determined the weekly program for players of this age group for each training components. Because of the tennis players results in the National tournaments for this age category we can confirm and apply the next contents of our program: technical (footwork in groundstroke's; effects in the serve flexibility, half and drive volleys, volley and smash, return of serve); tactical (attacking from the baseline, serve and volley, mid court game, attacking in the net, match play situations – singles and doubles); physical (concentration, control of emotions, motivation, control of thoughts, visualization). In the same time, with tournament players, we may have to develop a variety of different daily training structures. However, this situation may change with 12& under players since they usually go to school and are therefore only available to practice and complete at specific times in the afternoons and/or mornings.

## CONCLUSIONS

The results of our group training – basic prerequisites for ensuring effectiveness – we must ensure that: the team is comprised of players of homogeneous skill levels; the length of the session is between 1 or 2

hours; 1-2 courts are often for the training, depending on the number (max. 10 players on 2 courts); players practice the 5 basic game situation every day; all player fully participate (hitting, moving, resting, picking up balls, etc.) during all phases of the session and all drills performed. It is a team effort and players should work for each other; there are one or two main goals in each training session; optimal challenge, the group is rotated efficiently; a positive learning/training environment is created (credit of criticism, go for attitude, performance versus outcome, positive feedback, co-operation style, etc.); there are one or two main goals in each training session; optimal challenge, the group is rotated efficiently; a positive learning/training environment is created (credit to criticism, go for attitude, performance versus outcome, positive feedback, co-operative style).

## REFERENCES

- BRABENEC J., 1999**, *Competition: the most desirable form of training*, ITF Coaches Review, 9,10.
- DAVIES K., 1999**, *Ideas for competitions at the 14 and under level*, ITF Coaches Review, 10,10-12.
- GRANITTO G., 1999**, *PTI Examples of different competitive options*.PTA. Miami Fla. Coaches Review, 13,11-12.
- ITF, 1999**, *ITF Competition Formats Manual*. ITF Ltd. London
- MILEY D., 1998**, *The importance of competition planning*. ITF Coaches Review, 16, 5-7
- OTIS C., 1999**, *Special Challenges of Coaching adolescents*, ITF Coaches Review, 16, 1-2

## THE PHYSICAL PREPARATION AND THE EFFICACY OF THE PREPARATION PROGRAMMES AT THE NATIONAL FOOTBALL GROUP-JUNIORS

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### ABSTRACT

**Purpose.** The preparations especially the ones long term contribute to obtaining a good physical condition, to the improvement of the techniques and to compose a tactical behavior more inventive.

The improvement of the physical-technical-tactical through changing the trainings in centralized systems of preparing at the national group level having as aim the improvement of the sport performance of the football games at the level of juniors.

**Methods.** The groups. The analyzed subjects were the footballers of the national junior groups: the footballers of the National Group UEFA 85, which forms the experimental group and which is being influenced, on the shaping physical-technical-tactical "total training" during an yearly cycle training and the footballers of the National Group UEFA 86 as a controlling group, which functioned accordingly with the imposed requirements imposed by the available programmer from Romania, at that age.

The centralizing table includes the individual values at each parameter taken into consideration the analyze, the group environments, superior and inferior and the variation inside the tested group.

**Results.** *The MGM test.* If we compare the initial and the final results of the biometrical parameters (from the first table) we will consider that during the physical test "MGM" of the experimental group, at all the parameters (Unitarian force H for flying, Cve and Cvs) registered superior parameters comparing with the control group.

Inside the biometrical test "The equilibrium" the average level of the ray vector R1, R2, R3 and R4 inside the experimental team registers superior values comparing to the witness group.

**Conclusions.** The implementation of the preparation methodology which had as base the sharpening of the physico-technical-tactical preparation during 60-70 days from the year when the sportsmen were available for the national team has positively influenced the level of the physical preparation and the biometrical qualities first of all (this derives from the statistical manufacture of the values control checking of the physical indicators)

**KEY WORDS:** football, centralized checking, experiment, tests, physical preparation.

### INTRODUCTION

#### PURPOSE

In the modern vision regarding the tactical preparation of the junior footballers there is the training and exercising the three main elements of the game: obtaining a good physical condition, preparation and improvement of the technique, the composition an ingenious smart behaviour.

One supposed that the improvement of the technical preparation of the players will contribute to the improvement of the sportive performance of the football teams at the junior group level.

#### Material and methods

a) *Groups* The analysed subjects were the footballers of the national junior groups: the footballers of the National Group UEFA 85, which constitute the experimental group and which is being influenced and also the sharpening of the physical-technical-tactical preparation "total training" (M. Ionescu 1976; F. Motroc, A. Motroc 1999; V.I. Ionescu, C. Dinu 1982) during a certain training period and the footballers of the National Group 86 as a control group which activated accordingly with the requirements made by the available programmes concerning football, at that age.

b) *Experimental protocol* The action place: the football fields of the FRF- National Centre of preparation from the Mogosoaia complex, during 2007-2008.

c) *Tests: equilibrium test, CNM test, MGM test*

1. *The equilibrium test*

It is composed of four parts, each of it lasting 20 seconds, the difference between them being the action place.

The level of control capacity of the biopodal position is being stressed, the proper requirement is as small as possible variation of the projection of the charge center on the surface of the equilibrium platform. This variation can be viewed on the screen of the computer through a indicator light spot which represent the successive positions of the charge centre on the surface of the platform. The stability level is being appreciated by the vectorian ray.

2. *The control test neuromuscular (TCNM)*

One evaluates the capacity of solving movement tasks requiring a deep control of the used force, under the circumstances when there are no problems from an energetical point of view. It includes two parts which are different by the speed conditions, the subject being able to watch on the screen the way the task is being accomplished. The appreciation of the level of accomplishing the task. The supervision of the

level of accomplishing the task is being done from 1 to 10

3.The MGM (MIRON GEORGESCU MODIFIED, Hilerin, J.P., 1999)

It has as an aim fixing the main elements of the motilitical energetical and control at the level of the triple extension, in a great force-speed speed. It includes three series of 15 jugglings on both feet, on the right and on the left foot. Both the energetical – the level of the force-speed qualities aspects are being aimed as the control aspects, through certain parametrics.

Energetical parameters

Pu- the unitarian average power (W/kg)

H-flying – the average flying height (m)

Vrep-the speed parameter (repetition speed)

which actually represent the average time when touching the ground for propulsion (ms)

A-(D+S)- the difference between the value of the power on both feet and the sum of the values on both the right and the left, offers information about the equilibrium between the force part and the speed one; the values between 0 and 1 signify a disequilibrium meaning the lack of force, and the low ones lower than -1 a dezechilibrium concerning the lack of speed.

**RESULTS**

**Table 1:** The comparative analyse of biometrical technical tests (Firiteanu V.D.N., 2009)  
The MGM test

		PARAMETERS																
		Unitarian powers (W/kg)					H zbor (m)			V rep, (s)			C ve (%)			C vs (%)		
		A	D	S	D-S	A-(D+S)	A	D	S	A	D	S	A	D	S	A	D	S
<b>Medie</b>  <b>X</b>	The final experimental group	4,92	3,21	3,14	0,07	1,43	0,37	0,24	0,23	0,190	0,29	0,29	2,79	3,73	4,40	7,17	5,84	5,50
	The final witness group	5,08	3,11	3,20	0,21	1,236	0,38	0,22	0,23	0,173	0,254	0,272	2,44	4,69	4,21	5,49	5,00	4,76
<b>Abatearea Standard</b>  <b>Σ</b>	The final experimental group	0,42	0,36	0,40	0,31	0,38	0,04	0,03	0,04	0,03	0,03	0,03	1,77	1,55	2,35	3,44	2,93	2,08
	The final witness group	0,33	0,31	0,33	0,16	0,35	0,03	0,03	0,03	0,02	0,04	0,03	1,22	2,16	1,59	1,69	1,82	1,68
<b>The coefficient of variation</b>  <b>Cv (%)</b>	The final experimental group	8,65	11,16	12,84	86,5	26,79	10,52	13,71	16,06	17,97	9,49	11,08	63,22	41,58	53,52	48,00	50,23	37,79
	The final witness group	6,48	9,89	10,17	76,5	28,60	8,89	12,71	13,14	11,65	16,29	12,26	49,92	45,98	37,85	30,68	36,46	35,25

**Table 2:** The equilibrium test (Firiteanu V.D. N., 2009)

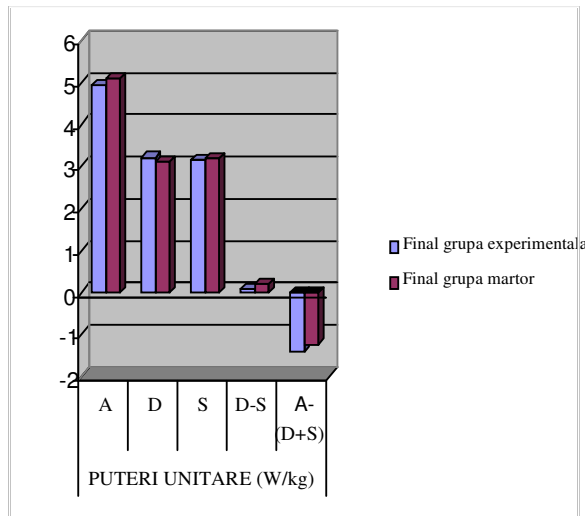
		The equilibrium test				The CNM test	
		AVERAGE	VECTORIAL	RAYS (mm)		NOTES	
		Rv 1	Rv 2	Rv 3	Rv 4	N (k 400)	N (k 150)
MEAN X	The final experimental group	1,95	2,17	1,62	2,58	8,28	8,03
	The final witness group	1,72	1,80	1,33	2,20	7,99	7,95
THE STANDARD EXCEPTION Σ	The final experimental group	0,73	0,97	0,53	0,72	0,50	0,73
	The final witness group	0,55	0,55	0,39	0,76	1,05	0,62
Coefficient of variation Cv(%)	The final experimental group	37,37	44,89	32,36	27,77	6,06	9,10
	The final witness group	32,04	30,83	29,62	34,48	13,20	7,83

*The interpretation of the information*

The MGM test. If we compare the the initial and the final results of the biometrical parameters (from the first table) we could consider that inside the physical test "MGM" of the experimental group, at all the parameters (unit force, H for flying , Cve and Cvs) marked superior parameters comparing to the group control. This thing happened in the case of jumps on both feet like in the case of jumps fist on left and then on right. The coefficient of variation evaluated between

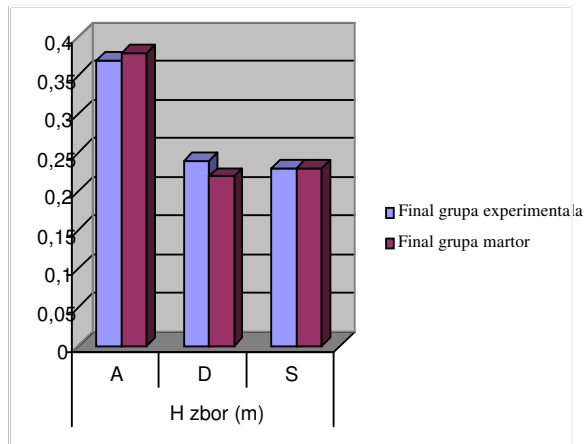
8,65 and 8,65 in the case of experimental group, and in the case of witness group between 6,48 and 76, 5 which shows that in most of the cases there is a homogenization superior to the experimental group towards the control group.

Inside the biometric test "Equilibrium" the average level of the vector rays R1, R2, R3 and R4 inside the experimental team registers values superior to the witness group.

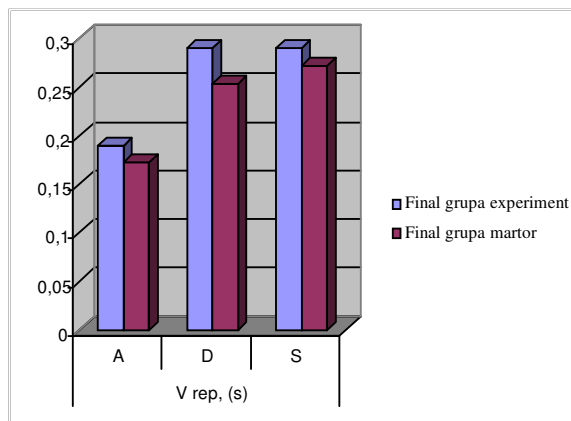


The first picture

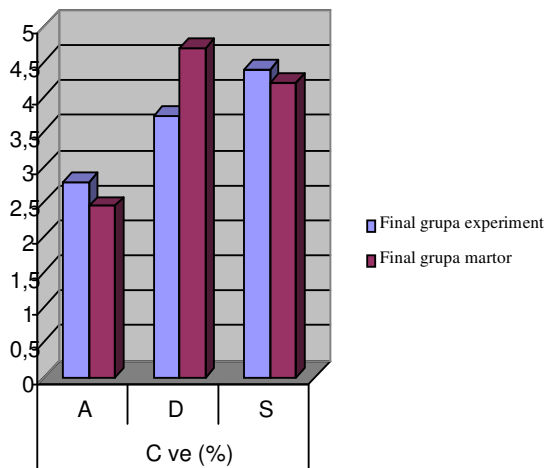
The graphic description of the results at the test- MGM-unit force



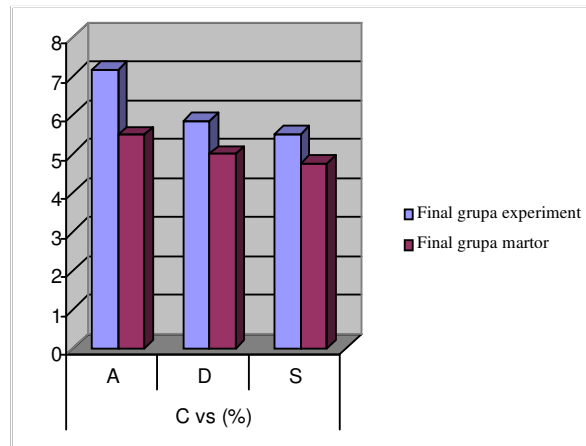
The second picture  
The graphic description of the results at MGM test- H for flying



The third picture  
The graphic description of the results at MGM test- repetition velocity



The fourth picture  
The graphic representation of the results at the MGM test-Cve



The fifth picture The graphic representation of the results of the MGM test – CVs

Concerning the biometric test "Equilibrium" the level of the vector rays R1, R2, R3, R4 inside the experimental team registers superior values to the control group.

#### DISCUSSION AND CONCLUSION.

Significant differences from a statistical point of view between the average final levels and the average initial levels of all the physical tests which acted under the circumstances of training inside the experimental group, which expresses the increase of the efficiency of the application while the training, of the proposed method, of the planning and of game inside The National Group UEFA 85, so an increase of the effects as a consequence of the supposed efforts made both by the coach and by the junior footballers, too.

The implementation of the preparation methodology had as support the shape of the physical-technical-tactical preparation during the 60-70 days from the yearly cycle when the sportsmen were available for the national team which positively influenced first of all the level of the physical preparation and of the biometric qualities (as this results from the statistical

manufacture of the values of the control tests of the physical indicators).

#### REFERENCES

- FIRITEANU, V.D.N.**, *The shape of the tactical preparation of the footballers at the national team of juniors, doctor paper*
- HILLERIN, J.P.**, *Proposal of interpretation of the variability of the contact times with the ground and flight in the MGM-15 test, with the indicators of the control neuromuscular quality of the parts of the motric interaction* –National psychology conference, Bucharest 27-29 may, 1999
- IONESCU, M.**, *football from a to z. The football along the years.* Sport Tourism publisher, Bucharest, 1988, 36-45.
- DINU, M., IONESCU, C.**, *The football, conceiving the game,* IEFS publisher, Bucharest, 1989, 59-70.
- MOTROC, I., COJOCARU, V.**, *The football-support course,* Ist, IInd and IIIrd tomes, ANEFS publisher, Bucharest, 1991, 286.
- MOTROC A., MOTROC, F.**, *The football for the children and juniors,* Bucharest, 1996, 15-35.

## THE DYNAMICS OF THE TECHNICAL TESTS FOR THE PREPARATION OF THE JUNIOR FOOTBALLERS

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#### ABSTRACT

**Purpose.** The centralized preparations especially the ones long term based contribute to obtaining of a good physical condition, to the improvement of the technique and to the composition of a tactical behavior more inventive.

The present paper will concentrate upon the role that the concrete application could have, a systematical and right application of the method of the physical and technical preparation concerning the football trainings.

**Methods.** The groups. The analyzed subjects were the footballers of the national junior groups: the footballers of the National Group UEFA 85, which forms the experimental group and which is being influenced, on the shaping physical-technical-tactical "total training" (M. Ionescu 1976; F.Motroc, A. Motroc 1999; V.I. Ionescu, C. Dinu 1982) during an yearly cycle training

and the footballers of the National Group UEFA 86 as a controlling group, which functioned accordingly with the imposed requirements imposed by the available programmes from Romania, at that age.

The activity place: the football fields of the FRF- The National Centre of preparing from the Mogosoia complex, during 2007 and 2008

*Tests for calling the technical preparation: "juggling", "lead ball", "kick", "the control of the ball", "head shot", "care long"*. The results were manufactured from a grafo-analytical point of view using the statistical functions: arithmetic average, error of the average, coefficient of variability (V), statistical significant (the student test), range of significance, standard exception, correlation index.

**Results.** The technical test "juggling", the average final level of the group test which was the experiment was 49 points higher than the control group which was only of 45 pints. So, this index, with 8,76%, which represent a significant difference from a statistical point of view ( $p < 0.05$ ). Finally, we could say that the homogenization of the results of the experimental group being compared with the control group is better, because the coefficient of variation of the levels of the test of the experimental group of 6,91% is higher than that one of the control group which is 5,72%.

**Conclusions.** The implementation of the methodology of preparation which had as support the sharpening of the physical-technical-tactical preparation during the 60-70 days during the annual cycle when the sportsmen were available for the national team and positively influenced the physical and technical level.

**KEY WORDS:** football, centralized preparation, experiment, test, technical preparation.

## INTRODUCTION

### PURPOSE

The new idea of "total training" includes the necessity of approaching the training from a manufacturing perspective, including methodological (M. Ionescu 1976; F. A Motroc, 1999; V.I Ionescu, C.Dinu 1982)

Starting with these considerations the present paper will concentrate on the role that the actual systematical and correct application could have of preparation of shaping the physical and technical preparation inside the football trainings.

It was supposed that the improvement of the physical and technical improvement of the players will contribute to the improvement of the sportive performance of the football players at the level of junior groups.

### MATERIAL AND METHODS

- a) Groups: The researched subjects were the footballers of the national junior groups: the footballers of the National Group 85, which constitute the experimental group and which is influenced on the shape of the physical-technical-tactical "the

total coaching" (M.Ionescu 1976; F. Motroc, A.Motroc 1999; V.I Ionescu, C. Dinu 1982) during a yearly training and the footballers of the National Group UEFA 86 as a control group which acted accordingly with the required conditions imposed by the available football programmes, at that age.

- b) *Experimental protocole* The action place: the football fields of the FRF- the National Centre of training from the Mogosoia complex, in 2007 -2008.
- c) *Tests for finding out the technical preparation: "juggling", "conducting the ball", "kick", "care long", "head kick"*
- d) *The statistical manufacture:* the results were manufactured graphic-analytical, using the statistical functions: arithmetic average, error of average, the coefficient of variability (v), statistical significance (the student test), the period of significance, the standard exception, the index of correlation (Adrian Gagea, 1996 pages 118-122, 1999, pages: 315-322, T.Baron, C.Anghelache, E.Titan, 1995)

## Results

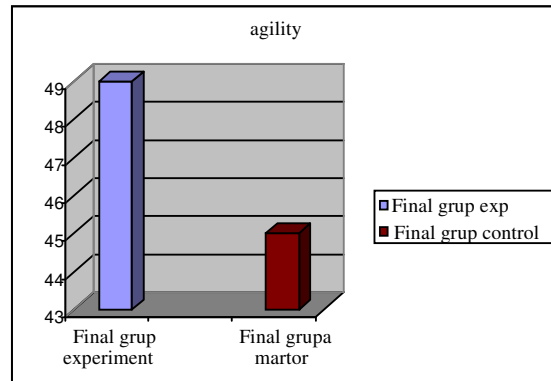
**Table.1** The comparative analyse of the technical tests between the experimental group and the control group (V.Firiteanu D.N, 2009)

The technical test		JONGLAR E	CONDUCE REA MG, (SEC)	ŞUT LA POART A (PUN CTE)	PASA LUNGĂ (PUN CTE)	CONTR OLUL MG, ( SEC)	LOVIT, CU CAP, (PUN CTE)	
Statistic indicators	The average level of the technical test							
	test X	The experimental final group	49	46,4	24,0	23,9	23,8	24
		The final witness group	45	42,6	23,2	23,3	23,1	23,8
Abaterea standard		The final experimental group	0,53	0,69	0,08	0,17	0,09	3,19
	Σ	The final witness group	0,48	0,13	0,17	0,21	0,08	0,84
The coefficient of variation	Final grupa experimentală	6,91%	4,70%	5,23%	7,28%	3,22%	4,35%	
Cv(%)								
Testul „t”		5,73 $p < 0,05$	3,90 $p < 0,001$	4,11 $p < 0,001$	3,17 $p < 0,001$	4,81 $p < 0,001$	6,73 $p < 0,05$	



The technical test ‘‘juggling’’, the average level of the experimental group test of 49 points is higher than the witness group of 45 points. Thus, this index raised at the experimental group towards the witness group finally, average with 4 units, respectively with 8,76%, which represent a significant difference from a statistical point ( $p < 0,05$ ). Finally, we could say

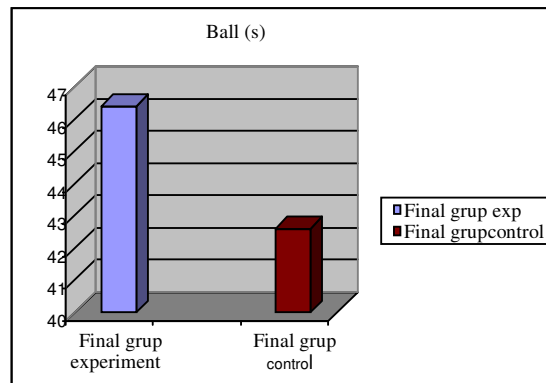
that the homogeneity of the results of the experimental group towards the witness group is better because the coefficient of variation of the levels of the test at the experimental group of 6,91% is higher than the witness group of 5,72%.



The first picture The graphical representation of the results at group-juggling

The technical test: ‘‘lead ball’’, the experimental group registered an average level of the test of 46,4 points which is higher than than the control group of 42,6 points, the progress of the experimental group towards the witness group of 3,8, respectively of 8,4%, which represent a significant difference

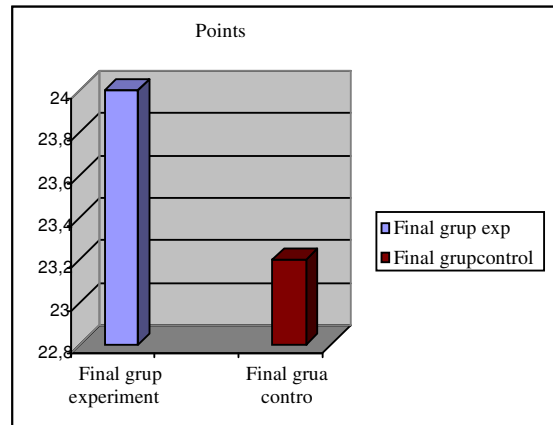
from a statistical point ( $p < 0,01$ ). The homogenization of the results of the experimental group raised finally towards the control group, because the coefficient of variation of the tissues at the experimental group of 4,70% is higher than the control group, 2,99%.



second picture: the graphical representation of the results at the test- the lead ball

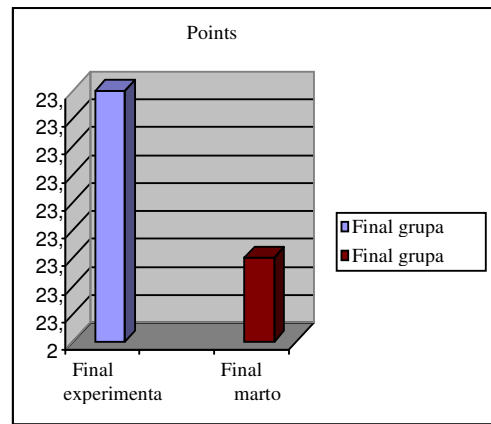
The technical test: ‘‘gate kick’’, the experimental group registered an average level of 24 points which is higher towards the witness group of 23,2 points. Thus, this index became higher at the experimental group towards the witness group, with 0,8, respectively 5,7% which represents a

significant difference from a statistical ( $p < 0,001$ ). The homogenization of the of the results of the experimental group, because the coefficient of variation of the tissues of the test of the experimental group of 5,23% which is higher than the witness group of 3,39%.



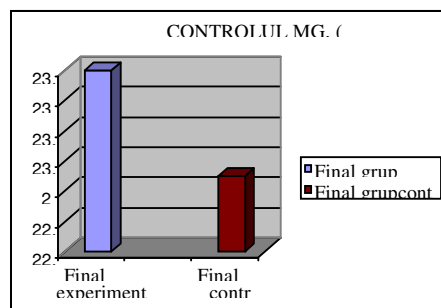
The technical test: "care long", the experimental group registered an average level of the test of 23,9 points which is higher than the control group of 23,3 points. Finally, this index raised approximately at the experimental group towards the witness group with 0,6 points, respectively with 11,6%

which represent a significant difference from a statistical point ( $p < 0,001$ ). The homogenization of results of the experimental group, because the coefficient of variation of the levels of tissues inside the experimental group of 7,28 is higher than the witness group of 3,80%.



The technical test: "ball control", the average final time of the test of the experimental group of 21,9 seconds is lower than the witness group of 23,1 seconds, the progress of the experimental group towards the witness group being the decrease of the average final time of the group with 1,2 seconds. Therhythm of the decrease of the experimental group towards the witness group expressed itself with 11,63%.The coefficient of variation of the registered times in

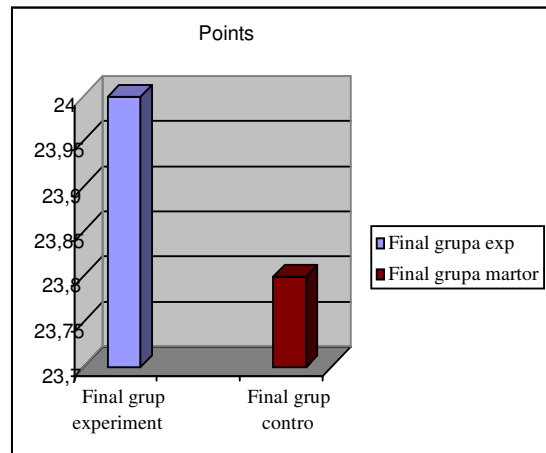
the final period by the footballers of the experimental group of 3,22% is superior to the final period of the witness group of 2,64%, which expresses a higher homogenization of the results of the experimental group towards the witness group. The calculation by the "t" tissue of difference between the final times in the two groups of the technical group, expresses a significant character of this one ( $p < 0,001$ ).



the fifth picture the graphic representation of the results at the test- the ball control

The technical test; "head kick", the average final level of the test of the experimental group of 24 points is higher than that one of the control group of 23,8 points, the progress of the

experimental group towards the control group is that one of 0,2 units. The rhythm of increase of the average final experimental level towards the control group is 1,2%.



the sixth picture The graphical representation of the results at the test- head kick

**DISCUSSION AND CONCLUSION.** The best results obtained inside the experimental group towards the control group were the next technical tests: "lead ball", "juggling", "gate kick". The good results are also present inside the other technical tests from the experimental group. Thus, inside the test "ball control" there is the decrease of the average final time inside the experimental group towards the control group. Likewise, at the technical test "head kick" the average final level in the experimental group is higher than that one realized by the control group. Finally, the coefficient of variation of the levels of the test at the experimental group of 4.45% is higher than control group of 3.06%, which signifies a higher homogenization of the results of the experimental group towards the control group. By using the "t" test for the calculation of the difference between the average final levels of the technical groups inside the two teams, we obtain a significant character of this one. ( $p < 0,001$ ). The implementation of the methodology of preparation which had as fundamental the shape of the physical technical-tactical preparation during the 60,70 days from the yearly cycle when the sportsmen were available for the national group positively influenced both the physical and the technical level. The methodology of implementation of the shape of tactical preparation inside the national junior team, called U.E.F.A 1985 during an yearly training cycle and competitions created the possibility that the national team should obtain official and friendly tournaments from 15 players, 13 triumphs, an equal match and defeat.

#### REFERENCES

- GAGEA, A.,** *Tecnology and statistics, master degree course*, ANFS publisher, Bucharest, 1996, pages 118-122
- GAGEA, A.,** *The methodology of the scientific research in physical education and in sport*, Foundation publisher; "Romania for tomorrow", Bucharest 1999, 105-115; 139-143; 156-163
- FIRITEANU, V.D.N.,** *The shape of the tactical preparation of the footballers at the national team of juniors, doctor paper*
- HILLERIN, J.P.,** *Proposal of interpretation of the variability of the contact times with the ground and flight in the MGM-15 test, with the indicators of the control neuromuscular quality of the parts of the motric interaction* –National psychology conference, Bucharest 27-29 may, 1999
- IONESCU, M.,** *football from a to z. The football along the years*. Sport Tourism publisher, Bucharest, 1988, 36-45.
- DINU, M., IONESCU, C.,** *The football, conceiving the game*, IEFS publisher, Bucharest, 1989, 59-70.
- MOTROC, I., COJOCARU, V.,-** *The football- support course*, Ist, IInd and IIIrd tomes, ANEFS publisher, Bucharest, 1991, 286.
- MOTROC A., MOTROC, F.,-** *The football for the children and juniors*, Bucharest, 1996, 15-35.

## DECISION MAKING SELF-ESTEEM AND DECISION MAKING STYLES OF TURKISH TENNIS REFEREES

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#### SUMMARY

The aim of this study is to examine the decision making self-esteem and decision making styles of the tennis referees. The working group is constituted of 130 tennis referees, 47 of them are female and 87 are male. For this study Melbourne Decision Making Questionnaire I-II (MDMQ) is used. Cronbach Alpha Reliability Coefficient of the Questionnaire is found to be .73. For the analysis of the data Mann-Whitney U Test, Kruskal-Wallis Test and Wilcoxon Signed-Rank Test are used. A significant difference could not be found between the tennis referee's decision making

self-esteem and lower dimension of decision making styles with respect to their educational status, gender, referee ratings and umpiring periods ( $p>0.05$ ). It has been observed that as the self-esteem levels of the referees increase, their vigilant decision making levels also increase, while procrastinating, buck-passing and panicking decision making levels decrease. A meaningful relation has been found between the ages of the referees and panic decision making styles. It has been detected that the older the referees are, they panic less during decision making. A significant relation has been observed between the tennis playing time and abstaining decision making styles. It has been confirmed that the buck-passing decision making style is more common among referees who played tennis for longer periods.

**KEY WORDS:** Tennis referee, decision making self-esteem, decision making style

## INTRODUCTION

The referees are one of the most important elements of the sports world. During a game a referee's correct decision is essential. It is the referee decisions that affect the game results and determine the winning and losing sides. The referee decisions must be indisputable and satisfying for both sides. A referee's experience, knowledge and personal characteristics may be effective on his/her decision making during a game. Decision making is a process resulting in an outcome leading to the selection of a course of action among several alternatives. In order to make a decision, more than one alternative must be available (Rollinson, 2002). The effectiveness of the decision making process depends on the characteristics of the person who makes the decision. Because at the decision making step the methods preferred by the individuals are important (Shiloh et al, 2001). According to Mann et al (1998), the individuals use four different decision making styles namely vigilant, buck-passing, procrastinating and hyper-vigilant. The persons who use the vigilant decision making style elaborately search the necessary information before making their decisions and make their choices after evaluating the alternatives carefully. The persons who choose buck-passing decision making style avoid the decision making process and they are inclined to shift off the responsibility. The persons who adopt the procrastinating decision making style try to postpone the decision making process without any acceptable reason. And the persons who are inclined to use the hyper-vigilant decision making style feel themselves under pressure when they have to make a decision and they make their decisions hastily. Examination of the decision making styles of the tennis referees may contribute the studies related to the correct decision making styles of the referees. Within this context, in this study decision making self-esteem and decision making styles of the tennis referees has been examined with respect to their gender, age, educational status, umpiring period, referee ratings and tennis playing period.

## METHOD

This is a scanning type of study aimed at detecting the existing situation. The working group is constituted of 130 tennis referees that participated in the tennis referees development seminary held in 2009 in Antalya. 47 (36.2%) of the referees who joined the study voluntarily are female and 87 (63.8%) are male. The personal information related to the tennis referees are given in Table 1.

**Table 1.** Personal information related to the tennis referees

### Personal Information

Age	n	%
18-29	33	25.4
30-41	52	40.0
42 and older	45	34.6
<b>Total</b>	<b>130</b>	<b>100</b>
Gender	n	%
Female	47	36.2

Male	83	63.8
<b>Total</b>	<b>130</b>	<b>100</b>

Educational Status	n	%
High School	27	20.8
University	103	79.2
<b>Total</b>	<b>130</b>	<b>100</b>

Referee Rating	n	%
Nominee	23	17.7
Region	83	63.8
National	20	15.4
International	4	3.1
<b>Total</b>	<b>130</b>	<b>100</b>

Umpiring Period	n	%
0-3 years	34	26.2
4-7 years	51	39.2
8-11 years	24	18.5
12 years and more	21	16.2
<b>Total</b>	<b>130</b>	<b>100</b>

In the study Melbourne Decision Making Questionnaire (MDMQ) I-II which is developed by Mann et al (1998) is used for the detection of decision making self-esteem and decision making styles of the tennis referees. MDMQ I aim at detecting decision making self-esteem and MDMQ II decision making styles. MDMQ I consist of 6 elements and MDMQ II 22 elements and 4 lower dimensions (vigilant, buck-passing, procrastinating and hyper-vigilant). In the study made with test repeating method, the reliability coefficients of the questionnaire - adapted to Turkish by Deniz (2004) - derived from the lower coefficients are found as  $r=.68$  ile  $r=.87$ . Deniz (2004) has stated that this questionnaire is valid and reliable.

The independent variables of the study are gender, age, the educational status, umpiring period, referee ratings and tennis playing period. Dependent variables are decision making self-esteem and decision making styles. As the distribution of the data is not normal, in the study non-parametric tests have been used. For the purpose of demonstrating the differentiation of decision making self-esteem and decision making styles of the tennis referees due to gender, educational status and tennis playing, Mann-Whitney U Test and for other independent variables Kuruskal-Wallis Test is used. For the detection of the relationship between decision making self-esteem and decision making styles (vigilant, buck-passing, procrastinating and hyper-vigilant) Wilcoxon Signed-Rank Test is used. The results of the reliability study show that Cronbach Alpha Reliability Coefficient of the Questionnaire is .73. In the study the significance level is found to be  $p<0.05$ .

## FINDINGS AND DISCUSSION

The results of the Mann-Whitney U Test which is used to understand whether decision making self-esteem and decision making styles of the tennis referees differ due to gender and educational status show that they do not differ. The results of the Kuruskal-Wallis Test which is used to see whether decision making self-esteem and decision making styles of the tennis referees differ due to the umpiring period and referee ratings also prove that they do not differ.

Wilcoxon Signed-Rank Test analysis (Table 2) made to understand whether here is any relationship between decision making self-esteem and decision making styles of the referees or not, show that there is a positive relationship between the self-esteem levels and vigilant decision making styles ( $Z = -8.097$ ,  $p < .05$ ). A negative relationship is found between the self-esteem levels and buck-passing ( $z = -9.9700$ ,  $p < .05$ ), procrastinating ( $Z = -9.977$ ,  $p < .05$ ) and hyper-vigilant ( $Z = -9.988$ ,  $p < .05$ ) decision making styles of the referees. We can say that as the self-esteem levels of the referees increase, their vigilant decision making levels also increase, while procrastinating, buck-passing and panicking decision making levels decrease.

**Table 2.** Wilcoxon Signed-Rank Test analysis

Decision Making Styles		Vigilant	Buck-passing
Procrastinating	Hyper-vigilant		
Z		-8.097	-9.700
-9.977	-9.988		
P		.000	.000
.000	.000		

$P < .05$

Kruskal-Wallis Test analysis which is made to examine the relationship between the tennis playing period and decision making styles of the referees show that there is not a significant relationship between the tennis playing period and self-esteem [ $X^2(2)=1.346$ ,  $p > .05$ ], vigilant decision making [ $X^2(2)=1.084$ ,  $p > .05$ ], procrastinating decision making [ $X^2(2)=3.186$ ,  $p > .05$ ] and hyper-vigilant decision making [ $X^2(2)=1.371$ ,  $p > .05$ ]. However, a significant relationship between the tennis playing period and buck-passing decision making style is detected [ $X^2(2)=6.412$ ,  $p < .05$ ]. The decision making style of the tennis referees who played tennis for 8 years or longer ( $x=36.20$ ) are more buck-passing compared to the ones who played tennis for 4-7 years ( $x=23.40$ ). We can say that the buck-passing decision making style is more common among referees who played tennis for longer periods.

Kruskal-Wallis Test analysis which is made to examine the relationship between the ages and decision making styles of the referees show that there is not a significant relationship between tennis playing period and self-esteem [ $X^2(2)=.299$ ,  $p > .05$ ], vigilant decision making [ $X^2(2)=.294$ ,  $p > .05$ ], buck-passing decision making [ $X^2(2)=4.420$ ,  $p > .05$ ] and procrastinating decision making [ $X^2(2)=1.452$ ,  $p > .05$ ]. However, a significant relationship between the age and hyper-vigilant decision making [ $X^2(2)=9.223$ ,  $p < .05$ ] has been observed. The tennis referees 42 years old or older ( $x=53.06$ ) are less hyper-vigilant in decision making compared to the referees 18-29 ( $x=75.08$ ) and 30-41 years

old ( $x=70.19$ ). As a conclusion we can say that as the referees get older, they become less hyper-vigilant in decision making.

### CONCLUSION

No significant differences has been observed between the gender, educational status, umpiring period, referee ratings and decision making self-esteem and the lower dimensions of the decision making styles of the tennis referees.

A significant relationship between the ages and hyper-vigilant decision making styles of the referees has been detected. The tennis referees 42 years old or older are less hyper-vigilant in decision making compared to the referees 18-29 and 30-41 years old. It can be said that as the referees get older, they become less hyper-vigilant in decision making. U.O.Uzunoglu, 2008, has reported that the football referees make less buck-passing decisions as they get older.

A significant relationship between the tennis playing periods and buck-passing decision making styles of the referees has been observed. The decision making style of the tennis referees who played tennis for 8 years or longer are more buck-passing compared to the ones who played tennis for 4-7 years. It can be said that the buck-passing decision making style is more common among referees who played tennis for longer periods.

While a positive relationship is observed between the self-esteem levels and vigilant decision making styles of the referees, a negative relationship is conspicuous between their self-esteem levels and buck-passing, procrastinating and hyper-vigilant decision making styles. E.M.Deniz (2004) and Mann et al (1998) have stated that there is a positive relationship between decision making self-esteem and vigilant decision making style. As a conclusion it can be said that as the self-esteem levels of the referees increase, their vigilant decision making levels also increase, while procrastinating, buck-passing and panicking decision making levels decrease.

### References

- DENIZ, E., M. (2004). *Investigation of the Relation Between Decision Making Self-Esteem, Decision Making Style and Problem Solving of the University Students.* Eurasian Journal of Educational Research, 15, 23-25.
- MANN, L., RADFORD, M., BURNETT, P., FORD, S., BOND, M., LEUNG, K., NAKAMURA, H., VAUGHAN, G., YANG, K. (1998). "Cross-cultural Differences in Self-reported Decision-making style and Confidence." 33, (5), 325-335.
- ROLLINSON, D. (2002). *ORGANISATIONAL BEHAVIOUR And Analysis An Integrated Approach* (Second Edition). Pearson Education Ltd: Essex.
- SHILOH, S., KOREN, S., ZAKAY, D. (2001). "Individual Differences in Compensatory Decision Making Style and Need for Closure as Correlates of Subjective Decision Complexity and Difficulty". Personality and Individual Differences, 30, (699-710).
- UZUNOĞLU, U., Ö. (2008). "Examination of The Decision Making Styles of The Turkish Referees in Relation With the Ratings and Some Variables", (Unpublished Post Graduate Thesis), Selçuk University, Health Sciences Institute, Konya.

## PSYCHOLOGICAL CHARACTERISTICS ON WOMEN SOCCER PLAYERS

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### ABSTRACT

In soccer game, the mastery level corresponds to executions that rely primarily on skills highly automated, with elements of originality, risk. Required all higher mental processes, but also a number of analyzers. Mental processes involved in football activity are tightly correlated with temperamental type of athlete.

**KEY WORDS:** psychological characteristics, soccer, women soccer players.

### INTRODUCTION

Football is primarily a team game, which involves direct contact with the opponent players, seeking multilateral sports players, in both the complexity of movements and/or various working conditions. Mastery level corresponds to movement executions that rely primarily on highly automated skills, with elements of originality and risk, which gives a high grade in movement execution. Also, for movement executions there are two analyzers – kinetic and balance – which gives control and are directly involved in movement executions. Body scheme and laterality are strongly engaged in soccer game (A. Dragu, 2003). We can not overlook the perception of space, which helps to create a sense of ball, gate and placement.

### CONTENT

Regarding the higher mental processes, we note the following:

- The level of attention - the ability to concentrate attention must be maximum, which means distraction of athlete from the actions of stimuli with harmful effects and the orientation of the player, simultaneously, to its execution, teammates, opponents and referees; basically it's about flexibility and distributivity of attention.

- The level of thinking - is requested for thinking efficiency and flexibility.

- The level of imagination – in this case is required both, reproductive type of imagination (replay some action schemes which was suggested by coach) and the creative type (creation of new solutions).

- The level of intelligence - in soccer, the intelligence - resolvent-productive side of the personality - acts as technical skills, as well as, tactical intelligence.

**Technical ability** involves not only the correct execution of a technical element (passing, stopping, receiving, kicking), but also adaptation of motric behavior to the actual situation due to the nature of the field, wind, speed and direction of the ball. Therefore, it contains sensorial elements (external perception, proprioception - kinetic sensations and balance), logical (understanding the situation, reported to the task and intent), and data memory, combined with specific skills.

Intelligent motor acts present the following characteristics:

- inventiveness;
- anticipation;

- adaptability;
- variety;
- efficiency;
- promptitude;
- opportunity;
- rapidity;
- precision;
- accuracy (M. Epuran, E. Horn, 1985).

Gifted players have a good psychomotricity background (coordination, balance, body scheme) which can lead to a quick learn and progress.

**Tactical intelligence** includes motric ability, which can be structured and adjusted to the problematic situations encountered in the game. It can resolve (tactical) problem and creation (the answers to the problems already encountered and, in the same time, creating problems for the opponent). Tactical intelligence does't always correlate with technical skill. There may be players with technical ability, but endowed with a poor tactical intelligence. A performance player must have both tactical intelligence and technical skill, which can be added together in what is called „intelligence game”.

In terms of specific intelligence there is a great diversity which must be taken into account in both training and preparation for the game. Thus, a fairly large number of players are able to make concrete practical demonstrations, but fail to retain the information or recommendations/theoretical explanations. Others understand very well the details, but they can not realize in practice. There are also players with sound technical knowledge, but they fail to apply them in game, or players who learn the tactical and technical guidance, but cannot make the connection between theory and practice.

Most valuable players are those who not only are able to learn technique, but succeed and improve in practice.

In acceptance of M. Epuran, E. Horn (1985), soccer competence has three components:

1. Psychomotric (coordination, kinesthetic sense, body scheme, etc.).
2. Somato-physiological (somatic, motor and physiological qualities)
3. Mental (practice intelligence, voluntary and emotional adjustment).

Psychomotric componenet mainly include:

- movements rapidity (optimal reactivity);
- reaction time (anticipation time);
- kinesthetic sense (movements precision);
- spatial perception (distance, depth, volume);
- perceptions of time (rhythm, tempo, duration);

- movements coordination (general and intersegmentar coordination);
- laterality;
- static and dynamic balance;
- body scheme;
- ideomotricity (ability to adjust actions by movements representation).

Sonato-physiological component include:

- motor abilities: speed, strength, endurance, skill, mobility;
- morphological qualities: somatic type;
- exercise and recovery capacity.

Mental component include:

- practical intelligence (tactical)
- creativity;
- tenacity;
- decision;
- combativeness;
- composure;
- self-critical ability;
- resistance to stress and frustration;
- emotional balance;
- communication with others;
- motivation for performance.

For soccer is very important to know the type of temperament.

**Sparkle temperament** is determined by a strong nervous system, balanced and mobile, characterized by quickness, quick movements, emotional vivacity. The player is happy, sociable.

The athlete with a such temper can also easily adapt to training and competitions. On field is lively, full of initiative, willing to cooperate with the desire for great success. The players don't have conflicts with coach and teammates and fits easily in team discipline. During the match the players don't protest at the referees decision and show no verbal aggression against opponents. Athletes with sparkle temper are named by teammates "good guys" (V. Prelici, 1980).

**Phlegmatic temperament**, are based on a strong nervous system, balanced and inert. The players show patience in activities. The players don't let disrupted by the bad situations. Because of their great capacity of concentration and perseverance can achieve exceptional results. They are moderate, with a sense of measure, do not show excessive confidence in their forces.

In sports activity, such a temper has advantages and disadvantages. The phlegmatic athlete have constant reactions and show great perseverance in both training and competitions. The players work conscientiously. In difficult or critical moments they don't lose composure, and because its slower he can be overfulfilled in some context situation. A soccer player with a phlegmatic temperament may be particularly efficient in certain circumstances and moments.

**Choleric temperament** with a powerful and unbalanced nervous system, is explosive, boisterous and unequal. He passes from actions with maximum intensity to the abandonment or inactivity. Energetical mobilization is maximum and this occurs occasionally with depletion of energy. The player is impatient and prefer non-deliberately actions; it's comfortable when operate in conditions of risk. Due to these peculiarities, his behavior is often unpredictable. Choleric person is a good organizer and has a propensity to action and can achieve exceptional results.

Choleric soccer player seems to be favored in the sport activities, but failures - which are inherent - can have profound effects on individuals with this type of temperament. The monotony of training is hard to endure for the players and the bereave and stressful conditions may lead to the manifestations that will affect the results: violent outbursts, conflicts with opponents, teammates or coaches. Repeated failures can mobilize the player, but it may cause unacceptable reactions on social level (violence, alcoholism). **Melancholic temperament** has a nervous system characterized by weakness. In critical situations, people with a melancholic temperament do not work at their best possibilities and may fail more often than other peoples temperaments. In normal conditions, the player acts patiently and conscientiously, have a high self-exigency, but also a sensibility and inclination to sentimentalism. In some cases those with melancholic temperament are not realistic, failure may lead to dreaming or sterile dreams. Soccer players with melancholic temperament are characterized by the fact that they often get better results in training than in competition. In their cases is not about a lack of mobilization or superficiality in training, rather is an overmotivation that annihilates the initiative. They feel the need that in difficult situations to have near peoples that they trust. Athletes with melancholic temperament are disciplined, careful, with the desire to do their duty, show a high self-exigency that making the influence exerted by their coach to be particularly effective.

#### CONCLUSIONS

Mental processes involved in football activity are tightly correlated with temperamental type of athlete. Therefore a main role have the coach, who must decide how to persuade athletes to "give everything" on the ground, both in training and especially in competition.

#### REFERENCES

- DRAGU, A., 2003**, *Psihologia activității sportive*, EDP, R. A., București.
- EPURAN, M., HORN, E., 1985**, *Mecanisme de influențare a comportamentului în fotbal*, Ed. Sport-Turism, București.
- GLEIM, G. W., 1984**, *The profiling of professional football players*, Clin Sports Med, 3 (1): 184-97.
- JUNGE, A., DVORAK, J., PETERSON, L., ET AL., 2000**, *Psychological and sport-specific characteristics of football players*, The American Journal of Sports Medicine, 1: 28.
- PRELICI, V., 1980**, *Performanța sportivă, personalitate, selecție*, Ed. Facla, Timișoara.

## CONTRIBUTIONS TO DANCE SPORT TRAINING METHODS AT BEGINNERS' LEVEL, 6 TO 9 YEARS OLD

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#### ABSTRACT

**Premises.** As in these last years the dance sport became very popular in Romania thanks to the large number of specific clubs accepted in the family of the Romanian Federation of Dance Sport, the rivalry of these clubs grew stronger; each club looks for methods of progress, of obtaining good results in the domestic events and in the international ones afterwards.

The main objective of the study is the initiation into the dance sport and the debut in the first event of this kind. For the materialization of the notions specific to the training in dance sport, one considers that every two weeks one training session should be exclusively dedicated to the development of the other motor skills, without ignoring the

development of the motor skills specific to the dance sport during all training sessions. This strategy will contribute to the improvement of the training methods in the dance sport at beginners' level.

**Research methods and procedures.** The study was carried out along two years (2002-2004), with juveniles, 6 to 9 years old, belonging to the „Pygmalion” Sports Club Association of Bucharest. With a number of 250 children, separated in several groups, the school year 2002-2003 included 34 weekly training cycles, 3 weekly cycles of pause and 54 hours of training.

As noticed during the first training sessions, the diversity and the playful character were the most obvious features of the work with children under school age. Given the age particularities, during the first four months it was considered necessary to review all the exercises already taught after every four sessions. Thus, one part of the program carried on the learning process, and the other part included the consolidation and the rehearsal of the dances prepared for the school festival.

During the five training sessions left until the school year end, the dances to be executed during the school festival were learned up. These children performed three dances out of the four dances they had learned; in the same time, this thing represented the final control event of the children members of the advanced dancers' group.

Thus, at the beginning of February a new training stage of the kindergarten best dancers started. There were 24 children (12 girls and 12 boys), separated in two groups of 6 couples, all of them belonging to the preparatory groups that enrolled in school in September. The unselected children carried on the planned program until the end of the school year. For a better materialization of the activity, at least two individual training sessions with the six couples supposed to have their debut at the first competition in November 2004 were held during the 7 days of training. Therefore, the couple who had a training session during the last interval was spared at the last training session. The individualization principle has been applied even since this age, in order to correct the execution mistakes and to supplement the training program above the tolerance threshold.

**Results.** The results of the study proved the efficiency of the specific means utilization within the dance sport training at juvenile level. Thus, 6 couples out of 12 had their debut in the first competition and were supposed to participate in the next event. Out of the first 6, three qualified for the semifinals, and the other ones for the quarterfinals, in the 14<sup>th</sup>, 18<sup>th</sup> and 21<sup>st</sup> place.

**Conclusions.** We consider that the research objective has been reached, and the planning (although succinctly introduced in this paper) has been formulated correctly, as it is based on all the principles of the sports training (the principle of the conscious and active training, of the multilateral training, specialization, individualization and progressive teaching), the training factors (physical, technical, psychical, etc.), the pedagogical principles “teaching-learning” (from simple to complex, from easy to difficult, from fragmented to whole, etc) and, equally important, the factual confirmation during the events.

In the final part of the work, we can point out that the utilization of a training session exclusively meant to develop the other motor skills every two weeks, without ignoring the development of the motor skills specific to the dance sport in any session, contributes to the improvement of the training methods in the juvenile level dance sport, fact confirmed by the results of the study.

**KEYWORDS:** dance sport, training, planning, selection.

## INTRODUCTION

The difficult situation of the whole Romanian sport of nowadays makes us understand the necessity of a better training of the young coaches, of the persons who deal with the preparation, selection and discovery of the young talents. Certainly it is not enough for a rapid and continuous recovery of the situation, but this is the easiest and safer thing as possible. The development of the centers for children and juniors, the creation of the proper infrastructure for the carrying out of the physical education activity within kindergartens, general schools and high schools lay the basis of the performance at regional, national, European and world level (Năstase V., 2002).

An important characteristic of the teaching processes achievement in any field is represented by the order and discipline proved by the specialists while organizing their work. In sport all results depend absolutely on the training planning, which in its turn depends on the competitions planning issued by the rightful bodies. Thus, depending on the announced competitive schedule, the coaches divide the yearly planning into a planning by stages (mezzo-cycles), which are divided into weekly planning (micro-cycles) in their turn, and the weekly planning is divided into lesson plans. (Achim Ș., 2002)

Therefore, the annual planning includes all the components of a calendar and/or competitive year, such as the establishment of the performance objectives, the calendar periodization, the determination of the number of training hours and recovery hours per week; the annual planning offers to the coach the possibility to choose the training methods depending on the competitive program, on the available time for training, on the athletes' age and training level, but on the intended goals too (Bompa, T., 2001).

Thus: during the first period, the *preparatory one*, the stress is laid on the general physical training, the outlining of the technical directions and the creation of the favorable framework for the progressive development of the psychological factor needed to the participation in competitions. The first stage of the preparatory stage (aiming at the general physical development) lays the emphasis on the comprehensive development of the body. The second phase of the preparatory stage – the specific physical training – represents a passage to the pre-competitive period, the training sessions have a higher degree of specificity. The competitive period represents the acme of the sports shape, so two sub-stages can be identified: the *pre-competitive sub-stage* and *competitive one*. After the competitive period, after efforts and stress, when the fatigue is already installed in



the athlete's body and psychic as well, a passage to the next transition is needed. This stage facilitates the physical and psychological rest, the biological recovery but also the maintaining of the general physical training in case of a correct approach (Bompa, T., 2001).

The goal of the study is the highlighting of the training contents necessary for the initiation to the dance sport and for the debut in the first competition of this kind.

**HYPOTHESIS OF THE PAPER**

It was considered that one training session out of two should be dedicated, every two weeks, to the development of the other motor skills exclusively, without ignoring in any training session the development of the motor skills specific to the dance sport. Thus the training method in the dance sport for beginners' level will be improved.

**Organization and carrying out of the study**

The study was carried out in two stages:

- 1<sup>st</sup> stage – the initiation period in the school year 2002-2003 with beginner children of 6 to 9 years old, with a number of 250 children distributed into several groups;

- 2<sup>nd</sup> stage- period of the school year 2003-2004 with a number of 24 children (12 girls and 12 boys), distributed in two groups of 6 couples each, all of them belonging to the preparatory groups that enrolled for school in September.

All children were selected from „Pygmalion” Sports Club Association of Bucharest.

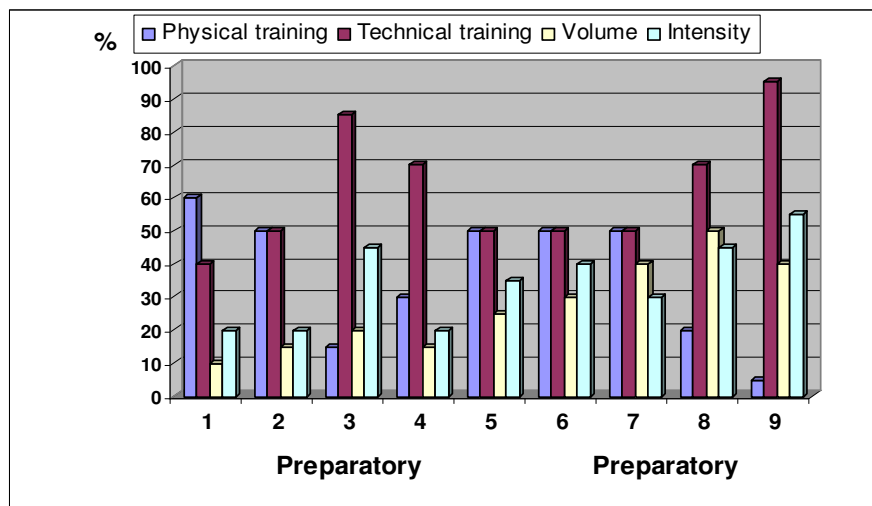
**METHODS OF RESEARCH** used:

- *Bibliographic study*- theoretical documentation of the paper;
- *Method of observation* – observation of the subjects' progress within the training sessions;
- *Video method* – used for recording different exercises on fitness machines;
- *Method of experimental study* – method in which the study hypotheses are confirmed or invalidated;
- *Method of graphical representation* – it contributed to a more efficient interpretation of the study results.

**RESULTS OF THE STUDY.** The school year 2002-2003 included 34 weekly cycles of training, 3 weekly cycles of pause and 54 hours of training.

Table no.1. Annual training plan, school year 2002-2003

Month	10	11	12	1	2	3	4	5	6
Competitive calendar	None	None	None	None	None	None	None	None	None
Periods	Preparatory				Preparatory				
Stages/mezzo-cycle	I	II	III	IV	V	VI	VII	VIII	IX
Training place	Bucharest		Bucharest		Bucharest		Bucharest		Bucharest
	Bucharest	Bucharest	Bucharest	Bucharest	Bucharest	Bucharest	Bucharest	Bucharest	Bucharest
Share of training factors	P.Fz. 60% P.Th. 40%	P.Fz.50% P.Th.50%	P.Fz.15% P.Th. 85%	P.Fz.30% P.Th.70%	P.Fz.50% P.Th.50%	P.Fz.50% P-Th.50%	P.Fz.50% P.Th.50%	P.Fz.20% P.Th.80%	P.Fz.5% P.Th.95%
Control Trials			Festivals						Festivals
Medical Control									
Volume Share	10%	15%	20%	15%	25%	30%	40%	50%	40%
Intensity share	20%	20%	45%	20%	35%	40%	30%	45%	55%



Graph no.1. Share of training factors related to effort parameters

*Contents of the preparatory period methods– initiation training level:*

- Introduction to sports training, familiarization exercises with warm up and dance;
- Learning of the easiest movements of Cha-Cha-Cha: cha-cha-cha rhythm, without travel, a leg flexion, alternatively, on each count until the pupils understand. One shall dance on the instructor’s count firstly.
- Consolidation of the steps previously learnt for cha-cha-cha dance: the movement work is continued on cha-cha-cha music in double count, that means slowly. The training is carried on with the second figure, „Time-Step” respectively, the work of the previous figure on side travel on cha-cha -1 counts”;
- Learning of the constitutive elements of dance: this dance is designed to support the assimilation

process of movements on music. One shall choose a tune that the children like very much and shall continue teaching the movements of this dance.

We must keep in mind that these movements are very similar to the constitutive movements of the basic steps of cha-cha-cha, samba, jive dances. These are easy movements that offer the children freedom of expression and happiness subsequently, encouraging the motivation of the learning activity in this way.

As seen from the first training sessions, the diversity and playful character are the most obvious features of working with preschoolers. Beyond these features of the lesson plans that were applied in a proportion of 80-90%, the main problems faced during the first month of course resulted from the fact that children at a so early age have difficulties in remembering from one workout to another the informative volume dosed per each meeting.

Therefore during the first four months every four sessions were deemed necessary for the review of all exercises taught; the other five lesson plans were structured as follows: one part carried on the learning process and the other one aimed at a further enhancement and repetition of the dances prepared for the show.

We mention the fact that at the middle of the school year the level of the mobility, speed and strength development was cautiously and progressively planned in order to prevent the preschoolers’ overstress.

The dances were taught within the training sessions, including the better assimilation of the steps already learnt , consistent with the work on slow tunes, the steps being executed in small choreographies. For all dances presented in the Christmas show were chosen songs with rhythm of Samba and Cha-cha-cha.

In the remaining 5 lessons until the end of the school year, the dances to be presented in the school festival were repeated again in the idea that the club too would hold

its own show, with the athletes from the older and preparatory groups coming from several education institutions. These children performed three dances out of the four dances they had learned; in the same time, this show represented the final control trial in the passage to the next threshold of selection and progress.

Then we observed in particular how the athletes reacted in front of a numerous audience, in a very large hall, performing in a six lines formation, each line having 25 dancers. The children with real coordination skills, who proved to be mentally balanced, were taken into consideration.

This show, with representatives of the older couples, performance ones, was meant to create to the small athletes and to their parents the idea of belonging to a well structured organization, with results in competitions, with a training system and discovery of great talents among skillful juveniles.

Training resumed on January 7, 2003, and the first four sessions have reviewed all the elements of dance taught in first half of the year. In parallel, the final selection was made, based on data collected over the first months of work with those who formed the advanced group. So in early February began a new stage of preparing the best children in kindergarten. They were in number 24 (12 girls and 12 boys), divided into two groups of 6 pairs, all part of the preparation groups that went to school in September.

In the children’s process of **selection** was also taken into account their parents’ agreement to continue dance sport after kindergarten period; therefore the children went to the training camp organized by the club during summer time.

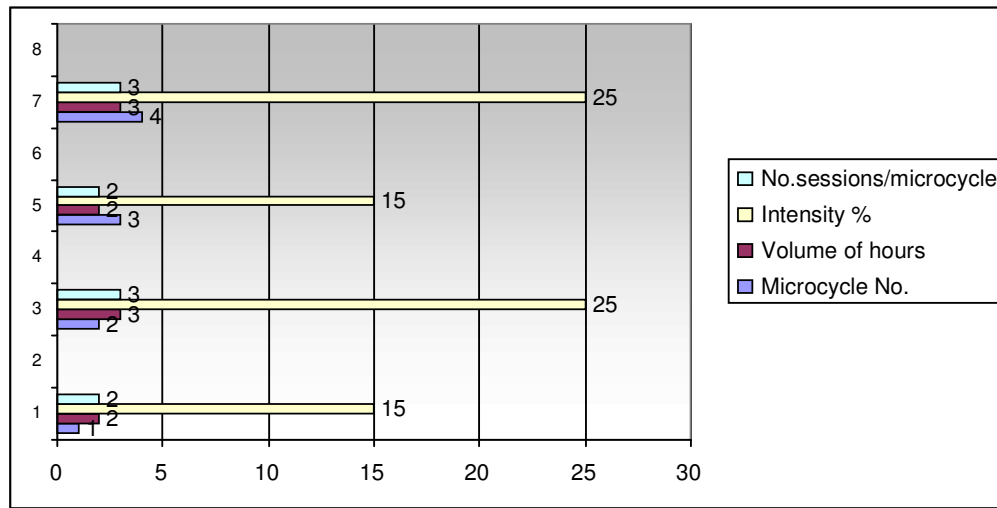
The children who were not selected continued however the scheduled program by the end of school. One of the advantages of this structure is that the children belonging to the large groups in 2003 entered the new year 2004 with a significant level of knowledge, and selection was started with a higher standard.

The two groups had two workouts per week, one hour each, before the end of school year, with only one week of holiday in April. Emphasis was placed on both the character of basic steps and new dance elements performance and on the multilateral development through games and relays organized after every four sessions. In that particular session both groups were reunited in a supplementary workout for that week. For example, we shall present a training mezzo-cycle in March, during the preparatory period: 02.03.2003-30.03.2003, actually 12 dancers (6 girls and 6 boys) of 6-7 years old (see table No.2 and graph no. 2).

Training goal: *acquiring the knowledge needed to the debut in the first dancing competition and the multilateral development.* Effectively 12 athletes(6 girls and 6 boys) aged 6-7 years.

Table no.2. Contents of training mezzo-cycle, preparatory period.

Micro-cycle no.	1		2		3		4	
Volume of hours	2		3		2		3	
Intensity %	15		25		15		25	
No. of sessions/micro-cycle	2		3		2		3	
Ratio of training factors	Physical	Technical	Physical	Technical	Physical	Technical	Physical	Technical
	30	70	60	40	40	60	70	30
Days of training	L	Mi	L	Mi	V	L	Mi	L
Character of means	Physical	X	X	X	X	X	X	X
	Technical	X	X	X	X	X	X	X



Graph no.2. Contents of training mezzocycle, preparatory period

Up to the middle of May, the dancers have learned elements organized in short choreographies (for Samba, Cha-cha-cha and Jive dances only) that they used during the show organized by the 4<sup>th</sup> district Town Hall on the 1<sup>st</sup> of June, on the occasion of the Children's Day .

*Contents of technical training:*

- Samba dance: Stationary Samba Walks, Wisk to Left and Right;
- Cha-cha-cha dance: Time Step, Open and Close Basic Movement, Check from PP and CPP (New Zork), Spot Turn to Left and Right, Alemana.
- Jive dance: Basic in place, Change of place Right to Left, and Left to Right, Change of Hands Behind Back, Slow promenade Walks, American Spin.

- Slow Waltz dance: Close Changes Right and Left, Natural and Reverse Turn.

We mention that these choreographies are in conformity with the Regulation of the Dance Sport Federation regarding the figures accepted during the Hobby class events.

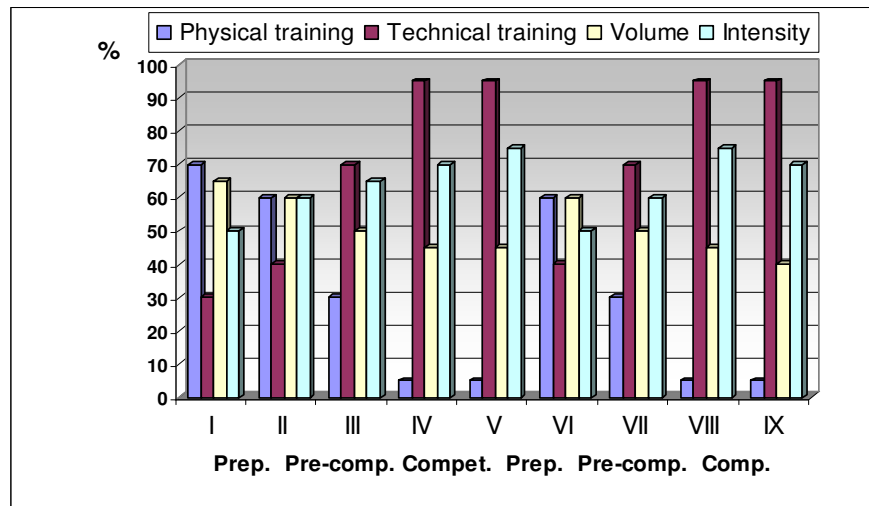
Since the 20<sup>th</sup> of June 2004 up to the 1<sup>st</sup> of August 2004 the children have received a holiday, after which they have entered into the following training program:

*The annual training plan for beginner children of 6 to 9 years old within the „Pygmalion” Sport Club (as per table no.3 and graph no.3)*

During the school year 2003-2004, the training was resumed on 1.08.2004, with a number of 12 couples of children of 6 to 7 years old.

Table no.3. Annual training plan , school year 2003-2004

Month	8	9	10	11	12	1	2	3	4	5
Competitive calendar	None	None	None	Zonal Comp.	Zonal Comp.	None	None	Zonal Comp.	Zonal Comp.	Ref.
Periods	Preparatory		Precomp	Competitive		Preparatory		Competitive		Ref.
Stages/mezzocycle	I	II	III	IV	V	VI	VII	VIII	IX	X
Training place	Bucharest Sarata Monteoru		Bucharest	Bucharest		Bucharest	Bucharest		Bucharest	Ref.
Share of training factors	P.Fz.70% P.Th.30%	P.Fz.60% P.Th.40%	P.Fz.30% P.Th.70%	P.Fz.5% P.Th.95%	P.Fz.5% P.Th.95%	P.Fz.60% P.Th.40%	P.Fz.30% P.Th.70%	P.Fz.5% P.Th.95%	P.Fz.5% P.Th.95%	Ref.
Control Trials										Ref.
Medical Control										Ref.
Volume Share	65%	60%	50%	45%	45%	60%	50%	45%	40%	Ref.
Intensity share	50%	60%	65%	70%	75%	50%	60%	75%	70%	Ref.



Graph no.3. Share of training factors related to effort parameters

Within the training sessions for multilateral development, for avoiding mental coercion to which athletes are submitted through the 4 workouts per day, it was suggested the idea that these training sessions were intended to recreation through various sports games, relays, running (using also childhood games like "Tag" - where he who was caught was obliged to execute a certain number of squats or push-ups - or that ball game where all stood in a circle and the person who caught the ball, besides having to recover it, also received a penalty from the other players' part).

For a better concretization of the activity, during the 7 days of training were executed at least two individual workouts with the six couples that were supposed to have their debut in the first event in November. So that the couple trained in the last period was spared during the last training session.

The *individualization* principle has been applied since that age in order to correct the execution mistakes and to supplement the training program over the tolerance level. Such training sessions are also the occasion of an objective assessment of athletes' skills by individual observation; thus the coach understands their needs and applies new ways of training suitable for each athlete. We believe that these lessons are necessary at this stage of learning, to correct any useless or incorrect movements, resulting from a poor neuromuscular coordination. By these individual classes the motor stability is reached in a faster way, with an appropriate coordination of nervous processes and a minimum consumption of energy.

### CONCLUSIONS

The study results show the effectiveness of using specific means within the beginner dancers' training. Thus, out of the 12 couples, 6 of them made their debut in the first competition and are supposed to

participate in the next competition. Of the top 6, three couples have qualified for the semi-finals, and the other three were placed the 14<sup>th</sup>, 18<sup>th</sup> and 21<sup>st</sup> in the quarterfinals.

We consider that the objective of the research has been achieved and that the planning, although succinctly introduced in this paper, has been correctly formulated, because behind it are all sports training principles (awareness and active training principle, the multilateral training, the specialization, individualization, the progressive teaching), the training factors (physical, technical, psychical, etc.), the teaching-learning pedagogical principles (from simple to complex, from easy to difficult, from fragmented to whole, etc.) and, also important, the factual confirmation during competitions.

The every two weeks planning of a training session dedicated exclusively to the development of the other motor skills without ignoring, in all training sessions, the development of the motor skills specific to the dance sport helped to improve the methodology of training in dance sport at beginners' level.

### REFERENCES

- ACHIM Ș., 2002, *Planning in Sports Training*, "Ex Ponto" Publishing House, Bucharest, 35-37.
- BOMPA T., 2001, *Theory and Methodology of Sport Training*, "Ex Ponto" Publishing House, Bucharest, 125-128.
- NĂSTASE V.D., 2002, *Initiation into Standard Dances*. "Paralela 45" Publishing House, 47-49.
- NĂSTASE V.D., 2002, *Initiation into Latino-American Dances*. "Paralela 45" Publishing House, 55-57.

## THE EFFECT OF L-CARNITINE SUPPLEMENTATION ON 1500 m RUNNING PERFORMANCE

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### SUMMARY

The purpose of this study was to determine the effects of L-Carnitine on 1500m running performance and blood lactate level. Healthy and well-trained 20 voluntary male athletes were randomly classified in two groups as the control (n=10) and study (n=10) groups. Before the treatment performance times of the athletes for running 1500 m recorded and the blood samples were obtained four minutes after the exercise. Athletes in the study group were treated with 1 x 2 g of L-Carnitine per day after the lunch for 10 days, while the control group had only fruit juice. Then performance time recording and blood taking were repeated to see the effects of L-Carnitine. The results of the control group showed no statistical significance. But in the study group both performance times and plasma lactate levels significantly reduced (p<0.001). In this study, 10 days L-Carnitine supplementation has provided an ergogenic benefit on blood lactate level and 1500m running performance on well-trained athletes.

**KEYWORDS:** L-Carnitine, plasma lactate level, performance, exercise.

### INTRODUCTION

Carnitine, also called as vitamin B<sub>T</sub>, plays an important role during the transport and oxidation of the long-chain fatty acids (F.A. Rodriguez, 1992). This feature brought a question to minds: whether endogenously produced carnitine is sufficient during exercise. The studies showed that its level doesn't change during low-density exercises (up to VO<sub>2</sub> 50%). On the other hand, during high- and maximal-density exercises plasma and skeletal muscle carnitine contents decrease significantly. So it was recommended to give exogenous L-Carnitine to keep its blood levels high during exercise (J. Decombaz, 1993, C. Marconi, 1985, N. Siliprandi et al, 1990). Two functions of the carnitine are especially important because of its effects on the performance and its ergogenic use: 1) its role at the oxidation of free fatty acids (Rodriguez F.A., 1992. C Barnett et al 1994) balancing the acetyl CoA/Coa ratio and increasing the acetyl CoA formation from piruvate (D. Constantin, et al 1991). It's assumed that L-Carnitine decreases lactate production. There are many studies conducted on effects of exercise on the carnitine content of plasma and muscle. Siliprandi and L. Vecchiet, 1990, V. Wyss, 1990 found that 2 g of L-Carnitine given one hour before the exercise decreases the plasma lactate levels and increases the performance. According to S.E. Oyono, 1988, L-Carnitine given 1 and 2 weeks helps to develop the performance scores. On the other hand, Oyono (C.J Rebouche, D.J Paulson, 1986, Colombani, 1996, S.W Trappe, 1994 and R.C Harris, 1987) could not find any additional effect of L-Carnitine on performance. So the bias on the effect of L-Carnitine on exercise is not clear yet. To our knowledge there isn't any study in the literature investigating the effects of L-Carnitine on 1500 m running performance. Hence we aimed to give

2 g of L-Carnitine for 10 days to 1500 m running athletes.

### MATERIALS AND METHODS

The study performed with 20 healthy male volunteer athletes whose 1500 m running performance time was between 4-5 minutes. After the informed consent was obtained the athletes were randomly divided into two groups as the study and the control groups. Seven days before the tests the initial information from volunteers was obtained; such as age, height, weight and physiologic parameters like resting heart rate and max VO<sub>2</sub>.

The volunteers run 1500m twice ten days apart. After each period their performance times were recorded. After the exercise at the first minute heart rates and the fourth minute blood samples (10 ml) from the antecubital vein were obtained. During the ten day interval between the performances the study group had 2 gr/day L-Carnitine L-Tartarate (%68.2 L-Carnitine, and %31.8 L-Tartarate, Lonza Ltd. Basel/ Switzerland) containing 200 ml fruit juice. The control group had only the fruit juice. While obtaining the blood samples fluoride oxalate was used as the anticoagulant to minimize the lactate concentration changes. Samples were analyzed at room temperature at dimmed light. One ml of the lactate reactive was put into each tube. Then the plasma or the standard solution was added, 10 µl from each. The tubes were incubated for ten minutes. The reactive solution was used as the blank while the absorbance values at 540 nm wave length were obtained. The results were evaluated from the calibration curve and results were given as mMol/L. Paired sample t test was used for the statistical evaluation (B. Dawson-Saunders, R.G Trapp, 1990)

## RESULTS

Some physical and physiological findings of the athletes are given in Table 1 and 2.

There was no statistical significance between the physical and physiological profiles of the study and the control groups. In the control group 1500 m running time, heart rate and plasma lactate levels were not significantly different between the first and the second tests ( $p > 0.05$ ). Whereas in the study group 1500 m running time and plasma lactate levels were significantly lower at the second test when compared to the first test ( $p < 0.001$ ).

## DISCUSSION

Fatty acid metabolism is very important during exercise. Carnitine, whether taken from diet or endogenously synthesized by liver or kidneys, increases the physiologic performances of skeletal and cardiac muscles. To our knowledge up to now there is no study conducted to search the effects of L-Carnitine on 1500 m running performance. Vecchiet et al. showed that 2 g of L-carnitine given to athletes one hour prior to the exercise increases the maximal oxygen intake and the energy they spend. So their performance increases significantly (V. Wyss, 1990). Marconi et al showed that 4 g/day L-Carnitine given for two weeks improved max.  $\text{VO}_2$  (S.E.Oyono, 1988, V.Wyss et al 1990) gave 3 g/day L-Carnitine at different intervals for seven days and athletes' power and total energy levels increased. Respiratory quotient significantly reduced in a study of Gorostia et al (C. Greig et al 1987) In our study, we found a significant improvement in the performances of the study group. So the results are consistent with these studies reporting the beneficial effect of L-Carnitine intake.

On the other hand, there are controversial studies. For seven days 2 g/day L-Carnitine with supramaximally intense and short-length swimming by Trappe et al (24), 4 g/day L-Carnitine for two weeks with maximally and supramaximally intense biking by Barnett et al, 2g/day L-Carnitine taken two hours prior to 20 km running had no effect on the performance. Also Oyono et al 1988, and (R.C Harris et al, 1987) found no effect of L-Carnitine on supramaximally intense exercises. All of them had agreed that L-Carnitine might have a positive effect on the sportive performance but the intensity of exercise in their studies may be too much to see this effect. Today to define the intensity of the exercise lactate threshold of the athlete is used ( M.J.Chwalbinska, 1989, E.M.Gorostiaga, 1989). Blood lactate levels increase at exercises of high intensity or above (K.P.George, 1988(G.M.E Janssen et al 1989). During exercise, carnitine provides economical expenditure of carbohydrate by increasing the use of free fatty acids (F. Brouns, 1998, Y.Feng, 2001).It also increases conversion of piruvate by piruvate decarboxilase to acetyl CoA by increasing the use of free coenzyme A

(Co A). So the lactate production by muscles decreases due to the increased conversion of lactate to piruvate ( A. Hildebrand, 2000). L-Carnitine given 60 minutes prior to the exercise has shown to decrease the plasma lactate levels significantly by Vecchiet (V. Wyss, 1990). Whereas L. Vecchiet et al, 1990 and C. Barnett, 1994, couldn't see any decrease in lactate levels following high and supramaximally intense swimming exercise. In our study, we observed the decrease in the lactate levels with consumption of L-Carnitine in the study group ( $p < 0.001$ ). The lactate levels that we measured were similar to the levels S.V.Trappe 1994, and A. Hildebrand 2000,observed, but they were higher than the values given in some studies (C Barnett et al 1994, K.P.George, 1988, V. Wyss, 1990). It might be because of the differences in the intensity and duration of the exercise. There might be also an influence of the laboratory methods used to measure plasma lactate levels (P.A Bishop 1992, K. Sahlin,1990).As a result, we found an ergogenic effect of L-Carnitine consumption on 1500 m running performance.

## REFERENCES

- BARNETT C, COSTILL D.L., VUKOVICH M.D., COLE K.J., GOODPASTER B.H., TRAPPE S.W., FINK W.J. 1994, *Effect of L-Carnitine Supplementation on Muscle and Blood Carnitine Content and Lactate Accumulation During High-Intensity Sprint Cycling*, International Journal of Sports Nutrition 4(3), 280-288**
- BISHOP, P.A., SMITH, J.F., KIME, J.C., MAYO, J.M., TIN, Y.H.,1992, *Comparison of a Manual and an Automated Enzymatic Technique for Determining Blood Lactate Concentrations*, International Journal of Sports Medicine 13(1), 36-39**
- BROUNS, F, VAN DER VUSSE, G.J., 1998, *Utilization of Lipids During Exercise in Human Subjects: Metabolic and Dietary Constraints*, British J of Nutr 79(2), 117-28**
- CHWALBINSKA, M.J., ROBERGS, R.A., COSTIL, D.L., FINK W.J. ,1989, *Thereshold for Muscle Lactate accumulation During Progressive Exercise*, J. Appl Physiol 66(6), 2110-2116**
- COLOMBANI, P., WENK, C., KUNZ, I., KRAHENBUHL, S. ET AL 1996, *Effects of L-Carnitine Supplementation on Physical Performance and Energy Metabolism of Endurance-Trained Athletes: a double-blind crossover field study*. European J. Appl Physiology and Occup Physiol 73(5), 434-439 P.**

- CONSTANTIN, D, CARLIN, J.I, CEDERBLAD G, HARRIS, R.C, HULTMAN, E, 1991, Acetyl Group Accumulation and Pyruvate Dehydrogenase Activity in Human Muscle During Incremental Exercise, Acta Physiol Scand 143: 367-372**
- DAWSON-SAUNDERS, B., TRAPP, R.G. 1990, Basic and Clinical Biostatistics, (First Ed), Appleton and Lange, Connecticut**
- DECOMBAZ, J., DERIAZ O., ACHESON K., GMUENDER B., JEQUIER E., 1993, Effect of L-Carnitine on Sub maximal Exercise Metabolism after Depletion of Muscle Glycogen, Medicine Science Sports Exercise Vol. 25. No: 6, 733-740**
- FENG, Y., GUO C., WEI, J., YANG, J., GE Y. 2001, Necessity of Carnitine Supplementation in Semistarved Rats Fed a High-Fat Diet, Nutrition 7 (7-8), 628-631 Foster C., Cohen J., Donovan K., Gastrau P., Killian P.J., Schragger M. (1993) Fixed Time versus Fixed Distance Protocols for the Blood Lactate Profile in Athletes, International Journal of Sports Medicine 14(5), 264-268**
- GEORGE, K.P., MAC LAREN, D.P.M. 1988, The Effect of Induced Alkalosis on Endurance Running at Intensity Corresponding to 4 mMol Blood Lactate, Ergonomics (31) 11, 1639-1645**
- GOROSTIAGA, E.M, MAURER, C.A., ECLACHE, J.P., 1989, Decrease in Respiratory Quotient During Exercise Following L-Carnitine Supplementation, Int. J. of Sports Medicine Vol.10, No 3, 169-174**
- GREIG, C., FINCH, K.M., JONES, D.A., COOPER, M., SARGEANT, A.J., FORTE, C.A., 1987, The Effect of Oral Supplementation with L-Carnitine on Maximum and Sub maximum Exercise Capacity, European J Appl Physiol and Occup Physiol 56, 457-460**
- HARRIS, R.C., FOSTER, C.V.L., HULTMAN, E., 1987, Acetylcarnitine Formation during Intense Muscular Contraction in Humans, J Appl Physiol 63, 440-442 (R.C Harris, 1987)**
- HILDEBRAND, A., LORMES, W., EMONERT, J., LIA Y., LEHMANN, M., STEINACKER, J.M. ,2000, Lactate Concentration in Plasma and Red Blood Cells Increasing Exercise, Int J Sports Med 21(7), 463-468**
- JANSSEN, G.M.E., SHOLTE, H.R., VAANDRAGER, M.H.V., 1989, Muscle Carnitine Level in Endurance Training and Running a Marathon, Int J Sports Med 10, 153-155**
- MARCONI, C., SASSI G., CARPINELLI, A., CERRETELLI, P.,1985, Effects of L-Carnitine Loading on the Aerobic and Anaerobic Performance of Endurance Athletes, European J Appl Physiol and Occup Physiol 54, 131-135**
- OYONO, S.E., FREUND H., OTT, C. AND ET AL,1988, Prolonged Sub maximal Exercise and L-Carnitine in Humans, Eur J of Appl Physiol and Occup. Physiol 58, 53-61**
- REBOUCHE, C.J, PAULSON D.J. 1986, Carnitine Metabolism and Functioning Humans, Annual Review Nutrition 6, 41-66**
- RODRIGUEZ, F.A., BANGUELS, M., PONS V., DROBNIC, F., GLILEA, P.A.1992, A Comparative Study of Blood Lactate Analytic Methods, Int J Sports Medicine 13, 462-466,**
- SAHLIN, K.,1990, Muscle Carnitine Metabolism during Incremental Dynamic Exercise in Humans, Acta Physiol. Scand. 138, 259-262, 1990**
- SILIPRANDI, N., DI LISA, F., PIERALISI, G., RIPARI, P., MACCARI, F., MENABO R, 1990, Metabolic Changes Induced by Exercise in Human Subjects Following L-Carnitine Administration, Biochemical at Biophysical Acta 1034, 17-21**
- TRAPPE, S.W., COSTIL, D.L., GOODPASTER, B., VUKOVICH, M.D., FINK, W.J., 1994, The Effects of L-Carnitine Supplementation on Performance during Interval Swimming, Int J Sports Medicine Vol.15, No 4, 181-185,**
- VECCHIET, L., DI LISA F., PIERALIS, G., RIPARI, P., MENABO, R., GIAMBERARDINO, M.A., SILIPRANDI N. 1990, Influence of L-Carnitine Administration on Maximal Physical Exercise, Eur J Applied Physiol and Occup. Physiol 61, 486-490, 1990**
- WYSS, V., GANZIT, G.P., RIENZI, A, 1990, Effects of L-Carnitine Administration on  $VO_{2max}$ . And the Aerobic-anaerobic Threshold in Normoxia and Acute Hypoxia, European J Applied Physiol and Occup Physiol 60, 1-6, 1990**

**Table 1. Some physical and physiological findings of the athletes.**

Groups	Age (Year) <i>X± SD</i>	Active Sport Life (year) <i>X± SD</i>	Weight (kg) <i>X± SD</i>	Height (cm) <i>X± SD</i>	Resting Pulse (beat/min) <i>X± SD</i>	Max.VO <sub>2</sub> (ml/kg/min) <i>X± SD</i>
Control Group (n=10)	21,6±1,6	5,3±1,2	68,9±5,6	174,6±5,6	70,4±3,3	58,7±2
Study Group (n=10)	21,2±1,4	5,5±1,4	70,4±4,4	176,6±5,8	69,6±3,7	60,2±1,8
p	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05

**Table 2. Comparison of the parameters at the first and the second tests.**

Groups	Running Time (sec)	Pulse Rate (beat/min)	Plasma Lactate (mMol/L)
	First test – Second test <i>X± SD</i>	First test – Second test <i>X± SD</i>	First test – Second test <i>X± SD</i>
Control Group (n=10)	298,9±5,5 – 296±7,1	139,4±3,4 – 141,2±4,3	16,8±1,6 – 16,7±1,6
Study Group (n=10)	298,2±4,5 – 285,3±4,7*	138,7±4,3 – 139,5±3,6	18,3±1,7 – 16,1±1,2*
p	<0.001	<0.001	<0.001

\*When compared to their first test results p value was found to be <0,001.

## EXAMINATION OF ADOLESCENTS' RESPONSES TO THE BASIC BASKETBALL TRAINING

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### ABSTRACT

**Purpose:** In the study, it is aimed to examine influence of 12 weeks basic basketball training on some physical characteristics of boys.

**Material and method:** Study; 9–14 - year old 20 boys of experimental group (E) and 9–14-year old 20 boys of control group (C), that is, total 40 volunteers from Konya Private Bahçeşehir College's basketball school participated in study. Influences of 12 weeks basic basketball training applied in study was attempted to be determined by jump, standing long jump, flexibility, speed and equilibrium levels.

**Result:** After application, it was seen that there has been an important increase in Height and Body Weights ( $p>0.05$ ) of groups C and E and that there was no difference in jumping and equilibrium features. It was determined that long jump, flexibility and speed characteristics of Group E significantly developed and that development in Group C was insignificant. When looked at the difference between two groups, it was found that speed development in Group E was more significant than Group C ( $p>0.05$ ), but there was no significant difference in physical parameters. Minitab package program was used in doing statistical analysis of data. Measured parameters, mean values and standard errors of all the volunteers were calculated. Independent-samples "t" test was used in determining difference between groups and paired-samples "t" test in groups.

**Conclusion:** As a result, it could be said that 12 weeks practice was effective on the physical characteristics of boys in adolescence period, but compared to the children in the same period, this influence remained unimportant.

**KEYWORDS:** Adolescent, Basketball, Physical Characters

### INTRODUCTION

Sportive games aim to develop physical properties like endurance, strength, speed, skill and dynamism in a desired way by starting from youth and with oriented work, and to bring a superior level by reinforcing in adolescence. (S. Mengütay, 1999). Ball

games require comprehensive skills including physical, technical, mental and tactical features. Accordingly, in order to be able to perform defense and attack skills in the game, players must especially have physical skills. These skills are considerably significant to win a



basketball game (N. Tusunawake, Y. Tahara, K. Moji, 2003).

Basketball sport also requires technical and tactical operations in a disciplined manner besides strength, speed, endurance, skill and dynamism having been developed from childhood and youth. Application arduousness of technical and tactical elements in immediate and fluctuant positions in the game is also a significant factor in development of features like coordination-reaction. Fundamental movements, as we call the foundation of basketball, are the applications that every player is to learn (J.V. Krause, 1996).

Those are the periods that low density initial trainings for aged 6-10 before puberty, basic sportive formations in aged 11-14 puberty period, then aged 15-18 special trainings at the end of puberty and as to adulthood, high performance trainings are performed (H.A. Pekel., L. Aydos, M. Onay, 2006). The aim of this study is to research 12-weeks application in terms of the effects of physical properties (height, weight, vertical jump, standing double-leg long jump, flexibility, 20-meter sprint, flamingo) of male children aged 6-14 who started basketball as beginners collating them with sedentary in the same age group on development of children.

#### **Material**

Total 40 male children took part in the research voluntarily as experimental group, age average of which is  $9,65 \pm 2,27$ , and control group age average of which is  $9,75 \pm 2,26$  and playing basketball in twelve weeks period, registered in Konya Private Bahçeşehir College's basketball school. Measurements related with the research were performed in Konya Private Bahçeşehir College Facilities.

**Experimental group:** 20 male children who started basketball as beginners and playing basketball only for twelve weeks participated voluntarily. After registration works of the experimental group, required negotiations were performed and primary measurements (pre-tests) were taken. After twelve weeks training program of basketball schools, second measurements (post-tests) were taken.

**Control Group:** Sedentary 20 male students were chosen as control group voluntarily. First measurements (pre-tests) were taken together with the experimental group. And control group only participated in 40-min./week Physical Education Lesson applications during that time.

#### **Method**

##### **Training Program**

Students were subjected to trainings for twelve weeks under the name of basketball school and these exercises were performed as 1,5 hour/day and 2 days/week. Students were trained by group coaches. The extent of the trainings was generally consisted of basic techniques, equilibrium ability, game info and educational games. In

these trainings in which basic techniques of basketball were infused; various competitions such as standing, ball handling, basic passing techniques, dribbling, turnstile, chute, deception, pick, backfield, game rule info, educational games and display of learnt techniques were applied.

##### **Measure of body height and weight**

Body heights of the volunteers who participated in the research were measured with height scale branded Holtain and 0.01 sensitivity. Body weights were determined with Tanita TBF 410 (made in Japan).

##### **Vertical jump measure**

Subjects were asked to jump above with maximum strength after completing quick knee bending down as akimbo on normal upright posture. Distance was measured and evaluated with cm type in vertical jump test.

##### **Standing double-leg long jump measure**

The aim of this test is to determine the strength of the person. The sportsman performed two jumps afoot on a fixed point without speed. At the end; the best ratings of two jumps were accepted and written as cm.

##### **Flexibility measure**

It was performed with 0,83 Wells Sit and Reach test. The furthest point was taken by knees on the measure table, sitting adjacent and perpendicular; with two hands, bending three times. A short break was given and second trials were performed. The best ratings were saved from both results and enounced with cm numbers in parts drawn on measure table.

##### **20 M. Sprint measure**

In 20 m. section, two photocells were positioned in score and finish lines. Applicant started to run behind 1 meter from the score line of his own accord. Passing the score line, electronic chronometer started. In the moment he passed the finish line, electronic chronometer stopped. Gained results were saved.

##### **Flamingo (right-left) Equilibrium Test**

Intending to determine static equilibriums of the research group, Flamingo Equilibrium Test was used. According to this test, the research group members balances himself stepping on wooden equilibrium tool 3 cm. in width, 4 cm. in height and 50 cm. in length via dominant leg, twists his foot from knee, pulling it through hip and holding it with the hand on the same side. Standing in balance with one foot in this position, time starts and tries to keep this balanced position for 1 minute. If the balance is disrupted (delivering the foot while holding, falling from the wood, touching somewhere with any of his body parts and etc.) then the time is paused. When the research group ascends to the wood and balances him again, the time continues. This test continues for 1 minute in that way. When the period is completed, every balance attempts of the research group are counted (after falling) and this number is saved as the score of the research group at the end of the test.

##### **Data Analysis**

According to the order of normality, parametric tests were used for data that shows normal distributions. Comparison of pre and post test values of the subjects was made with Paired Samples t-test, as for inter-groups comparisons, Independent Sample t-test was used.

## Results

**Table 1.** Some physical measures of the control and experimental groups before and after education

	Variables	N	Ave.	s.s	t	p	
Height	Experimental	Pre test	20	138,25	15,15	6,038	,000
		Post test	20	141,30	14,29		
	Control	Pre test	20	138,65	13,19	8,143	,000
		Post test	20	141,50	13,71		
Weight	Experimental	Pre test	20	40,30	17,34	3,404	,003
		Post test	20	41,75	17,68		
	Control	Pre test	20	39,25	12,97	2,557	,019
		Post test	20	39,90	12,66		
Vertical Jump	Experimental	Pre test	20	20,45	7,29	,044	,966
		Post test	20	20,50	6,25		
	Control	Pre test	20	21,60	5,79	1,437	,167
		Post test	20	23,20	5,76		
SDLLJ	Experimental	Pre test	20	128,45	20,34	3,236	,004
		Post test	20	134,45	22,18		
	Control	Pre test	20	130,95	20,95	1,132	,272
		Post test	20	133,65	20,92		
Flexibility	Experimental	Pre test	20	18,20	5,42	3,327	,004
		Post test	20	18,65	5,37		
	Control	Pre test	20	19,35	4,34	,525	,606
		Post test	20	19,45	4,66		
20m sprint	Experimental	Pre test	20	5,47	1,28	4,788	,000
		Post test	20	4,83	1,18		
	Control	Pre test	20	5,38	,91	1,101	,285
		Post test	20	5,54	1,04		
Flamingo right	Experimental	Pre test	20	17,80	21,39	,710	,486
		Post test	20	18,28	23,73		
	Control	Pre test	20	10,47	9,97	1,247	,227
		Post test	20	10,34	9,74		

<b>Flamingo left</b>	<b>Experimental</b>	Pre test	20	10,01	11,20	,516	,612
		Post test	20	9,92	11,13		
<b>Control</b>		Pre test	20	9,41	8,45	,734	,472
		Post test	20	9,09	9,26		

Analyzing the table, a significant difference in height and weight values  $p < 0,05$  of the Control group was observed. While having significant difference in height, weight, sdllj, flexibility and 20 m. sprint values

of the experimental group; there could not be found any significant difference in vertical jump, flmg right and left values.

**Table 2.** Comparison of some inter-group physical measures of Pre Test and Post Test groups

	Variables		N	Ave.	s.s	t	p
<b>Height</b>	<b>Pre test</b>	Control	20	138,65	13,19	,103	,919
		Experimental	20	138,25	15,15		
	<b>Post test</b>	Control	20	141,50	13,71	,052	,959
		Experimental	20	141,30	14,29		
<b>Weight</b>	<b>Pre test</b>	Control	20	39,25	12,97	,281	,782
		Experimental	20	40,30	17,34		
	<b>Post test</b>	Control	20	39,90	12,66	,481	,636
		Experimental	20	41,75	17,68		
<b>Vertical Jump</b>	<b>Pre test</b>	Control	20	21,60	5,79	,619	,543
		Experimental	20	20,45	7,29		
	<b>Post test</b>	Control	20	23,20	5,76	1,690	,107
		Experimental	20	20,50	6,25		
<b>SDLLJ</b>	<b>Pre test</b>	Control	20	130,95	20,95	,446	,661
		Experimental	20	128,45	20,34		
	<b>Post test</b>	Control	20	133,65	20,92	,128	,900
		Experimental	20	134,45	22,18		
<b>Flexibility</b>	<b>Pre test</b>	Control	20	19,35	4,34	,725	,477
		Experimental	20	18,20	5,42		
	<b>Post test</b>	Control	20	19,45	4,66	,475	,640
		Experimental	20	18,65	5,37		
<b>20m sprint</b>	<b>Pre test</b>	Control	20	5,38	,91	,319	,753
		Experimental	20	5,47	1,28		
	<b>Post test</b>	Control	20	5,54	1,04	2,278	<b>,034</b>

	Variables		N	Ave.	s.s	t	p
		Experimental	20	4,83	1,18		
Flamingo right	Pre test	Control	20	10,47	9,97	1,438	,167
		Experimental	20	17,80	21,39		
	Post test	Control	20	10,34	9,74	1,434	,168
		Experimental	20	18,28	23,73		
Flamingo left	Pre test	Control	20	9,41	8,45	,218	,830
		Experimental	20	10,01	11,20		
	Post test	Control	20	9,09	9,26	,298	,769
		Experimental	20	9,92	11,13		

Analyzing the table, no significant difference on height, weight, vertical jump, sdllj, flexibility, 20 m. sprint and flamingo right and left values, compared with 1<sup>st</sup> measurements (pre-test) of experimental and control groups, was observed ( $p>0,05$ ). Compared with 2<sup>nd</sup> measurements (post-test) of experimental and control groups, the control group was ascertained as significantly low in pursuant of experimental group ( $p<0,05$ ).

## Discussion and Conclusion

In the study, the height average of experimental group after first measure (pre-test) was determined as 138.25 cm  $\pm$  15.15, in the second measurement (post-test) 141.30 cm  $\pm$  14.29, and the height average of control group in the first measurement was 138.65 cm  $\pm$  13.19, in the second measurement 141.50 cm  $\pm$  13.71. These values were considered to be significant statistically ( $p<0.05$ ). These findings are supported with the study findings by Ö. Hamamioğlu and Y. Kaya (2008) in which significant difference exists on height in the pre and post tests of experimental groups which were performed for children aged 7-12 of basketball education applied for 6 weeks. In the study performed by G. Büyükyazı, and Y. Sevim (2000), height averages of experimental and control groups were determined as 155.21 cm and 156.14 cm. before trainings for 11 weeks applied to 14 male basketball players aged 13-14. As for the second measurements of the subjects committed at the end of 11 weeks, height averages were statistically considered insignificant ( $p>0.05$ ). In the study in question, while trainings, insignificance of which was made, were commented as having no effect on height averages, inconsiderable changes observed between pre-test and post-test can be expounded as a result of natural growth of that age group. In our study, all the differences between pre and post test measurements of the groups are not advisable to be connected only with exercise trainings. Because the main feature of this age

group is their presence in a development period observed clearly (D.A. Bailey, R.M. Malina, R.L. Mirvald, 1986). It is possible to comment that the increase of height average in children is the reflection of the time passing from birth to maturity (S. Mengütay, 2000). The significant increases of height and weight values of children are notified as the development belonging to childhood and adolescence periods. However, it is notified in certain studies that exercise trainings may also have contributions in increases (U. Yörükoğlu, M.Koz 2007, P. Bale, J.L. Mayhew, F.C. Piper et. al. 1992, R.M. Malina, C. Bouchard 1991).

In the study, the weight average of experimental group after first measure (pre-test) was determined as 40.30 kg  $\pm$  17.34, in the second measurement (post-test) 41.75 kg  $\pm$  17.68, and the weight average of control group in the first measurement was 39.25 kg  $\pm$  12.97, in the second measurement 39.90 kg  $\pm$  12.66. These values were considered to be significant statistically ( $p<0.05$ ). These findings show parallelism with the studies in which P.B. Watts, L.M. Joubert, and A.K. Lish, J.D. Mats, B. Wilkins (2003) stated there were significant differences between height and weight in the same age group that studied and did not study regular sport education, and in which D.D. Backous, J.A. Farrow, K.E. Fridel (1990) stated there were significant differences in terms of weights of male adolescents who performed and did not perform regular exercises. In addition to showing parallelism with the study findings of Ö. Hamamioğlu, Kaya (2008), U. Yörükoğlu, M. Koz (2007), it displays contrast with the study findings of İ. Yazarer, Y. Taşmektepligil, Y.S. Ağaoglu, F. Albay (2004) ve G. Büyükyazı, Y. Sevim (2000) in which no significant difference was observed in average of weight. Height and weight are notified to be used in determination of especially development periods and general health environments, and being a physical measurement; besides having effects of nutrition, environmental and

genetic factors on development (V.A. Kanungsukkasen 1983).

In the study, while vertical jump values of the sportsmen comprising experimental group are  $20.45 \pm 7.29$  before the application, post-application values (post-test) are  $20.50 \pm 6.25$ . While vertical jump values of the sportsmen comprising control group are  $21.60 \pm 5.79$  before the application, post-application values (post-test) are  $23.20 \pm 7.76$ . Results were not considered as significant statistically ( $p > 0.05$ ). Having not been seen any significant change on vertical jump values observed between measurement values are considered to be stemmed from exiguity of training time, and being relatively technical based and applied as a game of the training program performed. It can be said that general increase in values takes form according to general growth factor, and training effect of which is low. Between pre-test values of experimental and control groups performed by Ö. Saygın, Y. Polat, K. Karacabey (2005) for male children aged 10-12, it was notified that there was not come across any significant difference between vertical jump parameters.

Consequently, the fact that the basic basketball program applied for 12 weeks have no significant effect on adolescents can be attested with similar results of control group used in the study and researches and besides with normal growth and development period of the children showing changes in physical properties.

## REFERENCES

- BACKOUS, D.D., FARROW J.A., FRİDEL, J.A., et al, 1990, Assesment Of Maturity in Boys and Grip Strength.** Journal Adolesc Healt Care, 11 (6), 497-500.
- BAİLEY, D.A., MALİNA, R.M., MİRİYALD, R.L., 1986, Physical Activity and Grovth of The Child.** In F. Falkner and J. M. Taner (Ed) Human Growth vol. 2: Postnatal Grovth Neurobiology, pp: 147-170, Nevv York Plenum.
- BALE, P., MAYHEW, J.L., PİPER, F.C., et al, 1992, Biological and Performance Variables in Relation to Age in Male and Female Adolescent Athletes,** J Sports Med Phys Fitness, 32(2),142-8.
- BÜYÜKYAZI, G., SEVİM, Y., 2000, Farklı Aerobik Antrenman Programlarının 15-16 Yaş Grubu Erkek Basketbolcülerin Aerobik ve Anaerobik Güçleri Üzerine Etkileri,** Spor Hekimliği Dergisi, Cilt: 35, 19-28.
- HAMAMİOĞLU, Ö., KAYA, Y., 2008, Basketbol Sporunun 7-12 Yaşlarındaki Erkek Çocuklarındaki Boy-Kilo Ve Vücut Yağ Oranına Etkisi,** J.I of Physical Education and Sports Science, Cilt 2, Sayı 3.
- KANUNGSUKKASEN, V.A., 1983, Measurement and Comparision of Selected Physical Fitness Components and Antropometrical Characteristics of America.,** Unpublished Doctorate Dissertation, 75-76, Oklahoma.
- KRAUSE, J.V., 1996, Basketball Skills & Drills, 3-4,** Eastern Washington University.
- MALİNA, R.M., BOUCHARD, C., 1991, Growth, Maturation, and Physical Activity,** Human Kinetics Publishers Inc, Illinois.
- MENGÜTAY, S., 1999, Okul Öncesi ve İlkokullarda Hareket Gelişimi ve Spor,** Ankara, Tütibay Ltd.Şti.
- MENGÜTAY, S., 2000, Okul Öncesi ve İlkokullarda Hareket Gelişimi ve Spor.** Tutibay Yayınları, Ankara.
- PEKEL, H.A., AYDOS, L., ONAY, M., 2006, Türkiye'deki Elit Atletlerin Sosyo-Ekonomik Durumları Üzerine Bir Araştırma,** Kastamonu Eğitim Dergisi, 14, 2, 667-678.
- SAYGIN, Ö., POLAT, Y., KARACABEY, K., 2005, Çocuklarda Hareket Eğitiminin Fiziksel Uygunluk Özelliklerine Etkisi.** Fırat Üniversitesi Sağlık Bilimleri Dergisi, 19 (3), s. 205-212.
- TUSUNAWAKE, N., TAHARA, Y., MOJİ, K., 2003, Body Composition and Physical Fitness of Female Volleyball and Basketball Players of the Japan Inter-high School Championship Teams.** J. Phy. Antropol. and Appl. Human Sci 22 (4): 195-201.
- WATTS, P.B., JOUBERT, L.M., LİSH, A.K., et al, 2003, Anthropometry of Young Competitive Sport Rock Climbers.** Br Journal Sport Medicine, 37, 420-424.
- YAZARER, İ., TAŞMEKTEPLİGİL, Y., AĞAOĞLU, Y.S., et al, 2004, "Yaz Spor Okullarında Basketbol Çalışmalarına Katılan Grupların İki Aylık Gelişmelerinin Fiziksel Yönden Değerlendirilmesi",** Ankara Üniversitesi Beden Eğitimi Ve Spor Yüksekokulu SPORMETRE Beden Eğitimi ve Spor Bilimleri Dergisi, C, II (4), ss, 163-170.
- YÖRÜKOĞLU, U., KOZ, M., 2007, Spor Okulu Çalışmaları İle Basketbol Antrenmanlarının 10-13 Yaş Grubu Erkek Çocukların Fiziksel, Fizyolojik Ve Antropometrik Özelliklerine Etkisi,** A.Ü. Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, V (2) 79-83.

## RESEARCHES CONCERNING THE KINEMATIC ANALYSIS OF THE HOP IN THE MALE TRIPLE JUMP EVENT

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### ABSTRACT

**Purpose.** The purpose of this research was to emphasize the technical aspects specific to the hop triple jump event by kinematic analysis.

**Methods.** In order to elaborate this research paper we used some research methods that gave us the opportunity to achieve a scientific approach based on quality and precision: case study, kinematic analysis, experiment.

**Results.** By this research we wanted to measure of the following kinematic parameters: the time of the hit phase, the trajectory (height) of the body mass center and the distance between the projection of the B.M.C on the ground and the contact point of the hit foot during the hit phase.

**Conclusions.** The data and the means that were used in order to process the kinematic parameters obtained by achieving this scientific approach represent real and objective instruments of technique monitoring that can be used in order to provide quality and efficiency to the training process – technical factor.

**KEYWORDS:** hop, kinematic analysis, triple jump,.

### PURPOSE

A real knowledge of the human movement aspects is fundamental from the perspective of a variety area of domains that interacts in order to provide the necessary support for some objectives

The information obtained by kinematic measurement and evaluation represents important indicators in the sportive technical monitoring activity, being a support in the correct learning, consolidation and improvement of the different component of this modern sportive training factor.

The movement analysis in real time, on kinematic characteristics, represents an essential instrument in the monitoring of the sportive technique and assumes the existence of an operational system by whom the figure data, recorded by using software technologies, will be processed, interpreted and used to describe and become more aware and exact the technical aspects. [C.J. Payton & R.M, Bartlett 2008]

„The kinematics studies the geometrically, spatial and temporally description of the movement by the framework of the following parameters: time, position, trajectory, angles, linear velocity, linear acceleration, angular velocity, angular acceleration. The kinematics analyses suppose the utilization of these parameters in order to obtain some objective information, concerning the technique elements and proceedings, as well as the base mechanism, specific to some sportive discipline or event.” [I, Mihai, 2009]

Knowing the kinematic features of the practiced sportive event represents on objective element of orientation of the training and in the same time an

achievement having general and particular character: physical exercises and sport science, physical education, medicine, psychotherapy, occupational therapy, medical assistance, etc. [B. Abernethy, and colab., 2008]

evaluation mean of the technical behavior evolutions' providing stringency and efficiency to the sportive training process.

The aim of this research was to emphasize the technical aspects that are specific to the hop of the triple jump event by kinematic analysis.

The achievement of this aim was possible by fulfilling the following objectives:

- the establishment of the kinematic parameters that will be measured and analyzed;
- the delimitation of the moments when the kinematic parameters will be measured and analyzed;
- the dynamic determination of the kinematic parameters used in this research that are specific to each athlete.

### METHOD

In order to elaborate this research paper we used some research methods that gave us the opportunity to achieve a scientific approach based on quality and precision: case study, kinematic analysis, experiment, table and graphic and it was focused on the National and Olympic Team components of the Romanian Track and Field Federation, specialized in the triple jump event.

**Table 1. The time of the hit phase**

Athlete	Jump phase	Time (ms)
Oprea Marian	Hop	140
Anghel Alin	Hop	120
Daianu Adrian	Hop	140

The data from the table 1 indicate the fact that the time of the hit phase recorded by the three athletes during the hop phase has values between 120 and 140 milliseconds. So, it can be seen that the value of the hit

time realized by Oprea and Daianu has similar values, respectively 140 ms, while the value of the hit phase time achieved by Anghel is 120 ms.

**Table 2. The height of the B.M.C. during the hop (m)**

The moments of the hop								
Oprea Marian			Anghel Alin			Dăianu Adrian		
Contact	Hit	Take-off	Contact	Hit	Take-off	Contact	Hit	Take-off
1.05	1.26	1.26	1.09	1.26	1.26	0.93	1.16	1.16
1.02	-	1.28	1.05	-	1.29	0.94	-	1.19
1.02	-	1.31	1.05	-	1.32	0.94	-	1.23
1.03	-	1.34	1.08	-	1.35	0.96	-	1.25
1.05	-	1.38	1.1	-	1.38	0.97	-	1.28
1.09	-	1.40	1.15	-	1.41	1.01	-	1.31
1.17	-	1.43	1.21	-	1.43	1.07	-	1.34
1.19	-	1.45	-	-	1.47	1.12	-	1.37
-	-	1.48	-	-	1.48	-	-	1.38
-	-	1.49	-	-	1.49	-	-	1.4
-	-	1.50	-	-	1.49	-	-	1.4
-	-	1.49	-	-	1.47	-	-	1.4
-	-	1.49	-	-	1.45	-	-	1.4
-	-	1.47	-	-	1.44	-	-	1.39
-	-	1.47	-	-	1.41	-	-	1.38
-	-	1.46	-	-	1.39	-	-	1.36
-	-	1.45	-	-	1.37	-	-	1.34
-	-	1.44	-	-	1.34	-	-	1.34
-	-	1.42	-	-	1.31	-	-	1.32
-	-	1.39	-	-	1.27	-	-	1.29
-	-	1.37	-	-	1.25	-	-	1.27
-	-	1.34	-	-	1.22	-	-	1.24
-	-	1.32	-	-	1.19	-	-	1.21
-	-	1.29	-	-	1.18	-	-	1.18
-	-	1.25	-	-	1.15	-	-	1.15
-	-	1.21	-	-	-	-	-	1.11
-	-	1.17	-	-	-	-	-	1.08
-	-	1.13	-	-	-	-	-	-
-	-	1.08	-	-	-	-	-	-

Table 2 and graphics 1, 2 and 3 show the position of the BMC emphasizing for each athlete the trajectory during the hop, too.

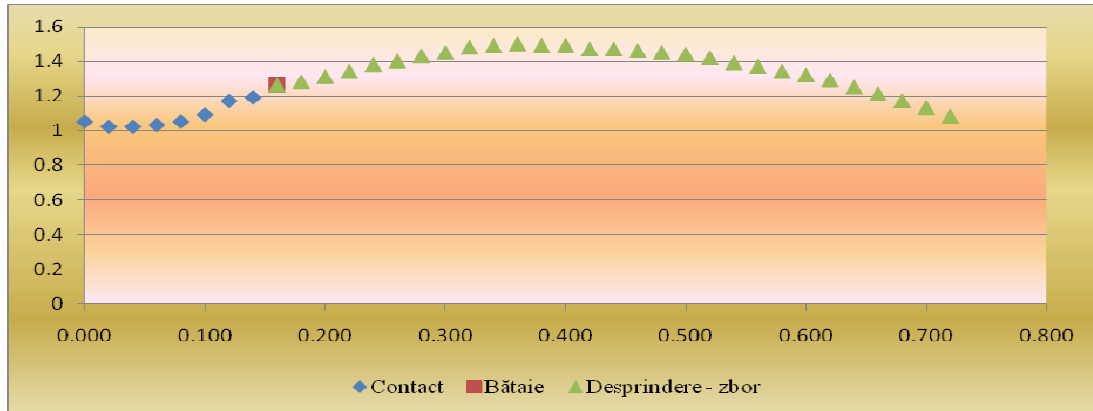
From the values showed in the mentioned table we can see the fact that the height of the BMC presents vertical oscillations with values between: 0.12 and 0.19 m in the ground contact moment, 0.28 and 0.42 m from the moment of take-off until the highest point of the flight and between 0.32 and 0.42 m in his descendent phase. The average of the BMC height recorded during

the hop is between 1.22m (Daianu) and 1.30m (Oprea and Anghel). The standard deviation has the following values  $\pm 0.14$  m (Anghel),  $\pm 0.15$  m (Daianu), respectively  $\pm 0.16$  m (Oprea).

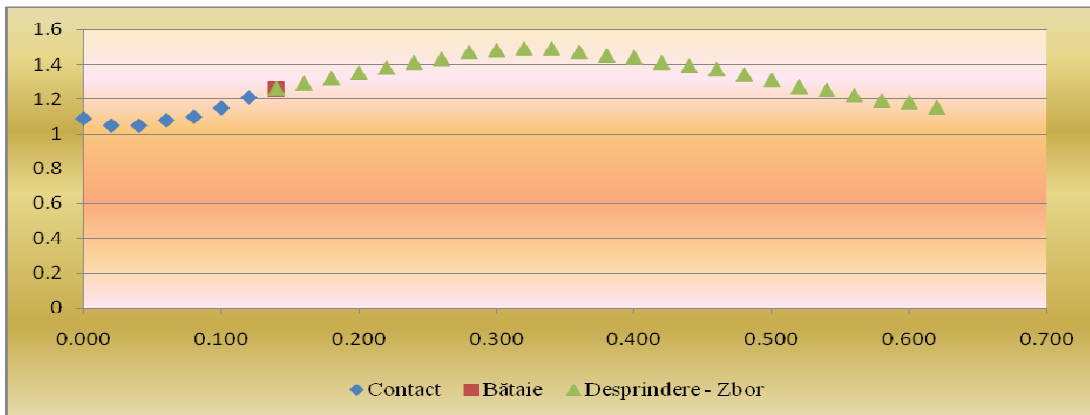
The maximum point of the BMC (graphic 1) has a value of 1.50 m, the difference between his position in the contact moment (1.05m) and the maximum point of the flight being 0.45m. The variation of the BMC on his trajectory, after the take-off and until the ground contact moment is in average of 2.6 cm.

The maximum height of the BMC trajectory (graphic 2) has a value of 1.49 m, the difference between his position in the contact moment (1.09m) and the maximum moment of flight being 0.40m. The variation of the variation of the BMC on his trajectory, after the take-off and until the ground contact moment is in average of 2.3m.

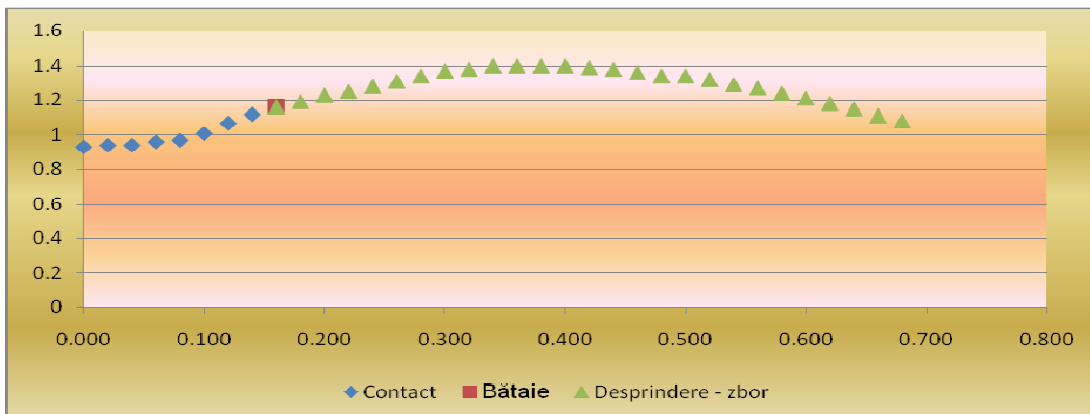
On the graphic 3 we can see that the maximum point of the BMC position has a 1.40 m value. The difference between his position in the contact moment (0.93 m) and the maximum point of the flight is 0.47 m. The variation of the variation of the BMC on his trajectory, after the take-off and until the ground contact moment is in average of 2.07m.



*Graphic 1. The trajectory of the BMC during the hop - Oprea Marian -*



*Graphic 2. The trajectory of the BMC during the hop - Anghel Alin -*

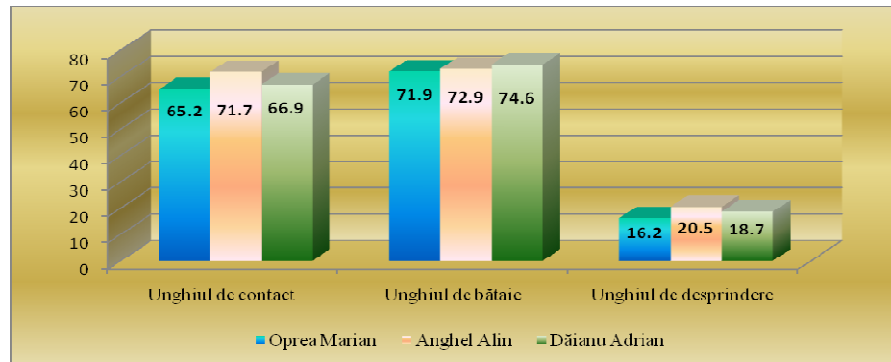




**Graphic 3. The trajectory of the BMC during the hop  
- Daianu Adrian -**

**Table 3. The value of the contact hit and take-off angles – the hop**

Athlete	Contact angle	Hit angle	Take-off angle
	<i>The hop</i>	<i>The hop</i>	<i>The hop</i>
Oprea Marian	65.2 <sup>0</sup>	71.9 <sup>0</sup>	16.2 <sup>0</sup>
Anghel Alin	71.7 <sup>0</sup>	72.9 <sup>0</sup>	20.5 <sup>0</sup>
Dăianu Adrian	66.9 <sup>0</sup>	74.6 <sup>0</sup>	18.7 <sup>0</sup>



**Graphic 4. Dinamica valorilor unghiurilor de contact, bătaie, desprindere**

Analyzing the values of the contact, hit and take-off angles (tables 3 and graphic 4) we can observe the following aspects: the contact angle has 65,2<sup>0</sup> (Oprea), 71,7<sup>0</sup> (Anghel), respectively 66,9<sup>0</sup> (Daianu); referring to the hit angle, the values of the three

athletes have an ascendant trajectory starting with Oprea and finishing with Daianu; in the take-off angle case, as the contact angle, Anghel has the highest value followed by Daianu and Oprea.

**Table 4. The distance between the hit leg and BMC projection on the ground in the hit moment**

Athlete	Position of the hit leg (m)
Marian Oprea	0.43
Anghel Alin	0.39
Daianu Adrian	0.38



**Graphic 5. The dynamics of the hit leg position and the BMC projection on the ground in the hit moment**

Referring to the hit leg position and the projection of the BMC projection on the ground (table and 0.38m, before BMC. As we can see in the graphic 5, the highest distance between the contact

#### DISCUSSION AND CONCLUSION

By achieving this scientific approach we can say that by processing the video images and by the kinematic analysis of the evolution of the three athletes we emphasized the specific aspects of the hop – male triple jump event – these data being appreciated from the following perspectives:

- The data referring to the hop execution time presents real and precise information concerning its duration, helping the coach in monitoring the time of the structural components of the event knowing that the more time for the base mechanism elements execution is needed (especially the three hits) the bigger are the velocity loss and that determines the obtaining of low performances;
- the determination of the contact point position of the hit leg given the projection of the M.G.C. of the body on the ground in the moment of the performance of the three successive phases of the hit, offers exact information about the distance where the athlete put his leg before projection of M.G.C. If this distance is longer than 1,5 feet, it becomes a limiting element in gaining the optimum speed needed for the achievement of the whole jump in optimum conditions.
- The determination of the contact, hit and take-off angles, specific to the hop,

4) in the contact moment of the hit phase of the hop, we can observe that he presents a value between 0.43 point of the hit leg and the projection of the BMC is in Oprea case, followed by Anghel and Daianu. allows the emphasizing of some information that, by their values, represents elements of appreciation regarding to the technical behavior, offering the trends of the approach and exit from the hit phase. .

#### REFERENCES

- ABERNETHY, B. and colab., (2008) – The biophysical foundations of human movement, Human Kinetics, S.U.A., p. 3 – 14
- MIHAI, I., (2009) – *Researches concerning the kinematics analyses in the triple jump event*, International Scientific Conference – “Innovation and creation in the field of physical activity, sources of human performance” – Galati, pp. 293 – 297
- PAYTON C.J. & BARTLETT R.M., (2008) – Biomechanical evaluation of movement in sport and exercise, edit. Routledge – Taylor & Francis Group, Londra, p. 33 – 35
- <http://www.dartfish.com/en/support-video-software/documentation/index.htm>, 22.09.2008.

### RESEARCHES CONCERNING THE UTILIZATION OF THE KINEMATIC ANALYSIS MOVEMENT SOFTWARE IN 2D SYSTEM – DARTFISH<sup>®</sup> IN THE MALE TRIPLE JUMP EVENT TECHNIQUE MONITORING

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#### ABSTRACT

**Purpose.** The determination of the operational route that is necessary to use the kinematic analysis Dartfish<sup>®</sup> software in the monitoring activity of the male triple jump event technique.

**Methods.** To achieve this research there were used some research methods such: kinematic analysis method, case study method, experimental method.

**Results.** There were established the steps of the operational route necessary to use the kinematic analysis Dartfish software in the monitoring activity of the male triple jump event technique.

**Conclusions.** The utilization of the Dartfish<sup>®</sup> software can represent a useful instrument in the monitoring activity of the male triple jump technique by implementing it in the sportive training process.

**KEYWORDS:** kinematic analysis, monitoring, triple jump, Dartfish<sup>®</sup> software.

#### PURPOSE

The permanent improvement of the instruments and methods used in order to monitor the technique aspects of the human movement determined the obtaining of some more accurate information regarding to the basic element of the movement, influencing in a favorable way the scientific research activity that is necessary in order to provide quality and efficiency to the means that are used in the sportive training process. “The

science of the information promotes new instruments to analyze the sportive performance following some methodological and technological progresses in sportive and physical activities domain. So, using the modern technologies gives the possibility that the training process of the physical education and sport domain should be approached from a different perspective.” [DUPUI, P., 2003, pp. 7 - 13]. The using of some instruments with more and more various utilization options, electronic control

devices, different types of behaviors recording, answers processing and the necessary information presentation, made the movement analysis to become a component that complete the supporting elements that the scientific research activity has to base on trying to amplify in a positive sense the effects of the sportive training process. The aim of this research was to determine the operational route that is necessary to use the kinematic analysis Dartfish<sup>®</sup> software in the monitoring activity of the male triple jump event technique.

In order to accomplish this aim we planned the fulfillment of the following objectives:

1. The identification of the technical features specific to the 2D movement analysis;
2. The determination of the action ways that are compatible with the monitoring activity of the male triple jump event technique;
3. The establishment of the operational design necessary to implement the 2D Dartfish<sup>®</sup> movement kinematic analysis software in the framework of the monitoring means specific to the male triple jump event.

#### METHOD

The research was based on the case study along with the kinematic analysis method, documentary informatics method, experimental method, graphic and table method and it was focused on the components of the Olympic and National Team of the Romanian Track and Field Federation, specialized in the triple jump event. Three video cameras were used (two having its own memory storage space - the hard disk - and one the possibility to record on mini DV) in order to record images that will be processed later using Dartfish<sup>®</sup> software. For the third video camera which had a mini DV tape images storage system we used an image processing program called „Ulead Video Studio”. The three cameras were positioned in order to include in the filming angles the technical behaviour of the athletes starting with the first hit phase.

**Results** After the video images recording the video material was transferred in the PC and processed to obtain images recorded with 50 frames/second. The result of this processing was materialized in the establishment of the time between two consecutive frames - 0.020 seconds meaning 20 milliseconds, representing in the same time the temporal distance that was used to process the images using the Dartfish<sup>®</sup> movement kinematic analysis software - Analyzer module. Using the Dartfish<sup>®</sup> software for the kinematic analysis means the browsing of the following steps (<http://www.dartfish.com/en/support-video-software/documentation/index.htm>, 2008):

- the images are imported in the PC and they are saved as video clip;

- the Dartfish<sup>®</sup> software in opening and from the instruments bar the Analyzer option is chosen;
- selecting the clip that will be analyzed;
- rewinding the clip (frame by frame) in order to establish the moments that will be analyzed;
- establishing the time of the analyzed clip.

From this moment the movement analysis may began by following the next actions (according with the kinematic components that will be analyzed):

- the establishment of the frame that will be analyzed;
- the visualizing of the markers from the analysis as well as the delimitation of the involved segments and joints;
- after the determination of the markers, segments and joints that will be analyzed the kinematic component (s) that will be approached is (are) selected (velocity, trajectory, angle);
- after the kinematic components establishment a table is being opened where there will be inserted the data that is specific to each kinematic indicator;
- after that the data are exported in the Excel program to be statistically processed and graphical lineup that will emphasize the important aspects of the analyzed movements.

The stages of the operational route that is necessary to use the kinematic analysis Dartfish<sup>®</sup> software in the monitoring activity of the male triple jump event technique were based on the previous presented steps and concerned the following:

- the establishment of the technical aspects the will be monitored: the technical behaviour of the athletes after the first hit phase;
- the location of the video cameras at optimum distances in order to record images that will be processed later by using Dartfish<sup>®</sup> software: each side of the motion plan recording the movements of the hit and swing leg;
- the establishment of the image acquisition rate - the same for all recorded images;
- the delimitation as video clip of the images that will be kinematic processed and analyzed: each trial of the athletes was processed in order to obtain clips that will contain images concerning the hop, step and long jump;
- opening of the Dartfish<sup>®</sup> software - analyzer module, selection of the wanted clip and the establishment of its time (fig. 1, 2, 3);

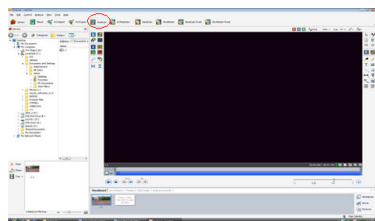


Fig. 1. Choosing the Analyzer option from the instruments bar of the Dartfish<sup>®</sup> software

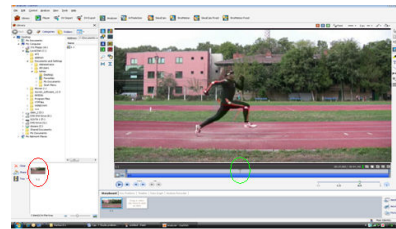


Fig.2. Selecting and rewinding the clip

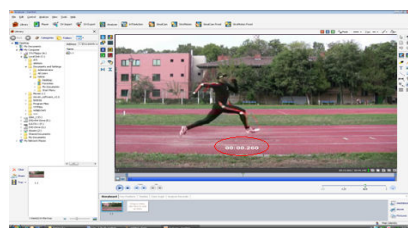


Fig.3. Establishing the clip time

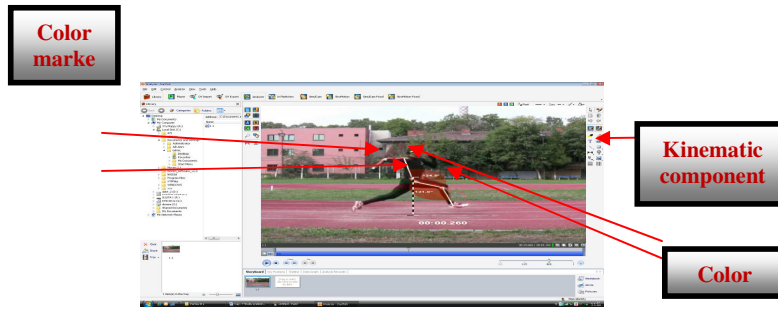


Fig.4. The visualization of the markers and the determination of the kinematic indicators

- the visualization of the color markers and the establishment of the kinematic components wanted to be analyzed: the height and trajectory of the point that represents the position of the body mass center established in the standing position; the trajectory of the ankle, knee, hip and shoulder joints; the angle from the knee and hip joints, as well as the contact, hit and take-off angle; the distance between the projection of the body mass center on the ground and the contact point of the hit leg in the hit phase moment (fig.4);
- the opening of a table from the instruments bar of the soft and the insertion of the values corresponding to the selected kinematic parameters (fig. 5);
- the exporting of the data in the Excel program and their statistic, mathematic and graphic processing (fig. 6).

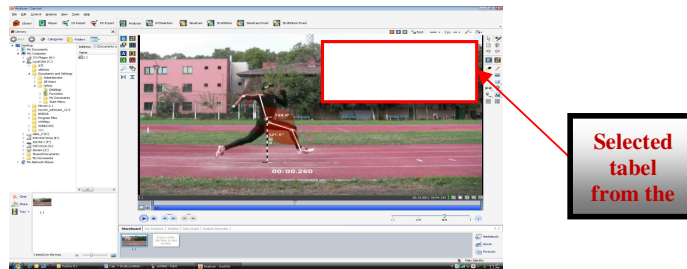


Fig.5. The insertion of the data in the Dartfish<sup>®</sup> work table

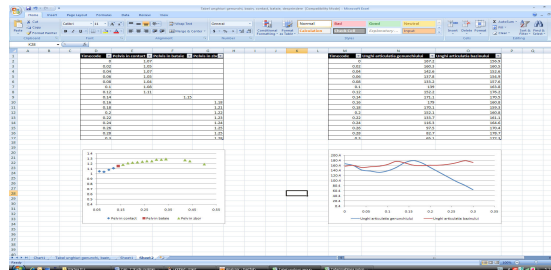


Fig.6. The Excel export and processing data

**DISCUSSION AND CONCLUSION**

- by determining and graphic representing the B.M.C. trajectory or of different joints of the body we can obtain data that shall emphasize their direction and oscillations registered during the base mechanism elements (fig. 7);

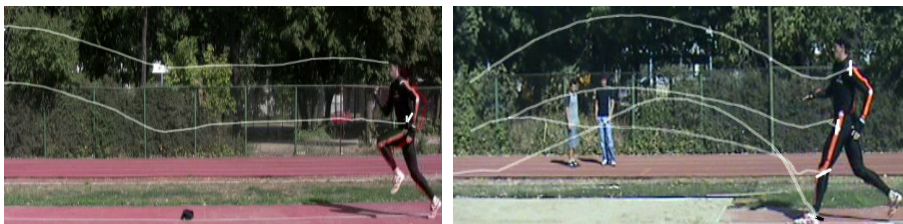


Fig. 7. Representations of different points and joints trajectories

- the determination of the angles specific to this type of jump (the angles of contact, hit and take-off; the angle formed in the hip and knee's joints both at the hit and swing legs' level) allows emphasizing some information

which by its value, represents elements of assessment of the technical behavior of the inferior limbs' level, helping to the monitoring of the technique in the whole event (fig. 8);



Fig.8. representing the angles during some moments of hit phase

- the determination of the B.M.C. during the different phases of the base mechanism of the event emphasizes the trajectory that the athlete describes it, giving to the coach clues about the way that the athlete records wrong

oscillation in vertical axis during the running or uses his force to take-off from the hit (too much on the vertical or too much on the horizontal) (fig. 9);

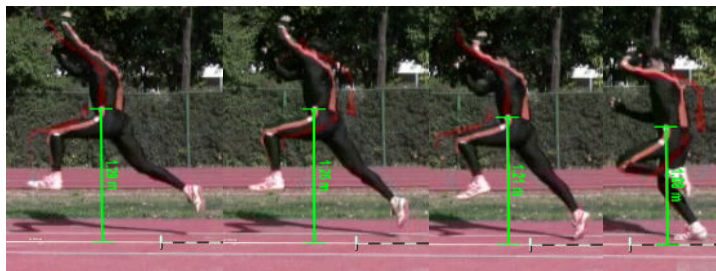


Fig.9. The B.M.C. representations during some moments of the hit phase

Using the kinematic analysis software of the movement in 2D system in order to monitor the male triple jump event technique can represent a support element in the sportive training process – technical training component –

#### REFERENCES

DUPUIS, P., 2003, *Informatic instruments in collective sports* (translation) – High performance sport no.466 – Internal use-Bucharest, pp.7-13;

being used in video images processing to record figure data but also to elaborate instruments of visual representation of the technical behaviour;

<http://www.dartfish.com/en/support-video-software/documentation/index.htm>, 22.09.2008.

## EXAMINATION OF ATTENTION LEVELS OF ATHLETES WHO DO TAEKWONDO, KARATE AND MUAYTHAI

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### ABSTRACT

Attention is one of the most important parts of cognitive functions in education, work and sports life as well as in many of our daily activities. Attention is one of the characteristics which is necessary in sports in order to reach to a good level. This research was done with the aim of examination of the attention levels of athletes who do Taekwondo, Karate and Muaythai between the ages of 10 and 20. According to this aim, 61 male and 29 female athletes took part in this research. Bourdon Attention Test which was improved by Bourdon (1955) was used to determine the attention levels of the subjects from whom the exemplifications were taken. Gathered information was analyzed by using t-test in SPSS pocket program.

To conclude, the attention levels of the athletes from 10-20 age group who do Taekwondo, Karate and Muaythai were examined, it has been found that there is no significant difference between the attention levels of the subjects and age, gender and sports branch they do.

**KEYWORDS:** Taekwondo, Karate, Muaythai, Attention.

### INTRODUCTION

At any moment in time, people are bombarded with various stimuli, only some of which are relevant to current goals and only a few of which will ever reach our consciousness. The many stimuli present may each require a different action (actions) that are often incompatible with each other (A. Johnson and A.W. Proctor, 2004). Attention is to react preferentially to the related stimulus by eliminating the stimuli (M.H. Anshel et al. 1991). Attention may change depending on motivation level that child show to the different duties, their interests and skills (H.A. Ruff and M.K. Rothbart, 1996). It has been reported that little children are weaker in paying attention to these stimuli by neglecting visual stimuli and pay less attention in stimuli in the environment than adults (V. Nougier and B. Rossi, 1999). From the many years, attention has been concerned with the factors that affect learning a motor skill. In motor- learning as a science, attention is defined as, in the human performance, the conscious or unconscious engagement in perceptual, cognitive and motor activities before, during and after performing skills; the human information- processing systems includes limitation to the number of these activities that can be performed simultaneously. Attention has the limited capacity that effects the performance when done more than one activity at the sometime (R.A. Magill, 2004). When the attentional demands of the first task increase, performance on the second task will decline (as cited in C.K. Wirth, 2004). Attention also includes the processes of filtering our perceptions, balancing our several perceptions and adding emotional importance to these perceptions of us. The skill of controlling thinking processes and concentrating on one duty in the necessary key element for the effective performance in sports (R.M. Nideffer, 1993). Organism focusses on the stimuli that directly affect the behaviour. Selectivity may occur in very different behaviour situations, is multi-directional and

is seen as basic condition for the sports performance (S.H. Boutcher, 1992). Requiring thinking, planning and analysing, athletes use wide-internal focus. The attention focus is wide since athletes should focus on many things at one time and the focus direction is internal for data processing. Attention is to focus on previous experiences and strategies. In other times; athlete needs to be aware of complicated and quickly changing environment and to evaluate the situation to give suitable reaction. In these situations, he uses wide-external focus. He should evaluate external clues quickly and then one related to the duty is chosen (S.H. Boutcher, 1992, R.M. Nideffer, 1992).

The aim of the research is to examine the attention levels of athletes who do Taekwondo, Karate and Muaythai between the ages of 10 and 20 according to the sports branch they do.

### METHOD

90 athletes between the ages of 10 and 20 who do Taekwondo, Karate and Muaythai took part in the research voluntarily.

In the research, the attention levels of the subjects and the difference between sports branches were examined. In order to determine the attention levels of the subjects in the research, "Bourdon Attention Test" developed by Benjamin Bourdon (1995) was used. Bourdon attention test is a test measuring attention, its density, the speed of mobility, concentration (Y. Brunner, 2006). In this research, the letter form of Bourdon attention test was used. Students were asked to find "b, d, g, and p" and mark them. In evaluation of the test, true-false answers of the children were taken into consideration. Each true answer was accepted one point. The maximum score that could be taken in the test was determined as 110. The individual's score's increasing meant the increasing of the attention level. Its reliability; the reliability of the



test was done by the researcher. Test-retest reliability was calculated as reliability study and correlation coefficient was examined. This coefficient was found as 78. Its validity; at the end of criteria validity study, the correlation of Bourdon attention test was found as 63.

### STATISTICAL ANALYSIS

In the evaluation of received data, One – Way ANOVA and unpaired t-tests were used to determine significant differences for each dependent variable. For all analyses, the criterion for significance was set at an alpha level of  $p < 0.05$ .

### RESULTS

As seen in table 1, the gender and age information of the athletes who do Taekwondo, Karate and Muaythai in the research is presented.

As seen in table 2, the number of marked true-false letters at the end of Bourdon test, the number of unmarked letters were examined according to the sports branches and no significant difference has been found between sports branches of the athletes who do Taekwondo, Karate and Muaythai in the research and their attention levels. ( $p > 0.05$ )

As seen in table 3, the number of marked true-false letters at the end of Bourdon test, the number of unmarked letters were examined according to the gender variable and no significant difference has been found between genders of the athletes who do Taekwondo, Karate and Muaythai in the research and their attention levels ( $p > 0.05$ ).

### DISCUSSION AND CONCLUSION

In the study where the attention levels of athletes who do Taekwondo, Karate and Muaythai between the ages of 10 and 20 were examined;

Totally 90 subjects, 27 females, 62 males, took part in the research. When sports branches were examined according to the age, The maximum average values have been found as in: %55.2 for 10-12 age group in Taekwondo, %43.3 for 13-15 age group in athletes doing karate, %46.7 for 16-18 age group in athletes doing Muaythai (table 1).

No significant difference has been found between sports branches of the athletes who do Taekwondo, Karate and Muaythai in the research and their attention levels (Table 2).

It is thought that there is no significant difference between sports branches of the subjects and their attention levels since Taekwondo, Karate and Muaythai are all from the far east and include similar techniques in terms of movement discipline.

The attention levels of 29 gymnasts aged 7-13 were examined and number of total marked items of older gymnasts was found to be higher (G.Tenenbaum et al., 1987).

In a study where the effects of paying attention level of students in 4th and 5th classes in primary school over self-perception and success levels were examined, the practices of paying attention education were found to cause significant differences in paying attention levels but that didn't differ according to the classes and genders of the students (B.D.Karaduman, 2004).

In the validity and reliability studies for Turkish athletes of d2 test evaluating attention, no significant difference was found between genders but difference was found between the education years of the subjects (E. Çağlar, 2003).

The number of marked true-false letters at the end of Bourdon test, the number of unmarked letters were examined according to the gender variable in the subjects participated in research and no significant difference has been found between genders of the athletes who do Taekwondo, Karate and Muaythai in the research and their attention levels (table 3).

Even if it doesn't seem that subjects' being male or female doesn't affect attention level, female subjects have been determined to mark more true letters than males.

Although some researches on attention in literature point out girls are better in paying attention skill (A. Helmke and A. Rankl 1993, J. Borchert, 1998) and some researchers suggest boys (C. Neuhaus, 2000), it is reported in that field literature about attention that there is no difference between boys and girls in keeping attention. S. Kaymak (2003) found that there was no difference between girl and boy students in terms of paying attention level. Attention study was done to the 18-32 aged students and no significant relation was found between attention and gender variable (E.A. Zillmer and C.H. Kennedy, 1999). This research findings show similarity with the study.

In conclusion, in the study where the attention levels of athletes who do Taekwondo, Karate and Muaythai between the ages of 10 and 20 were examined, no significant difference has been found between age, gender and sports branches of the subjects and their attention levels. But it has been determined that the attention values of female subjects are higher than males'. Since Taekwondo, Karate and Muaythai are all from the far east sports and similar movements and techniques are used by athletes in them, it is thought that there is no significant difference in attention levels of the athletes.

**Table 1: Percentage (%) and frequency distribution of age ranges related to the subjects in the research according to the branches.**

	gender	age	f	%
Teakwondo N:29	female:13 male:16	10-12 age	16	55,2
		13-15 age	9	31,0
		16-18 age	2	6,9
		20 and over	2	6,9
		Total	29	100,0
Karate N:30	female:9 male:21	10-12 age	9	30,0
		13-15 age	13	43,3
		16-18 age	6	20,0
		20 and over	2	6,7
		Total	30	100,0
Muaythai N:30	female:5 male:25	10-12 age	3	10,0
		13-15 age	3	10,0
		16-18 age	14	46,7
		20 and over	10	33,3
		Total	30	100,0

**Table 2: examining attention values of the subjects in the research according to the sports branches.**

variables		Sum of Squares	Mean	F	p
number of marked true letters	Between Groups	1923,604	961,802	1,778	0,175
number of marked false letters	Between Groups	1,338	0,669	0,615	0,543
Total number of marked letters	Between Groups	1993,780	996,890	1,851	0,163
number of unmarked letters.	Between Groups	1399,319	699,660	1,167	0,316

**Table 3: examining attention levels of the subjects in the research according to the gender variable.**

	gender	N	Mean	Std. Deviation	t	P
number of marked true letters	female	27	76,59	25,740	0,495	0,622
	male	62	73,90	22,571		
number of marked false letters	female	27	0,15	0,534	0,930	0,355
	male	62	0,37	1,191		
Total number of marked letters	female	27	76,74	25,604	0,454	0,651
	male	62	74,27	22,601		
number of unmarked letters.	female	27	73,41	25,740	0,707	0,481
	male	62	77,42	24,096		

**REFERENCES**

**ANSHEL, M.H., FREEDSON, P. HAMILL, J., HAYWOOD, K., HORVAT, M., PLOWMAN, S., 1991,** *Dictionary of the Sport and Exercise Sciences*, Champaign, IL: Human Kinetics Books.

**BORCHERT, J., 1998,** *Effective trainings programme zur Erhöhung schulischer Aufmerksamkeit. Ein Überblick für Lehrkräften in sonderschulen.* Sonderpaedagogischer kongress in Hannover. www. vds-bundesverband. de/material/kongress98/borchert. htm.

**BOUTCHER, S.H., 1992,** *Attention and athletic performance: an integrated approach.* In. Thelma S.Horn (Ed.) *Advances in Sport Psychology*, Champaign, IL: Human Kinetics Publishers, 251-263.

**BRUNNER, Y. Y., 2006,** *Luçse, çem Supervnmaniye.* Rostov –na Donu: Feniks, 15-16.

**ÇAĞLAR, E., 2003,** *The reliability and validity of d2 test in athletes.* H.U. Health Sciences Institute. Doctoral thesis, Ankara.

**HELMKE, A., RENKL, A., 1993,** *Das münchener aufmerksamkeitinventar. Ein instrument zur systematischen verhaltensbeobachtung der schüleraufmerksamkeit im unterricht.*



Diagnostica: Zeitschrift für Psychologische Diagnostik und Differentielle Psychologie, 38, 130–141.

- JOHNSON, A. & PROCTOR, A.W., 2004**, *Attention: Theory and practice*. United States of America, Sage Publications. Inc. 4-93.
- KARADUMAN, B. D., 2004**, *The effect of paying attention education program over the level of paying attention, self-perception and success levels of 4th and 5th graders in primary school*. Ankara University Education Sciences Institute Doctoral thesis, Ankara.
- KAYMAK, S., 2003**, *The effect of paying attention education program over paying attention skills of 2nd and 3rd graders in primary school*. Unpublished doctoral thesis. Ankara University. Social Sciences Institute, Ankara.
- MAGILL, R.A., 2004**, *Motor learning and control: Concepts and applications*. (7<sup>th</sup> ed.) Boston. Mc Graw Hill.
- NEUHAUS, C., 2000**, *Der hyperactive jugendliche: Erwachsen werden mit ADS*. Ukraina, Ravensburger.
- NIDEFFER, R.M., 1993**, *Attention control training*. In R.N. Singer, M. Murphey, L.K. Tennant (Eds.) *Handbook of Research on Sport Psychology*, New York: Macmillan Publishing Company, 542-556.
- NOUGIER, V. & ROSSI, B., 1999**, *The development of expertise in the orienting of attention*. *International Journal of Sport Psychology*, 30, 246-260.
- RUFF, H. A., ROTHBART, M. K., 1999**, *Attention in early development: Themes and variations*. New York: Oxford University Press.
- TENENBAUM, G., BENEDICK, A.A., BAR-ELI, M., 1988**, *Quantity, consistency, and error-rate of athletes' mental concentration*. *International Journal of Sport Psychology*, 19, 311-319.
- WIRTH, C.K., 2004**, *Influence of Attentional and Motivational Factors on the Performance of a Mastered Motor Task*. Published Master Thesis, University of Florida, Florida, United States.
- ZILLMER, E.A. & KENNEDY, C.H., 1999**, *Preliminary United States norms for the d2 test of Attention* *Archives of Clinical Neuropsychology*, 14 (8), 727-728.

## STUDY CONCERNING THE 3 POINTS SHOTS REALIZED BY THE TOP 4 RANKED TEAMS AT THE MEN OLYMPIC BASKETBALL TOURNAMENT, BEIJING 2008

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### SUMMARY

**Purpose.** The author aims to analyze the long-distance shots attempted by players of the top 4 ranked teams in the Olympic basketball tournament. Beijing, 2008.

**Methods.** The records of the 3 points shots were taken from the site of the International Federation of Amateur Basketball - FIBA. The study of the related literature provided information about the concerns, the news and the results concerning the long-distance shots. The data was processed by statistical-mathematical method.

**Results.** We presented and we analyzed the total number of 3 points attempts, number of successful shots, the percentage of success, the contribution of the 3 points shots to the total results, the number of 3 points shots per quarters, the general performance of the team and the individual performance of the players.

**Conclusions.** There is a concern of specialists to study various aspects about the long-distance shots.

Although the teams have paid special attention to the 3 points shots as a way to get an advantage over the opposing team, they represent only 39.32% of the filed goals attempts and 30.02% of the successful field goals.

The distribution of the individual attempts and of the success percentage is normal.

Even if each team has had at least one player with a lot of 3 point shots and a high percentage of success, we can not get to the conclusion that there is a trend in specializing only a few players for this kind of shot.

**KEYWORDS:** basketball, three points shot, the Olympic tournament, men

### INTRODUCTION

After the introduction of the 3 points shot in the rules of basketball, this game has suffered several changes that lead to the increasing of the offensive system area, a better valuation of the players with a good precision at medium and long-distance shots, a change of strategy for the defensive players who were forced to extend the area where they have to guard the attacking players and also the game became more spectacular (G. Schmidt & A. Clausmayer, 1995).

In order to know the modern basketball with all the components and in order to identify the trends in the evolution of the game the researcher will need to have good skills in synthesizing, analyzing and making use of the information. But this is not enough. The researcher will also need objective and relevant data (T. Predescu & G. Ghișescu, 2001). In order to have an appropriate evaluation we will need to have data that is objectively and numerical collected, relevant and meets the quality criteria (D. Colibaba-Evuleț & I. Bota, 1998).

The important international competitions, especially the Olympic Games, are occasions for objective evaluations of the game as whole or specific aspects of basketball. It is important to have studies made after each competition because this is the main instrument that helps us to know more about individual and team performances. (T. Predescu & C. Negulescu, 1998; Ș. Maroti, 2008; G. Schmidt, P. Kollath & D. Sommer, 1991)

### Purpose

This paper aims to study the best 4 teams at the men Olympic tournament and to analyze the frequency of the 3 points shots, their efficiency, the contribution of 3 points shots to the total points of the team and the

repartition of these shots among the players of each team.

### SUBJECT AND METHOD

In this paper we have used data from the recording of the games from the Olympic basketball tournament Beijing 2008. These records have been taken from the official bulletin of FIBA.

We analyzed the 3 points shots (304 attempts) of the members (48 players) of the first four ranked teams (USA, Spain, Lithuania and Argentina) in the quarter-finals, in the semifinals, in the final for bronze medals and in the final.

The variables that were considered are the total number of 3 points attempts, the number of successful 3 points shots, the success percentage of the 3 points attempts. We also analyzed the individual results of the players, the number of attempts and the number of successful attempts in a certain period.

We used scientific documentation in order to gather information about the news and the opinions expressed in the specific literature about the 3 points shots. We also studied other previous researches on this subject.

We used the statistical-mathematical method for the data processing. For the analysis we calculated the basic statistical indicators.

### RESULTS AND INTERPRETATION

The analysis is showing us that 3 of the 4 teams have attempted a comparable number of 3 points shots: USA 88 attempts, Lithuania 85 attempts and Argentina 78 attempts. The Spanish team has a much smaller number of 3 points shots – 53 attempts. This leads us to believe that, excluding Spain, the leading teams in the tournament have considered the distance

shots as an important part in their game tactics and they considers these shots as a way to gain an advantage in front of their opponents.

We also analyzed the difference between the highest number of attempts and the lowest number of attempts that each team had in a game. We found out that USA had a difference of 3 attempts between the game with the most 3 points shots and the one with the lowest number of 3 points shots. The performance of

the Spanish team was also uniform with a difference of only 4 attempts. Argentina, with a difference of 9 shots, and Lithuania, with a difference of 8 attempts, had bigger oscillations from game to game.

The general success percentage of the 3 points attempts is 37,82%. USA, with 39,77%, and Argentina, with 39,74%, are above average. Lithuania, with 36,47%, and Spainia, with 33,96% are under the average (Table 1).

**Table 1** Three points attempts, number of successful shots and the percentage of success

3 points shots	Team				Total
	USA	Spain	Argentina	Lithuania	
Attempts	88	53	78	85	304
Successful	35	18	31	31	115
%	39,77	33,96	39,74	36,47	37,82

We compared the success percentage of the 3 points shots of the top ranking teams at the Olympic tournaments at Atlanta 1996, Sydney 2000 and Beijing 2008. We realized that the differences are not very big: 39,03% in 1996, 37,53% in 2000 and 37,87% in 2008. Realizing the importance of the 3 points shots both the offensive players and the defensive players are very well prepared and this is why now there is a balance between offence and defense.

An important aspect is the time interval in which the 3 point shots are attempted. On the average, the teams attempted a 3 points shot at every 1`54". A successful 3 points attempt occurs on the average at every 4`59". Considering the time of the attack, we found out that the teams have attempted 3 point shots very early (1 second after possession) and also very late (24 seconds after they got possession).

We found out that out of the total number of 304 3 points shots, 62 attempts occurred in the first quarter, 77 attempts in the second quarter, 82 attempts in the third and 77 in the last quarter. The lowest number of 3 points shots was attempted in the first quarter and the highest one in the third quarter. The average number of 3 points shots per quarter was 76. Considering the number of attempts per quarter, only the first quarter is below the average with 68 attempts. The second, third and fourth quarter were all above the average with 77, 82 and 77 attempts respectively.

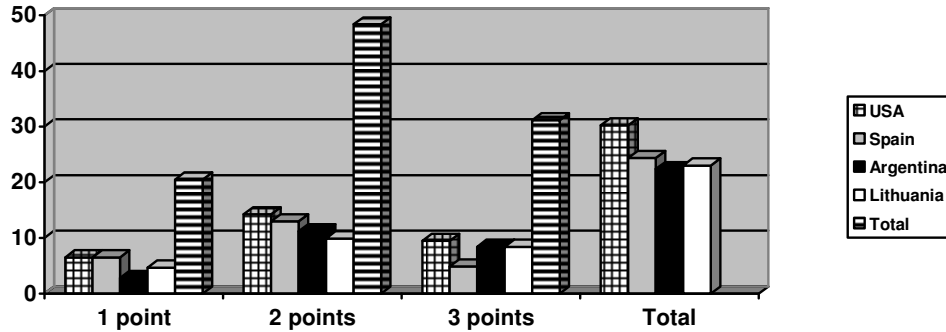
Studying the success ratio per quarter, we found out that the highest percentage of success was in the third quarter, with 41,46% successful attempts, and then first quarter, with 39,7 %, the fourth, with 37,66 % and the second one with 32,46 % (table 2)

**Table 2** The 3 points attempts and the success percentage in each of the quarters

Team	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			Total		
	A	S	%	A	S	%	A	S	%	A	S	%	A	S	%
USA	23	9	39,13	22	8	36,36	23	10	43,47	20	8	40,00	88	35	39,77
Spain	16	7	43,75	9	3	33,33	14	4	28,57	14	4	28,57	53	18	33,96
Argentina	16	7	43,75	22	6	27,27	19	9	47,36	21	9	42,85	78	31	39,74
Lithuania	13	4	30,76	24	8	33,33	26	11	42,30	22	8	36,36	85	31	36,47
Total	68	27	39,7	77	25	32,46	82	34	41,46	77	29	37,66	304	115	37,82

Studying the contribution of each type of shot to the total results, we found out that 20,48% of the points were scored from free throws, 48,37% of the points were scored from 2 points shots and the contribution of 3 points shots amounted to 31,13% of

the points (Figure 1). The percentage of points scored from 3 points shots was quite different for the 4 teams: 20,00% Spain, 31,34% USA, 36,47% Lithuania and 37,5% Argentina.



**Figure 1** The percentage of the points scored from free-throws, 2 and 3 points shots

The present situation is the result of the increased efficiency of the defense that lead to reaching a balance between offence and defense. The defense became more aggressive and now we have specific tactics aimed against long-distance shots. This way we have an obvious balance between the field goals scored from close to the basket, semi-distance and long-distance.

The number of 3 points shots represent 39,32% and the 2 point shots are 60,67% of the total filed goal attempts. The number of successful 3 points shots represent 30,02% of the total field goals and the 2

points shots, close-range and semi-distance shots, contribute with 69,97% to the number of field goals.

All the teams had a much better percentage for 2 points shots compared with the 3 points shots. For USA the 2 points percentage was 25,51% higher than the 3 points percentage, for Spain it was 19,37% higher, for Argentina it was 13,7% higher and for Lithuania 20,23% (Table 3). The conclusion is that the preparation of the players should be improved in order for them to increase their percentage of successful 3 points shots.

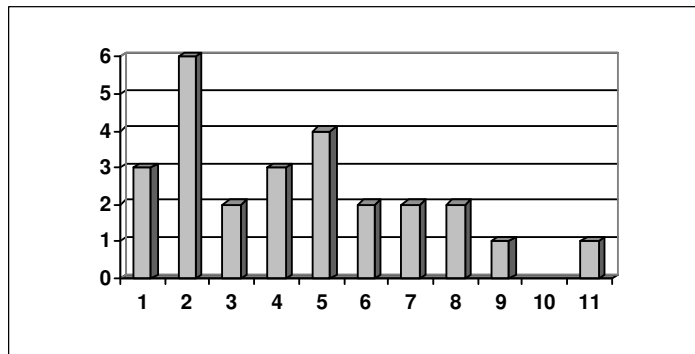
**Table 3** 2 points and 3 points attempts, filed goals and the percentage of success.

Team	Attempts		Field Goals		Success percentage	
	2 points	3 points	2 points	3 points	2 points	3 points
USA	121	88	79	35	65,28 %	39,77 %
Spain	135	53	72	18	53,33 %	33,96 %
Argentina	116	78	62	31	53,44 %	39,74 %
Lithuania	97	85	55	31	56,70 %	36,47 %
Total	469	304	268	115	57,14 %	37,82 %
%	60,67 %	39,32 %	69,97 %	30,02 %		

We found that out of the 48 players that we analyzed, 34 have attempted at least on 3 points shot. Out of them 26 had at least one successful 3 points shot. So 70,83% of the players contributed to the realization of the 304 3 points shots. If we consider the total number of players, then the average is 6,33 attempts per player. If we only consider those who attempted 3 point shots, then the average is 8,94 shots per player.

In analyzing the most efficient players, we only considered those players with at least 3 long-range attempts. The dispersion range is large, covering players with no successful attempt and also one player with 11 successful 3 points shots (Figure 2). Regarding the efficiency, the distribution curve is normal, the majority of players (80%) have between 20% and 50% success

ratio. 8% do not have any successful attempt. 3 players have a success ration of over 50% - 55,55%, 62,5% and 66 % respectively. The conclusion is that there are big differences between the performances of the players and also that there are some specialized players that have very good results with this kind of shot.



**Figure 2** Successful 3 points shots per player (Only players with at least 1 successful shot were considered)

The players with the highest number of points scored from 3 points shots were P. Quinteros (Argentina) 33, K. Bryant (USA) 27, R. Fernandez (Spain) and S. Jasaitis (Lithuania) 24 each.

The players with the highest percentage at 3 point shots were: T. Prince (USA) 66,66 %, P. Quinteros (Argentina) 62,5 % and J. Garbajosa (Spain) 55,5 %.

### CONCLUSIONS

The points realized from 3 points shots are representing 42,85% of the total points scored from field goals. So there is a balance between the field goals. This is because the defense is trying to prevent shots from any range: close-range and semi-distance and long-distance.

The average success ratio per team is between 33,96% and 39,77%, this being an average-low percentage.

The distribution of the individual performances is normal; most players have a success percentage between 20% and 50%.

We do not see a specialization of only few players who attempt this kind of shots because 70,84 % of the players have attempted 3 points shots. So the tendency is to train players to be able to shoot effectively in any conditions.

At least one player per team had a success ratio of at least 50% (USA – 4 players, Spain – 3 players, Lithuania and Argentina – 1 each).

Because the defense is more aggressive towards the 3 points shooters, it is harder to find a suitable position from where to shoot. This is why

some times the players have to take greater risks when attempting 3 points shots.

### BIBLIOGRAPHY

- COLIBABA-EVULEȚ, D. & BOTA, I., 1998** *Metodologia elaborării modelelor de joc*, în: „Jocuri sportive. Teorie și metodică”, Editura Aldin, București: 145 – 186.
- MAROTI, Ș., 2008** *Turneu olimpic de baschet masculin, Beijing, 2008*, în: *Palestrica mileniului III, Cultură și civilizație*, volumul IX, nr. 4 (34), decembrie 2008: 278 – 281.
- Olympic Basketball Tournament for Men, Beijing, 2008*  
[http://www.fiba.com/pages/eng/fe/08/oly/m/men/newsid/27974/FE\\_news\\_inteArti.html](http://www.fiba.com/pages/eng/fe/08/oly/m/men/newsid/27974/FE_news_inteArti.html) în perioada 10 - 24 august 2008.
- PREDESCU, TEODORA & NEGULESCU, C., 1998** *Modelarea în baschet*, în: *Curs de baschet. Specializare anul IV, Academia Națională de Educație Fizică și Sport*, București, 1998: 79 – 102.
- PREDESCU, TEODORA & GHÎȚESCU, G., 2001** *Baschet. Pregătirea echipelor de performanță*, Editura SemnE, București: 7 – 43.
- SCHMIDT, G., KOLLATH, P. & SOMMER, D., (1991)** „Video and Computer im Leistungssport der Sportspiele”, în: *Leistungssport*, nr.1 1, 1991: 96 – 58.
- SCHMIDT, G. & CLAUSMAYER, A., 1995** *Baschet – Evoluția aruncării de trei puncte*, în: *Sportul de performanță*, nr. 378 – 379, Centrul de cercetări pentru probleme de sport, București: 25 – 40

## SOCCKER TRAINER

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**ABSTRACT.** Coach is a public figure, active in sports, having a certain degree. The coach is a competent person qualified in charge of selecting and training athletes in training and competition. He leads the overall activity of players and team training. We can say that the coach is an educator as complex self-training and education of athletes, in an area of quality and efficiency, with gifted individuals than the average population, usually children and youth. Pedagogical process of communication and leadership training and education is conducted individually and in groups at different levels of education and aspiration. Coach personality should be oriented towards training and development issues at various levels of the personality of the player.

**Conclusions:** Being a coach, like all other professions, requires knowledge and passion, sacrifice and dedication of part of your soul, children, sports, travel and all activities required performance. Future sporting world will depend not only funds, technology coaches but also for their quality.

**KEYWORDS:** coach, soccer, trainer

### Introducing:

Coach is the "central figure" of the entire training process. Role and social status of coach make this one of the key factors specialist - to whose work and competence, fought with passion and responsibility depends on the continued growth of football players and team training valuable, able to raise the prestige of the sports. Coach personality should be oriented towards training and development issues at various levels of the personality of the player. We can say that the coach is a good technician, master of physical preparation, technical and tactical athletes, planning and organization of practical actions. Skills and abilities are basic attributes of this side of the personality and professional coach. Knowledge which must have a coach when training must be very many and various fields, such as knowledge in the field of anatomy and physiology, knowledge of psychology, knowledge of training theory, knowledge about human growth and development, knowledge sports nutrition, hygiene knowledge, knowledge of sports medicine, knowledge of both the organization and administration of funds and materials and sports grounds. The work of a coach is the most complex activity, which includes a large number of tasks and functions, some more pleasant than others but all equally important. Being a coach, like all other professions, requires knowledge and passion, dedication and sacrifice part of your soul, children, sports, travel and all activities required performance. (A. Larion, 2007). In his study on psycho-social-profile professional football coach, Stanculescu V presents the characteristics and qualities needed for soccer coach grouped into four categories, as follows:

- I. General ability: general intelligence, sense of observation, learning ability, creative ability.
- II. Special skills: communication skills, pedagogical tact, organizational capacity.
- III. Temperamental traits and characteriale: principledness and fairness, leadership, sense of responsibility, sociability, demanding, self-control.
- IV. Knowledge of general culture, knowledge - specialized in basic training activity-specific

knowledge, knowledge of management science., Knowledge of languages.

Passion for sports is certainly the most characteristic quality of the coach and the motivation for it is performance sports results and the belief that quality is only scientifically. (G. Stanculescu, I. Melenco, 2003). If professional major requirement is competence (ability to coach his office to perform duties), the morally primary requirement is accountability. Together they will represent the authority coach. Authority is, in one aspect is the ability to listen to others, and under another - the ability to issue decisions and organize the conditions under which he and his team must act to achieve goals. Coach is the man, which in its work with human material at its formation ages, both in terms of performance sport, and especially education, his personality, his training in all aspects. Important is the coach to have a training and game design. Without exaggeration we can say that at any time, any place, no matter what position coach must use their knowledge of psychology, both athletes and guidance for wise leadership, controlled and enthusiastic while their conduct. Every professional needs assistance or scientific advice from others. (M. Epuran, 1990). Quality Coach of the children and junior teams are focused on: being a good teacher, especially using the method of training by discovery not by order, to know a foreign language and work on computers (PC) have more patience ; to be a good technician, all or almost all soccer ball (C Ploesteanu, 2007). Relations between components of a team and group life, positive and negative raises many problems, and coach should know and should find solution to resolve the matter. He will have to show intelligence, tact and skill to avoid creating conflicts in relations between players and between them and technical management. Creating a discipline her free consent and permanent, is a main feature in a soccer team, whose players are competing against opponents, but also to partners and who depend on you coach at a time. In a research which aims to find out what qualities appreciate more players to their coach, Professor Epuran received two types of responses: players in the early stages of

training coach appreciates the ability to teach technical performances, the players are mastery stage coach to motivate appreciate the ability to compete. We all want more, more, and for this you need to behave in particular and to give new meaning to our work. Future football world will depend not only funds, technology coaches but also the quality. Remember that work is tested whenever the coach when the team submits a game that says a lot.

On the typology of coaches say that every coach has his philosophy about football, in line with experience, knowledge, contribute to the development of soccer, soccer current position, current position in soccer, future outlook, which together form a specific type of soccer coach :

1. Type of coach who believes in physical training: coach who believes that physical training is important factor in obtaining high football training (hitting the ball as far as tactical discipline iron).
2. Type of coach who believes in individual technical training: coach who believes that technical training is important factor in obtaining sports performance in soccer: short pass, imagination, creativity, individual expression of the total composition of players in the game.
3. Type of coach who believes in tactics and strategy: the coach who believes that performance is achieved in particular through strategic tactical factor.
4. All type of coach: the coach who believed in total factor joining physically, technically and tactically, apply in conditions of adversity in the official game.

#### **Working with specialist team**

Technical team should be multidisciplinary, including the capability club: coach, junior physical, physician, psychologist, methodologist, masseur. Coach is one who directs all their activities, its technical knowledge must be as diverse and at a higher level.

The coach must always be concerned that for each training session for each game, period of training to look, think and find new solutions, the most appropriate situations, to devise new programs to provide and maintain a personal touch interest in the team's players.

He must have strength to recognize when there are mistakes that have cost, perhaps losing some games, and also when the results are great to have discernment and humility required to assign their entire team and everyone who helped. For all these require primarily a thorough training in all aspects, to study everything that is new in the field and, not least to try, in practice, the brave, what it considers to be appropriate and useful for the team he leads. Should not and is not appropriate for a coach based solely on player experience, where it exists. (Stanculescu, G. I. Melenco, 2003). This is very useful, but must be supplemented by what has been gained from former coaches, but especially with what is learned again and

- Repression, intimidation group.

put into practice. The job coach must always be strength and power to go back, take it over again, patience needed to achieve the expected results with a new collective power of adaptation, collaboration and imposing viewpoint without reject what is good and comes from employees.

#### **Coach - Manager**

What would be the role of coach as a manager? Among other things, is very important that he or she knows to combine the actions of players. This process is very complicated. Important is here that we deal only with a different action to any player in the field. It includes, for example, elements such as putting players in the field, playing various schemes and so on. What I described above

is a division of labor can take place only within the organization. Even if players or coaches can move from one team to another, and does it matter that we know each other. Organization and solve problems using knowledge available to its members, not just those related to negotiating costs.

#### **Coach - Sports Performance decisive factor in obtaining**

The most important function of the profession of coaching is the training of athletes and driving them into competitions. Once completed training, participation in the competition remains. In the case of preparing as good of athletes from two different teams, the existence of a value equal among the teams will win, without doubt, the team's best run in the competition, which team will win the coach demonstrates competence leadership, managing to exploit fully the qualities of players. Given this, it is clear that the influence of coach the team can show both positive and negative. Thus, the coach needs to know to what extent it corresponds with the direction of the realities of the game. Be a language or code used appropriate communication, mobilize team in terms of competitiveness, combativeness, game device for keeping the team benefit or balance. It leads the game with some approximate relations (tactical team lead) and not to correct technique during the game. In general, team lead proactive, not retroactive, because the allegation can not fix anything, especially during the game. Experts in psychology believes that the positive role of coach in the competition is shown by:

- Function of catharsis - a group setting in order his release harmful complex;

- Function enhancement - the activation group availabilities;

- Routing function to push up contest.

Negative role of coach in the competition may be manifested by:

- Tension, irritation of the group;

- Demoralize the group;

To avoid conflict, it is necessary for the coach to take account of psycho-social needs of the group of athletes. Ignoring these needs group and it is repulsive, insensitive, attitude. But when coach proves that responds to needs of the group, will lead the group in the desired direction. Today, athletes compete leadership rises to the level of science, representing a quintessence of the vocation of coaching, to realize that the best athletes training and skills. The team can be compared to an orchestra playing a score that is led by coach conductor.

### CONCLUSIONS

The coach is not simply a man who is dressed in a tracksuit, leaving the field with players running less and thus complete its work, but a teacher, psychologist, methodist, father. The work of a coach is the most complex activity, which includes a large number of tasks and functions, some more pleasant than others but all equally important. Being a coach, like all other professions, requires knowledge and passion, dedication and sacrifice part of your soul, children, sports, travel and all

activities required performance. The future will depend not only sports world funds, technology coaches but also for their quality. Let us not forget that work is tested whenever the coach when the team submits a game that says a lot.

### REFERENCES

- EPURAN, M., 1990**, Modeling the behavior of sports Edit. Sport-Turism, Bucharest
- LARION, A., 2007**, Athletics specialization / mastery lifting sports, Edit. Ovidius University Press, Constance.
- MELENCO, I., 2008**, Soccer faculties, Edit. Constanta Ovidius University Press,
- PLOEȘTEANU, C., 2007**, Soccer / Training - Competition. Publisher Europlus, Galati.
- STANCULESCU, G., 2003**, Soccer specialization, Edit Cowan University Press. Constanta.
- STANCULESCU, G., MELENCO I., 2003**, Soccer game theory, Edit Cowan University Press, Constance.
- STANCULESCU, V., 1982**, Guide football coach, Edit Sports-Tourism, Bucharest.

## THE EVOLUTION OF THE CENTRE OF CORPORAL MASS (CCM) RELATED TO BODY HEIGHT - POSSIBLE CRITERION OF ORIENTATION OF BEGINNER AND ADVANCED ATHLETES TOWARDS THE HURDLES EVENT

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### ABSTRACT

The current study is mostly addressed to athletics teachers/ coaches who deal with the selection and training of athletes for hurdle events. The research aims to develop a certain aspect of beginner and advanced athletes training for professional athletics, particularising on permanent selection, within the orientation stage to short distance hurdles. Our brief presentation intends to develop particular aspects, less approached in the literature of this field, that of sportive selection for hurdles in children and juniors. Some of them may describe aspects of a narrow field of investigation, consisting in supportive arguments based on good practice experiences of athletics teachers/coaches, expectantly useful in professional athletics.

**KEYWORDS:** centre of corporal mass, constitutional morphotype, selection screening.

### INTRODUCTION

One of the most important issues in the process of screening future athletes is to anticipate physical constitution of tomorrow's teenager by looking at today's child. Yet, this anticipative image has no precise instruments of prediction. We often speak about the "eye" of the coach that mentally accelerates the evolution of the child in front of him. Some of the trainers are really able to predict that, based on a heavy professional experience, as well as on a specialised documentation within this field.

Large numbers of studies reveal the fact that there are no correlations that could demonstrate that an athlete with remarkable results at an early age will definitely

perform as a senior athlete. As a trainer, I have often come up against situations when young athletes, mostly girls of 10-12 years old had won national championships at *children level I and II* categories. As they grew older, those tiny girls, powerful, very fast, robust, resistant and coordinated, became more and more heavy and massive, no longer able to catch up with the training exigencies. So called athletic "champions-to-be" were disappearing from the running tracks, without even reaching the *junior II level* of age category (15-16 years old).

"Why is that happening?"- was the question we have asked ourselves over many years. Often, we thought training was not appropriate. The answer came out



finally from the way of setting out screening criteria in the process of initial selection.

### Content

Each branch of sport has its own ideal constitutional morphotype which is strongly related to a particular sportive field requirement. Athletics, for example requires motric criteria within the initial selection (screening stage). The most posturographists related the relationship between the position of the center of pressure and the position of the center of gravity, Gagey, Pierre-Marie, Bizzo Guy (2001). Bejan, A., Jones, E., Charles, J. (2010) pointed out that the position of the center of mass of the body makes the difference in speed records (e.g. athletes with longer legs and a higher center of mass are advantaged). These criteria point out the current motric qualities through a series of control tests of individuals, with the result of an individual score that enables ranking. The following motric qualities are assessed:

- Speed, i.e., running speed measured over 50 metres starting from standing position;
- High jump (explosive force) of the lower limbs, measured with la long jump without impetus;
- Arm strength and coordination elements of this level, measured with a shot put, without impetus; also, another test would be that of maintaining a suspended position with arms bent over at 90 degrees;
- Abdominal strength: timed pull-ups (30 seconds);
- General skill: a timed relay race;
- General endurance, measured by a 600 metres running test.

Up to a point, everything seems to work out well. But only up to a point which then becomes a “critical point”, from which the assessment of the constitutional morphotype starts, as well as of the psycho type, then of the somatic type, physiotype, etc. For this new set of criteria, called “complex-factor” (with a determinative significant power, up to that of contributing factor), there is no “control testing” or standardised marks of ranking. We must underline that girls are mostly discussed here. Most of them, apparently thin, get higher results than boys of the same age group. This is the so called “trap” in which most of the coaches usually fall. Because of their short experience, they tend not to consider much of the important evidence, such as the following ones, called by us “screening tips”, Neagu, N. (2010):

- Somatometric and anthropometric screening – somatometric assessment (height, weight, length of the limbs, length of the bust, perimeters, diameters, dynamometrics, centre of the corporal

mass position, etc, as well as the correlations between them);

- Somatoscopic screening – somatoscopic assessment (vicious spine positions or lower limbs – *valgum* or *varrus* knee, flat foot, etc);
- Genotypic screening – constitutional genotypic assessment (morphotype) of the genitors;
- Puberty / sexual screening – the level of sexual development: evolution tendency of the secondary sexual characteristics at the pre-puberty and puberty age (the ratio between biological and chronological age);
- Anamnetic screening – investigation and assessment of clinical anamnesis;
- Functional screening – investigation of certain body functions, followed by minor medical evaluations (an ECG is compulsory), allergy tests, etc;
- Muscular screening – evaluation of the muscular fibres typology;
- Psychological screening – standardised tests are used here, such as for:
  - The level of attention (concentrated, distributed, discriminatory, etc)
  - The level of multiple intelligences – mostly those with a certain significance on high performance sports: spatial-visual intelligence, musical-rhythmic intelligence, corporal-kinaesthetic intelligence, interpersonal and intrapersonal intelligence;
  - The level of emotional intelligence;
  - A certain temperamental typology;
  - The affective-emotional typology;
  - The moral-volitional typology.
- Psychomotric screening such as for:
  - The level of psychomotric development (corporal scheme, laterality, coordinative capacity);
  - The sensorial perceptive and motric level;
  - The corporal and its segments kinaesthesia.
- Suggestional screening – investigation of the level of motric suggestibility.

We have therefore found that underlining the complexity of all aspects connected to the high performance sports selection is well based on facts. Obviously, there are certain steps to be followed, depending then on the trainer, who has to set priorities in a right chronological order. We also emphasise here the importance of this set of criteria, compulsory to be fully or partially assessed by the professional athletes-to be.

Related to the above mentioned criteria, we refer now to a personal longitudinal research study that I have elaborated and experimented during my professional activity. The starting point was the idea that hurdles runners should have an optimal constitutional shape, connected to the technical requirements of this certain athletic event.

Briefly, it is about designing somatic evaluation grids, so called somatic patterns, in which the hurdles runner should fit perfectly. We have experimented this study for over 15 years. As a result of this research, Table 1 shows the evaluation grids on certain stages. In relation to the hurdles techniques assimilation, we have considered the following parameters as suitable for the designed patterns:

- Body height (BH);
- Body weight (W);
- Length of the lower limb (LLL)
- Position and evolution of the height of the centre of corporal mass (CCM)

Within the permanent selection, approximately 200 girls were investigated. Based on individual somatometric files we have observed them over 5-6 years.

We have chosen the above parameters, due to the fact that the first signs of puberty lowered the sportive efficiency of the girls. Very few of them moved on without negative influences on their achievements.

Because, at present, the possibilities of a biomechanical study are utterly limited, oftentimes the appreciation of a technical execution has a deep objective characteristic, but obviously a limited one. In the case of hurdles, the constitutional particularities of the sportsperson, in correlation with the space and time particularities and the technicality of their movements, will constitute an assembly of factors that influence performance.

Among these particularities can be found those connected to the height of the centre of corporal mass (CCM), the point where the sum of all moments equals zero, Ackland, R. T., Elliot, C. B., Bloomfield, J.(2009). A part of the relationships that can be established between CCM and the other elements which take part in the achievement of high level performance:

- the position of CCM in connection with the height of the sportsperson;
- the position of CCM opposed to the height of the hurdle;
- the length of the lower limb (LLL) and its ratio with the height of the body;
- the amplitude of the trajectory of the vertical oscillations of CCM while jumping over the hurdle in relation to their amplitude while running in between the hurdles;
- their interrelationship in the context of dynamic features of the execution: speed and acceleration, rhythm and tempo, technicality.

The study of the segmentary lengths of the body and the relationships between them, correlated with the interactions that arise during the hurdles run, becomes a necessity if we intend to shape authentic performers for this sport event. If we only focus on partial guide marks (for example: focusing on the evolution of the height and weight), we will only obtain partial results throughout the training process. That is why an objective approach of the

distribution of segmentary partial weights is utterly important (hindquarters/ backquarters) through the evolution of the position of the CCM (over the process of growth and ontogenetic development of the sportswomen). If we ignore the interdependence between these factors in the somato-functional development of the body, some early promising results will not necessarily have the expected results and we will have to realise where we failed with the training process, whereas the cause lies in the ignorance of some aspects of somatic evolution.

Gravity acts upon the body in the way of cumulated forces, on a vertical plane, having the running track as direction. The vector resulting from their cumulation acts upon a point of the body, called the centre of corporal mass, which is generally found at the intersection of medio-frontal, medio-sagittal and medio-transversal planes.

The centre of the corporal mass (CCM) can be defined as the point upon which a resultant of the lines of gravity acts. This is a conducted and oriented force, so it is a vector and can be described mathematically. Since gravity is defined according to acceleration "g" ( $9.81 \text{ m/s}^2$ ) and results from the action of the gravitational forces "F" on the mass of the body "M", it means that

$$g = \frac{F}{M} \quad \text{thus } M = \frac{F}{G} \quad \text{and } F = Mg.$$

For symmetrical bodies that have a uniform density, the gravitational centre superposes upon its geometrical centre. Since the human body is asymmetrical and the different segments have various densities, CCM will not coincide with the geometrical centre.

The different positions the human body can take, in our case the one of the hurdles runner, supposes the continuous modification of the position of the point in which the resultant of the lines of gravitational forces is applied. Thus, the CCM of the body does not have a fixed position, but it varies from person to person, from one body posture to another, from one sequence of movement to another. CCM moves in the same direction as the movements of the body. It can go upwards, whenever we lift the upper or lower limbs, and it goes down whenever the limbs come back to the normal position. Due to these multiple variations of CCM its localisation cannot be established but for one determined position of the body: orthostatism, sitting, hanging, clinostatism, etc.

In the case of hurdles, when the body of the athlete is in motion, the trajectory of CCM defines or does not define the efficiency of the movements the athlete performs. The totality of these movements leads to a movement of the CCM on the optimal trajectory which facilitates the obtaining of the best sporting achievements. The trajectory of CCM gives us data on particularities of the body (implicitly and the technicality of the movements) as a whole, as well as

on the movement of its segments (lower limbs, upper limbs, etc).

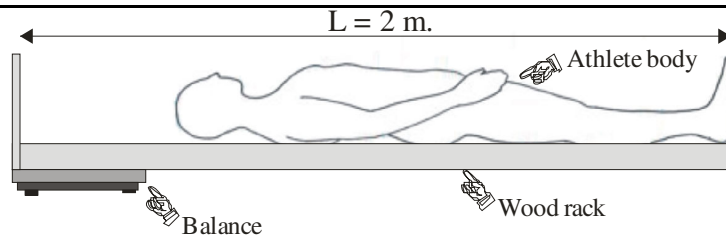
Meanwhile, the vertical oscillations of CCM while running hurdles are more accentuated in the moment of the jump across the hurdle, and are higher, respectively. One of the objectives that has to be followed in the process of motric learning of the jump across the hurdle, is that, through its technical execution of this motric structure, the vertical oscillation is as low and precise as possible, it is close to the oscillations of the CCM while running in between the hurdles.

The lone interior forces cannot modify the position and movement in space of the CCM, but only the centres of weight of the segments of the body (limbs, trunk). The movement of the CCM is possible only when external forces act upon it, for instance the forces of reaction to the completion of impulsive movements of the legs while running or while jumping across the hurdle.

If the resultant vector of these forces is directed towards the centre of corporal mass, it will imprint on the whole body a movement of translation towards a direction and way, opposed to the action of the impulse of the legs, towards the finishing line, respectively. If the resultant force does not go precisely through the centre of weight, but through its vicinity (higher or lower), it imprints the body (the entire morphodynamic system) a movements of rotation or overturning.

The direction or sense of overturning will be ahead and downwards, if the resultant acts above the CCM, and ahead and upwards if it acts under the CCM, respectively. There can be other situations, especially

#### Figure 1. The indirect determining of the position of CCM



We used this method because according to Palmer (2005), the level of CCM is positioned invariably at approximately 56.5% of the height, regardless of the

$$\text{CMC} = \text{height} \times 0.057 + 1.4 \text{ (measurement in centimetres)}$$

This seems to be a limited interpretation, because it does not take into account the distribution partial weights and the relationship between the lengths of the segments. Each athlete constitutes an individuality, that is why a global approach is inefficient, if not mistaken. Thus, we started from some premises – hypotheses:

- a) we have no objective reason to state that the curve of the evolution of body height is necessarily parallel to the CCM, during the growth and development of the body.

during bodily dexion during the jump over the hurdle, when the cumulated external forces act laterally from the point of CCM, imprinting over the body of the runner movements of torsion towards the right or the left, or in directions combined with those described above. All these will have negative effects on the final result. This matter will be closely examined later. But our aim was to describe the importance of biomechanical approaches in the analysis of the technicality of the hurdles event, with reference to the ideal constitutional morphotype for this complex event, starting from the premise that a higher position of the CCM constitutes a favouring factor in the hurdles event.

Consequently, we measured the position of the CCM in different moments, over several years. The technique of measurement was the indirect method, using the following equipment (Figure 1):

- balance; wooden rack with a length of 2 metres and a weight of 10 kilograms; centimetric measuring tape.

We used the following formula for determining the position of the CCM:  $H_{(CMC)} = \frac{GP-GT}{G} \times 2$ , where:

$H_{(CCM)}$  = the height of the centre of corporal mass,  $G_P$  = the partial weight of the body of the sportsperson, lying on the rack with the soles placed on the distal end of the stretcher,  $G$  = the weight of the sportsperson,  $C_T$  = the weight of the rack.

constitutional particularities of the sportsperson, which introduces an invariable coefficient (0.057) in the formula, thus:

- b) the development of the body does not necessarily happen on the basis of proportional evolution of the partial weights and the length of its segments;  
c) the distribution of muscular mass and of the adipose tissue is not uniform and identical for several individuals.

These premises allowed us to reason that there can be at least three different situations of the evolution of these ratios:

- a) an evolution proportional to the parameters involved;

- b) a stagnation or regress of the position of the centre of corporal mass (CCM), paralleled with the growth of body height (BH) and the length of the lower limb (LLL) on the basis of accentuated accumulation of muscular and adipose mass (especially in girls), on the level of the pelvis and hips;
- c) an accentuated growth of the height of CCM, on the basis of the growth of body height (BH), due to the growth in length of the hindquarters or to accentuated accumulation of muscular or adipose mass in the area of backquarters.

During the research, new elements have come to light, elements that had not been in our focus initially. By this we mean the surveillance of the percentage ratio between weight and height, recorded at different moments:

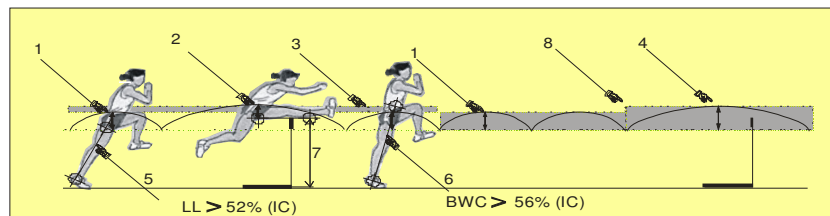
- a) before the beginning of the menstrual cycle;
- b) at the beginning of the menstrual cycle;
- c) after approximately one year from the beginning of the menstrual cycle;
- d) after two years;
- e) after more than two years from the beginning of the menstrual cycle.

The measurements and the correlations between the parameters allowed us to establish some approximate (constitutional morphotypes) stadial somatic models,

that we considered optimal for the hurdles event, with the aid of which we can thus compare the comprising (or not) into a chart, of a future hurdles athlete, starting from prepuberty or puberty age. Thus we can foresee the constitutional profile of the future hurdles runner, adequately directing the selection and training, having a reliable reference and more consistent elements regarding the evolution of the athlete. Knowing in due time the differences in regard to these models, we are able to predict the age of maximum efficiency or the age of risk.

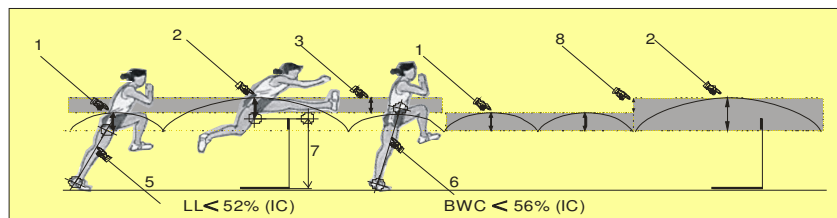
The chart in Figure 1 resulted from the analysis of the results. We applied it and noticed that it is a useful tool in the selection process, but also in the prevention of some unreal predictions in the constitutional evolution of the hurdles runner. We started from the hypothesis that a higher position of the CCM constitutes a favouring element in the hurdles event, because it determines a diminution of the amplitude of the vertical oscillations of the CCM while jumping across the hurdle and its bringing closer to the level of vertical oscillations of the CCM during a sprint event on a plane level, and also of the running in between the hurdles. The positioning of the CCM at an optimal level of 56-57%, or even at 57-58% from the body height determines the above mentioned details (see Figures 2 and 3)

**Figure 2.** The low level of vertical oscillations of the CCM, morphotype included in the chart



1. vertical oscillations of the CCM while running between the hurdles; 2. vertical oscillations of the CCM while jumping across the hurdle; 3. the difference in amplitude between the two moments; 4. the amplitude of the oscillation of CCM over the hurdle; 5. the length of the lower limb (LLL); 6. the height of the position of the CCM; 7. the height of the hurdle (HH); 8. the difference between the amplitudes of the oscillations of CCM during the running between the hurdles and the jump over the hurdle.

**Figure 3.** The high level of vertical oscillations of the CCM – morphotype which cannot be included in the graph



1. vertical oscillations of the CCM while running between the hurdles; 2. vertical oscillations of the CCM while jumping across the hurdle; 3. the difference in amplitude between the two moments; 4. the amplitude of the oscillation of CCM over the hurdle; 5. the length of the lower limb (LLL); 6. the height of the position of the CCM; 7. the height of the hurdle (HH); 8. the high difference between the amplitudes of the oscillations of CCM during the running between the hurdles and the jump over the hurdle.

Below is the description of a tool, still in the stage of prototype, which will allow precise measurements of the CCM in clinostatism which is in its final stage of development. We intend to register this tool with OSIM, being an invention in the field. See Figure 4.

**Figure 4.** Tool for the measurement of CCM in clinostatism (prototype)



**Table 1.** Correlative stadial somatic morphotypes – girls trained for short distance hurdles, Neagu, N. (2010).

B O D Y H E I G H T  ( B H ) ( c m )	STAGES														
	I			II			III			IV			V		
	PREPUBERTY MORPHOTYPE W/BH=24% CCM/BH =58% LLL/BH=53% (tolerance ≈ ± 1-1,5%)			MORPHOTYPE AT THE BEGINNING OF THE MENSTRUAL CYCLE W/BH=26% CCM/BH =58% LLL/BH=53% (tolerance ≈ ± 1-1,5%)			MORPHOTYPE AFTER ONE YEAR FROM THE BEGINNING OF THE MENSTRUAL CYCLE W/BH =28%±1% MENSTRUAL CCM / BH =57% LLL/BH=52% (tolerance ≈ ± 1-1,5%)			MORPHOTYPE AFTER TWO YEARS FROM THE BEGINNING OF THE MENSTRUAL CYCLE W/BH =31%±1% MENSTRUAL CCM / BH =57% LLL / BH =53% (tolerance ≈ ± 1-1,5%)			MORPHOTYPE AFTER MORE THAN TWO YEARS FROM THE BEGINNING OF THE MENSTRUAL CYCLE W/BH =34%±1% MENSTRUAL CCM / BH =56,5% LLL / BH =53% (tolerance ≈ ± 1-1,5%)		
	W (kg)	(CCM) (cm)	LLL (cm)	W (kg)	(CCM) (cm)	LLL (cm)	W (kg)	(CCM) (cm)	LLL (cm)	W (kg)	(CCM) (cm)	LLL (cm)	W (kg)	(CCM) (cm)	LLL (cm)
140	33.60	81.20	74.20	36.40	81.20	74.20									
142	34.08	82.36	75.26	36.92	82.36	75.26									
144	34.56	83.52	76.32	37.44	83.52	76.32									
146	35.04	84.68	77.38	37.96	84.68	77.38									
148	35.52	85.84	78.44	38.48	85.84	78.44									
150	36.00	87.00	79.50	39.00	87.00	79.50	42.00	86.25	77.40						
152	36.48	88.16	80.56	39.52	88.16	80.56	42.56	87.40	78.43						
154	36.96	89.32	81.62	40.04	89.32	81.62	43.12	88.55	79.46						
156	37.44	90.48	82.68	40.56	90.48	82.68	43.68	89.70	80.50	48.36	88.92	82.68			
158	37.92	91.64	83.74	41.08	91.64	83.74	44.24	90.85	81.53	48.98	90.06	83.74			
160	38.40	92.80	84.80	41.60	92.80	84.80	44.80	92.00	82.56	49.60	91.20	84.80	54.40	90.40	84.80
162	38.88	93.96	85.86	42.12	93.96	85.86	45.36	93.15	83.59	50.22	92.34	85.86	55.08	91.53	85.86
164	39.36	95.12	86.92	42.64	95.12	86.92	45.92	94.30	84.62	50.84	93.48	86.92	55.76	92.66	86.92
166	39.84	96.28	87.98	43.16	96.28	87.98	46.48	95.45	85.66	51.46	94.62	87.98	56.44	93.79	87.98
168	40.32	97.44	89.04	43.68	97.44	89.04	47.04	96.60	86.69	52.08	95.76	89.04	57.12	94.92	89.04
170	40.80	98.60	90.10	44.20	98.60	90.10	47.60	97.75	87.72	52.70	96.90	90.10	57.80	96.05	90.10
172							48.16	98.90	88.75	53.32	98.04	91.16	58.48	97.18	91.16
174							48.72	100.05	89.78	53.94	99.18	92.22	59.16	98.31	92.22
176							49.28	101.20	90.82	54.56	100.32	93.28	59.84	99.44	93.28
178										55.18	101.46	94.34	60.52	100.57	94.34
180										55.80	102.60	95.40	61.20	101.70	95.40

BH body height; W body weight; CCM the height of the centre of corporal mass; LLL the length of the lower limb.

For a better understanding, the usage method of this table will be explained below.

**Cased study 1:** Let us take for example the case of a 10 year-old girl, B.D. She has a height of 1.50 metres. Following the table we will notice that she should have a

weight of 36 kilograms in order to have an ideal ratio between height and weight, that is 24% (with a tolerance of  $\pm 1\%$ ) at this stage. Also, she should have the CCM situated at 87 cm from the ground and a length of the lower limb (LLL) of 79.5 centimetres. The girl, after the anthropometric measurements had 35.5 kilograms (with an acceptable motric qualities. See figure 9 and Figure 2 with the personal somatometric file.

**Case study 2:** Let us take the example of T.R. a 9 year-old girl. During the initial selection process, she has a height of 1.42 metres. The girl, after the anthropometric measurements had 31 kilograms (with a ratio of 21.8% W/BH), the level of CCM was 57.7%. Three years later of evolution according to the table, after approximately one and a half year from the beginning of the menstrual cycle, on the basis of a relatively balanced growth of the other parameters, the level of CCM drops to 58.5% at the age of 12 until 56.9 % at the age of 13.5. In conclusion T.R. does not constitutionally correspond to the hurdles event. At the age of 15 she abandons professional athletics, not being able to cope with the demands of the training. See figure 3 with the personal somatometric file.

**Conclusion**

Based on the recorded result and their analysis we can notice the following:

- a) the evolution of the height of CCM shows particular differences for each individual, exemplifications in two different typical cases, presented in Figures 5 and 6;
- b) the middle level we found for CCM is of approximately 57% of the height;
- c) the middle level of the LLL/H ratio is about 53-54%;
- d) the middle level of the W/H percentage is:
  - I. prepuberty stage, 24%  $\pm 1-1.5\%$
  - II. puberty stage, 26%  $\pm 1-1.5\%$
  - III. stage at the beginning of the menstrual cycle, 28 %  $\pm 1-1.5\%$
  - IV. stage after 1 year from the beginning of the menstrual cycle 31 %  $\pm 1-1.5\%$
  - V. stage after two years and after more than two years from the beginning of the menstrual cycle + 34 %  $\pm 1-1.5\%$

According to the results we can come to a number of conclusions and recommendations:

- a) the hypothesis is confirmed also through the point of view of the results of the athletes in time;

ratio of 23.66% W/BH), but her CCM was 24.8%. In conclusion B.D. corresponds, from a constitutional point of view, to the hurdles event. If these values had been higher, she would have encountered problems that would have perturbed the training process, regardless of some

- b) a distorted evolution of the recorded parameters is correlates with the lowering of the sporting efficiency and vice-versa;
- c) the non-framing in stadial models leads, in time, to a stagnation of the results and even to their regress;
- d) the keeping and training of the girls who fit into these models, even if the initial results are not very satisfactory;
- e) the individual somatometric file is useful in predicting the somatic evolution;
- f) even within exceptional results in the categories children I or juniors III, the girls who overcome these models, in time become overweight, regressing in time;
- g) the guide mark for the appreciation of biological age is the beginning of the menstrual cycle and not the chronological age and the level of manifestation of secondary sexual characteristics.

After analysing the results, the resulting conclusions, we suggest the following:

- a) the usage of the stadial models as orientative reference values in the prediction and constitutional evolution of the selected athletes (see Table 1);
- b) we suggest the using of these referential models, both in the initial selection process as well as during the training stage.

This is only a component of the factors that influence achievement, the framing in the above described models not being functional, isolated from the level of motric qualities or the necessary set of motric skills, a premise fulfilled by us through the selection of the most valuable athletes of our club.

As exemplifications of the present study, we include below the somatometric files of the two cases described above. Based on the graphic representation of the recordings over several years, the differences of evolution between the two distinct situations becomes evident, framing in the model and non-framing in the model. See figures 5 and 6.

Figure 5. Individual constitutional morphotype which fits in the correlative somatometric chart

**INDIVIDUAL SOMATOMETRIC FILE – THE EVOLUTION OF THE RECORDED PARAMETERS**

**Orientation of training: SPRINT – HURDLES**

						169		MU
						167	BH	cm.
				163				
			157					
			146					
	141							
						95	CCM	cm.
						94		
						92	LLL	cm.
				89		89		
	81	84		86				
		77						
	74							
						27%	30.5	30%
						23%		
		22%				51	W	kg.
						44.5		
	20.6%							
		32						

	←	29							
<b>Year of recording</b>		<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>		
<b>Age (years)</b>		9	10	11	12	13	14		
<b>First menstrual cycle</b>									

BH, body height; W, body weight; CCM, height of centre of corporal mass; LLL, length of lower limb.

Figure 6. Individual morphotype which does not fit in the correlative somatometric chart

### INDIVIDUAL SOMATOMETRIC FILE – THE EVOLUTION OF THE RECORDED PARAMETERS

Orientation of training: HURDLES										
							158	158	BH	MU cm.
					157					
	←			155						
			148							
		142								
	←						93		!!!	CCM cm.
				92			90	90		
			87							
		82					81	81	81	
			78							LLL cm.
	←	73								
							30.4	28.5	%	%
				23.9		26.8				
			23.3			48				
		21.8								W kg.
			35							
	←	31								
<b>Year of recording</b>		<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>			
<b>Age (years)</b>		9	10	11	12	13	14			
<b>First menstrual cycle</b>										

#### BIBLIOGRAPHY

- ACKLAND, R. TIMOTHY, ELLIOT, C. BRUCE, BLOOMFIELD, J.** 2009, *Applied Anatomy and Biomechanics in Sport*, 2<sup>nd</sup> edit., Human Kinetics, Cahmpaigns.
- BEJAN, A. & MARDEN, J.H.**, 2006, Unifying constructal theory for scale effects in running, swimming and flying. *J. Exp. Biol.*, 209, pp. 238–248.
- CALAIS-GERMAIN, BLANDINE**, 2009, *Anatomie pentru miscare. Introducere în analiza tehnicilor corporale*, vol.1, Editura Polirom, Iași.
- BEJAN, A., JONES C. EDWARD & JORDAN C.** (2010), *The evolution of speed in athletics: why the fastest runners are black and swimme white*. *Int. Journal of Design & Nature*. Vol. 5, No. 0 (2010) 1–13.

- CATHY, R.OLAND, MARC, CIZERON, 2008**, *Le modelage du corps en mouvement des gymnastes par les entraîneurs experts en gymnastique artistique*. *Revue Interrogations*, Nr.7, ([http:// www.revue-interrogations.org](http://www.revue-interrogations.org))
- CHARLES, J.D. & BEJAN, A.**, (2009), *The evolution of speed, size and shape in modern athletics*. *J. Exp.Biol.*, 212, pp. 2419–2425.
- GAGEY, P.-M., BIZZO, G.**, 2001, *La mesure en Posturologie*, Institut de Posturologie ([http:// pmsgagey.club.fr](http://pmsgagey.club.fr)), Paris.
- NEAGU, N.** 2010, *Teoria si practica activității motrice umane*. Edit. University Press, Tîrgu Mures.



## THE CORRELATION BETWEEN THE ACADEMIC ACHIEVEMENT LEVEL OF PRIMARY SCHOOL STUDENTS AND THEIR ATTITUDES TOWARD A PHYSICAL EDUCATION LESSON

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### ABSTRACT

The purpose of this study was to determine whether there was a meaningful relationship between students' academic achievements and their attitudes toward a physical education lesson. A total of 873 students from the sixth, seventh and eighth grades participated in the study.

While the value attached by 'highly-successful' students to the lesson and their expectations from it were greater than two other groups, they were more dissatisfied with the lesson than the other groups. Although all three groups expressed similar opinions about what they were provided with by the lesson, highly-successful students expressed more negative opinions regarding their affective progress in the lesson than did the 'intermediate' and 'low successful' students. In all three groups, male students were considerably more positive toward the lesson in general than were female students.

**KEYWORDS:** Academic achievement, physical education lesson, attitudes.

### INTRODUCTION

Many studies have been conducted in an effort to determine the correlation between students' physical activities or physical skills and their academic achievement levels. This study provides a special focus on such issues as academic performance (achievement), physical condition, eating habits, participation in physical activity programs, knowledge of sports, motor skills and physical fitness.

Some studies show that there is a positive correlation between physical activity, self-confidence, body mass index, school performance and academic performance. For instance, in a study conducted with fifth, seventh and ninth grade students in California, a positive correlation, although low, was discovered to exist between the students' academic scores and their scores in physical fitness tests. The study indicated that at all grade levels, high academic scores were associated with high-level sporting activity (Prosser & Jiang, 2002). Researchers found physical fitness to be more strongly correlated with achievement in mathematics than in English. Studies of 134 students from the third and fifth grades by Eveland-Sayers et al. (2009) supported the existence of a connection between specific components of physical fitness and selected indices of academic achievement (reading and mathematics). Similarly, in their study of 3,990 students from the fourth and eighth grades, Chomitz et al. (2009) pointed out that there was a significant positive correlation between the students' academic achievement in English and mathematics and their physical fitness levels. Another study (Carlson et al., 2008), whose sample included students from the fifth grade, focused on the correlation between the amount of time allocated for physical education lessons and academic achievement. In a study resulting from a review of literature, Trost (2007) concluded that there was not a positive correlation between participation in

physical education and other school-based physical activities and academic achievement. Evenson, Ballard, Lee & Ammerman (2009) stated that daily 30-minute physical activities yielded positive outcomes in primary and secondary schools. Tara, Yen, Sarah & Marc (2008) conducted a study in order to determine the effects of participation in physical education lesson structured with physical activities on students' academic achievement levels. The authors could not obtain any meaningful data that would suggest a correlation between participation in physical education lessons and academic achievement. Daley & Ryan (2000) studied the correlation between academic performance and participation in physical activities of male and female students from the eighth grade to the eleventh grade. The study used the students' scores in English, mathematics and science lessons as a basis for determining their academic achievements. A low negative correlation was found between the amount of time (in minutes) allocated for sport and exercise among students who were 13, 14 and 16 years old and their scores in English lessons. A similar situation was observed in the scores of 16-year-old students in science lessons. In order to determine the effects of physical education and physical activity on the academic achievement levels of sixth-grade students, Coe et al. (2006) studied 214 randomly-selected students over two school terms. The researchers used scores in mathematics, chemistry, English and geography as a basis for measuring academic achievement. An attempt was made to focus on anthropometric structure (weight, body mass index), the training provided throughout a certain time period and the amount of time allocated for physical activities outside the school each week to maintain a metric for physical education and physical activity. No meaningful correlation was found between academic achievement and physical education. High scores were



associated with the amount of time allocated for weekly physical activity. The studies conducted up to now can be categorized in terms of content:

- physical fitness and academic achievement; and
- participation in physical activity and academic achievement.

**Purpose**

All the previous studies focused on analyses of the correlation between the students' academic achievements and their physical fitness or their participation in physical activities. The purpose of this study is to associate primary and secondary school students' general academic achievement in school with their attitudes towards physical education lessons.

Suggestions can then be made to improve physical education lessons and a different perspective obtained on students' attitudes toward physical education.

**Method**

*Participants*

The study was conducted on a total of 873 students (417 female and 456 male) in the sixth, seventh and eighth grades at the Vali Necati Çetinkaya primary school, which is located in the centre of the city of Konya, Turkey. Table 1 shows the number of students, the distribution by gender and the number of female and male students in each department formed by the process specified above.

Table 1: Classrooms of students participating in the study and their distribution by gender

6th Grade			7th Grade			8th Grade		
Branch	Female	Male	Branch	Female	Male	Branch	Female	Male
6/A	17	21	7/A	20	24	8/A	14	18
6/B	16	21	7/B	28	13	8/B	18	18
6/C	16	20	7/C	20	18	8/C	16	25
6/D	16	19	7/D	25	23	8/D	16	14
6/E	14	19	7/E	24	20	8/E	13	19
6/F	14	22	7/F	24	22	8/F	19	20
6/G	19	19	7/G	12	23	8/G	16	20
6/H	22	18	7/H	18	20	8/H	14	18
Totals	134	159		171	163		126	152

*The Placement Test (SBS) and Calculation*

SBS is carried out on the basis of the classroom scores, which are calculated from Behavior Score and year-end achievement score. SBS is the examination process of the System for Attending Secondary School, which aims to conduct a multi-faced assessment and evaluation of the students.

SBS are central systemic examinations administered at the end of sixth, seventh and eighth grades and cover the curriculum of the compulsory courses other than visual arts, technology and design, music, physical education, counselling and social activities. One can calculate weighted year-end scores by multiplying the scores obtained by the students for each course by the number of hours the course is delivered per week (for example, if a student scores 70 in a course that is delivered for two hours per week, the weighted year-end score will be  $70 \times 2 = 140$ ). When such sums of scores obtained (for example  $140 + 150 + 140 + 160 + \dots = 1,010$ ) are divided by the number of hours such courses are delivered per week ( $2 + 2 + 2 + \dots = 14$ ), the year-end scores will have been calculated ( $1,010/14=72.14$ ).

The scoring is calculated on a scale of 100 and the highest points at the sixth, seventh and eighth grades are converted to 500, the maximum point. The process of converting the achievement score to 500 is carried out separately for students who study at

classrooms/schools or private teaching classrooms/institutions, where reconciling is implemented: such students are evaluated with reference to their own student groups and not to students from other schools.

The Behavior Score is obtained through an evaluation of performance against such criteria as accommodation to the internal school culture, self-care, self-knowledge, communication and social interaction, compliance with common values, solution-orientation, participation in social activities, teamwork and responsibility, efficient working and environmental awareness, converted into a score on the scale of 100 and then into 500, the maximum point.

The scoring system for the first participants in the SBS, who were seventh grade students in the 2007-2008 school year, calculated the secondary school placement score by focusing on 40 per cent and 60 per cent of the seventh and eighth grades respectively. The classroom score of those who repeat a grade level is calculated from the SBS score, behaviour score and year-end achievement score for the year in which the student repeats the grade level.

The SBS is generally carried out on the first Saturday or Sunday in June, starting at 10.00 am and lasting for up to 120 minutes in one session throughout the nation. Each student's answer sheet is evaluated by two optical readers, via a double control system. The

number of correct and wrong answers for each test of the courses included in the SBS is determined. For each test, one-third of the wrong answers are subtracted from the number of correct answers, resulting in raw scores in return for valid scores. These temporary raw scores are turned into the total number of questions in the test and, in this way, evaluation-based raw scores are determined. Five different raw scores are calculated for each student. The mean score for the test is calculated by adding the scores obtained by all the students and dividing the consequent figure by the number of students taking the test. The standard deviation value of each test is found by using the raw scores, mean scores and the number of students taking

Table 2: Distribution of SBS questions by course

Tests	Number of Questions			Test Weight Coefficients		
	6th Grade	7th Grade	8th Grade	6th Grade	7th Grade	8th Grade
Turkish Language	19	21	23	4	4	4
Mathematics	16	18	20	4	4	4
Science and Technology	16	18	20	3	3	3
Social	16	18	20	3	3	3
Foreign Language	13	15	17	1	1	1
Total number of questions	80	90	100	15	15	15

Source: Ministry of National Education, Republic of Turkey, e-Application Guide for SBS 2009

#### *Attitude scale for the physical education lesson*

The study used a Likert-type scale in accordance with the objectives in order to determine the secondary school students' attitudes (affective characteristics) toward the physical education lesson (see Appendix). (Yoncalik 2006).

#### *DATA ANALYSIS*

The packages SPSS 12.0 (Statistical Package for Social Sciences) and SPSS 10.0 were used to conduct statistical analyses of the data obtained through the study (independent samples T test - inter-group one-way Anova /Scheffe)

#### **FINDINGS**

Table 4 presents the mean achievement displayed by each of the classroom departments formed by the school management in the areas (courses) constituting the sections of SBS.

Since the students from the sixth grade in the school had never taken the SBS, their mean achievement was the data obtained from the practice exams in the format of the SBS conducted in the fifth grade. The most successful in all the areas (courses) of the sixth-grade classrooms were 6/C, 6/H, 6/A and 6/D. The mean achievement scores obtained by the students in these four departments were the same in several areas (courses) and in others are so similar that they could be accepted as being the same. For instance, the mean achievement scores of the departments 6/H and

the test. The standard deviation value (SD) for each student is obtained via a process of transformation that uses the mean scores and standard deviation values of a particular test, and makes the mean of the raw scores of all the students 50 and standard deviation values 10. By adding the weighted standard scores of the tests, one can discover the Total Weighted Standard Score (TWSS). For the hearing impaired, who are exempt from the tests on foreign languages, TWSSs are calculated by translating the sum of the weighted standard scores for other tests into the total number of questions included in all the tests. Table 2 presents the distribution of the SBS questions by number and course.

6/A in Turkish language and mathematics were the same (75). In addition, the mean achievement score of both 6/A and 6/D in social sciences was 70 and the mean score of both 6/D and 6/H in English language was 78 (see Table 3). The least successful were 6/F, 6/E and 6/B. Table 3 indicates that the mean achievement scores of 6/G in all areas had an 'intermediate' character, with 10 to 15 scores different from the most and least successful departments. In other words, the students in 6/G could be regarded as middle-level successful students in terms of the SBS, compared with the students in other departments.

The most successful seventh-grade departments in all areas were 7/D and 7/E; they were followed by 7/A, 7/F, 7/C and 7/B, and the least successful were 7/H and 7/G. The most successful eighth-grade departments were 8/B, 8/C and 8/H, and the least successful were 8/A, 8/E, 8/D.

The achievement levels were therefore categorised as:

- (1) Highly successful, 6/A, 6/C, 6/D, 6/H, 7/D, 7/E, 8/B, 8/C, 8/H
- (2) Intermediately successful, 6/G, 7/A, 7/B, 7/C, 7/F, 8/F, 8/G
- (3) Low successful, 6/B, 6/E, 6/F, 7/G, 7/H, 8/A, 8/D, 8/E

The first group included 354 students, the second 246 and the third 273.

**Table 3: Ranking of the achievement levels of the 6th, 7th and 8th grades in terms of the SBS**

Turkish language			Mathematics			Science and Technology			Social			Foreign language (English)		
Row	Branch	Average puan	Row	Branch	Average puan	Row	Branch	Average puan	Row	Branch	Average puan	Row	Branch	Average puan
1	6/C	77	1	6/C	77	1	6/H	81	1	6/H	73	1	6/C	81
2	6/H	75	2	6/H	75	2	6/C	79	2	6/C	72	2	6/A	79
3	6/A	75	3	6/A	75	3	6/D	76	3	6/A	70	3	6/D	78
4	6/D	74	4	6/D	74	4	6/A	75	4	6/D	70	4	6/H	78
5	6/G	60	5	6/G	60	5	6/G	61	5	6/G	53	5	6/G	63
6	6/B	50	6	6/B	50	6	6/B	43	6	6/E	43	6	6/E	54
7	6/F	48	7	6/F	48	7	6/E	43	7	6/F	38	7	6/B	53
8	6/E	48	8	6/E	48	8	6/F	40	8	6/B	36	8	6/F	52
1	7/E	94	1	7/E	79	1	7/D	75	1	7/E	90	1	7/D	94
2	7/D	92	2	7/D	74	2	7/E	71	2	7/D	88	2	7/E	92
3	7/A	86	3	7/A	63	3	7/A	64	3	7/A	80	3	7/A	87
4	7/B	83	4	7/F	54	4	7/F	52	4	7/F	73	4	7/B	82
5	7/C	80	5	7/C	48	5	7/C	46	5	7/B	67	5	7/C	77
6	7/F	79	6	7/B	41	6	7/B	46	6	7/C	62	6	7/F	74
7	7/H	54	7	7/H	21	7	7/G	24	7	7/H	33	7	7/H	52
8	7/G	50	8	7/G	20	8	7/H	22	8	7/G	26	8	7/G	45
1	8/B	86	1	8/B	77	1	8/B	69	1	8/B	90	1	8/B	87
2	8/C	85	2	8/C	66	2	8/C	61	2	8/C	81	2	8/C	85
3	8/H	83	3	8/H	57	3	8/H	59	3	8/H	78	3	8/H	83
4	8/G	74	4	8/F	42	4	8/F	45	4	8/F	60	4	8/G	65
5	8/D	73	5	8/D	38	5	8/A	41	5	8/D	57	5	8/E	59
6	8/E	70	6	8/G	37	6	8/G	41	6	8/G	55	6	8/F	57
7	8/F	70	7	8/A	31	7	8/D	39	7	8/A	46	7	8/D	54
8	8/A	55	8	8/E	28	8	8/E	37	8	8/E	44	8	8/A	50

Table 4: Results of inter-group one-way Anova (Scheffe)

Dependent variable	Group	Mean	F	Sig.	Group Multiple Comparisons	Std error	Significance	
Interest	1 (High)	4.02	5.771	.003	1	2	.07761	.060
	2 (Mid.)	3.82				3	.07531	.006
	3 (Low)	3.73				2	.08219	.786
Motivation	1	3.41	9.841	.000	1	2	.06702	.790
	2	3.45				3	.06504	.000
	3	3.69				2	.07098	.005
Acquisition	1	3.33	3.507	.030	1	2	.08594	.659
	2	3.41				3	.08340	.031
	3	3.45				2	.09102	.299
General Attitude	1	3.58	1.404	.246	1	2	.06455	.953
	2	3.56				3	.06264	.396
	3	3.67				2	.06836	.306

The highest mean (4.02) in terms of the dimension of 'Interest' of the attitude scale was obtained from the student group that had the highest scores in the SBS and the student group that had the lowest score in the SBS ranked last (3.73). In the dimensions of 'Motivation' and 'Acquisition', the highest mean scores (3.69 and 3.45 respectively) were achieved by the student group with low scores in the SBS. In terms of 'Interest' and 'Motivation' for physical education lesson, it can be concluded that the student group with high scores in the SBS was more interested in a statistically-meaningful way ( $p=.006$ ,  $p=.000$ ) than the group with low scores in the SBS, but the motivation levels during physical education lesson were less when compared with other student groups. There was a statistically-meaningful difference in terms of the dimension of 'Motivation' between mean of the group with intermediate scores in the SBS and that of the group with low scores in the SBS ( $p=.005$ ). There was no statistically-meaningful difference between the groups in terms of the dimension of 'Acquisition' ( $p=.030$ ).

Table 4 presents an evaluation of the total scores obtained by the students without dividing the answers provided to the attitude scale into dimensions. There was no meaningful difference among the attitudes of the students on the basis of their scores in the SBS. However the highest mean value (3.67) belonged to the student group with low scores in the SBS. The number of male students with high scores in the SBS was 156, with intermediate scores 116 and with low scores 184.

Table 5 indicates that in all the three dimensions of the attitude scale, male students with high scores in the SBS had higher mean scores than those with intermediate and low scores in the SBS ('Interest' 3.76, 'Motivation' 3.68 and 'Acquisition' 3.78). On the other hand, the lowest mean scores belonged to the group with low scores in the SBS ('Interest' 3.52, 'Motivation' 3.48 and 'Acquisition' 3.73).

Table 5: Results of inter-group one-way Anova by gender (Scheffe)

Males								
Dependent variable	Group	Mean	F	Sig.	Group Multiple Comparisons	Std error	Sig.	
Interest	1(High)	3.76	4.441	.012	1	2	.09372	.128
	2(Mid.)	3.57				3	.08320	.016
	3(Low)	3.52				2	.09063	.859
Motivation	1	3.68	1.762	.173	1	2	.12123	.733
	2	3.59				3	.10761	.174
	3	3.48				2	.11723	.665
Acquisition	1	3.78	.229	.795	1	2	.08532	.981
	2	3.76				3	.07574	.803
	3	3.73				2	.08251	.920
Females								
Dependent variable	Group	Mean	F	Sig.	Group Multiple Comparisons	Std error	Sig.	
Interest	1(High)	3.60	3.093	.046	1	2	.12690	.927
	2(Mid.)	3.56				3	.11962	.192
	3(Low)	3.82				2	.11603	.072
Motivation	1	3.58	4.563	.011	1	2	.10708	.094
	2	3.35				3	.09790	.807
	3	3.28				2	.09790	.807
Acquisition	1	3.38	1.318	.269	1	2	.13553	.654
	2	3.25				3	.12775	.269

<p style="text-align: center;">3                      3.17</p> <p>In terms of interest in, motivation during and acquisition from physical education lesson, the male student group with low scores in the SBS had more positive opinions than other groups, although this did not lead to any statistically-meaningful difference. The number of female students with high scores in the SBS was 117, intermediate scores 130 and low scores 170. Unlike the male students, the greatest interest among female students (<math>M=3.82</math>) was displayed by the student group with low scores in the SBS. Even so, it can be seen that the students with low scores in the SBS are at the bottom of the list in terms of motivation</p>	<p style="text-align: center;">2                      3                      .12391                      .802</p> <p>during and acquisition from the lesson. The difference for female students with high scores in the SBS was not at a significant level (<math>p&lt;.005</math>).</p> <p>This is also reflected in the results of inter-group independent t test, which means that there were statistically-meaningful differences between the means of the answers provided by female and male students (<math>p&lt;.005</math>). Notwithstanding their achievement scores in the SBS, male students in all three groups had more statistically-meaningful positive attitudes than female students.</p>
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**Table 6: Results of the independent samples T test on the basis of the genders of the students in each group categorized by their achievement scores in the SBS**

<b>High SBS score</b>					
Dependent variable	Gender	N	Mean	Std deviation	Sig.
Interest	Female	117	3.60	.96246	.006
	Male	156	3.89	.72564	
Motivation	Female	117	3.58	.82496	.062
	Male	156	3.76	.74853	
Acquisition	Female	117	3.38	.98829	.010
	Male	156	3.68	.93023	
General Attitude	Female	117	3.52	.77731	.003
	Male	156	3.78	.63883	
<b>Intermediate SBS score</b>					
Dependent variable	Gender	N	Mean	Std deviation	Sig.
Interest	Female	130	3.56	.97845	.000
	Male	116	4.13	.80662	
Motivation	Female	130	3.35	.86618	.033
	Male	116	3.57	.74814	
Acquisition	Female	130	3.25	1.06034	.011
	Male	116	3.59	.96098	
General Attitude	Female	130	3.39	.85507	.000
	Male	116	3.76	.66049	
<b>Low SBS score</b>					
Dependent Variable	Gender	N	Mean	Std deviation	Sig.
Interest	Female	170	3.82	1.03090	.001
	Male	184	4.18	.92580	
Motivation	Female	170	3.28	.83054	.006
	Male	184	3.52	.78758	
Acquisition	Female	170	3.17	1.11448	.007
	Male	184	3.48	1.05212	
General Attitude	Female	170	3.43	.84684	.000
	Male	184	3.73	.76103	

**Discussion**

The study was conducted with the aim of examining some ideas about the correlation between academic achievement and attitudes toward a physical education lesson. It focused on students from one school. The reason for this is that attitudes toward a physical education lesson may be affected by various factors, including teachers with different equipment, knowledge, experience and personal characteristics; the socio cultural, socioeconomic and physical environment surrounding the school; the physical facilities of the school (sports hall, sports arena, school garden, sports tools, equipment and materials) and the characteristics of the students enrolled in the school.

These factors can also apply to other courses (mathematics, science, English language and so on) that have

been used as bases for determining academic achievement. The study indicated that even though a physical education lesson does not interest 'low successful' students as much as it interests highly-successful ones, the former take more pleasure (get more motivated) than 'intermediately' or 'highly' successful students. On the basis of the findings, it can be argued that while highly-successful students attach more value and expect more from a physical education lesson than the other groups, they are more dissatisfied with the lesson than the other two groups. Although the three groups have expressed similar ideas as to the contributions of the lesson, highly-successful students are least likely to think that they have experienced affective development or progress during the lesson. The most positive attitude toward the lesson was displayed by the student group with low scores in

the SBS, although not a level that would result in a statistically-meaningful difference (see Table 4). The highly-successful male group expressed more positive opinions than the other male groups regarding interest, motivation and acquisition, but this did not result in a statistically-meaningful difference. Unlike the male students, the greatest interest was displayed by the 'low successful' female group. A study of 300 female students in Zagreb focused on the correlation between the general achievement levels of the students and their interest in physical education. It concluded that there was not a meaningful correlation between an interest in sports activities and general achievement levels (Students' interests, 2005). Male students in all three groups had more positive attitudes, in a statistically-meaningful manner, than female students. *Implications:* Physical education lessons could be carried out with a group formed through the participation of students from different departments with similar interests in, expectations from and motivations during the lessons. The students' academic achievement in other courses could also be taken into consideration during the process of grouping. In this way, physical education lessons might prove to be more useful for all students in a school. Another way of grouping might be to measure the physical fitness levels of the students in the same classroom and to enable the students with similar physical characteristics to receive physical education lessons together. When students with similar anthropometric and physiological characteristics participate in physical education together, the lessons will be more uninterrupted, faster and more competitive, leading in turn to higher-level affective, cognitive and behavioral acquisitions.

#### REFERENCES

- CARLSON, S.A., FULTON, J. E., LEE, S. M., MAYRAND, M., BROWN, D. R., KOHL, H. W. ET AL., 2008. *Physical education and academic achievement in elementary school: data from the early childhood longitudinal study*. Am J Public Health, 98(4), 721-727.
- COE D. P., PIVARNIK, J. M., WOMACK, C. J., REEVES, M. J. AND MALINA, R., M., 2006. *Effect of physical education and activity on academic achievement in children*. Med Sci Sports Exerc, 38(8), 1515-1519.
- CHOMITZ, V. R., SLINING, M. M., MCGOWAN, R. T., MITCHELL, S. E., DAWSON, G. F., AND HACKER, K. A., 2009. *Is there a relationship between physical fitness and academic achievement? Positive results from public school children in the northeastern United States*. J Sch Health, 79(1), 30-37.
- DALEY, A. J., AND RYAN, J., 2000. *Academic performance and participation in physical activity by secondary school adolescents*. Percept Mot Skills, 91(2), 531-534.
- EVELAND-SAYERS, B. M., FARLEY, R. S., FULLER, D. K., MORGAN, D. W., AND CAPUTO, J. L., 2009. *Physical fitness and academic achievement in elementary school children*. J Phys Act Health, 6(1), 99-104.
- EVENSON, K. R., BALLARD, K., LEE, G., AND AMMERMAN, A., 2009. *Implementation of a school-based state policy to increase physical activity*. J Sch Health, 79(5), 231-238.
- PROSSER, L., AND JIANG, X., 2002. *Relationship between school physical activity and academic performance of children*. Int J Educ Res, 15(3), 11-16.
- STUDENTS' INTERESTS and attitudes in relation to PE activities and to general achievement at school. / Razlike u interesima i stavovima o sadržaju predmeta tjelesne i zdravstvene kulture (TZK) u odnosu na školski uspjeh. (2005). Hrvatski Športskomedicinski Vjesnik, 20 (1), 26-32. Retrieved 3 September 2009, from CAB ABSTRACTS 1990-Present database
- TARA, A. S., YEN, T., SARAH J. S., AND MARC, R. L., 2008. *The importance of physical activity and physical education in the prediction of academic achievement*. J Sport Behav, 31(4), 368-388.
- T. C. MILLI EĞİTİM BAKANLIĞI, 2009. *Seviye Belirleme Sınavı e- Başvuru Kılavuzu [Republic of Turkey, the Ministry of National Education, e-Application Guide for SBS 2009]*.
- TROST, S. G., 2007. *Physical education physical activity and academic performance in youth*. Retrieved insert date from <http://www.activelivingresearch.org/>.
- YONCALIK, O., 2006. *The effect of reciprocal teaching style applications on the 6th grade student's attitude and success in the physical education courses in the elementary education*. Unpublished doctoral dissertation, Gazi University.

#### Appendix: Attitude Scale

##### Interest items

1. If it were allowed, I would not attend the physical education classes.
2. I do not have any expectations from the physical education course.
3. I cannot think of any schools in which the physical education course is absent from their curriculum.
4. I am waiting for the days on which we have physical education classes with full enthusiasm.
5. In my opinion, physical education course hours should be increased in the curriculum.
6. I feel sad on the days we have physical education classes at school.

##### Motivation items

1. I learn something new in each of the physical education classes.
2. It makes me bored to repeat the movements during the classes.
3. In my opinion, most of the things we do during the classes are to waste time.
4. In physical education classes, I feel as if time never passed.
5. A physical education course is a lesson enabling me to show my capabilities and abilities.
6. I like the way course subjects are taught to us in the classes.
7. I do not learn the course subjects well.
8. I forget what we are taught in physical education classes in a short time.

##### Acquisition items

1. The physical education course teaches me to respect my friends.
2. I understand the importance of working by helping each other in the physical education course.
3. The physical education course helps me understand what I can achieve on my own.
4. Through the physical education course, I trust myself more.
5. I understand the importance of obeying rules in the physical education course.
6. The physical education course makes me love sports.
7. In physical education classes, I am in better harmony with my friends.

## COMPARISON OF ANTHROPOMETRIC MEASUREMENTS OF DOMINANT HANDS BETWEEN ADULT ELITE VOLLEYBALL PLAYERS AND SEDENTARIES

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### ABSTRACT

**Objective:** The aim of the study is to compare the dominant hand anthropometric rational differences between adult elite volleyball players and sedentaries. **Method:** In this study, totally 100 subjects (mean age  $23.9 \pm 3$ ) participated and, they are separated as 25 male volleyball players, 25 female volleyball players, 25 male sedentaries and 25 female sedentaries, respectively. The objects of volleyball levels (elite or non elite) are evaluated by an individual questionnaire data form. Length, weight, hand length, hand width, metacarpal width, hand finger length, hand wrist circumference and hand wrist width are measured by anthropometer, stick, tape measure (international standards, millimetric) and the data are analyzed statistically with t-Test and Two-Way ANOVA. **Result:** With the measurements stated above meaningful differentials are found between volleyball players and sedentary related to length, weight, hand length, hand width, metacarpal width, hand finger length, hand wrist circumference and hand wrist width.

**Conclusion:** Theoretically, it is assumed that elite sportsman and woman represents the most appropriate physical structure related to the sport branch performed. In this context, anthropometric measurements of sportsmen and women are at higher degree than sedentary. In this study, anthropometric hand measurements of volleyball players and sedentaries (related to gender variable) are found different. As a result, it is found that the meaningful difference related to anthropometric measurements of dominant hand result from the performed sport branch.

**KEYWORDS:** Sport, Anthropometric Hand Measurements, Volleyball Player, Sedentary

### INTRODUCTION

Volleyball is very common in all countries nowadays and, is a team game that people play at almost every age. The questions and worries about 'how to obtain success in sport', 'how to reach the summit' and 'how to stay on top' are important in the selection of branch-specific players and determining the applicable training. Therefore, researchers' interests are increased in studies which targets putting forward the performance and physical qualifications with scientific data. At the present time, athletes in all branches want to be faster, to be more efficient and have superior anthropometric and physiological capacities in quality. When we look at the countries that had reached highest levels in the sports industry, their teams are more aware of people and perform in the light of more scientifically prepared programs. As a part of overall body structure, hand consists of 27 bones such as carpal, metacarpal, phalanges and three functional sections. The genes and genetic structure of an individual play a role in the development and differentiation of hands. And also, in the process of development, external and occupational factors affect hand structure. It is thought that in different branches of sport, suitable training for purpose is contribute to forming of hand by modification in the structure.

Previously many conducted studies showed that in terms of anthropometric, dominant hand gives higher measurement values than others. On the other hand, many studies have revealed that mainly used extremities develop. For example, the study conducted in Vienna has revealed that there is a significant relationship between business using hand and hand size (D.F. Roberts, 1995). As volleyball, handball, basketball branches is required mainly the use of hand it is considered that hands of professional athletes in these branches are to be more developed than

sedentary'. For this reason, the aim of the study is to compare the dominant hand anthropometric rational differences between adult elite volleyball players and sedentary.

### METHOD

Male volleyball players with a mean age of 23,1 years; male sedentary with a mean age of 23,7 years; female volleyball players with a mean age of 24,7 years and female sedentary with a mean age of 24,8 years voluntarily participated in the study. Subjects who are playing in the first volleyball league are elite level athletes. To determine anthropometric measurements of subjects, in accordance with international standards, the height with anthropometer, body weight with 100 gr-sensitive electronic weigher, wrist circumference with measuring tape and hand length, finger length, hand width and metacarpal length by using compass are measured (T.J. Lohman et al., 1998; J.S. Weiner and J.A. Lourie, 1988). The obtained results were analyzed statistically by using SPSS software; frequency distribution, cross tabulation (comparison of differences between socio-demographic groups) and t-test are used to test research hypotheses.

### RESULTS

The findings of this study were evaluated by a quantitative analysis. A total of 100 subjects (mean age  $23.9 \pm 3$ ) participated in the study, as 25 male volleyball players, 25 female volleyball players, 25 male sedentary and 25 female sedentary, respectively.

It is determined that male volleyball players' and sedentary' with the mean age of 23,4 years and 23,1 years average anthropometric measurements are as follows (Table 1) height of 1938,23 mm, 1736,33 mm; weight of 858,97 gr, 726,80 gr; hand length of 223,36 mm, 202,04 mm; finger length of 115,56 mm, 105,84 mm; hand width of 116,08 mm, 103,88 mm; metacarpal width of 91,80 mm, 84,56 mm; wrist width

of 62.72 mm, 57.60 mm; wrist circumference of 188.76 mm, 175.80 mm, respectively

**Table 1.** Antropometric Data of Male Volleyball Players and Sedentaries

	Volleyball Player (n=25)		Sedentary (n=25)		MEAN DIF.	F
	M	DS	M	DS		
Length (mm)	1938.23	50.79	1736.33	69.88	180.510	0.81
Weight (gr)	858.97	64.79	726.80	136.55	143.570	0.00
Hand Length (mm)	223.36	9.48	202.04	7.78	21.320	2.15
Hand Width (mm)	116.08	5.36	103.88	4.62	12.200	1.94
Hand Finger Length (mm)	115.56	5.10	105.84	6.27	9.270	1.63
Metacarpal Width (mm)	91.80	4.13	84.56	4.85	7.240	1.343
Hand Wrist Circumference (mm)	188.76	6.54	175.80	8.704	12.960	0.535
Hand Wrist Width (mm)	62.72	2.475	57.60	3.162	5.120	0.058

p ≥ 0.001

significancy

level

It is determined that with the mean age of 24.7 years, female volleyball players' and sedentary' average anthropometric measurements are as follows (Table 2) height of 1767.97 mm, 1595.97 mm; weight of 699.90 gr, 576.80 gr; hand length of 203.96 mm, 182.12 mm; finger length of 105.84 mm, 95.96 mm;

hand width of 98.84 mm, 92.92 mm; metacarpal width of 82.56 mm, 77.04 mm; wrist width of 57.28 mm, 52.40 mm; wrist circumference of 176.12 mm, 160.36 mm. **Table 2.** Antropometric Data of Female Volleyball Players and Sedentaries

	Volleyball Player (n=25)		Sedentary (n=25)		MEAN DIF.	F
	M	DS	M	DS		
Length (mm)	1767.97	74.43	1595.97	64.57	179.460	0.870
Weight (gr)	699.90	98.10	567.80	87.94	136.480	0.023
Hand Length (mm)	203.96	10.85	182.12	10.69	21.840	0.018
Hand Width (mm)	98.84	5.10	92.92	4.94	5.920	0.092
Hand Finger Length (mm)	105.84	5.914	95.96	6.14	9.880	0.004
Metacarpal Width (mm)	82.56	3.513	77.04	3.680	5.520	0.141
Hand Wrist Circumference (mm)	176.12	20.50	160.36	7.24	15.760	1.078
Hand Wrist Width (mm)	57.28	3.49	52.40	2.36	4.880	1.862

p ≥ 0.001 significancy level

**DISCUSSION AND CONCLUSION**

In Chuang and his friend's study, between 16 and 20 years of age 120 male subjects were analyzed. The average of subjects' hand length was found as 18.4 ± 0.9 cm (M.C. Chuang et al., 1997). As a result of the study conducted by B. Buchholz and T.J. Armstrong, (1991) on ages ranged from 10-31 years 15 male and 15 female subjects; male participants' hand width value of 87.0 ± 5.0 mm, female participants' hand width value of 75.2 ± 2.8 mm was found. Male participants' hand length value and female participants' hand length value were found to be 187.0 ± 9.9 mm and 167.2 ± 4.6 mm, respectively (B. Buchholz and T. Armstrong, 1991). It was observed that the results of measurements are close to sedentary' value, are lower than volleyball players' value. In L.L. Lloyd and T.M.C. John's, (1967) research on mean age of 20.44 ± 3.89 years 117 male subjects; right hand length was measured at 19.21 ± 0.98 cm, left hand length was measured at 19.20

± 0.97 cm (L.L. Lloyd and T.M. C. John, 1967). O. Okunribido, (2000), in his study on ages ranged from 9-60 years (mean age of 33.51 ± 15.35 year) 37 female Nigerian subjects, found right hand width as 75.75 ± 5.17 mm, right hand length as 175.05 ± 11.07 mm (O. Okunribido, 2000). In the study conducted by G. Kulaksiz, (2001), it was found that group consisted of male and female college students ranged from 17 to 25 years old have right hand width of 81,1325 ± 6,0447 mm (G. Kulaksiz, 2001). J.E. Fernandez and K.G. Uppugonduri, (1992), found that 128 south Indian male workers' with mean age of 25.2 ± 4.1 years dominant hand width as 83 ± 4 mm (J.E. Fernandez and K.G. Uppugonduri, 1992). L.W. Means and R.E. Walters, (1982), measured hand length in their research on the group consisted of 77 male and 79 female subjects. As a result of the measurements, it was found that among male whose right hand are dominant, their right hand lengths are longer than left, in the same way among



male whose left hand is dominant, their left hand lengths are longer than right. In female, they found that than their right hand's (L.W. Means and R.E. Walters, 1982). In branches in which the using the hand is important, anthropometric measurements of the hands are thought to be essential in directing of athlete. In terms of anthropometric measurements of the hands, significant differences were found between elite-level volleyball players and sedentary groups, and it was concluded that athlete's branch could be resulted from.

#### REFERENCES

- BUCHHOLZ, B., ARMSRONG, T. J., 1991,** *An Ellipsoidal Representation Of Human Hand Anthropometry.* Human Factors, 33(4): 429-441.
- CHUANG, M.C., YOU, M., CAI, D., CHEN, C.C., 1997,** *Isometric Muscle Strength Of Chinese Young Males In Taiwan.* Ergonomics, 40(5): 576-590.
- CRONEY, J., 1981,** *Anthropometry for Designers.* Van Nostrand Reinhold Company. New York.
- DE GARAY, A.L., LEVINE, L. CARTER, J.E.L. 1974,** *Genetic And Anthropological Studies Of Olympic Athletes.* Academic Pres. New York.
- FERNANDEZ, J.E., UPPUGONDURI, K.G., 1992,** *Anthropometry Of South Indian Industrial Workmen.* Ergonomics, 35(11): 1393-1398.
- GUYTON, A.C., HALL, J.E., 2001,** *Clinical Psychology.* Philadelphia. A Harcourt Health Sciences Company.
- HALDER, D., DHARAP, A.S., THAN, M., 1999,** *Normal Values For Total Hand Length, Palm dominant right hand's length value is lower than their left hands'; dominant left hand's length value is lower*
- Length And Middle Finger Length In Malaysian Newborns From 34-42. Weeks Of Gestation.* Anthropologischer Anzeiger, 57(1): 69-75.
- KULAKSIZ, G., 2001,** *El Dominansının, El Antropometrik Ölçümleri Üzerine Etkisinin incelenmesi.* Gazi Üniversitesi, Tıp Fakültesi Anatomi Anabilim Dalı, Uzmanlık Tezi, Ankara.
- LLOYD, L.L., JOHN, T.M.C, 1967,** *Notes On Anthropometric Technique:Anthropometric Measurements-Right And Left Sides.* American Journal of Physical Anthropology, 26: 367-370.
- LOHMAN T. G., ROCHE, A. F., MARTORELL, R.M., 1998,** *Anthropometric Standardization Reference Manual.* Champaign. H. Kinetics Books.
- MEANS, L.W., WALTERS, R.E.,1982,** *Note Sex, Handedness And Asymmetry Of Hand And Foot Length.* Neuropsychologia, 20(6): 715-719.
- NAIPER, J., 1990,** *"Hands".* Princeton University Pres, New Jersey.
- OKUNRIBIDO, O.O., 2000,** *A Survey Of Hand Anthropometry of Female Rural Farm Workers In Ibadan, Western Nigeria.* Ergonomics, 43(2): 282-292.
- ROBERTS, D.F., 1995,** *The Pervasiveness of Plasticity. Human Variability and plasticity,* Cambridge University Pres, s:1-17
- WEINER, J.S., LOURIE, J.A. (Ed.).1988,** *Practical Human Biology.* Academic Press. London.

## THE ACUTE EXERCISE THE EFFECT OF THE SUPPLEMENTATION OF GLYCEROL AND THE FATIGUE ON THE LEVELS OF SOME MINERALS AND HCT, THB AND GLUCOSE

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#### ABSTRACT

**Objective:** The aim of this research is to investigate the effect of the applied glycerol reinforcement on the levels of Na, K, İca, HCT, THB and Glucose in sportsmen and sedanter individuals before the accute exercise.

**Method:** 10 healthy sportsmen, in their avarage age  $18.20 \pm 0.61$ , avarage height  $178,20 \pm 1.78$  cm and avarage body weight  $65.17 \pm 2.04$  kg, interested in athleticism in an elite level and 10 healthy sedanter men, in their age  $19.70 \pm 0.47$ , avarage height  $169,10 \pm 2.21$  cm and avarage body weight  $71.09 \pm 1.87$  kg as a control group, that's to say, 20 people have participated in this research as tested people. In the first day, the examples of blood have been taken from S and C's elbow veins before and after the shuttle run test. After 1 day break, in the 3rd day, before 2 hours of the same exercise test (GET) , the solution has been applied to both 2 groups by mixing it with 1 gr/kg glycerol water and the same test has been applied again. Before and almost after the applied ET and GET throughout 2 days, the qualified parameter levels of taken blood examples have been determined.

**Result:** It has appeared the level of HCT, THB and Na of C group ( $p < 0.005$ ) in an important level, after GET the unimportance of this increase. After ET, the decrease of K levels of C group ( $p < 0.05$ ) in an expressive level and the absence of the important difference after GET have been determined. It hasn't appeared the expressive difference in the İca levels of C group after ET and GET. After ET and GET the important increase of glucose levels of C group ( $p < 0.05$ ) have been determined.

There is no important difference in the levels of HCT, THB, Na and K of S group after ET and GET. The decrease of İca level of S group has been determined ( $p < 0.05$ ) in an important level after ET and GET. It has appeared the

increase of glucose levels of the same group after ET and GET in an excessive level and the importance of this increase before ET and GET. ( $p < 0.005$ )

It has appeared the absence of the important difference of the levels of HCT, THB and K between 2 groups, but that C group has higher level of Na than S group in an excessive level after ET and GET, the  $\dot{I}Ca$  level of C group is higher than S group and after GET the glucose level of S group is higher than C group in an excessive level.

**Conclusion:** In conclusion, in this research, it can be said that the applied submaximal exercise has caused the unimportance differences in the amount of THB related with osmotic pressure and HCT concentration and Na, K and  $\dot{I}Ca$  levels and the applied liquid glycerol reinforcement or their loses together with this exercise protocol haven't changed osmotic pressure of blood liquid in this quantity and period at least and so they haven't affected hemoconcentration mechanism in an important level and it can be thought that the reason of the increase in glucose levels is the acceptance of glycerol and the content of the exercise protocol.

**KEYWORDS:** Exercise, Glycerol, Electrolyte, Hematology.

### INTRODUCTION

Agents such as glycerol and dextran have been given to the sportsmen by way of oral and intravenous to increase the volume of the plasm and maintain the exercise in a long time. In the studies, it has been informed that loading glycerol to the sportsmen with various methods increases their performances very much (A. Coutts, et al, 2002, R.A. Robergs and S.E. Griffin, 1998, P. Montner, et al, 1996). It has been focused that glycerol, which has been given before exercise, has the important effects on decreasing the internal heat and increasing the velocity of the perspiration in addition to datas that the application of the glycerol increases the osmolarity of the plasm and the volume of the plasm and decreases the volume of the urine (R. Murray et al, 1991). Decreasing in the volume of the plasm has been also able to increase the level of THB because of the level of HCT.

During the exercise, the potassium in the muscular tissues goes out of the cell and increases the blood stream by way of the local vasodilatation as physiologic. In the heavy exercise, hyperkalemia can appear to decrease even the level of ATP. The existence of the level of serum Na above 145mEq/L

has been known as hypernatremia. The hypernatremia can result from dehydration or Na retention. The dehydration needs to appear more than increase in Na, K for the existence of the hypernatremia. The existence of the dehydration more than Na, K has caused Na concentration in the plasm (G.B. Haycock, 2006).

The source of the energy changes according to the type and time of the exercise. During the low intense exercise, the loss of glucose is equal to the appearance of the glucose and glucose concentration remains in the same degree. During the average and heavy intense exercise, the rate of the appearance of the glucose is more than the rate of glucose which muscles has used and this situation causes the increase in blood glucose concentration (J.A. Romijn, 1993). When the violence of the exercise increases, carbonhydrates have become a main source of energy. When the violence of the exercise increases more and more, carbonhydrates can be produced by only using them (S. Paker, 1998).

The type, violence and time of the exercise have affected the hematology parameters. In the acute exercise, hematologic changes also have been explained with the homeconcentration mechanism and the loss of the plasm.

### Results

**Table.** C and S Groups of Values Before and After Exercise

	G	T.Ö		T.S	
		Rest Mean±SE	Exhaustion Mean±SE	Rest Mean±SE	Exhaustion Mean±SE
HCT(%)	C	47,37±0,60 <b>b</b>	53,78±2,30 <b>a</b>	47,70±1,85 <b>ab</b>	48,45±1,26 <b>b</b>
	S	48,90±2,49 <b>ab</b>	49,86±1,00 <b>a</b>	44,95±1,23 <b>b</b>	46,21±1,45 <b>ab</b>
Na(mmol/L)	C	140,45±0,66 <b>b</b>	A 144,15±0,44 <b>a</b>	143,96±1,04 <b>a</b>	145,77±0,86 <b>a</b>
	S	141,92±0,96 <b>ab</b>	B 141,82±0,54 <b>b</b>	142,54±1,09 <b>ab</b>	145,00±0,86 <b>a</b>
K(mmol/L)	C	4,77±0,28 <b>a</b>	4,15±0,16 <b>b</b>	4,44±0,12 <b>a</b>	4,23±0,04 <b>ab</b>
	S	4,35±0,19	4,78±0,23	4,73±0,14	5,35±1,01
$\dot{I}Ca$ (mmol/L)	C	1,29±0,01	A 1,32±0,03	1,28±0,006	A 1,29±0,01

	S	1,27±0,01 a	B 1,21±0,01b	1,26±0,01 a	B 1,20±0,03 b
THb(g/dl)	C	16,08±0,21 b	18,14±0,83 a	16,21±0,63 ab	16,50±0,42 ab
	S	16,61±0,84 ab	17,38±0,43 a	15,27±0,42 b	15,71±0,49 ab
Glikoz(mg/dl)	C	64,86±4,04 c	91,57±4,87 a	76,14±2,51 b	B 79,43±2,52 ab
	S	65,00±2,23 c	104,14±9,83 a	80,43±3,18 b	A 106,00±7,58 a

**AB:** In the same column, the differences between average values are ( $p < 0.05$ ) important among the group carrying different letters.

**abcd:** In the same line, the differences between average values are ( $p < 0.05$ ) important within group carrying different letters.

**C:** Control group

**S:** Sportsman group

**BS:** Before supplementation

**AS:** After supplementation

It has appeared the level of HCT, THB and Na of C group ( $p < 0.005$ ) in an important level, after GET the unimportance of this increase. After ET, the decrease of K levels of C group ( $p < 0.05$ ) in an expressive level and the absence of the important difference after GET have been determined. It hasn't appeared the expressive difference in the  $\dot{V}O_2$  levels of C group after ET and GET. After ET and GET the important increase of glucose levels of C group ( $p < 0.05$ ) have been determined.

There is no important difference in the levels of HCT, THB, Na and K of S group after ET and GET. The decrease of  $\dot{V}O_2$  level of S group has been determined ( $p < 0.05$ ) in an important level after ET and GET. It has appeared the increase of glucose levels of the same group after ET and GET in an excessive level and the importance of this increase before ET and GET. ( $p < 0.005$ )

It has appeared the absence of the important difference of the levels of HCT, THB and K between 2 groups, but that C group has higher level of Na than S group in an excessive level after ET and GET, the  $\dot{V}O_2$  level of C group is higher than S group and after GET the glucose level of S group is higher than C group in an excessive level.

## MATERIAL

Total 10 sportsmen whose average ages are  $18.20 \pm 0.61$  years, average heights are  $178.20 \pm 178$  cm and body weights are  $65.17 \pm 2.04$  kg and who are interested in the branch of athleticism in the elite level and 10 healthy and sedentary men whose average ages are  $19.70 \pm 0.47$  years, average heights are  $169.10 \pm 2.21$  cm and average body weights are  $71.09 \pm 187$  kg as a

control group, that's to say, 20 people have been participated in this study as experimentals.

## Method

**S:** Sportsmen group (n:10)

**C:** Control Group (n:10)

**ET:** First day before exercise test

**GET:** Third day before exercise test

Before and after shuttle run test (ET), in the first day S and C groups' blood samples have been taken from their elbow veins. After one day break in the third day before 2 hours out of the same exercise test (GET) they have been given to both 2 groups as solution by mixing 1 gr/kg glycerol with water and the same test has been applied again. Before and after ET and GET applied in every 2 day, the levels of blood examples (fatigue) have been determined by using the device labelled with EIRMA point (USA) and CC cartridge.

## Exercise Test

20 m meci running test which applied to people being in experiment is multi-leveled test aiming getting tired of people and its first level is warming up tempo. People run first 20 m distance as coming and going. Running speed is controlled with a tape giving signal voice. People started running when they firstly heard signal voice and reached the line by second signal voice. When they heard second signal voice they were backed to starting line by turning back and the running went on with these signals. The people set their own tempos as being on the other side of the patch when they heard the signal. The running which was slow at the beginning is increased at ever 10 seconds. If a person can't reach the line before signal, but if she can reach other signal, person went on the test. If person can't reach 2 signals after and after, test is finished. The tiredness is formed on people with this way.

## STATISTICAL ANALYSES

Average values and Standard errors of parameters of all experimentals have been counted. Independent 't' has been used in the importance determination of differences among groups. The repeated measurement has been applied by analyzing variance in the

determination of differences in the in-group. Paired 't' has been applied in the determination of differences.

### DISCUSSION AND CONCLUSION

It has been informed that after giving the glycerol which provides the decrease in the volume of the plasm by way of oral has affected the hepatic and renal metabolism with the effects on the separation of the body heat (R. Murray, et al, 1991), therefore, it will be able to cause important changes in some hematologic parameters of sportsmen and sedentary individuals who exercise regularly (G.J. Rietjens, et al, 2002).

In the research, the increase in HCT and THB in both 2 groups after ET and GET, but the important increase in C group after ET ( $p < 0.05$ ) have been observed. It has been informed that the acute submaximal exercise increases the numbers of erythrocyte, Hct and Hb in proportion to the values before exercise in an understandable way and this increase is related with the loss of the plasm which the exercise causes (S. Akar, et al, 1992). Although these changes in the hematologic parameters have been observed immediately after the exercise, it shows that these changes turn into the the level of the rest within 24 hours following the exercise (H. Beydađı, et al, 1994). In the study, it can be thought that there is the increase in HCT and THB in the C group after ET and because of the loss of this increase, glycerol has prevented the loss of the plasm by decreasing the osmotic pressure in the sedentary individuals after GET. However, the non-existence of the important difference in the intergroups has prevented this idea. The reason for the unimportant increase in HCT and THB in S group and important increase in HCT and THB in C group ( $p < 0.05$ ) after exercise test has been explained with hemoconcentration related with exercise and the important thing is also giving high blood in terms of hemotocrit from splanic circulation to circular circulation. Comparably, B.J. Freund, et al, (1991) have determined the important increase in the levels of the hemoglobine of the experimentals when they exercise with % 60-80 of max VO<sub>2</sub>. S. Patlar and E. Keskin, (2007) have informed that average intense and submaximal exercise increases the levels of HGB and HCT in the important degree and glycerol supplementation applied with exercise protocol has no effect on the levels of HGB, HCT.

In the research, the increase in the level of glucose in C and S groups in the important degree after ET ( $p < 0.05$ ), this unimportance of the increase in C group after GET, but the understandable increase in S group ( $p < 0.05$ ) have been observed. The intensity of the exercise affects muscles' use of glucose and the production of the glucose. During the exercise, the production of the glucose increases to satisfy the increasing need of glycogen of the muscles (N. Marmy-Conus, et al, 1996). When the intensity of the exercise increases from %25 of VO<sub>2</sub> to %65 and %85

of VO<sub>2</sub>, the increase in the rate of the appearance of glucose has been determined. During the low intense exercise, the loss of the glucose is equal to the appearance of the glucose and glucose concentration remains in the same degree. During the average and high intense exercise, the rate of the appearance of the glucose is more than the rate of the glucose that muscles uses and this situation causes the increase in the blood glucose concentration (J.A. Romijn, et al, 1993).

M. Gleeson, et al, (1986) have given glucose, glycerol and placebo to 6 experimentals (age 32.3±3 year) before exercise and they have made them exercise in the level of 45 min. %75 max VO<sub>2</sub> until they become fatigue. When glucose has been taken, no differences between measured blood glucose concentration and placebo, glycerol have been determined after exercise. C. Aydın, et al, (2000) have determined the understandable increase in the levels of the glucose ( $p < 0.01$ ) after aerobic and anaerobic exercise. They have informed the unimportance of the increase in the level of the glucose between 2 exercises.

During the period of the low intense exercises, the body has worked as an aerobic and the most of the production of the energy has been satisfied from the fat. When the intensity of the exercise increases more and more, carbonhydrates has become the main source of the energy, muscles have gone towards to glycogen which is the more effective source of the energy (H. Beydađı, et al, 1994).

It can be said that the exercise applied in the study is an submaximal exercise and causes the fatigue, the energy is provided from carbonhydrates because the violence of the energy increases more and more and this causes the increase in the levels of the glycose.

In the study, the increase in the level of Na of C group in the important degree after ET, unimportance of this increase after GET have been observed. The decrease in the levels of K (Potassium) of C group after ET in an understandable degree ( $p < 0.05$ ), but after GET no differences have been determined. The understandable differences in the levels of İca in C group after ET and GET have not been seen.

There have no differences in the levels of NA and K of S group after ET and GET. R.L. Pieschl et al, (1992) it has been determined that there are important increase in the levels of Na in the sportsmen after 400 m sprint run, no difference in K and the decrease in the level of İca in S group after ET and GET in the important degree ( $p < 0.05$ ).

It has been seen that between 2 groups, there are no important differences in the levels of K (potassium), but the level of Na of C group after ET is higher than those in S group ( $p < 0.05$ ), the level of İca of C group is higher than those in S group in an important degree ( $p < 0.05$ ). it has been informed that many hormonal changes accompanied with exercise

affect the absorption of Ca. F.S. Navas, et al, (1997), the loss of Ca increases thanks to perspiration during the exercise (R.C. Klesges, et al, 1997). In the acute and chronic metabolic acidosis the increase in the swing of Ca can happen from the bone to circulation (P. Sriboonlue 1996). It can be said that this increase in Ca group results from the lack of adaptation to exercise. T.E. Aguilera et al, (2000) have determined that there is the increase in the levels of Na and K in 17 sportsmen after exercise, V. Çinar et al, (2009) have determined that fatigue increases the levels of Ca and K after exercise.

In conclusion, it can be said that applied submaximal exercise affects the levels of HCT, THB, Na, K and  $\text{Ca}^{2+}$  and this will be explained with the adaptation to the exercise and the loss of the plasma because of exercise, when considering the intensity and the time of the exercise test, the energy is provided from carbohydrates and this causes the important increase in the levels of glucose. In this study, it can be said that applied glycerol supplementation has no important effect.

#### REFERENCES

- AGUILERA T.E., ESTEPA, J.C., LÓPEZ, I., et al, 2000, *Quantitative analysis of acid-base balance in show jumpers before and after exercise*. Res Vet Sci. 68(2):103–8.
- AKAR, S., BEYDAĞI, H., TEMOÇİN, S., et al, (1992), *Egzersiz bazı kan parametreleri üzerine etkisi*, Spor Hek Derg, 27, 93 – 99.
- AYDIN, C., GÖKDEMİR, K., CİCİOĞLU, İ., 2000, *Aerobik ve Anaerobik Egzersiz Sonrası İnsülin ve Glikoz Değerlerinin İncelenmesi*. Hacettepe J. of Sci. 11(1),47–55.
- BEYDAĞI, H., ÇOKSEVİM, B., TEMOÇİN, S., 1994 *Spor yapan ve yapmayan gruplarda bazı eritrositer parametrelere egzersizin etkisi*, Gaziantep Üniversitesi Tıp Fak Derg, 5, 21 - 28.
- ÇINAR, V., BALTACI, A.K., MOĞULKOÇ, R., 2009, *Effect of Exhausting Exercise and Calcium Supplementation on Potassium, Magnesium, Copper, Zinc and Calcium Levels in Athletes*. Pak. J. Med. Sci. 25 (2):238–242.
- COUTTS, A., REABURN, P., MUMMERY, K., et al, 2002, *The effect of glycerol hyperhydration on olympic distance triathlon performance in high ambient temperatures*, Int. J. Sport Nutr. Exerc. Metab, 12, 1, 105–19.
- FREUND, B.J., SHIZURU, E.M., HASHIRO, G.M., et al, 1991, *Hormonal, electrolyte and renal responses to exercise are intensity dependent*, J. Appl. Physiol, 70, 2, 900–906.
- GLEESON, M., MAUGHAN, R.J., GREENHAFF, P., 1986, *Comparison of the effects of pre-exercise feeding on glucose, glycerol and placebo on endurance and fuel homeostasis in man*. European Journal of Applied Physiology, 55(6), 645–653.
- HAYCOCK, G.B., 2006, *Hypernatremia: diagnosis and management*. Arch Dis Child Educ Pract Ed, 91: ep8-ep13.
- KLESGES, R.C., WARD, K.D., SHELTON, M.L., et al, 1997, *Changes in Bone Mineral Content in Male Athletes. Mechanism of Action and Intervention Effects*. Jama, 277:22–4.
- MARMY-CONUS, N., FABRIS, S., PROTETTO, J., et al, 1996, *Preexercise glucose ingestion and glucose kinetics during exercise*. Journal of Applied Physiology, 81(2), 853–857.
- MONTNER, P., STARK, D.M., RIEDESEL, M.L., et al, 1996, *Pre-exercise glycerol hydration improves cycling endurance time*. Int J Sports Med, 17, 27–33.
- MURRAY, R., EDDY, D.E., PAUL, G.L., et al, 1991, *Physiological responses to glycerol ingestion during exercise*. Am.Physiological Soc., 1, 144–149.
- NAVAS, F.S., MARTÍN, J.F., CORDOVA, A., 1997, *Compartmental Shifts of Calcium and Magnesium as a Result of Swimming and Swimming Training in Rats*. Med. Sci. Sport Exerc. 29,882–91.
- PAKER, S., 1998, *Sporda Beslenme*. 4. Baskı, Onay Ajans, Ankara.
- PATLAR, S., AND KESKİN, E., 2007, *Düzenli Egzersiz Yapan Sporcularda ve Sedarterlerde Gliserol Takviyesinin Bazı Hematolojik Parametreler Üzerine Etkisi*, <http://egzersiz.sdu.edu.tr>. Egzersiz, Sayı 1, No:1.
- PIESCHL, R.L., TOLL, P.W., LEITH, D.E., et al, 1992, *Acid-base changes in the running greyhound: contributing variables*. J Appl Physiol. 73(6):2297–304.
- RİETJENS, G.J., KUİPERS, H., HARTGENS, F., et al, 2002, *Red blood cell profile of elite olympic distance triathletes. A threeyear follow-up*. Int. J. Sports Med, 23,6,391–6.
- ROBERGS, R.A., GRIFFIN, S.E., 1998, *Glycerol. Biochemistry, pharmacokinetics and clinical and practical applications*. Sports Med, 3, 145–167.
- ROMIJN, J.A., COYLE, E.F., SIDOSSIS, L.S., et al, 1993, *Regulation of endogenous fat and carbohydrate metabolism in relation to exercise intensity and duration*. American Journal of Physical Anthropology, 265, 380–391.
- SRIBOONLUE, P., PRASONGWATARA, U., TASUKHOWONG, P., et al, 1996, *Increase Risk of Urinary Stone Disease by Physical Exercise*. Southeast Asian J. Trop Med. 27,172–7.

## COACHING QUALIFICATIONS OF THE COACHES IN TURKISH WOMEN'S BASKETBALL FIRST LEAGUE

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### ABSTRACT

In the present study, it is aimed to determine the coaching qualifications of the coaches in the Turkish Women's Basketball First League. The related domestic and foreign literatures were reviewed for collecting data; the questionnaire developed by the researcher was administered to the whole universe and 20 questionnaire forms were analyzed. The data obtained as a result of the application were subjected to a non-parametric statistical analysis using the SPSS software. Consequently; it was found that all the coaches of the women's basketball teams included under the scope of this research are male and most of them perform coaching as their primary profession which causes intensive work tempo for them. In addition, it is seen that the coaches follow the developments and the scientific publications about basketball, and they continually participate in the training programs related to basketball. Moreover, they perform the first player choice benefiting from their past experiences and considering the physical characteristics of players. The coaches with a good coaching quality are of great importance as they improve the performance of a team and they play a significant role in the growth of skilful basketball players and thus the development of the basketball in the country. In order to enhance their coaching qualifications, they need to be satisfied in economical terms, which can allow them to follow the related publications about basketball, participate in seminars, make analysis and comparisons about the philosophies of other coaches, support their studies with scientific data, seeing the qualified coaches are conscious about continually improving themselves.

**KEYWORDS:** Coaching Qualifications, Basketball, Coaches.

### INTRODUCTION

The main purpose of sports is to show and sustain the highest performance individually or as a team. Performance is a physical process and is maximized with an appropriate guidance and psychological preparation (U. Abakay, 2010). However, a player cannot be successful if he/she is not appropriately guided and not trained in technical and tactical terms no matter how talented and hardworking he/she is (O. Doğan, 2004). A player needs sophisticated coaches who help players to accomplish their aims for success, continually improve themselves about their profession and coaches who are responsible and open to innovations (F. Korkmaz et al. 2006; D. Brown, 2003 and S. Hatchell, 2006). The coaches who consider all the data revealed by researchers, use scientific methods the most efficiently, seek to provide a training of the highest standard to their players and form the basis of sports (E. Başer, 1998). A coach is a person who takes players to the highest point in terms of performance and their potential, helps them to realize their physical, social, emotional and mental capacities, and use the methods peculiar to him/her in order to accomplish these aims (E. Konter, 1996). What to teach, when to teach, how much to teach and how to teach are important factors as well as technical strategy knowledge of a coach. The way of coaching and a good choice of the titles such as what kind of decisions are taken, what kind of a system will be thought, which methods will be applied for the players to take decisions and which roles will be given to players are the determinant factors for success (Y. Sevim, 2006a). Coaching is of great importance in terms of sports performance. Accordingly, a coach who is strong in psychological terms and who supports his players continuously and who has a vision is required

to achieve the desired performance. In addition, coaches should have such characteristics that they could establish a balance between their own requirements, the player's and also the performed sports' requirements (Y. Sevim, 2007). If coaches make plans properly in parallel to a team's goals by including training processes, presumably this will improve the players' skills (O. Sevim, 2007). The improvement of coaching quality shows parallelism with the improvement of the qualities of players. Therefore it plays a vital role in the improvement of the quality of the sports in the country. The aim of the present study is to reveal the coaching qualifications of the coaches in the Turkish Women's Basketball First League and to determine whether these qualities vary depending on certain variables or not. It is thought that the findings to be obtained at the end of the study will contribute to the improvement and the development of basketball coaches and therefore the sports of basketball. **Material and Methods\_Group of the Survey** The universe of the research is consisted of 12 head coaches and 13 assistant coaches, in total 25 coaches (subjects of this survey), in the Turkish Women's Basketball First League. As the whole universe was reached, the researcher did not take samples. The number of the questionnaire forms analyzed at the end of the study is 20, nine of them are filled by assistant coaches and eleven of them are filled by head coaches. **Data Collection Method** In this research, a questionnaire was used to collect data from all basketball coaches in Turkish Women's Basketball First League. Cronbach's alpha coefficient was used in order to determine the reliability of the questionnaire ( $\alpha=0.74$ ). **Data analysis:** The data collected in this were analyzed with SPSS program. The analyses results were evaluated by means of %, frequency and q-

square. The significance level in the survey has been accepted as 0.5.

Basketball First League, the data related to the coaching qualities are given in this part.

**Results** As a result of the analysis of the questionnaires administered to the coaches in the Turkish Women's

**Table 1:** The distribution of the subjects by their coaching positions

Position in Team	Number	%
Head Coach	11	55.0
Assistant Coach	9	45.0
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>

According to the data in Table 1, it is realised that 55 % of the research group are head coaches and 45 % of the research group are assistant coaches.

**Table 2:** The distribution of the subjects by the age range

Age Groups	Number	%
26-33	6	30.0
34-41	9	45.0
42-49	3	15.0
50-57	2	10.0
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>

As seen in Table 2, 45 % of the subjects included within the scope of the research are between 34-41 and 10 % are between 50-57 age range.

**Table 3:** The distribution of the subjects by the certificates of coaching

Coaching Level	Number	%
Level C	1	5.0
Level B	9	45.0
Level A (Highest)	10	50.0
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>

In Table 3, it is found that 50 % of the subjects has Level A and 45 % of them has Level B certificate of coaching.

**Table 4:** The distribution of the subjects by the occupational status and duty periods

		The Period During Which Coaching is Performed Actively				TOTAL
		6-11 Years	12-17 Years	18-23 Years	24 Years and Over	
<b>My Primary Profession</b>	<b>N</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>5</b>	<b>17</b>
	<b>%</b>	15.0	35.0	10.0	25.0	85.0
<b>My Secondary Profession</b>	<b>N</b>	<b>1</b>	-	-	<b>2</b>	<b>3</b>
	<b>%</b>	5.0	-	-	10.0	15.0
<b>TOTAL</b>	<b>N</b>	<b>4</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>20</b>
	<b>%</b>	20.0	35.0	10.0	35.0	100.0

As seen in Table 4, 85 % of the subjects performs coaching as their primary profession, and 35 % of them has been coaching for 24 years and more.

**Table 5:** The distribution of the subjects by the work hours per week

Work Hours per Week	Number	%
1-10 Hours	2	10.0
11-15 Hours	1	5.0
21-25 Hours	2	10.0
26 Hours and Over	15	75.0
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>

**Table 5** revealed that 75 % of the subjects work 26 hours and more per week, 10 % of them work for less than 10 hours per week.

**Table 6:** The distributions of the subjects by their position in following the improvements in their fields, the training programs and basketball games

	Watching Basketball Games on TV		Following the Developments and Scientific Publications on Basketball		Participating to the Training Programs on Basketball	
	N	%	N	%	N	%
<b>Frequently</b>	<b>20</b>	100.0	<b>19</b>	95.0	<b>16</b>	80.0
<b>Sometimes</b>	-	-	<b>1</b>	5.0	<b>4</b>	20.0
<b>Never</b>	-	-	-	-	-	-
<b>TOTAL</b>	<b>20</b>	100.0	<b>20</b>	100.0	<b>20</b>	100.0

In Table 6, it is found that all subjects watch basketball games on television, a significant proportion of them (95 %) continuously follow the developments

and the scientific publications and 80 % of them continuously participate in the training programs on basketball.

**Table 7:** The distribution of the subjects by the extra time they spare for their players and the money they spend from their own budgets

	Extra Time Spared for the Players		The Expenditures spend on the Players by the Coaches	
	N	%	N	%
<b>Yes</b>	17	85.0	15	75.0
<b>Sometimes</b>	3	15.0	5	25.0
<b>No</b>	-	-	-	-
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>	<b>20</b>	<b>100.0</b>

As seen in Table 7, 85 % of the subjects spare time for their players except for the trainings, 75 % of them spend for their players from their own budgets.

**Table 8:** The distribution of the subjects by the methods used for the first selection of players

Player Selection	Number	%
Using Scientific Methods	1	5.0
Benefiting from their Past Experiences	8	40.0
Considering the Ambitious Players	3	15.0
Considering the Physical Characteristics of Players	8	40.0
<b>TOTAL</b>	<b>20</b>	<b>100.0</b>

From the Table 8, it can be concluded that 40 % of the subjects perform the first selection of the players based on the physical characteristics, again 40

% of them make this selection by benefiting from their coaching experiences, and 5 % do the same by using scientific methods.

**Table 9:** The distribution of the subjects by the variable of professional status according to how they describe the profession of coaching

	A Profession which Requires Special Effort		A Quite Difficult Profession		TOTAL	
	N	%	N	%	N	%
<b>My Primary Profession</b>	13	65.0	4	20.0	<b>17</b>	<b>85.0</b>
<b>My Secondary Profession</b>	3	15.0	-	-	<b>3</b>	<b>15.0</b>
<b>TOTAL</b>	<b>16</b>	<b>80.0</b>	<b>4</b>	<b>20.0</b>	<b>20</b>	<b>100.0</b>



$X^2 = 0.882$ ,  $Sd:1$ ,  $p = 0.348 > 0.05$

In Table 9, it is found that 80 % of the subjects describe the profession of coaching as “a profession which requires special effort”, while 20 % of them describe coaching as “a quite difficult

profession”. When considered from the variable of professional status, no meaningful relationship has been found about their opinions on coaching profession ( $P > 0.05$ ).

**Table 10:** The distribution of the data related to the work hours of the subjects by the variable of professional status

	1-10 Hours		11-15 Hours		21-25 Hours		26 Hours and Over		TOTAL	
	N	%	N	%	N	%	N	%	N	%
<b>My Primary Profession</b>	-	-	1	5.0	2	10.0	14	70.0	<b>17</b>	<b>85.0</b>
<b>My Secondary Profession</b>	2	10.0	-	-	-	-	1	5.0	<b>3</b>	<b>15.0</b>
<b>TOTAL</b>	<b>2</b>	<b>10.0</b>	<b>1</b>	<b>5.0</b>	<b>2</b>	<b>10.0</b>	<b>15</b>	<b>75.0</b>	<b>20</b>	<b>100.0</b>

$X^2 = 12.680$ ,  $Sd:3$ ,  $p = 0.005 < 0.01$

Table 10 displays that there is a statistical difference with a significance level of  $p < 0.05$ , when considered the professional statuses and the work hours per week of the subjects.

**Table 11:** The distribution of the subjects by the age groups based on their preferred methods for the first selection of the players

Age Group	Using Scientific Methods		Benefiting from their Past Experiences		Considering the Ambitious Players		Considering the Physical Characteristics of Players		TOTAL	
	N	%	N	%	N	%	N	%	N	%
<b>26-33</b>	-	-	2	10.0	-	-	4	20.0	<b>6</b>	<b>30.0</b>
<b>34-41</b>	1	5.0	1	5.0	3	15.0	4	20.0	<b>9</b>	<b>45.0</b>
<b>42-49</b>	-	-	3	15.0	-	-	-	-	<b>3</b>	<b>15.0</b>
<b>50-57</b>	-	-	2	10.0	-	-	-	-	<b>2</b>	<b>10.0</b>
<b>TOTAL</b>	<b>1</b>	<b>5.0</b>	<b>8</b>	<b>40.0</b>	<b>3</b>	<b>15.0</b>	<b>8</b>	<b>40.0</b>	<b>20</b>	<b>100.0</b>

$X^2 = 14.444$ ,  $Sd:9$ ,  $p = 0.107 > 0.05$

In Table 11, it is found that 20 % of the subjects between 26-33 and 34-41 age groups primarily consider “the physical characteristics of players” in their first selection of the players, 15 % and 10 % of them between 42-49 and 50-57 respectively make their selections only “benefiting from their coaching experiences”. No statistically significant difference is found between the player selection methods and the coaches’ ages.

**DISCUSSION AND CONCLUSION**

As a result of the study, it is found that virtually all of the coaches perform coaching as their primary profession. This finding might show that the salaries of the coaches in the Turkish Women’s Basketball 1st League are satisfactory.

It is seen that 55 % of the research group work as a head coach, 45 % as an assistant coach; 45 % are in the 34-41 age group, 10 % are in the 50-57 age group; and 50 % has Level A, and 45 % Level B coaching certificate. In the study by the Sevim 2007, the women’s teams’ average age of the coaches was found 37 (O. Sevim, 2007). This data is parallel with

the results of our research. Moreover, half of the subjects has the highest level, Level A certificate, which may reflect the fact that they are experienced and have a certain amount of background.

It is found that 35 % of the subjects worked as a coach for 24 years and more. The coaches participating in the study by Corso stated that the experience-linked learning processes and coaching practices are the most important experiences in completing their personal skills (M.E. Corso, 1992).

It is seen that the 75 % of the coaches who participated in the study work 26 hours and more, while 10 % of them work less than 10 hours per week.

It is determined that all of the coaches watch the basketball games on TV and a significant majority of them (95 %) always follow the developments and scientific publications and 80 % of them continually participates in the training programs on basketball. Manuel stated that coaches should improve their systems by following new studies and should be more diligent in participating in the coaching seminars and receiving a certificate (T.L. Manuel, 1988). However, an adequate training may not be provided because of

the fact that the duration of these courses opened with the purpose of educating basketball coaches in Turkey are not long enough to train coaches, while the term of the same type training is 3 years in Russia where a great progress has been made in basketball (S.C. Ergüleç, 1996). In the present study, it is noticed that the coaches are open to the developments in regards to their field and are in a continuous development process in order to perform their coaching profession and to be successful at the highest level.

It is seen that the 85 % of the research group spare time for their players apart from the trainings, and the 75 % of them spend money for their players from their own budgets. Coaches are the trainers who play the biggest role in the development of athletes. Coaches are also responsible for solving certain problems which will prevent players from reaching to and proving their highest performance (Y. Sevim, 2006b). A great majority of the subjects sparing extra time and spending money for their players may prove that they focus on success and draw an idealist image. In this context, it is imperative that coaches communicate with their players not only in the court but also out of the court.

Moreover it is discovered that 40 % of the subjects perform the first selection of the players based on the physical characteristics, again 40 % of them make this selection by benefiting from their coaching experiences, and 5 % do the same by using scientific methods. In his study, Kalyon showed that strengthening players in physical and psychological terms and enabling them to gain qualities superior to their rivals are important factors (T.A. Kalyon, 1990). Therefore, in the first player selection, the physical and psychological characteristics required by basketball should be considered. However, a priority shall be given to scientific methods for accurate selections.

It is detected that while 80 % of the subjects regard coaching as a "profession that requires special effort", 20 % of them consider it as a "quite difficult profession".

It is found that 20 % of the subjects who are in the age groups of 26-33 and 34-41 take the "physical characteristics" into consideration in the first player selection, 10 % and 15 % of those with the age groups of 42-49 and 50-57 respectively make their choices benefitting only from their "coaching experiences".

Consequently, coaches who have good coaching qualifications play an important role in not only improving the performance of a team, but also in developing talented basketball players and improving the basketball in that country. This can be done by the coaches who are economically satisfied, follow the

publications on basketball, participate in seminars, make comparisons and analysis on the philosophy's of other coaches, who are conscious about continuously improving themselves and support their studies with scientific data.

## REFERENCES

- ABAKAY, U., 2010,** *Futbolcu - Antrenör İletişiminin Farklı Statülerdeki Futbolcuların Başarı Motivasyonu İlişkisi*, Doktora Tezi, Gazi Üniversitesi, Ankara.
- BAŞER, E., 1998,** *Uygulamalı Spor Psikolojisi*, Bağırhan Yayınevi, Ankara.
- BROWN, D., 2003,** *Basketball Coaches Organizational Handbook*, Monterey, Coaches Choice.
- CORSO, M.E., 1992,** *Coaches' Perceptions of the Knowledge Skills, and Experiences Necessary to Fulfill Their Coaching Role*, Dissertation, University of Northern Colorado, Colorado.
- DOĞAN, O., 2004,** *Spor Psikolojisi Ders Kitabı*, Cumhuriyet Üniversitesi Yayınları, Sivas.
- ERGÜLEÇ, S.C., 1996,** *Türkiye'de Basketbol Antrenörlerinin Yetiştirilmesi*, Ankara Üniversitesi Yayınları, Ankara.
- HATCHELL, S., 2006,** *Guide to Coaching Girls' Basketball*, Camden: McGraw-Hill Mountain Press.
- KALYON, T.A., 1990,** *Spor Hekimliği, Sporcu Sağlığı ve Spor Sakatlıkları*, Ankara.
- KONTER, E., 1996,** *Bir Lider Olarak Antrenör*, İstanbul, Alfa Basım Yayım Dağıtım.
- KORKMAZ, F., KORKMAZ, N.H., ARABACI, R., AKÇA, A., AKÇA, C., 2006,** *Türkiye Voleybol Antrenörlerinin Sosyal Tercihleri ve Mesleklerine Bakışları*, Uludağ Üniversitesi Eğitim Fakültesi Dergisi. XIX (2).
- MABUEL, T.L., 1988,** *A Study Tracing the Career Paths of Today's Top Twenty-Five Active Head Coaches in Women's Basketball in Divisions I, II and III of the NCAA*. Master Thesis, Michigan: Central Michigan University.
- SEVİM, O., 2007,** *Türkiye ve Amerika'daki Elit Bayan Basketbol Takımları Antrenör ve Oyuncularının Bazı Özelliklerinin İlişki Düzeylerinin İncelenmesi*, Doktora Tezi, Gazi Üniversitesi, Ankara.
- SEVİM, Y., 2006a,** *Antrenör Eğitim İlkeleri*, 1. Basım, Nobel Yayın Dağıtım, Ankara.
- SEVİM, Y., 2006b,** *Basketbol*, 6. Baskı, Nobel Yayın Dağıtım, Ankara.
- SEVİM, Y., 2007,** *Antrenman Bilgisi*, 7. Basım, Nobel Yayın Dağıtım, Ankara.

## THE EFFECTS OF 4 MONTH VOLLEYBALL TRAINING ON FLEXIBILITY, JUMP, SPEED, AND AGILITY IN PREADOLESCENT GIRLS

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### ABSTRACT

**Purpose.** Training programs for volleyball players can benefit their physical and physiological development (R. Lidor et al, 2010). Therefore, the purpose of this study was to determine the effects of 4 month volleyball training on flexibility, jump, speed, and agility in preadolescent girls.

**Methods.** Twenty girls ( $x_{age}$ :  $10.5 \pm 1.5$ ,  $x_{sports\ age}$ :  $1.1 \pm 0.4$ ) volunteered to participated in this study. The informed consent was taken from all parents. Pre-test, mid-test (on the 2<sup>nd</sup> month) and post-test (on the 4<sup>th</sup> month) measurements were taken. The body height and weight, flexibility (sit and reach test), speed (20 m run test), vertical jump (with arm swing allowed), standing long jump, agility (Illinois agility run test) were measured.

**Results.** 4 month volleyball training significantly affected subjects' body height, body weight, flexibility, jump, speed, and agility performance ( $p < 0.05$ ). The jump, speed and agility performance were significantly improved, although flexibility decreased for this period.

**Conclusions.** Our results were parallel to the previous studies (R. M. Malina, 1994, D. R. Melrose et al., 2007). Subjects' body height and body weight was increased, this results could be related the physical development. In the further study, these performance tests would also be applied on the control group at the same age, to test whether this positive improvement arose from the volleyball training.

**KEYWORDS:** volleyball training, preadolescent, performance.

### Purpose

Training programs for volleyball players can benefit their physical and physiological development (R. Lidor et al, 2010). How might physical activity during childhood and adolescence, particularly athletic participation, affect physical growth? This question is a major concern of parents, coaches and physical educators (T. W. Rowland, 2005).

On the other hand, it is accepted that increased physical activity and musculoskeletal stress are important for promoting growth in children (D. A. Bailey et al., 1978, K. T. Borer, 1995). Moreover, children's involvement in sport training might provide particular long-term health benefits (e.g., stimulation of bone growth and density may ameliorate the risk of future skeletal diseases) (T. W. Rowland, 2005).

There are some assessment protocols in order to investigate exercise effects on growth. These protocols typically include laboratory and field tests, but access to laboratory equipment and staff is often limited. Therefore, field tests are used to assess performance and often include evaluation of sprint, jumping, and agility (W. B. Young et al, 2002, J. B. Cronin et al, 2005, T. Little et al, 2005).

Consequently, the purpose of this study was to determine the effects of 4 month volleyball training on flexibility, jump, speed, and agility in preadolescent girls.

### METHODS

Twenty girls ( $x_{age}$ :  $10.5 \pm 1.5$ ,  $x_{sports\ age}$ :  $1.1 \pm 0.4$ ) volunteered to participated in this study. The informed consent was taken from each subjects' parents.

Pre-test, mid-test (on the 2<sup>nd</sup> month) and post-test (on the 4<sup>th</sup> month) were applied to the subjects in order to examine the physical and physiological effects of volleyball training. For this purpose, the body height and weight, flexibility (sit and reach test), speed (20 m run test), vertical jump (with arm swing allowed), standing long jump, agility (Illinois agility run test) were measured. Before the tests, subjects performed the warming up and stretching exercises approximately 15 minutes.

Volleyball trainings consisted of 60 minutes at each weekend and in total eight training unit per month. The volleyball trainings contained the warm up and stretching (~15 min.), fundamental skill training combined with quickness, strength, and reaction exercises (~30 min.), and mini volleyball match (at the end of the training, ~15min.).

Data were analysed using by Sigma Plot 11.0 (Systat Software Inc). Friedman repeated measures analysis of variance on ranks were applied. The statistical significance was set at  $p < 0.05$ .

### RESULTS

4 month volleyball training significantly affected subjects' body height, body weight, flexibility, jump, speed, and agility performance ( $p < 0.05$ ). Subjects' body weight increased along with their body height. The jump, speed and agility performance were significantly improved, although flexibility decreased

for this period. All anaerobic tests results were significantly different in the 4<sup>th</sup> month test compared with first test (Table 1).

## DISCUSSION AND CONCLUSION

Physical activity might influence growth in children by three possible mechanism (a) exercise draws on caloric stores and competes with the energy demands of normal growth for available nutrients. Through 'caloric stealing' physical activity may thus potentially impair growth on a nutritional basis. (b) Physical activity serves as a potent stimulus for production of growth factors. (c) Muscular activity creates local mechanical stresses that trigger musculoskeletal growth (T.W. Rowland, 2005).

According to G. E. Theintz et al. (1993), intense training might delay linear growth in young female gymnasts. This result shows a similarity with our findings.

R. M. Malina (1994) found the body height and body weight  $141\pm 6.6$  cm,  $31.3\pm 3.5$  kg, respectively in 10-year-old girls volleyball players and Prokopec et al (2003) found  $144.6\pm 5.2$  cm,  $33.7\pm 4.2$  kg in 9-10-years-old girls volleyball players. Our subjects' body height and weight values are higher than both two studies at the same age group ( $150.8\pm 9.0$  cm,  $44.6\pm 10.1$  kg, respectively).

R. Lidor et al (2007) investigated the effects of 15 month volleyball training using with the motor, physical and skill tests (2 speed tests, agility run test, 4 explosive power tests, endurance test and serving velocity test) in fifteen male adolescent volleyball players. They found that all participants improved their results in all but 2 tests (endurance and skill tests) and vertical jump with approach was found to be a good indicator for distinguishing between two level group players (starters and nonstarters). Stamm et al (2005),

found relationship between the volleyball players' jumping ability and their team's ranking. They reported that players from teams that were ranked 1-6 had better jumping abilities than players in team ranked 7-12 in a European Youth Volleyball Championship. In one study (D. R. Melrose et al, 2007) vertical jumping with arm swing allowed values of 12-14-years-old players were  $33.2\pm 6.0$  cm. This result is higher than our subjects' vertical jumping result ( $30.6\pm 5.5$  cm), but our subjects were 2 year younger than their subjects.

R. Lidor et al (2007) also suggest that physical and motor tests do not reflect open skill ability in volleyball. Thus, these general field tests can be used to determine the differences of players' motoric performance (and it does not show directly specific skill ability such as volleyball) or to follow the players' physical and motoric development. On the other hand, it could be insufficient to follow the children and adolescents' physical, physiological and motoric development with only the field tests. Because, the result of the study which investigate the relationship between sprinting, agility, and jump ability in female athletes indicate that linear sprinting, agility and vertical jumping are independent locomotor skills and suggest a variety of tests ought to be included in an assessment protocol for any athletes (J. D. Vescovi et al, 2008).

In conclusion, we could say that our results were parallel to the previous studies (R. M. Malina, 1994, D. R. Melrose et al., 2007). Subjects' body height and body weight was increased, this results could be related to the physical development. In the further study, these performance tests would also be applied on the control group at the same age, to test whether this positive improvement arose from the volleyball training.

Table 1. Preadolescent girls' physical characteristics and flexibility, jump, speed and agility performance in volleyball.

	First test (a) (n=20)	2 <sup>nd</sup> month (b) (n=20)	4 <sup>th</sup> month (c) (n=20)
Body height (cm)	$148.9\pm 9.4^c$	$149.7\pm 9.3^c$	$150.8\pm 9.0^{a,b}$
Body weight (kg)	$42.0\pm 10.3^{b,c}$	$43.6\pm 9.9^{a,c}$	$44.6\pm 10.1^{a,b}$
Flexibility (cm)	$30.8\pm 6.9^c$	$30.5\pm 5.8^c$	$25.7\pm 4.5^{a,b}$
Vertical jump (cm)	$23.8\pm 5.8^{b,c}$	$26.9\pm 5.5^{a,c}$	$30.6\pm 5.5^a$
Standing long jump (cm)	$135.9\pm 20.6^{b,c}$	$143.2\pm 19.9^a$	$145.9\pm 21.7^a$
20 m run test (sec)	$4.39\pm 0.37^{b,c}$	$4.10\pm 0.27^a$	$4.09\pm 0.26^a$
Illinois agility run test (sec)	$22.6\pm 1.8^{b,c}$	$21.4\pm 1.2^{a,c}$	$20.6\pm 1.4^{a,b}$

## REFERENCES

- BAILEY, D. A., MALINA, R. M., RASMUSSEN, R. L., 1978,** *The influence of exercise, physical activity, and athletic performance on the dynamics of human growth. In: Human growth 2: Postnatal growth*, F. Faulkner (ed.), Newyork: Plenum Press, 475-505.
- BORER, K. T., 1995,** *The Effects of Exercise on Growth*, Sports Med; 20, 375-397
- CRONIN, J. B., HANSEN, K. T., 2005,** *Strength and Power Predictors of Sports Speed*, J Strength Cond Res; 19, 349-357
- LIDOR, R., GAL, Z., 2010,** *Physical characteristics and physiological attributes of adolescent volleyball players: A review*, Pediatr Exerc Sci; 22, 114-134.88.
- LIDOR, R., HERSHKO, Y., BILKEVITZ, A., et al, 2007,** *Measurement of Talent in Volleyball: 15-month Follow-up of Elite Adolescent Players*, J Sports Med Phys Fitness; 47(2):159-68.
- LITTLE, T., WILLIAMS, A. G., 2005,** *Specificity of Acceleration, Maximum Speed and Agility in Professional Soccer Players*, J Strength Cond Res; 19, 76-78.
- MALINA, R. M., 1994,** *Attained Size and Growth Rate of Female Volleyball Players Between 9 and 13 Years of Age*, Pediatr. Exerc. Sci.; 6, 257-266.
- MELROSE, D. R., SPANIOL, F. J., BOHLING, M. E., et al, 2007,** *Physiological and Performance Characteristics of Adolescent Club Volleyball Players*, J Strength Cond Res; 21, 481-486.
- PROKOPEC, M., REMENAR, M., ZELEZNY, J., 2003,** *Morpho-physiological Characteristics of Young Female Volleyball Players*. Papers Anthropol; 12:202-218, 2003.
- THEINTZ, G. E., HOWALD, H., WEISS, U., et al, 1993,** *Evidence for a Reduction of Growth Potential in Adolescent Female Gymnasts*, J Pediatrics; 122, 306-313.
- ROWLAND, T. W., 2005,** *Children's exercise physiology*, Human Kinetics, 2nd Edition, Champaign, USA.
- STAMM, R., STAMM, M., KOSKEL, S., 2005,** *Combined Assessment of Proficiency in the Game, Anthropometric Variables and Highest Reach Test Results in a Body Build Classification at Girls' Youth European Volleyball Championship 2005 in Tallinn*, Papers Anthropol; 14:333-343.
- YOUNG, W. B., JAMES, R., MONTGOMERY, I., 2002,** *Is Muscle Power Related to Running Speed with Changes of Direction?*, J Sports Med Phys Fitness; 42, 282-2
- VESCOVI, J. D., McGUIGAN, M. R., 2008,** *Relationship Between Sprinting, Agility, and Jump Ability in Female Athletes*, J Sports Sci; 26(1): 97-107.

## COMPARISON OF SOME PERFORMANCE VARIABLES ACCORDING TO AGE GROUP OF 10-13 YEAR OLD CHILDREN SELECTED WITH TALENT SEARCHING METHOD IN ATHLETICS

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### ABSTRACT

#### Purpose

The purpose of this study was to determine and to compare some performance variables of 10-13 year old children who were selected with talent searching method in athletics according to age group.

#### Methods

Top 10% of children were selected to the athletics at their age group according to the normative study in Ankara (Pekel H. A., 2007). 147 children (30 girls & 18 boys at 10-year-old, 14 girls & 24 boys at 11-year-old, 11 girls & 22 boys at 12-year-old, 12 girls & 16 boys at 13-year-old) were volunteered to participate in this study. Each subject performed flexibility, 30 m run test, standing long jump, and Illinois agility run test.

#### Results

As the age increases, the body height and body weight increase with it. In boys, there was significant difference in 30 m sprint performance between age group. Although there were not significant differences in jump and agility performance, the improvement was found with age increasing in boys children. On the other hand 11-year-old girls group have better performance values than 12-year-old girls group in all performance tests.

#### Conclusions

Body height, body weight, jump, sprint and agility performance improvement was observed in parallel with age increasing. For further study, children's maturation status should also investigate whether this improvement would effect from maturation.

**KEYWORDS:** Children, talent searching, athletics

### PURPOSE

Talent identification is a serious component of many sports, and a scientific systematic approach continues to elude recruitment officers (D. T. Pearson et al, 2006). Talent in sport is identified by characteristics that are at least partially genetically determined, affected by numerous environmental conditions and difficult to determine accurately (B. C. Elliot et al, 1989). Furthermore, talent in adolescents is recognised within on interaction of innate abilities, demonstrations of mature play patterns at an early age and demonstrations of highly sport-specific skills (M. J. A. Howe et al, 1998).

Many sports scientists are interested in talent searching and talent identification to get the top level achievement in sports. They focus on this area and study the fundamental requirements of talent search. One of the most important fundamental condition is to determine the talented children as early age as possible using the scientific methods and to orient them the appropriate sport branches (M. Yalçiner, 1993).

In order to identify sportive talent, it is necessary to determine the form of the tests used to conduct measurements and how evaluation will be performed. The requirements for each sports event must be ascertained in order to determine what will be measured, and the method to be used to establish evaluation standards must be determined before the process of evaluation is started (B. G. Ko et al, 2003). Consequently, normative studies about talent searching play a very important role for each country and they should categorized according to each age group in children.

Talent searching consist of many different studies and periods in order to find more children and youth who are ready to start the specific children and youth training or a general education in sports (K. Karl, 2001). In athletics, these periods divided in to three stages: (a) Basic selection: Consisting of 8-10 age group (b) Pre selection: Consisting of 10-12 age group (c) Final selection: Consisting of 13-14 age group (N. Candan et al, 1996, K. Karl, 2001, Y. Sevim, 2002). In pre-selection period, as many as

possible children should be included and tested for many times (S. Muratli, 2003, Y. Sevim, 2002). While using the scientific tests to determine the talented children, children's maturation status should not be forgotten. Because, hormonal changes exhibit a profound effect on exercise physiology and performance (T. W. Rowland, 2005).

There are many studies about talent searching (B. C. Elliot et al, 1989, Australian Sports Commission, 1994, J. Loco et al, 2000, Hands, B., 2000, H. A. Pekel, 2007, R Vaeyens et al, 2009). But each sports branch requires different tasks and motor abilities, therefore these tests need to be applied according to sports' branches requirements and constantly renewed. Hence, the purpose of this study was to determine and compare some performance variables of 10-13 year-old children who had been selected with talent searching method in athletics according to age group.

## METHOD

Top 10% of children were selected to the athletics from their age group according to the normative study in Ankara (H.A.Pekel, 2007). 147 children (30 girls & 18 boys at 10-year-old, 14 girls & 24 boys at 11-year-old, 11 girls & 22 boys at 12-year-old, 12 girls & 16 boys at 13-year-old) were volunteered to participate in this study and the informed consent were taken from all parents. Body height and weight were measured before the tests. Each subject performed flexibility, 30 m run test, standing long jump, and Illinois agility test. The statistical analyses were performed using the Sigma Plot 11.0 (Systat Software Inc). Kruskal Wallis one way analysis of variance on ranks was applied to ascertain any differences between the groups. Statistical significance was set at  $p < 0.05$ .

## RESULTS

The highest increase of body height was at aged 12 year in girls (from  $146.8 \pm 3.9$  cm to  $152.5 \pm 5.9$  cm; 3.8%) and at aged 13

year in boys (from  $150.8 \pm 6.9$  cm to  $161.8 \pm 8.7$  cm, 7.2%) (Table 1). Girls were taller than boys until the age of 13-year-old. In both groups, the highest increasing of body weight was in 13-year-old (13% in girls, 25.2% in boys) (Figure 1).

Boys at each age group completed with higher increment percent of their performance values in all tests compared with the girls.

The body height, body weight, flexibility, 30 m and standing long jump test values in both boys and girls at age 10-11-12-year-old were higher than according to H. A. Pekel normative study in Ankara city.

## DISCUSSION AND CONCLUSION

Physical growth is the most important factor in the development of physical responses to exercise during the childhood years. Many studies addressed the importance of athletes' body height and body weight to achieve the highest sports performance level. During early childhood, a progressive, almost linear, increase is observed, with average values for boys slightly but consistently greater than for girls at puberty, the added influence of sex hormones on somatic growth causes an acceleration in boys (from increased levels of circulating testosterone) and plateau in girls as they reach sexual maturity (T. W. Rowland, 2005).

In parallel with the highest increase of body height in girls and boys at aged 12 and 13 years respectively, the flexibility was decreased in both groups at aged 12 year. This result associated with the puberty. Pubertal changes can constitute a background for development of motor abilities and flexibility as an important component of physical fitness. But, N. O. Kanbur et al (2005) found sexual maturation stages in pubertal period would not effective in determining the flexibility at their study. Body size and physical fitness vary dramatically in any group of 12-year-old children. That is because each child is on different curve of biologic growth. Some are early matures, some late

and some in between. Boys and girls who mature early are taller and heavier than their peers and demonstrate greater lean body mass. They tend to perform better on motor tasks and are likely to be more successful in sport competition (at least at that age) (T. W. Rowland, 2005). Therefore, our study's limitation is the lack of maturation status information of the subjects. The other important point is the biologic age. Because, biologic age may not be parallel with chronologic age. This situation also must not be missed out by trainers and scientists. On the other hand, De Ste Croix et al (2002) studied the effects of age, body size, and sexual maturation on the development of isokinetic knee extension and flexion using multilevel modelling. Forty one subjects (20 boys and 21 girls) were studied on eight occasions over a four-year period, beginning when they were  $10 \pm 0.3$  years old. Both stature and mass were found to be significant predictors of both peak knee extension and flexion, but once these variables were accounted for in the analysis, age and sexual maturation did not contribute peak knee strength.

J. Loco et al (2000) reported the existence of several periods in motor performance status in 10-17-year-old Estonian girls: 1) The biggest differences in the mean results of the tests on motor abilities occurred between ages 10-11, 11-12, and 12-13 which coincide with the biggest differences in height and weight at the same age. 2) The differences in the mean results of most tests on motor abilities stabilized between the age groups of 13 and 14. The mean results of 14-year-old girls were lower in some tests compared to the results of 13-year-olds. (This result shows similarity to our findings). 3) The positive differences in the mean results remained between the age groups of 14-15 and 15-16. 4) The final stabilization of motor abilities occurred at the age of 16-17. 11-year-old girls have better performance values than 10 and 12-year-old girls. Consequently, it could be said this group is more talented than older. One of the aims of talent searching is to find more

talented generation, so it could be said this study accessed to the aim. In conclusion, body height, body weight, jump, sprint and agility performance improvement was observed in parallel with age increasing. For further study, children's maturation status should also be investigated whether this improvement would effect from maturation.

## REFERENCES

- AUSTRALIAN SPORTS COMMISSION, 1994, Norms for Sports Related Fitness Tests in Australian Students Aged 12-17 Years, Belconnen, ACT, Australian Sports Commission**
- CANDAN, N., DÜNDAR, U., 1996, Atletizm teorisi, Bağırğan Yayinevi, 1. Baskı, Ankara.**
- DE STO CROIX, M. B. A., ARMSTRONG, N., WELSMAN, J. R. et al, 2002, Longitudinal Changes in Isokinetic Leg Strength in 10-14-Year-Old, Ann Hum Biol; 29, 50-62.**
- ELLIOT, B. C., ACKLAND, T. R., BLANKSBY, B. A., et al, 1989, Profiling Junior Tennis Players Part I: Morphological, Physiological and Psychological Normative Data, J Sci Med Sport; 21(3): 14-21.**
- HANDS, B., 2000, Fitness and motor skill levels of Western Australian primary school children, Perth, WA: University of Western Australia.**
- HOWE, M. J. A., DAVIDSON, J. W., SLOBODA, J. A., 1998, Innate Talents: Reality or Myth, Behav Brain Sci; 21, 399-422.**
- KANBUR, N. O., DUZGUN, I., DERMAN, O., et al, 2005, Do Sexual Maturation Stages Affect Flexibility in Adolescent Boys Aged 14 Years? J Sports Med Phys Fitness; 45(1): 53-57.**
- KARL, K. (Translated by Hale Harputoğlu, Tanju Bağırğan), 2001, Sporda yetenek arama, seçme ve yönlendirme, Bağırğan Yayinevi, 1. Baskı, Ankara**



**KO, B. G., GU, H. M., PARK, D. H. et al, 2003, *The Construction of Sports Talent Identification Models*, Int J Appl Sports Sci; 15(2): 64-84.**

**LOCO, J., AULE, R., SIKKUT, T., et al, 2000, *Motor Performance Status in 10-17-year-old Estonian Girls*, Scand J Med Sci Sports; 10, 109-113.**

**MURATLI, S., 2003, *Çocuk ve spor antrenman bilimi yaklaşımıyla*, Nobel Yayınevi, Ankara.**

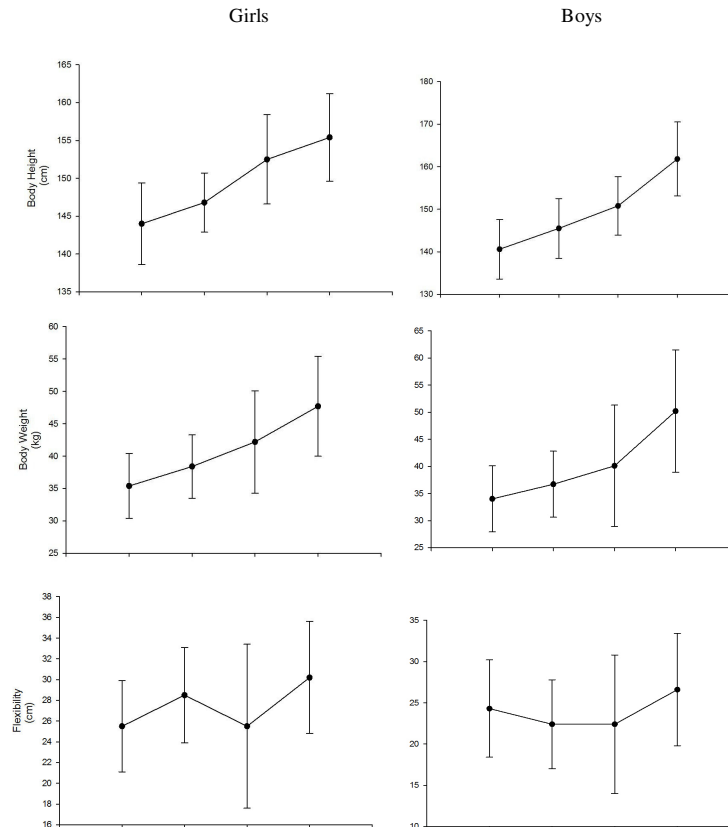
**PEARSON, D. T., NAUGHTON, G. A., TORODE, M., 2006, *Predictability of Physiological Testing and the Role of Maturation in Talent Identification for Adolescent Team Sport*, J Sports Sci Med Sport; 9, 277-287.**

**PEKEL, H. A., 2007, *Atletizmde yetenek aramasına bağlı olarak 10-12 yaş gruubu çocuklarda bazı değişkenler üzerinde normative çalışma (Ankara ili örneği)*, PhD Thesis, Gazi University, Institute of Health Sciences, Ankara.**

**ROWLAND, T. W., 2005, *Children's exercise physiology*, Human Kinetics, 2nd Edition, Champaign, USA**  
**SEVİM, Y., 2002, *Antrenman bilgisi*, Nobel Yayıncılık, 7. Baskı, Ankara.**

**VAEYENS R, GULLICH A, WARR CR, et al, 2009, *Talent Identification and Promotion Programmes of Olympic Athletes*, J Sports Sci; 27(13):1367-80.**

**YALÇINER, M., 1993, *Süratin mekanik ve fizyolojik özellikleri*, GSGM Yayınları, Yayın No: 118, Ankara**



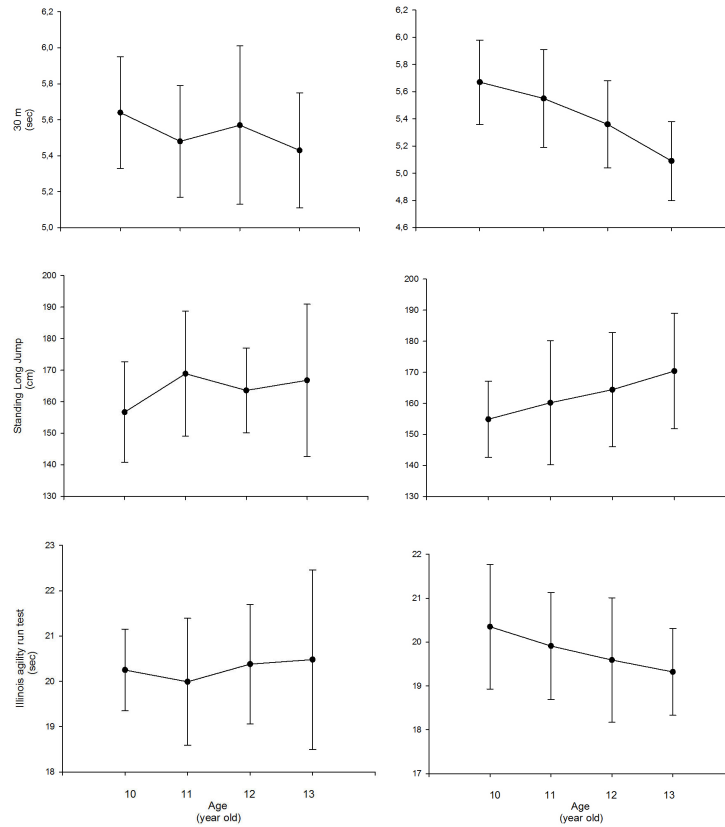


Figure 1. Some performance variables of 10-13-year-old girls and boys.

**Table 1.** Subjects' characteristics and their flexibility, sprint, jump, and agility performance according to age group of 10-13-year-old girls and boys.

	10-year-old (a)		11-year-old (b)		12-year-old (c)		13-year-old (d)	
	Girls (n=30)	Boys (n=18)	Girls (n=14)	Boys (n=24)	Girls (n=11)	Boys (n=22)	Girls (n=12)	Boys (n=16)
Body height (cm)	144.0±5.4 <sup>c,d</sup>	140.6±7.0 <sup>b,c,d</sup>	146.8±3.9 <sup>c,d</sup>	145.5±7.0 <sup>a,c,d</sup>	152.5±5.9 <sup>a,b</sup>	150.8±6.9 <sup>a,b,d</sup>	155.4±5.8 <sup>a,b</sup>	161.8±8.7 <sup>a,b,c</sup>
Body weight (kg)	35.4±5.0 <sup>f</sup>	34.0±6.1 <sup>d</sup>	38.4±4.9 <sup>f</sup>	36.7±6.1 <sup>d</sup>	42.2±7.9	40.1±11.2 <sup>d</sup>	47.7±7.7 <sup>b,b</sup>	50.2±11.3 <sup>a,b,c</sup>
Flexibility (cm)	25.5±4.4 <sup>f</sup>	24.3±5.9	28.5±4.6	22.4±5.4	25.5±7.9	22.4±8.4	30.2±5.4 <sup>a</sup>	26.6±6.8
30 m (sec)	5.64±0.24	5.67±0.31 <sup>d</sup>	5.48±0.31	5.55±0.36 <sup>d</sup>	5.57±0.44	5.36±0.32 <sup>a,d</sup>	5.43±0.32	5.09±0.29 <sup>a,b,c</sup>
Standing long jump (cm)	156.7±15.9	154.9±12.2	168.9±19.8	160.2±20.0	163.6±13.4	164.4±18.4	166.8±24.1	170.4±18.6
Illinois agility run test (sec)	20.25±0.9	20.35±1.42	19.99±1.40	19.91±1.22	20.38±1.32	19.59±1.42	20.48±1.98	19.32±0.99

## STUDY ON STAGE OF PHYSICAL COMPONENT DURING THE TRAINING PERIOD AT THE LEVEL OF A SENIOR TEAM – PROGRESUL BUCURESTI

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### ABSTRACT

**Purpose** The study tries to emphasize the role of physical preparation within a senior team in the context of playing a football match at a high level, in accordance with the requirements of modern football. Also, a correct approach of motric component leads to a development of motric qualities (speed, force, resistance) to superior values applicable both in sport and social-esthetical issues.

**Methods** The bibliographic study, the method of observation as well as statistical-mathematical one helped me to create a clearer image about the motric potential of players.

**Results** The parameters followed were improved, being included in the sphere of qualification “good”, as well as with excellent and satisfactory evolutions.

**Conclusions** The results reveal the fact that a special attention paid to motric component leads to a positive manifestation of the payers in the game and represents a new start point for the selection of new standards of physical component,

**KEYWORDS:** *football, training, physical preparation*

complex efforts at the level of requirements of superior stages of performance.

### INTRODUCTION

In current football, the physical preparation became a component of training as important as the other components of the preparation process namely (mainly): technical preparation, tactical as well as the theoretical and psychological one. The general physical preparation is meant to insure the body a good working capacity during effort, and the special one is concretised by:

- Movements which develop and perfect the physical qualities required by the particularities of technique and tactics of football game;
- Training specific exercises in the technique of the game, such as – running and specific jumps (C. Cernăianu, 2001)

Current football proved that it is not enough to have a very good technical/tactical preparation, to win a game if physical component is not paid special attention, especially that the effort of a player is high enough in a football game. The teams with a high technical/tactical level registered often negative results due to this “problem” concretized in receiving goals at the end of matches, leading to an unjust result in spite of the reality in the field. Due to the requirements of modern football, physical preparation became an extremely important component in the context of higher and higher requirements, with special sportive results. With a view to particularise the training of the player, the physical preparation must include: resistance, force, elasticity, speed (of execution, of reaction, of running, of explosion, of stopping, of acceleration). (M Rădulescu, M.Dima, 2009). In this respect, it is absolutely necessary that physical preparation plays a more important role in the process of preparation in order to have an “answer” as efficient as possible during the football game, but it especially represents a preparing step for training the body for

### *Hypotheses of the work*

This work leaves from the *hypothesis* that, by paying special attention to physical preparation specific to football player, we obtain:

- *a physical preparation which may facilitate more the performance of tasks during the game under technical/tactical aspect*
- *a development of motric qualities (speed, force, skill, resistance) to superior values*
- *a development of some moral – volitive and intellectual qualities and traits, of esthetical sense and social responsibilities*

### *Subjects, period and place of research*

The subjects of research are the players of the Group 1995 – Progresul Bucharest who have been supervised for around 2 years, on all components of training process. It must be stated that the team of players is mainly formed of junior players, born in 1992 and 1991; to these are added a few seniors, the physical component being only a transient/momentary one. The research was carried out on the sport base Cotroceni, during the first part of training period, namely during 05 - 08.01.2010 it continued in the mountains during the centralized period (cantonment) – 27.01.-05.02.2010 and ended on the sport base Cotroceni 15-19.02.2010. In the first part, one concentrated on the development of aerobic capacity, with long running and on different field, focusing on the volume of work, passing subsequently to shorter distances but with heavy charge; afterwards, we have increased the intensity on the same distances. It followed the cantonment which resumed in first

instance pure endurance, but on a much higher level, afterwards, there were performed „pieces” on short distances under more difficult conditions and on different field (low temperature, daps, snow, forest road). Under these conditions, it was performed the intermediary trial only as orientation level, opposite to initial and final trial. In the stage before cantonment, they worked in the force room twice a week focusing on superior body, afterwards, the cantonment represented a force training in the force room, continuing to work the same groups of muscles of superior body. On the force trials of superior body one attempted to assess certain specific parameters namely: abdomens, flotations, bar tractions. For force trials, I tried to assure a development of upper body, especially because this component became almost vital in the football game. In this respect, the results were significant, especially if we consider that a great part of them are still juniors (17-18 years) and they have not worked specifically until currently but very little.

#### *Trials of control*

*In order to deal with physical problems we have set forth the following control trials:*

1. **Cooper test – 12 minute** – represents a somehow difficult test which shows the level of preparation of aerobic/anaerobe component ( resistance on speed)- fair enough. The intermediary testing was performed on different field, with snow and slopes of 30 degrees, on forest road. The final trial was performed on athletic field under standard conditions, each of them running as much as possible during 12 minutes .
2. **2000m** - running on different field, with snow and daps with a slope of 30 degrees, on forest road. The final trial was performed on athletic field under standard conditions. The maximum time accepted with the qualification excellent 9.00min
3. **1000m** – running on different field, with snow and daps with a slope of 30 degrees, on forest road. The final trial was performed on athletic field under standard conditions. The final trial was performed on athletic field under standard conditions. The maximum time accepted was of 4.00min.

#### **INTERPRETATIONS OF RESULTS**

The best results obtained by the players of Progresul Bucharest team are included in the category of good and very good results, although the excellent ones were rare. Leaving from the idea that however the profess performed is a relative one, we may say that the parameters registered are good for a senior team of 4<sup>th</sup> League. Taking each parameter separately, we may say that some players have obtained considerable values the others being included in the average of the team.

On **Cooper test**, the average on final trial, under normal conditions of performance, was of

4. **100m flat** – under the same conditions as on 50 m flat. The maximum time accepted was of 12.2sec.
5. **50m plat** – when we had 3 trials (initial, intermediary and final), with the amendment that the intermediary trial was performed in the mountains in cantonment at Voineasa, on flat forest road and on snow. The maximum time accepted was of 6.4sec.
6. **Abdomen** – there were registered values at the beginning of training period, in cantonment and after cantonment during the final trial. There were registered correct executions for a period of 30 seconds (the performer has to touch the floor with the back)
7. **Flotations** – the same situation as for abdomens – there were registered correct executions for a period of 30 seconds (the performer has to bend the arms on 90 degrees)
8. **Bar tractions** the same situation as for abdomens - there were registered correct executions for a period of 30 seconds (the performer has to start with extended arms and to raise the chin over the fixed bar)

#### *Methods of research used*

We have elaborated this paper grounding on a range of methods of research which play a very important role in the performance of a real study of the team on this level of performance. Among the methods used:

- **study of bibliography** – we have considered a range of manuals and specialised books of some coaches famous in practice and theory of football game
- **method of observation** – we have watched a range of games and trainings, performing records of registration for the matches played by Progress Bucharest, as well as protocols of observation on training
- **method of statistical-mathematical processing of data** – we have calculated the arithmetical average for each trial, comparing the results with the ones specific to physical trials of football players on the level of performance specific to 4<sup>th</sup> League.

3056m within 12 minutes, result considered good (over 3000m – good, over 3100m – very good, over 3200m – excellent), although there have been players with very good results (3130m,3120m,3150m).

On the trial of **2000m** the average of distance crossed was of T1 – T2 - T3 (10.54min.-10.13min.-9.35min.) interpreted as being good (under 9 minutes – excellent); and here the results are non-homogenous, with results almost excellent (9.10minutes) as well as with satisfactory results (10.58 minutes).

On the trial of **1000m**, 4.22 represent the average which we consider to be very good (under 4

minutes – excellent). The majority of players respected the margin of 4 minutes, with slight exceptions (3.58min, as well as 5.26 min.).

The trial of **100m flat** had an average of the group on final trial of 12.28 sec, an average considered good, with a well enough progress on each player considering that the speed is genetically conditioned. The progress registered was of 0.20sec, being possible to result from the other motric qualities (force) . We may say the same for the trial of **50m plat** with an average of 6.38sec on last trial which represents an important progress opposite to initial testing, -0.14sec.

On force trials, the results were significant, especially if we consider that the majority of them are still juniors and did not work specifically until now but very little.

On **abdomens** the progress registered between T1 and T3 was of 6 units, reaching an average of 34 repetitions on last trial, being considered very good. On **floations** the evolutions of results from T1 to T3 was of

25.9 – 28.1 – 30.6 with a progress of 4.7 units, being interpreted as being good towards very good. **The tractions** on fixed bar presented the following evolution: 11.05 – 12.5 – 14.05; with a progress of 3 units. It is a pleasant surprise especially that the players did not work on this chapter; the results obtained were considered very good.

### CONCLUSIONS

The physical training in the context of current football, must insure to football player the “necessary energy” to deal with the game who began to be more and more “athletic”. What must be retained from this paper, is the fact that the approach of physical preparation must become an essential condition in the success of football performance. More the physical component is worked (without neglecting the other components of the preparation process) more the technical-tactical elements will be performed on high level, which leads to the increase of football show.

**Table 1 Table with results on trials of resistance**

No. crt	Name surname	Cooper test – 12 minutes				2000m				1000m			
		I	II	III	Progress	I	II	III	Progress	I	II	III	Progress
1	N.O.	2850	2960	3080	230m	10.36	9.36	9.12	1.24	5.52	5.05	4.26	1.26
2	L.A.	2780	2950	3100	320m	10.15	9.54	9.15	1.00	5.25	4.56	4.21	1.04
3	S.D.	2950	3000	3120	170m	10.16	9.52	9.10	1.06	4.51	4.20	4.12	0.39
4	I.G.	3000	3090	3150	150m	10.15	10.00	9.21	0.54	4.30	4.20	4.08	0.22
5	I. A.	2960	3000	3100	140m	10.32	10.05	9.26	1.06	5.00	4.36	4.15	0.45
6	G. P.	2820	2950	3070	250m	11.03	10.16	9.33	1.30	5.00	4.36	4.20	0.40
7	G. C.	2750	2950	3000	250m	11.01	10.21	9.45	1.16	5.00	4.48	4.19	0.41
8	G. F.	3000	3050	3150	150m	11.01	10.01	9.33	1.28	5.00	4.48	4.05	0.55
9	M. C.	2750	2900	3000	250m	11.58	11.03	10.05	1.57	6.00	5.17	5.03	0.57
10	D.T.	2850	2960	3020	170m	10.49	10.19	9.36	1.13	5.12	4.36	4.21	0.51
11	D. O.	2650	2800	2900	250m	12.45	12.20	10.58	1.47	6.15	5.34	5.26	0.49
12	A. A.	2880	2950	3080	200m	10.35	9.55	9.17	1.18	4.35	4.15	4.10	0.25
13	S. B.	3000	3050	3130	130m	10.26	9.50	9.19	1.07	5.27	4.42	4.18	1.09
14	B. D.	2960	3050	3100	140m	10.26	9.35	9.12	1.14	5.23	4.17	4.00	1.23
15	G. S.	2950	3000	3120	170m	10.27	9.43	9.22	1.05	5.08	4.23	3.58	1.10
16	B. A.	2700	2890	3020	320m	10.55	9.47	9.23	1.32	5.19	4.47	4.11	1.08
17	L. C.	2870	2950	3050	180m	10.28	9.50	9.21	1.07	5.09	4.32	4.16	0.53
18	S. B.	2830	2960	3050	220m	11.36	11.11	10.38	0.58	5.15	4.32	4.20	0.55
19	H. A.	2900	3000	3060	160m	10.37	9.48	9.14	1.23	5.00	4.39	4.12	0.48
20	A. V.	2650	2760	2850	200m	12.17	11.15	10.29	1.48	5.58	5.16	5.08	0.50
21	N.M.	2900	2950	3040	140m	10.38	9.54	9.25	1.13	5.05	4.40	4.25	0.40
<b>Media</b>		<b>2857</b>	<b>2960</b>	<b>3056</b>	<b>199m</b>	<b>10.54</b>	<b>10.13</b>	<b>9.35</b>	<b>1.18</b>	<b>5.15</b>	<b>4.42</b>	<b>4.22</b>	<b>0.53</b>

Table 2 Table with results on speed trials

No. Crt.	Name surname	100m				50m			
		I	II	III	Progress	I	II	III	Progress
1	N.O.	12.88	12.46	12.18	0.70	6.47	6.42	6.25	0.22
2	L.A.	12.45	12.39	12.21	0.24	6.41	6.35	6.28	0.13
3	S.D.	12.62	12.56	12.41	0.21	6.38	6.33	6.27	0.11
4	I.G.	12.63	12.57	12.48	0.15	6.81	6.76	6.62	0.19
5	I. A.	12.34	12.25	12.13	0.21	6.32	6.28	6.20	0.12
6	G. P.	12.98	12.77	12.71	0.27	6.68	6.57	6.51	0.17
7	G. C.	12.67	12.58	12.53	0.14	6.96	6.85	6.72	0.24
8	G. F.	12.22	11.84	11.79	0.43	6.55	6.51	6.42	0.13
9	M. C.	12.34	12.34	12.28	0.06	6.84	6.79	6.72	0.12
10	D.T.	12.76	12.68	12.59	0.17	6.76	6.72	6.65	0.11
11	D. O.	12.92	12.85	12.84	0.08	6.56	6.51	6.44	0.11
12	A. A.	12.34	12.10	12.06	0.28	6.43	6.39	6.29	0.14
13	S. B.	12.68	12.57	12.50	0.18	6.65	6.52	6.46	0.19
14	B. D.	12.26	12.08	12.04	0.22	6.43	6.37	6.27	0.16
15	G. S.	12.04	11.96	11.95	0.09	6.32	6.25	6.18	0.14
16	B. A.	12.08	11.91	11.86	0.22	6.22	6.19	6.12	0.10
17	L. C.	12.10	12.05	12.04	0.06	6.43	6.30	6.24	0.19
18	S. B.	12.30	12.27	12.24	0.06	6.44	6.36	6.29	0.15
19	H. A.	12.00	11.94	11.93	0.07	6.21	6.18	6.09	0.12
20	A. V.	12.55	12.50	12.31	0.24	6.63	6.55	6.49	0.14
21	N.M.	12.85	12.79	12.76	0.09	6.52	6.47	6.40	0.12
Media		12.48	12.35	12.28	0.20	6.52	6.46	6.38	0.14

Table 3 Table with results on force trials

No. Crt.	Name surname	abdomens				flotations				Bar tractions			
		I	II	III	Progress	I	II	III	Progress	I	II	III	Progress
1	N.O.	27	31	36	9	22	25	30	8	12	14	16	4
2	L.A.	28	34	39	11	25	27	31	6	11	12	14	3
3	S.D.	30	34	37	7	22	24	26	4	12	14	15	3
4	I.G.	27	29	33	6	26	28	32	6	11	12	13	2
5	I. A.	30	33	38	8	25	27	29	4	9	11	12	3
6	G. P.	29	32	38	9	28	29	32	4	10	12	13	3
7	G. C.	31	35	40	9	26	28	30	4	12	13	15	3
8	G. F.	29	32	35	6	25	27	30	5	11	13	14	3
9	M. C.	27	30	32	5	26	28	33	7	12	13	14	2
10	D.T.	28	31	35	7	27	29	31	4	9	10	12	3
11	D. O.	27	29	32	5	25	29	30	5	10	12	14	4
12	A. A.	31	32	33	2	26	27	30	4	11	12	14	3
13	S. B.	26	28	30	4	28	30	34	6	12	13	15	3
14	B. D.	29	33	35	6	26	29	31	5	14	15	16	2
15	G. S.	30	32	33	3	27	30	32	5	12	13	14	2
16	B. A.	29	31	32	3	28	31	32	4	11	12	14	3
17	L. C.	30	32	34	4	26	28	29	3	12	14	16	4
18	S. B.	28	30	33	5	25	28	30	5	11	13	14	3
19	H. A.	32	35	40	8	26	29	31	5	9	11	13	4
20	A. V.	26	29	31	5	27	29	30	3	10	12	13	3
21	N.M.	28	31	32	4	28	29	31	3	11	12	14	3
Media		28.6	31.5	34.6	6	25.9	28.1	30.6	4.7	11.05	12.5	14.05	3

Table 4 Average of results on trials on each trial as well as the progress registered

Nr. crt	trial	T1	T2	T3	Progress registered
1.	Cooper test -12 minutes	2857	2960	3056	199m
2.	2000m	10.54	10.13	9.35	1.18
3.	1000m	5.15	4.42	4.22	0.53
4.	100m	12.48	12.35	12.28	0.20
5.	50m	6.52	6.46	6.38	0.14
6.	abdomens	28.6	31.5	34.6	6
7.	flotations	25.9	28.1	30.6	4.7
8.	Bar tractions	11.05	12.5	14.05	3

## REFERENCES

CERNĂIANU, C. 2001, *Football. Manual of professional coach*, Rotech Pro Publishing House, 2001, Bucharest, 80-81.

RĂDULESCU, M., DIMA, M., 2009, *Football PRO. Problems of professional player*, Didactic and pedagogic publishing house, 2009, Bucharest, 49.

## THE INVESTIGATION OF ANXIETIES AND BRIEF SYMPTOM INVENTORY LEVELS OF FEMALE VOLLEYBALL PLAYERS

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### ABSTRACT

**The Purpose:** The aim of this study was to investigate the pre and post game state and trait anxiety levels and psychological symptoms of female volleyball players.

**Methods and procedures:** This study was carried out with 20 female volleyball players who participated in the games of Turkey Universities Volleyball Championships which was jointly organized in Kayseri by Turkey University Sports Federation and Erciyes University. Voluntary players completed a 20-item state and trait anxiety and a 53-item Brief Symptom Inventory before and after the game. Statistical analysis was carried out after the results of the questionnaire were evaluated, using Wilcoxon Rank Test which is a nonparametric test used to determine the significance of the difference between dependent groups. The significance level was determined as  $p < 0,05$

**Results:** No statistically significant difference was found between the pre and post game state and trait anxiety scores ( $p > 0,05$ ). Pre-game hostility, paranoid ideation and the index of additional items were found significantly high when the results of brief symptom inventory were compared ( $p < 0,05$ ). Furthermore, levels of pre-game somatization, obsessive-compulsive disorder, depression and anxiety disorder were observed to be higher than those of the post game's. There was a significant difference between the pre and post game index of the positive symptom total when global indices were compared ( $p < 0,05$ ). Although no statistical difference was observed in the levels of the general severity index and the positive symptom distress index, the pre-game results were found to be higher than the post-game results ( $p > 0,05$ ).

**Conclusions:** In conclusion, the game stress had an effect on high level of trait and state anxiety scores of female volleyball players who participated in our study. In addition, the game stress has caused significantly higher hostility, paranoid thoughts and positive symptom total levels. Although no significant differences were found, somatization, obsessive-compulsive disorder, general severity index and positive symptom distress index levels, it was thought that these psychological symptoms were also affected by the game stress.

**KEYWORDS:** Brief Symptom Inventory, Volleyball, Female Player, Anxiety

### INTRODUCTION

It has been recognized for many years that psychological factors, in particular anxiety, play an important role in competition (C.A. Lizuka, at al 2005) In sport psychology, anxiety refers to an unpleasant emotion which is characterized by vague but persistent feelings of apprehension and dread (E. Cashmore, 2002). A similar view of this construct was provided by J. Buckworth and R.K. Dishman (2002) who defined anxiety as a state of worry, apprehension, or

tension that often occurs in the absence of real or obvious danger.

One approach is that increases in competition anxiety, and particularly cognitive symptoms, always have a detrimental effect on performance. Another approach have suggested that the relationship with performance should be determined at a more individual level and that athletes possess optimal levels or zones of anxiety within which their performance will be maximized. A third perspective is based on the

principle that high levels of anxiety may be interpreted in a positive way and actually benefit sport performance ( B.W. Brever, 2009).

The anxiety distinction has been drawn by psychologists between state anxiety and trait anxiety. According to C.S. Spielberger (1966), state anxiety may be defined as subjective, consciously perceived feelings of tension and apprehension whereas trait anxiety refers to a general disposition among people to feel anxious in certain environmental situations. Applied to sport, the concept of state anxiety may be used to describe situations in which an athlete's feelings of tension may change during a match. On the other hand, a player who scores highly on trait anxiety may feel pessimistic most of the time. Athletes who display a high degree of trait anxiety are more likely to interpret sport situations as threatening than are less anxious counterparts (A.P. Moran, 2004).

In addition, competition stress may cause different psychological symptoms on the athletes. This is the important factor of identification these symptoms for improve the athletic performance and cope with stress of athletes.

Although the studies in the literature on anxiety levels of athletes found to be common, the effects of competition stress on psychological symptoms are restricted.

The aim of this study was to investigate the pre and post game state and trait anxiety levels and psychological symptoms of female volleyball players.

## METHODS

This study was carried out with 20 female volleyball players who participated in the games of Turkey Universities Volleyball Championships which was jointly organized in Kayseri by Turkey University Sports Federation and Erciyes University. At first, the identity information of the volunteers who participated in the study were recorded. Afterwards, State Anxiety (SA), Trait Anxiety (TA) and Brief Symptom Inventory (BSI) questionnaires were delivered to answer pre-game at rest and post-game in a gym environment. Answered forms were received one day later.

State anxiety, trait anxiety and BSI results were evaluated with using special calculation methods.

### State Anxiety:

Respondents rank each feeling item on a 4-point scale ranging from 1 (never) to 4 (always). Respondents answer to this interval for each question. In the questionnaire 1,2,5,8,10,11,15,16,19 and 20th items are reverse expressions. The others items are direct expressions. The points respondents give for each question are summed to find reverse and direct expressions. The total point of reverse expressions is subtracted from the total point of direct expressions. Finally, 50 point is added to the obtained score. This result is state anxiety score.

### Trait Anxiety:

Respondents rank each feeling item on a 4-point scale ranging from 1 (almost never) to 4 (almost always). Respondents answer to this interval for each question. In the questionnaire 21,26, 27,30,33,36 and 39th items are reverse expressions. The others items are direct expressions. The points respondents give for each question are summed to find reverse and direct expressions. The total point of reverse expressions is subtracted from the total point of direct expressions. Finally, 35 point is added to the obtained score. This result is trait anxiety score.

### Brief Symptom Inventory:

The Brief Symptom Inventory (BSI) was used to identify of psychological symptoms. BSI consist of 53 items covering 9 symptom dimension: Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety Disorder, Hostility, Phobic Anxiety, Paranoid Ideation, Psychoticism and three global indices of distress which Global Severity Index, Positive Symptom Distress Index and Positive Symptom Total. The global indices measure current or past level of symptomatology, intensity of symptoms and number of reported symptoms (L.R. Derogatis, 1999).

Respondents rank each feeling item on a 5-point scale ranging from 0 (not at all) to 4 (extremely). Rankings characterize the intensity of distress during the past seven days.

The items comprising each of the 9 primary symptom dimensions are as follows:

Somatization: Items 2,7,23,29,30,33 and 37

Obsessive-Compulsive Disorder: Items 5,15,26,27,32 and 36,

Interpersonal Sensitivity: Items 20,21,22 and 42

Depression: Items 9,16,17,18,35 and 50,

Anxiety Disorder: Items 1,12,19,38,45 and 49

Hostility: Items 6,13,40,41 and 46,

Phobic Anxiety: Items 8,28,31,43 and 47,

Paranoid Thoughts: Items 4,10,24,48 and 51,

Psychoticism: Items 3, 14, 34,44 and 53.

Dimension scores are calculated by summing the values for the items included in that dimension and dividing by the number of items endorsed in that dimension (L.R. Derogatis, 1999).

The GSI is calculated using the sums for the nine symptom dimensions plus the four additional items not included in any of the dimension scores, and dividing by the total number of items to which the individual responded. The PST is a count of all the items with non-zero responses and reveals the number of symptoms the respondent reports experiencing. The PSDI is the sum of the values of the items receiving non-zero responses divided by the PST (L.R. Derogatis, 1999).

### Statistical analysis

Statistical analysis was carried out after the results of the questionnaire were evaluated, using Wilcoxon Rank Test which is a nonparametric test used to



determine the significance of the difference between determined as  $p < 0,0$  dependent groups. The significance level was

### Results

The pre and post game state and trait anxiety levels of female volleyball players who participated in our study are given

	n	Pre Game			Post Game			Z	p
		X ± SD	Min	Max	X ± SD	Min	Max		
State Anxiety	20	41,80 ± 11,91	26	65	42,45 ± 12,60	20	72	-0,70	0,48
Trait Anxiety	20	40,10 ± 6,74	24	52	40,85 ± 8,95	21	64	-0,06	0,95

Table 1. No statistically significant difference was found between the pre and post game state and trait anxiety scores ( $p > 0,05$ ).

	n	Pre Game			Post Game			Z	p
		X ± SD	Min	Max	X ± SD	Min	Max		
General Severity Index	20	0,73 ± 0,44	0,00	1,75	0,57 ± 0,55	0,00	2,56	-1,85	0,06
Positive Symptom Total	20	25,95 ± 12,55	0	45	21,00 ± 13,90	0	51	-2,04	0,04*
Positive Symptom Distress Index	20	1,35 ± 0,43	0,00	2,21	1,25 ± 0,55	0,00	2,66	-1,06	0,28

Table 1. The comparison of state and trait anxiety levels pre and post game

Table 2. The comparison of global indices pre and post game

\* $p < 0,05$

	n	Pre Game			Post Game			Z	p
		X ± SD	Min	Max	X ± SD	Min	Max		
Somatization	20	3,65 ± 3,31	0	14	2,95 ± 3,48	0	15	-0,95	0,34
Obsessive-Compulsive Disorder	20	6,05 ± 3,37	0	12	4,65 ± 3,87	0	16	-1,26	0,20
Interpersonal Sensitivity	20	2,50 ± 1,82	0	7	2,45 ± 2,87	0	13	-0,35	0,72
Depression	20	4,55 ± 3,42	0	12	3,85 ± 4,22	0	19	-0,82	0,40
Anxiety Disorder	20	4,05 ± 3,42	0	13	3,30 ± 3,31	0	14	-0,81	0,41
Hostility	20	5,05 ± 3,96	0	16	3,40 ± 4,01	0	18	-1,99	0,04*
Phobic Anxiety	20	2,05 ± 2,13	0	8	1,90 ± 2,53	0	10	0,00	1,00
Paranoid Thoughts	20	4,60 ± 3,21	0	10	3,10 ± 3,47	0	14	-2,16	0,03*
Psychoticism	20	3,20 ± 2,48	0	8	3,10 ± 2,67	0	10	-0,19	0,84
Additional Items	20	3,30 ± 2,51	0	8	2,05 ± 2,25	0	8	-2,00	0,04*

Table 3. The comparison of Brief Symptom Inventory sub-indices levels pre and post game

\*  $p < 0,05$

The pre and post game global indices values of female volleyball players who participated in our study are given Table 2. There was a

significant difference between the pre and post game index of the positive symptom total (PST) score ( $p < 0,05$ ). Although no statistical difference was observed in the levels of the

general severity index (GSI) and the positive symptom distress index (PSDI), the pre-game results were found to be higher than the post-game results.

The pre and post game brief symptom inventory sub-indices values of female Although no statistically significant difference was found, levels of pre-game somatization, obsessive-compulsive disorder, depression and anxiety disorder were observed to be higher than those of the post game. No statistically significant difference was found between pre and post game interpersonal sensitivity, phobic anxiety and psychoticism scores ( $p > 0.05$ ).

### Discussion

Competitive sport can make even the world's most successful athlete feel nervous. Many factors such as expectations, perfectionism, fear of failure, lack of confidence, induce feelings of anxiety in athletes (A.P. Moran, 2004).

The anxiety distinction has been drawn by psychologists between state anxiety and trait anxiety. Trait anxiety is a relatively fixed behavioral disposition. Some athletes are disposed toward some anxiety regardless of the quality or level of the challenge, many athletes confess to vomiting and other nauseous manifestations before a competition. These individuals tendency is to appraise situations as threatening. State anxiety is a less permanent condition and affects competitors intermittently, depending on their perception of the particular situation. It may subside, or increase, during the actual competition, or after exercise (E. Cashmore, 2008).

The range of 36-41 points state and trait anxiety levels were classified as high-level by N. Oner and A. Le Compte (1985). In this study, pre-game state ( $41.80 \pm 11.91$ ) and trait anxiety ( $40.10 \pm 6.74$ ) levels were found to be high. When the related literature examined, the similar studies were found parallel with our results for high level of pre-game trait and state anxiety (M.W. Passer 1983, T.K. Scanlan and R. Lewthwaite 1986, R.J.

volleyball players who participated in our study are given table 3. Pre-game hostility, paranoid thoughts and the index of additional items were found to be significantly high ( $p < 0.05$ ).

Brustad 1988, J.S. Raglin and M.J. Morris 1994).

It is widely believed that anxiety produces inefficient muscular movements in athletes. On the other hand, anxiety can induce physiological arousal and stimuli sympathetic nervous system especially to successful competitors. When we become aroused, our brain's reticular activating system triggers the release of biochemical substances like epinephrine and norepinephrine into the bloodstream so that our body is energized appropriately for action (A.P. Moran, 2004). The athletes who overcome their anxiety and keep their optimal level can change this situation from disadvantage to advantage by increasing their athletic performance. In this study, the athletes who participated in our study had high level of pre-game state and trait anxiety scores. In addition, the athletes lost the match which we observed for our study. We think that the reason for losing the match was that the athletes couldn't keep an optimal level of their anxiety and their athletic performance has been affected by this situation.

Many sport psychologists believe that athletes' levels of trait anxiety are important determinants of the amount of state anxiety which they are likely to experience in a given situation (A.P. Moran, 2004). The athletes who have high competitive anxiety perceive higher threat level in the competition (R. Martens, 1990). If the trait anxiety score increases, state anxiety score increases as well (B. S. Hale, et al 2002). In our study, it has been observed that high levels of state anxiety scores can be connected to high levels of trait anxiety scores.

Being unsuccessful in sport activities may result in higher state anxiety levels. Noyes observed that when the performance in athletes was poor, the anxiety levels of

athletes were increased (M.H. Basaran, 2009). We think that the reason for no decrease in state anxiety level after the game may be due to losing the game and, therefore, the responsibility they feel towards each other.

In this study, pre-game Positive Symptom Total (PST) level was found to be significantly higher than the post-game level. In addition, although no statistical difference was observed in the levels of the General Severity Index (GSI) and the Positive Symptom Distress Index (PSDI), the pre-game results were found to be higher than the post-game results. PST values were reported to be statistically significant in the results of the study with kick boxers and mountaineers, which is also parallel with our results (B. Coksevim, et al 2006, M.M. Mazicioglu, et al 2000).

The function of each of these global measures is to communicate in a single score the level or depth of symptomatic distress currently experienced by the individual. The GSI is the single best indicator of current distress levels and should be utilized in most instances where a single summary measure is required. The GSI combines information on the numbers of symptoms and the intensity of perceived distress. The PSDI is a pure intensity measure in a sense corrected for the numbers of symptoms. It functions very much as a measure of response style, communication whether the patient is augmenting or attenuating distress in his/her manner of reporting. The PST is simply a count of the symptoms which the patient reports experiencing to any degree. The PSDI and the PST are used in conjunction with the GSI to gain a more meaningful understanding of the clinical picture (L.R. Derogatis, N. Melisaratos, 1983).

We think that the significant PST value and the high levels of GSI and PSDI values which are not however statistically different show that female volleyball players are affected by game stress and exposure some psychological symptoms. These psychological symptoms are discussed below using investigate sub-indices of BSI.

In our study, pre-game Hostility, Paranoid Thoughts and Additional Items values were found to be significantly higher than post-game. Due to the limited number of relevant studies, an effective discussion can not be held.

Hostility is consist of some symptoms like nervousness and wobbliness, blaming others for current predicaments, getting angry, short temper, distrust, beating someone (B. Alver, 2009), frequent arguments and uncontrollable outbursts of temper (L.R. Derogatis, N. Melisaratos, 1983). The game stress had an impact on these psychological symptoms of female volleyball players who participated in our study. Because of the efforts to overcome the anxiety, hostility may come to the fore (M.M. Mazicioglu, et al 2000). We think that the reason of high level pre-game hostility derive from high levels of state and trait anxiety scores of athletes.

Paranoid thoughts are conceived as a mode of thinking. The primary characteristics of paranoid thought are projection, hostility, suspiciousness, centrality, fear of loss of autonomy (L.R. Derogatis, N. Melisaratos, 1983), skepticism, jealousy and blaming on other excessively (B. Alver, 2009). It is seen that the game stress had an impact on these psychological symptoms of female volleyball players who participated in our study. We think that the reason for high level of pre-game paranoid thoughts is high levels of state and trait anxiety scores of athletes.

In this study, although no statistical difference was observed, pre-game levels of somatization, obsessive-compulsive disorder, depression and anxiety disorder are higher than the values of post-game. Somatization reflects psychological distress arising from perception of bodily dysfunction. Complaints typically focus on cardiovascular, gastrointestinal, respiratory system (L.R. Derogatis, N. Melisaratos, 1983), loss of memory, chest pain, agoraphobia, poor appetite, felling uncomfortably warm or cold, body's going numb and tingling (B. Alver, 2009). Even though no statistical difference was found between the pre and post game

somatization score, the game stress had an effect on these somatic symptoms of female volleyball players who participated in our study. We think that their athletic performance has been affected by this situation. Obsessive-compulsive disorder is consist of some symptoms like involuntary, disturbing, unfamiliar to self, repeated thought that cannot get out of mind with conscious endeavors (obsession) to neutralize obsessive thoughts (compulsion) (B. Alver, 2009). In addition, difficulty in making decisions and trouble concentrating (L.R. Derogatis, N. Melisaratos, 1983). These psychological symptoms of female volleyball players who participated in our study may be affected by the game stress.

Depression is consist of some behaviors and symptoms such as grief, pessimism, misery, annoyance, reluctance, desperation, loneliness, negative feelings pertaining self, lack of concern instability. There are fatigue, lassitude, tiredness, as well as physical, biological and psychological complaints in case of depression (B. Alver, 2009). Although no statistical difference was found between the pre and post game depression score, the game stress had an effect on these depressive symptoms of female volleyball players who participated in our study. We think that these symptoms may be affected by high level of pre-game trait and state anxiety scores.

Anxiety disorder is a disturbing feeling emerges when a strong desire or motive is likely not to be achieved. It consist of fear, anxiousness, strain, nervousness, shaking, getting into panic, urination disorders, feeling of as asphyxiation, sweating, breathing excessively (B. Alver, 2009). We think that these psychological symptoms of female volleyball players who participated in our study may be affected by the game stress. Hence, we think that their athletic performance has been affected by this situation during the game.

In addition, no significant difference was observed in the interpersonal sensitivity, phobic anxiety and psychoticism. This situation shows that game stress is not effective on these symptoms of female volleyball players who participated in our study.

In conclusion, the game stress had an effect on high level of trait and state anxiety scores of female volleyball players who participated in our study. In addition, the game stress has caused significantly higher hostility, paranoid thoughts and positive symptom total levels. Although no significant differences were found, somatization, obsessive-**2005, Anxiety and Performance in Young Table Tennis Players**, Sports Science Research,;26(3) : 73-75  
**MARTENS, R., 1990, Successful Coaching**, Second edition, Leisure Press, Champaign, Illinois, 21  
**MAZICIOGLU, M.M., BASTURK M., CETINKAYA F., 2000, Investigation of Personality Profiles of Mountaineer: The Brief Symptom Inventory**, Clinical Psychiatry, 3: 61-66

compulsive disorder, general severity index and positive symptom distress index levels, it was thought that these psychological symptoms were also affected by the game stress.

## REFERENCES

- ALVER, B., 2009, An analysis on different variables of psychological symptoms in accordance with the sports activities of university students**, World Applied Sciences Journal, 6 (8): 1039-1045
- BASARAN, M.H., TASGIN, O., SANIOGLU, A., TASKIN, A.K., 2009, Examination of the level of state-trait anxiety of athletes according to some variables**, Journal of Institute for Social Sciences University of Selcuk, 21: 533-542
- BRUSTAD, R.J., 1988, Affective outcomes in competitive youth sport: The influence of intrapersonal and socialization factors**. Journal of Sport and Exercise Psychology, 10: 307-321
- CASHMORE, E., 2002, Sport psychology: The key concepts**. London: Routledge.
- CASHMORE, E., 2008 Sport and exercise Psychology: The Key Concepts**, Second Edition Routledge, USA, 36
- COKSEVIM, B., SARITAS, N., KAYA, M., PEPE, O., 2006, The results of pre and post game state-trait anxiety levels of kick boxers**, 9. International Sports Science Congress Mugla/Turkey
- BUCKWORTH, J., DISHMAN, R.K., 2002, Exercise psychology**. Champaign, IL: Human Kinetics, 116
- BREVER, B.W., 2009, Sport psychology: Handbook of Sports Medicine and Science**. Wiley-Blackwell, USA, 32
- DEROGATIS, L.R., N. MELISARATORS., 1983, The Brief Symptom Inventory: An Introductory Report**, Psychological Medicine, 13: 595-605
- DEROGATIS, L.R., 1999, The Brief Symptom Inventory-BSI administration, scoring and procedures manuel-II. USA**, Clinical Psychometric Research Inc.
- HALE, B. S., KOCH, K. R., RAGLIN, J. S., 2002, State anxiety responses to 60 minutes of cross training**, British Journal of Sports Medicine, 36: 105-7
- LİKUZA, C.A., MARİNOVIĆ W., MACHADO A.A., VİLANI L.H.P., MORAN, A.P., 2004, Sport and Exercise Psychology: A Critical Introduction**. Routledge, USA, 73,65
- ONER, N., LE COMPTE A., 1985, The Handbook of Trait-State Anxiety Inventory**. Bogazici Publishing, Istanbul
- PASSER, M.W., 1983, Fear of failure, fear of evaluation, perceived competence and selfesteem in competitive-trait-anxious children**, Journal of Sport Psychology; 5: 172-188

RAGLIN, J.S., MORRIS M.J., 1994, *Precompetition anxiety in women volleyball players: a test of ZOF theory in a team sport*, British Journal of Sports Medicine, 28(1), 47-51

SCANLAN, T.K., LEWTHWAITE R., 1986, *Social Psychological aspects of competition for male*

*youth sport participants: IV. Predictors of enjoyment*. Journal of Sport Psychology, 8: 25-35

SPIELBERGER, C.S., 1966, *Theory and research on anxiety*. In C.S. Spielberger (Ed.), *Anxiety and behavior*. New York: Academic Press, 17

## DEVELOPMENT OF BACK LEVEL MUSCULAR STRENGTH UNDER ENDURANCE CONDITIONS IN PERFORMANCE BODYBUILDING

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### ABSTRACT

**Premises.** The bodybuilding is the sport practiced by the persons who intend to develop a proportioned body and a musculature massive and symmetrical as much as possible, but to reduce drastically the fat layer under the skin in the same time. With this aim in view we have considered that an efficient use of the training method by „giant sets” for the back strength development will contribute to the muscular strength development under endurance conditions, to the contouring of the muscular groups involved in the effort and to the diminution of the body weight.

**Method.** That is why we decided to organize a study of case within the „Tonik Fitness Club” of Bucharest, along a one year long training mezzo-cycle period (December 2009), four training sessions a week, with only one subject aged 34. The athlete’s evolutions were recorded at each workout for back strength, by means of the statistical-mathematical method and of the anthropometrical measurements and control trial results graphical representation method.

**Results.** The results of the anthropometric measurements make evident a decrease of the waist and an increase of the thoracic amplitude at the final test. And the results of the control trials regarding the back musculature strength under endurance conditions, appraised by pull-ups and by tractions at the cable machine, prove an increase of the reps number at both trials. The growing of the back musculature strength was obtained thanks to an efficient use of the method by „giant sets” during the training sessions and by the observance of a proper diet, elements that lead to the increase of the muscular mass and to the weight loss.

**Conclusions.** The correct use of the methodic procedure for the muscular strength development under endurance conditions at the back level during the body building training sessions lead to an increase of the muscular strength and of the muscular mass. The efficient utilization of the procedure by “giant sets” during the back strength training sessions contributed to the development of the muscular strength under endurance conditions and to the contouring of the muscular groups involved in the effort and to the decrease of the body weight.

**KEYWORDS:** body building, strength under endurance conditions, muscular mass, training.

### Introduction

The bodybuilding is the sport practiced by persons who intend to develop a well proportioned body and a massive and symmetrical musculature as much as possible, but in the same time they want to diminish as much as possible the fat layer under the skin (D. Hitru 2002). For this purpose are used exercises with dumb bells, bar bells, cables machines or other types of machines, but also aerobic exercises such as cycling, running, swimming, etc. The diet is also very important for a body builder training as it has a double purpose: to provide all needed to the increase of the muscular mass, but in the same time to reduce the fat layer (A.V. Voicu 1995).

The main *purpose* of the study is to point out the contents of the training means by using the methodical procedure for the muscular strength development under endurance conditions in the performance bodybuilding.

### Hypotheses of the study:

The correct use of the methodical procedure for the muscular strength development under endurance conditions at the level of the back, during the bodybuilding training sessions, will lead to the increase of the strength and of the muscular mass.

By an efficient utilization of the giant sets procedure during the training sessions meant to develop the back strength, the muscular strength under endurance

conditions will be developed, the muscular groups involved in effort will be defined and the body weight will decrease.

### Place of the study carrying out, subjects

In order to emphasize the contents of the training means by using the methodical procedure for the development of the muscular mass under endurance conditions at the back level in the performance bodybuilding, we have organized a case study within the Sports Club „Tonik Fitness Club” of Bucharest; the subject of the study aged 34 is a former amateur bodybuilder, with a motivation to participate in the local area or even national competitions for the future.

### Duration and stages of the study carrying out

The study was carried out along a training mezzo-cycle (December 2009), four times a week.

#### Stages of the study carrying out:

1. *Initial stage* (30.XI.09), the initial testing of the control trials and measurements.
2. *Fundamental stage* (1.XII-25.XII.09), application of the training program.
3. *Final stage* (28.XII.09), final testing of the control trials and measurements.

### Methods of research used as follows:

- *Bibliographic study* - theoretical documentation of the paper;
- *Observation method* – observation of the subjects’ progresses during the training;

- *Video method* – used for recording various exercises on the fitness machines;
- *Method of experimental study*– method used to confirm or invalidate the study hypotheses;
- *Statistical-mathematical method* – used for the calculation of the main statistical indices (Ş. Tüdöş, 1993);
- *Graphical representation method* – it contributed to a more efficient interpretation of the study results.

**Control trials and tests applied**

In order to render obvious the subjects’ progresses as for the pectoral musculature development, we have used the following tests and control tests:

**A. Anthropometrical measurements:**

1. Height (cm);
2. Weight (kg);
3. Thoracic perimeter (cm): inspiration, expiration and thoracic amplitude;
4. Arms perimeter (cm): right and left

**B. Control trials applied:**

1. Chest press with distanced hands grasp, a 80kg weight, assessed by maximum number of reps.
2. Pull-ups with distanced grasp, assessed by maximum number of reps.

**Training program applied for the development of the back strength under endurance conditions**

For the development of the back musculature strength under endurance conditions we have used the methodical procedure „Giant sets”. This procedure aimed to

**Results of the study**

the increase of the muscular mass and to the decrease of the body weight (fig.1).

“The giant sets” represent the training methodical procedure according to which two or several different exercises are made without any pause between them, for the same muscular group (D. Oprea, 2009).

1. Pull ups + Chest press
  - Series I-a: 8x + 8x40kg;
  - Series II-a: 8x + 8x48kg;
  - Series III-a:8x + 8x56kg;
  - Series IV-a:8x + 8x64kg.
2. Pull-ups + chest press + seated row
  - Series I-a:7x + 7x72kg + 8x33kg;
  - Series II-a:7x + 6x80kg; + 8x41kg;
  - Series III-a:6 ½ x + 5 ½ 88kg + 8x49kg;
  - Series IV-a:7x + 8x40kg + 8x57kg.
3. Pull ups – chest press – seated row + Smith tractions:
  - Series I:5x + 10x48kg + 5x65kg + 10x40kg;
  - Series II-a:4x + 10x56kg + 10x41kg + 10x48kg;
  - Series III-a: 5x + 8x64kg + 8x49kg + 8x56kg;
  - Series IV-a: 3 ½x + 6x72kg + 7x57kg+3+3x64kg.



Fig.1. Giant sets exercises

Table no.1. Anthropometrical measurements

No.	Full name	Age (years)	Weight (kg)		Height (cm)	Waist (cm)	
			Initial	Final		Initial	Final
1	R.V.	34	80	75	166	89	87.5

Table no.2. Anthropometrical measurements - thoracic perimeter

No.	Full name	Thoracic amplitude (cm)				Arms perimeter (cm)					
		Rest		Inspiration		Rest		Right		Left	
		Initial	Final	Initial	Final	I	F	Initial	Final	Initial	Final
1	R.V.	106	105	112	114.5	38	38.5	42	42.5	41.5	42

Table no.3. Results of control trials for back musculature strength-endurance

Full name	Pull-ups (max reps number)		Chest press (80kg)	
	Initial	Final	Initial	Final
R.V.	21	24	31	36

Table no.4. Back strength results (exercise no.1 Giant series)

E x e r	Pull-ups		Chest press	
	Reps.	Reps.	Reps.	Kg
	Series I-a	8	8	40
	Series II-a	8	8	48
	Series III-a	8	8	56

c i s e 1	Series IV-a	8	8	64
	Statistical indicators			
	X- arithmetical mean	8.0	8.0	53.0
	Am-average deviation	0.0	0.0	8.0
	s- standard deviation	0.0	0.0	8.94
	Cv %- var. coeff.	0.0	0.0	17.2
	r- Spearman correlation	0.50		
	t- Student,	0.82		
	t critical- 2.920, p-0.05			

Table no.5. Results for back strength (exercise no.2 Giant sets)

E x e r c i s e 2		Pull-ups		Chest press		Prone position row	
		Reps.	Reps.	Kg	Reps.	Kg	
	Series I	7	7	72	8	33	
	Series II	7	6	80	8	41	
	Series III	6.5	5.5	88	8	49	
	Series IV	7	8	40	8	57	
Statistical Indicators							
	X-arithmetic mean	6.88	6.63	70.0	8.0	45.0	
	Am-average deviation	0.19	0.88	15.0	0.0	8.0	
	s- standard deviation	0.22	0.96	18.2	0.0	8.89	
	Cv%- var. coeff.	3.15	14.49	26.03	0.0	19.88	

Graph no.1.Exercise no.1 Giant sets (Pull-ups + Chest press)

Graph no.2. Exercise no.2 Giant sets (Pull-ups + Chest press +seated row)

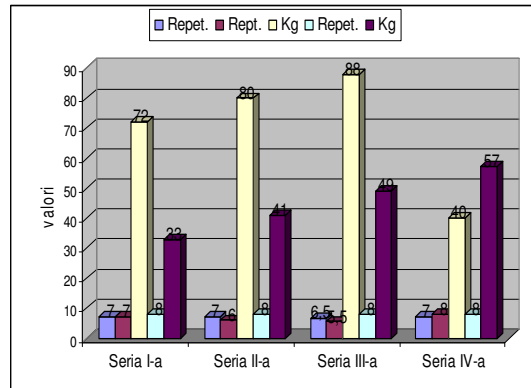
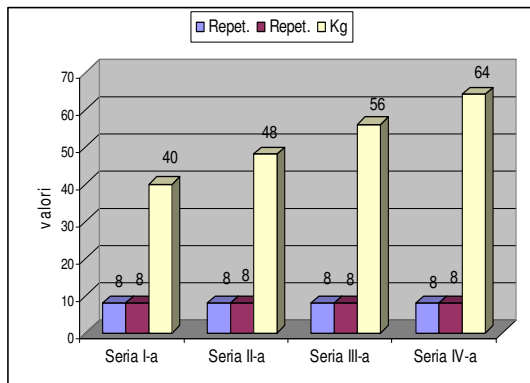


Table no.6. Correlation and significance of correlation between giant sets no.2 exercises

r- Spearman		Pull-ups	Chest press		Supine position row	
t- student		Reps	Reps	Kg	Reps	Kg
t critical- 2.920, p-0.05						
Chest press	Reps	0.80				
	Kg	1.89				
Supine position seated row		-0.40	-1.0			
	Reps	-0.62	*0.00			
	Reps	0.70	0.50	0.50		
	Kg	1.39	0.82	0.82		
		0.0	0.20	-0.20	0.50	
		0.0	0.29	-0.29	0.82	

Table no.7. Back strength results (exercise nor.3 giant series)

E x e r c i s e 3		Pull-ups	Chest press		Seated row, supine position grasp		Smith Traction	
		Reps	Reps	Kg	Reps	Kg	Reps	Kg
	Series I-a	5	10	48	5	65	10	40
	Series II-a	4	10	56	10	41	10	48
	Series III-a	5	8	64	8	49	8	56
	Series IV-a	3.5	6	72	7	57	6	64
Statistical Indicators								
	X-arithmetic mean	4.38	8.50	60.0	7.50	53.00	8.75	52.00
	Am-average deviation	0.63	1.50	8.0	1.50	8.00	1.25	8.0
	s- standard deviation	0.65	1.66	8.94	1.80	8.94	1.30	8.94
	Cv%- var. coeff.	14.85	19.51	14.91	24.04	16.88	14.85	17.20

Graph no.3. Exercise no.3 Giant sets  
(Pull-ups + Chest press + Seated row + Smith tractions)

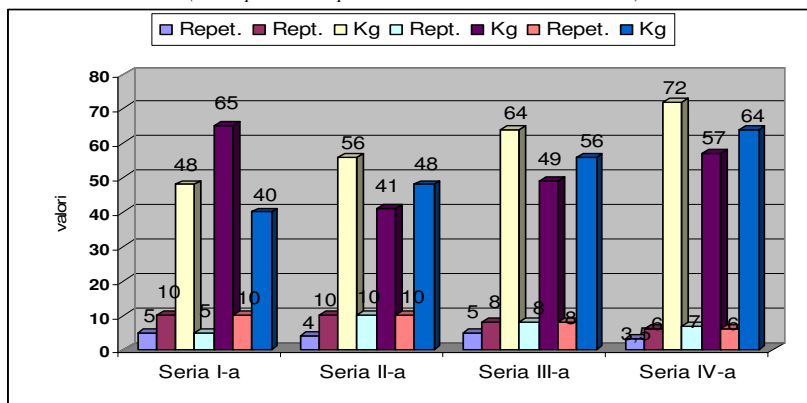


Table no.8. Correlation and significance of correlation

r- Spearman t- student t critical- 2.920, p<0.05		Pull-ups	Chest press		Seated row, supine position grasp		Smith tractions	
		Reps	Reps	Kg	Reps	Kg	Reps	Kg
Chest press	Reps	0.50 0.93						
	Kg	-0.55 -0.93	-0.85 -2.28					
Seated row, supine position	Reps	-0.15 -0.21	0.15 0.21	0.20 0.29				
	Kg	0.25 0.37	-0.05 -0.07	-0.20 -0.29	-1.0 ***			
Smith machine tractions	Reps	0.55 0.93	1.0 ****	-0.85 -2.28	0.15 0.21	-0.05 -0.07		
	Kg	-0.55 -0.93	-0.85 -2.28	1.0 ***	0.20 0.29	-0.20 -0.29	-0.85 -2.28	

**Interpretation of the study results**

1.The results of the anthropometrical measurements point out the fact that the subject of the study aged 34, with a height of 166 cm, had a weight of 80 kg at the initial testing and a decrease by 5 kg at the final test, while the waist had a value of 89 cm at the initial testing and a decrease by 1.5 cm at the final testing (table no.1).

- Thoracic perimeter at rest – it had a value of 106cm at the final testing and a decrease by 1 cm at the final testing; during the inspiration a value of 112cm was recorded at the initial testing and an increase by 2.5cm at the final testing.

By comparing both tests, the thoracic amplitude and the waist, it is obvious that a waist decrease and a

thoracic amplitude increase by 9.5 cm are recorded at the final test.

- Arms perimeter- the measurements had the following values: the right arm had an average size of 42 cm at the initial test and a growth by 0.5cm at the final testing, the left arm had an average value of 41.5cm at the initial testing and an increase by 0.5cm at the final testing, with an average value of 38cm at rest at the initial testing and of 38.5cm at the final testing (table no.2)

2. Results of the control trials (table no.3):

- Pull-ups with distanced grasp, evaluated by the maximum number of correct reps: the initial testing has 21 reps and the final testing has an increase by 4 reps.

- Chest press with a 80 kg weight, distanced grasp, assessed by the maximum number of reps: 31 reps are



recorded at the initial testing and an increase by 5 reps is recorded at the final testing.

**Back strength results**, table no.4, exercise no.1 giant sets, formed of pull-ups and chest press, performed one after another, without any pause; a number of 8 reps is maintained at both exercises and a progressive weight increase is recorded from a set to another, with an average value of 53kg and a moderate homogeneity.

As for the correlation of the number of reps with the weight used in the 4 sets of chest press exercises, a non-significant correlation is proved at  $p=0.05$ , with the  $t_{\text{calculated}}$  of 0.82 smaller than the tabular  $t_{\text{critical}}$  of 2.920.

Regarding the dynamics of the progressive increase of the effort loading at each exercise in giant set no.1, a conservation of the reps number for the pull-ups and the chest press is evident, in accordance with the increase of the load weight.

**Back strength results**, table no.5, exercise no.2, giant supersets, formed of pull-ups, chest press and seated rows, performed one after another, without any pause; the recorded values are the following ones: an average reps value of 6.88 at pull-ups, 6.63 at chest press and 70kg weight, while in the 4<sup>th</sup> series the weight was again 40kg; the seated row recorded an average value of 8 reps and 45kg weight.

An observation of the weight progressive increase dynamics at each exercise of the giant series no. 2 demonstrates a decrease of the pull-up reps number and a return of the weight at chest press and a progressive growth of the weights at seated row.

Regarding the correlation and the significance of the correlation of the giant supersets exercise no.2 (table no.6), an insignificant correlation is pointed out, whose values are smaller than the tabular  $t_{\text{critical}}$  of 2.920 and a significant correlation between the reps number and the weight used for the chest press, but with a negative value between these ones.

**Back strength results**, table no 7, giant supersets exercise no.3, formed of 4 exercises: pull-ups, chest press, seated rows and Smith tractions performed one after another, without any pause; the average values recorded are the following ones: 4.38 reps for the pull-ups, 8 reps and 60 kg weight for the chest press, 7.5 reps and 53kg weight for the seated row and 8.75 reps, 52kg weight at Smith tractions.

Regarding the correlation and the significance of the correlation of the giant supersets exercise no.3 (table no.8), there is a significant correlation of the chest press exercises and the Smith tractions as for the reps number and the load weight, with values higher than the tabular  $t_{\text{critical}}$  of 2.920; the other correlations are insignificant.

As for the dynamics of the progressive increase of the weights at each exercise during the giant set no.3, the following elements can be noticed: a decrease of the number of reps at the pull-ups, a progressive increase of the weight and the decrease of the number of reps at chest press, the return of the weight and the decrease of the number of reps at seated row and the diminution of the number of reps in conformity with the increase of the weight at Smith machine tractions.

### Conclusions

The results of the anthropometric measurements point out a diminution of the waist and an increase of the thoracic amplitude.

The results of the control trial, assessed by pull-ups and chest press prove an increase of the reps number at both trials.

Regarding the dynamics of the progressive growth of the effort load at each exercise of the giant sets, the following elements can be noticed:

- maintaining of the pull-ups and chest press reps number according to the increase of the load weight;
- decrease of the pull-up reps number and a return of the weight at chest press and a progressive increase of the weight at seated row;
- decrease of the pull-up reps number, progressive increase of the weight and decrease of reps number at the chest press, return of the weight and decrease of the reps number at the seated row and decrease of the reps number in conformity with the weight increase at the Smith machine tractions.

After a review of the effort dynamics during the giant sets, we can say that the correct use of the methodical procedure for the muscular strength development under endurance conditions at back level during the bodybuilding workouts lead to the growth of the muscular mass and strength.

Also, the efficient use of the procedure by giant sets during the back strength workouts had a contribution to the development of the muscular strength under endurance conditions, to the definition of the muscular groups involved in the effort and to the diminution of the body weight.

### REFERENCES

- HÎTRU, D., 2002, *Lecture Notes, Fitness and Bodybuilding*, ANEFS Bucharest, 12-14.
- OPREA, D., 2009, *Techniques of Increase of the Training Intensity*: in *Bodybuilding Fitness & Fight*. Magazine, Bucharest, no.6 (201), 14-15.
- TÛDÖŞ, Ş., 1993, *Elements of Applied Statistics*, Bucharest, 145-154.
- VOICU, A.V, 1995, *Bodybuilding*", Inter-Tonic Publishing House, Cluj-Napoca, 57-61.

## IMPROVEMENT OF THE INITIAL TECHNICAL TRAINING CONTENTS IN WOMEN'S ARTISTIC GYMNASTICS

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### ABSTRACT

**Premises.** The main goal of the training in the artistic gymnastics is the improvement of all possibilities of the body in order to achieve the performance, the high performance at the events held on dates fixed beforehand. To this effect, we have considered that an optimum relation of the general physical training and the technical training, reached through the selection of the most efficient specific means, will contribute to the improvement of the technical knowledge of the girls beginner gymnasts.

**Methods of research.** We decided to organize a study within the Sports Club during a period of 8 months, from October 2008 to May 2009. The subjects of the study were a group of 7 girls beginner gymnasts selected out of the whole training group. In order to find out the level of the gymnasts' training, evaluation tests of anthropometrical measurements and control trials were applied, in order to assess the muscular strength and joints mobility physical training and the technical training at apparatus: acrobatics, uneven parallel bars, balance beam and supported vaults. During the study, the method of observation was used: the gymnasts' evolution all along the training period was closely watched and the results obtained were processed and interpreted by means of the statistical-mathematical and graphical representation methods. For a more efficient contents of the beginner gymnasts' initial technical training, a training program was elaborated, which points out the contents of the means used within the artistic, technical and physical training.

**Results.** The results of the study emphasize the following practical-methodical aspects that are the basis of the technical training contents improvement at beginner gymnasts' level:

- the results of the somatic development prove a significant evolution of the anthropometrical measurements data with a poorer homogeneity as for the weight;
- the results of the physical training show significant differences of the control trials average scores and a good homogeneity at both tests;
- the results of the initial technical training point out significant differences at all apparatus, with a good homogeneity at both tests and a close connection to the physical training level of these ones.

**Conclusions.** Following up the conducted research we can confirm the following aspects:

- an optimum physical training of the girls beginner gymnasts influences on the efficiency of the technical elements needed to the initiation at each apparatus;
- the utilization of the physical training programs for each stage of the training improves the contents of the technical training;
- the assurance of an optimum relation between the general physical training and the technical training leads to the improvement of the technical resources of the girls beginner gymnasts.

**KEYWORDS:** gymnastics, artistic training, physical training, technical training.

### PREAMBLE

At the present moment, the artistic gymnastics reached a really high level so that the Code of Points modifications can no more be done, as it usually have happened after each one of the Olympic Games.

The artistic gymnastics is considered a limit-sport for the physical and psychical possibilities of its practicing athletes. By watching the large contests (World and European championships, Olympic Games), it can be noticed the very high level of gymnasts' training, this one entailing the more difficult selection of the best female gymnast (Grigore, V., 2001). As the specialists have stated and the experience has showed, a systematic training in gymnastics can be started from 5 to 6 years old. Thus it is emphasized the orientation towards a better basic training (a general one and a training for each apparatus separately), taking into account the technical contents extremely rich and various, the multitude of qualities needed to the assimilation of these movements, the multitude of

the problems related to the development of the future competitive female gymnasts, strong individual personalities (Vieru, N., 1997).

The main target of the training in artistic gymnastics is the improvement of all possibilities of the organism in order to achieve performances and high performances during the events held on dates determined beforehand (Potop V., 2008). The goal of the work is to demonstrate that by providing an optimum relation of the physical, choreographic and technical training, the beginner female gymnasts' initial training contents will be improved.

### Hypotheses of the Work

- An optimum level of the beginner gymnasts' physical training will influence upon the efficient learning of the technical elements needed to the initiation at each apparatus.
- The use of the physical training programs for each preparatory stage will lead to the improvement of the technical training contents.

An optimum relation of the general physical training and the technical training, ensured by the selection of the most efficient means, will improve the technical knowledge of the beginner female gymnasts.

#### **Place, subjects, duration**

The Gymnastics Department of the School Sports Club no.2 of Bucharest.

The study was carried out along a 8 months period, from October 2008 to May 2009.

The subjects of the study were a group of 7 beginner female gymnasts selected out of the whole group.

#### *Stages of the study carrying out:*

- Initial stage, 1- 12.IX.2008, initial testing of the trials and assessment of the technical elements learning at apparatus.
- Fundamental stage, October 2008 – April 2009, application of the technical and physical training programs.
- Final stage, 1-12.V.2009, final testing of the trials, assessment of the technical elements learning at apparatus.

#### **Research methods**

- Bibliographic study method,
- Experimental method;
- Observation method;
- Statistical method and graphical representation method.

#### **Applied trials and measurements**

I. Somatic development: Height (cm); Weight (kg); thoracic perimeter: inspiration, expiration and thoracic amplitude (cm).

II. Physical training assessed by trials, related to the muscular strength and joints mobility:

- Abdominal strength: stretched legs raise at 90° on the rib stall;
- Back strength: stretched legs raise from prone position on the gymnastics box
- Arms strength: arms bending and stretching (push-ups); hang with elbows bent, chin over bar at uneven parallel bars / high bar
- Legs strength: genuflexion with jump, simultaneously with forward arms raising up.
- Strength of scapulo-humeral joint, back and abdomen: prone support, holding the position.
- Mobility of the vertebral column: pushing into a bridge.
- Coxo-femoral mobility: forward split(right leg and left leg) and side split.
- Sense of balance– tiptoe walk on the beam, arms stretched laterally, dismount by deep stretched jump on a mat.

#### III. Technical training

1. Acrobatic training:

- *Forward-backward crouched roll on.*

- *Forward-backward roll on with legs astride.*

2. Training on beam:

- Forward walk on beam with leg balance; arms stretched laterally.

3. Training at uneven parallel bars

- Lateral motion on the lower bar from left to right and vice versa.

4. Training for vaults

- *For landing:* deep jump from the vaults table.
- *For jumping on the springboard* - 2-3 running steps, jump onto the springboard and vertical fly.

#### **Contents of the training means**

I. Artistic training

- walk; arched, acute and high running;
- gallop step;
- polka step;
- high step;
- forward, backward changed step;
- stretched somersault with 360° turning round;
- closed – open somersault;
- scissors jump;
- cat jump;
- sissonne jump;
- exercises at the wall horizontal bar, positions.

#### **II. Floor (acrobatic training)**

- acrobatic games and relay races;
- forward-backward and side roll-overs;
- forward-backward roll over (in crouching position, stretched legs astride and closed);
- pushing into a bridge;
- forward, right and left split;
- side split;
- handstand, falling into bridge position and stand up;
- slow forward – backward roll over;
- side roll over (cartwheel);
- returned cartwheel.

#### **III. Supported vaults**

Landing school :

- deep vaults;
- variants of vaults with jump onto springboard, landing.

School for the springboard jump:

- straight jumps onto springboard;
- with 2-3 running steps, jump onto springboard;
- vaults with landing backwards on the mats.

#### **IV. Beam**

- balance tiptoe walk with and without turning at the beam extremity and at beam halfway;
- high step;
- walk with balance of one leg;
- assemble straight jump;
- assemble sissonne;
- forward tucked overturning;
- two legs mounting in crouching position;
- dismount by simple somersault,

#### **V. Uneven parallel bars**

- games for adaptation to the apparatus;
- different hangs and supported positions;

- assisted: from hang position, handstand forward turning over on the low bar; - assisted: support on the low bar, backward swing, backward circle in supported position.

**RESULTS OF THE STUDY**Table no.1. **Results of anthropometric measurements**

Statistical Indices	Height (cm)		Weight (kg)		Thoracic perimeter (cm)					
	Initial	Final	Initial	Final	Expiration		Inspiration		Thoracic amplitude	
					Initial	Final	Initial	Final	Initial	Final
x	117	119.1	19.23	20.29	62.57	65.0	67.55	70.64	5.0	5.58
Am	4.0	3.84	2.29	2.10	2.49	2.36	2.86	2.33	0.47	0.55
s	4.66	4.42	2.45	2.30	2.87	2.66	3.17	2.64	0.69	0.59
Cv%	3.98	3.71	12.7	11.32	4.59	4.10	4.70	3.73	13.72	10.59
r	0.70		0.95		0.75		0.81		1.00	
t	2.19		6.76		2.54		3.12		23.59	

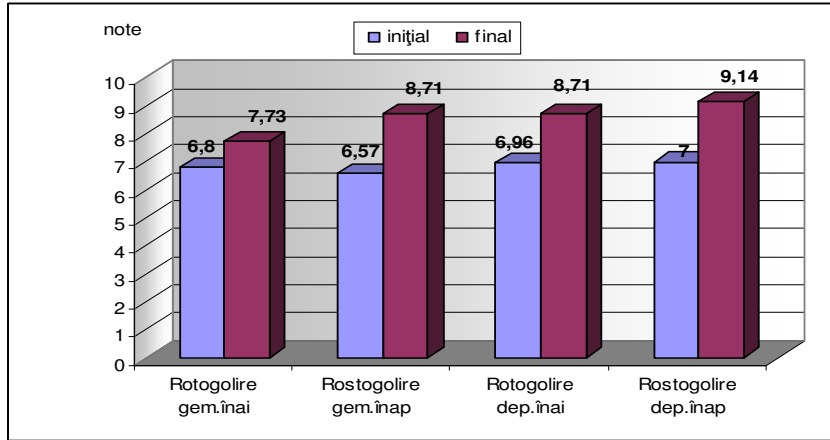
Table no.2. **Results of physical training**

Statist. Indices	Abdom. strength		Back strength		Arms str-pushups		Arms strgth-hold		Legs strength		Scap joint strngth	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
x	11.57	14.78	15.33	19.45	6.38	9.96	14.14	20.0	15.44	22.43	37.14	45.22
Am	1.92	2.02	1.93	1.69	0.75	1.26	1.88	2.18	2.27	2.78	4.45	4.86
s	2.26	2.25	2.16	1.83	1.00	1.61	2.23	2.30	2.59	3.33	5.41	6.0
Cv%	19.56	15.22	14.09	9.39	15.71	17.29	15.78	11.48	16.75	14.86	14.56	13.26
r	0.97		0.91		0.98		0.82		0.96		0.91	
t	9.47		4.93		11.67		3.22		7.23		7.23	

Table no.3. **Results of physical training - continued**

Statistical Indices	Spine mobility		Balance sense		Mobility-right split		Mobility-left split		Mobility-lat split	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
x	7.71	8.42	7.29	8.53	6.64	8.14	6.86	8.14	6.0	7.64
Am	0.44	0.55	0.61	0.58	0.46	0.33	0.33	0.33	0.07	0.46
S	0.55	0.59	0.70	0.70	0.48	0.47	0.47	0.47	0.27	0.48
Cv%	7.09	7.02	9.61	8.39	7.23	5.73	6.80	5.73	4.54	6.88
r	0.95		0.92		0.96		0.87		0.98	
t	6.55		5.24		7.23		3.87		11.67	

Table no.4. Results of technical training - acrobatics

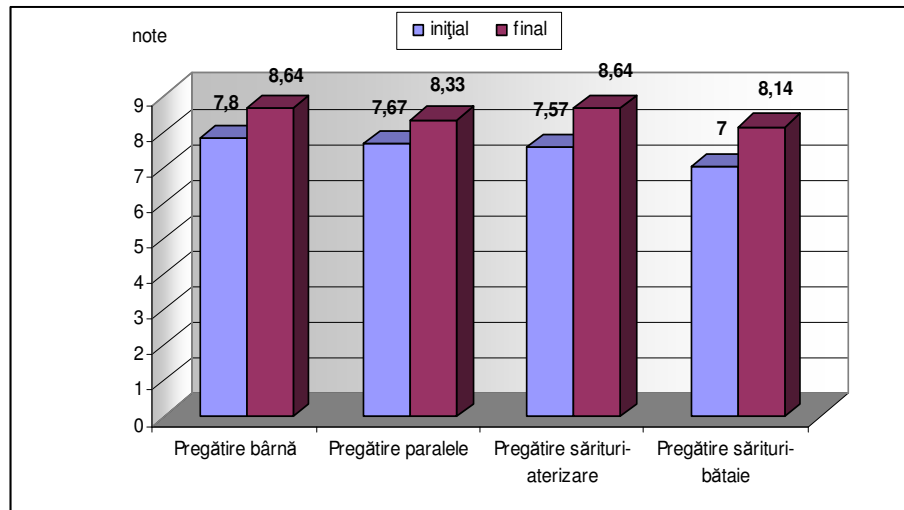


Graph no.1. Acrobatics technical training

Statistical Indices	Acrobatic training (scoring)							
	Forward crouch roll		Backward crouch roll		Forward roll astride		Backward roll astride	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
x	6.80	7.73	6.57	8.71	6.96	8.71	7.0	9.14
Am	0.64	0.40	0.49	0.61	0.17	0.44	0.0	0.33
s	0.75	0.45	0.49	0.70	0.36	0.55	0.0	0.47
Cv%	11.0	5.76	7.53	8.03	5.15	6.28	0.0	5.10
r	0.97		0.91		0.98		0.82	
t	9.47		4.93		11.67		3.22	

Statistical Indices	Beam training (scoring)		Uneven parallel bars (scoring)		Vaults training (scoring)			
	Walk with forwards leg balance		Side travel on low bar		Vault from table - landing		Jump onto springboard	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
x	7.80	8.64	7.67	8.33	7.57	8.64	7.0	8.14
Am	0.32	0.46	0.44	0.58	0.49	0.46	0.57	0.24
s	0.40	0.48	0.47	0.70	0.49	0.48	0.76	0.34
Cv%	5.13	5.56	6.15	8.39	6.54	5.56	10.8	4.24

Table no.5. Results of technical training - apparatus



Graph no.2. Technical training at apparatus

## Interpretation of study results

### 1. Interpretation of somatic development results

(table no.1):

- Height – the value at the initial testing is 117 cm and an increase by 2.1 cm at the final testing and insignificant differences at  $p > 0.05$ .
- Weight – the value at the initial testing is 19.23 kg with an increase by 1.06 kg at the final testing and significant differences at  $p < 0.01$ .
- Thoracic perimeter - Expiration – the value at the initial testing is 62.57 cm and an increase by 2.43 cm at the final testing and insignificant differences at  $p > 0.05$ .
- Thoracic perimeter - inspiration – the value at the initial testing is 67.55 cm and an increase by 3.09 cm at the final testing and significant differences  $p < 0,05$ .
- Thoracic amplitude – it has values of 5.0 cm at the initial testing and an increase by 0.58 cm at the final testing with significant differences at  $p < 0.01$ .

2. Interpretation of physical training results (tables no.2 and 3):

- Abdominal strength- at the initial testing it shows values of 11.57 reps and an increase by 3.21 reps at the final testing, with significant differences at  $p < 0,01$ .
- Back strength – it shows values of 15.33 reps at the initial testing and an increase by 4.12 reps at the final test with significant differences at  $p < 0.05$ .
- Arms strength – it has values of 6.38 reps at the initial testing and an increase by 3.58 reps at the final testing with significant differences at  $p < 0.05$ .
- Arms strength – it has values of 14.14 seconds at the initial testing and an increase by 5.86 seconds at the final testing, with significant differences at  $p < 0.05$ .

- Legs strength - it has values of 15.44 reps at the initial testing and an increase by 6.99 reps at the final testing, with significant differences at  $p < 0.01$ .

- Strength of scapulo-humeral joint – it shows values of 37.14 seconds at the initial testing and an increase by 8.08 seconds at the final testing, with significant differences at  $p < 0.01$ .

- Mobility of vertebral column – it shows values of 7.71 points at the initial testing and an increase by 0.71 points at the final testing, with significant differences at  $p < 0.01$ .

- Sense of balance – the initial testing shows values of 7.29 points and an increase by 1.24 points at the final testing, with significant differences at  $p < 0.01$ .

- Coxo-femoral mobility - it has values of 6.64 points at the initial testing and an increase by 1.5 points at the final testing, with significant differences at  $p < 0.01$ .

- Coxo-femoral mobility - it has values of 6.64 points at the initial testing and an increase by 1.28 points at the final testing, with significant differences at  $p < 0.01$ .

- Coxo-femoral mobility - it has values of 6.0 points at the initial testing and an increase by 1.64 points at the final testing, with significant differences at  $p < 0.01$ .

### 3. Interpretation of technical training results

1. Acrobatics training (table no.4 and graph no.1):

- Forward crouch roll– it has values of 6.80 points at the initial testing and an increase by 0.93 points at the final testing, with significant differences at  $p < 0,01$ .

- Backward crouch roll – it has values of 6,57 points at the initial testing and an increase by 2.14 points at the final testing, with significant differences at  $p < 0.01$ .

- Forward roll legs astride – it has values of 6.96 points at the initial testing and an increase by 1.75 points at the final testing, with significant differences at  $p < 0.01$ .

- Backward roll legs astride –the arithmetical mean has values of 7.00 points at the initial testing and an increase by 2.14 points at the final testing, with significant differences at  $p=0.05$ .

#### 2. Beam training

- Forward walk with leg balance - the arithmetical mean has values of 7.80 points at the initial testing and an increase by 0.84 points at the final testing, with significant differences at  $p=0.01$ .

#### 3. Training at uneven parallel bars

- Lateral travel on the low bar from left to right and vice versa - the arithmetical mean has values of 7.67 points at the initial testing and an increase of the arithmetical mean by 0.66 points at the final testing, with significant differences at  $p=0.01$ .

#### 4. Vaults training

- Landing - the arithmetical mean has values of 7.57 points at the initial testing and an increase of the arithmetical mean by 1.07 points at the final testing, with significant differences at  $p=0.05$ .

- Jump onto springboard - the arithmetical mean has values of 7.0 points at the initial testing and an increase of the arithmetical mean by 1.14 points at the final testing, with significant differences at  $p=0.01$ .

#### Conclusions

The beginner female gymnasts' training is achieved by the influence of the general physical training means, the initial technical training with the stress laid on the acrobatic and choreographic training, on the exercises from hang and support position and on direct or turned vaults.

Following up the conducted study it was found out that by providing an optimum relation of the physical, choreographic and technical training, the beginner gymnasts' initial training contents is improved.

The results of the study point out the following methodic – practical aspects that lie at the

bedrock of the technical training contents improvement at beginner female gymnasts' level:

- The results of the somatic development show a significant progress of the anthropometric measurements data with a poorer homogeneity at the weight.
- The results of the physical training point out significant differences between the average values of the control tests and a good homogeneity for both tests.
- The results of the initial technical training show significant differences at all apparatus, with a good homogeneity at both tests and a close relation with the physical training level of these ones.

The results of the study *validate* the proposed hypotheses, namely:

- An optimum physical training provided at the beginner female gymnasts' level influences upon the efficient learning of the technical elements needed to the initiation at each apparatus.
- The use of the physical training programs for each training stage improves the technical training contents.
- An optimum relation ensured between the general physical training and the technical training leads to the improvement of the beginner female gymnasts' technical knowledge.

#### REFERENCES

- GRIGORE, V., 2001**, *Artistic Gymnastics – Theoretical Bases of Sports Training*, Bucharest, “SemnE” Publishing House, 15-18
- POTOP V., 2008**, *Women's Artistic Gymnastics – Elements of Theory and Methods*. Bucharest, “BREN” Publishing House, 25-27
- VIERU, N., 1997**, *Gymnastic Sports Manual*, Bucharest, “Driada” Publishing House, 55-57

## **CORRELATIONS REGARDING THE INDICATORS RESULTED FROM THE EVALUATION OF THE VERTICAL TAKE-OFF, USING THE MODIFIED MIRON GEORGESCU BOARD**

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### **ABSTRACT**

This paper is the result of a research regarding the correlations between the indicators calculated through the 15 Jumps Test. The study followed 15 boys and 15 girls between the age of 8 and 18. We tried to emphasize the dynamics of the correlations between the take-off height and the 10 indicators calculated by a special program. For the evaluation of the take-off height we used the “15 Jumps Test”, recorded with the “modified Miron Georgescu” sensor board. The results were recorded and analyzed with the “Microsoft Office Excel 2003” and “SPSS” (Statistical Package for Social Science) software. The conclusions of this study show that there are in boys and in girls, positive correlations between the average take-off height (H jump) and the unit power, maximum take-off height, accomplished maximum unit power and the maximum possible unit power, with values between 0,843 and 0,989. The values are closer to 1 in girls, in comparison with the boys. It appears a reversed correlation between the average take-off height and the energy variability coefficient, whereas in other indicators we see alternating the non-correlation and the reversed correlation in girls and boys.

Keywords: correlations, take-off, evaluation, indicators

### **I. INTRODUCTION**

Study the relationship between height and power of detachment also the subject of several investigations in the literature and concluded "the greater the instantaneous power will be even higher rate of detachment, even if the average power is likely to be affected" (Gloria Rata, 2001, p. 108). Instantaneous power understood as "the ability to achieve the highest increase of force in the shortest time possible" depends on "the speed of fiber contraction speed and force of contraction number of fibers involved (J., Weineck, 1993, pag. 173). Power as explosiveness is similar to the impulse; it represents the singular, but every phase of increased strength and muscle quality of the nerves but also the dexterity to move towards the desired action.

The ratio of target-force-power, expressed specifically in the main indices of force sporting gestures, is "likely that imprisonment is placed, the curve of maximum power and maximum speed, closer to power than speed, an idea supported by Wilmore and Costil, 1998 who also emphasize that "presenting the appearance of explosive muscle strength of the force produced by movement speed. What speed is above all an innate quality, which is improved relatively by training, especially force is one that allows improved power, but power depends on the individual's age. The speed of transition from one phase to another, the process of achieving the 15

lessons, we provide crucial data on the height of the jumping power place and depends on "the reporting of breaking the height of body weight" (Mihai Epuran, 2005, p. 362) and is influenced by how quickly the work is carried out engineer.

### **II. OBJECTIVES**

For this study we have set the following objectives:

- emphasizing the correlations between the analyzed indicators;
- a comparative emphasis of the correlations between the indicators resulted through the assessment with the modified Miron Georgescu board between girls and boys.

### **III. HYPOTHESIS**

We started this study from the hypothesis that between all of the indicators there are positive correlations both in girls and in boys, and the highest value of the correlations is recorded in boys. The analysis of these correlations can underline the direction of action for enhancing the take-off jump.

### **IV. PROCEDURES AND RESEARCH METHODS**

**For this study we chose 30 subjects** divided in two groups, of boys and girls, between 8 and 18 years old. They were selected from a larger group of 1200 students, some of them



practicing competitive sports, and at that age they obtained the best result at the vertical take-off height.

### Assessment methods

As evidence of evaluation we used the 'test of 15 jumps from two legs' by Miron Georgescu installation - changed. Facility via a computer interface coupled to a measuring time on land, air time and using a program automatically calculated according to weight and energy parameters athlete neuromuscular control settings. "The equipment has established itself as an equipment of testing the force-velocity qualities in the lower limbs through the emphasis of the energy and control parameters" (Niculescu and Larisa Mugar Vladu, 2009, p. 134). Calculate indicators have special significance as the power average unit (PU) emphasizes character balance in the force-velocity relationship, the average height of flight ( $H_{\text{jump}}$ ) is the parameter of force-speed with the dominant power, repetition rate ( $V_{\text{rep}}$ ) is a parameter the dominant force-velocity speed, energy variability coefficient (CVE) is the difference between flying and tmpii make make the soil and characterized the control phase separation, the coefficient of structural variability (CVS), expresses the ability to control the phase mobility and rigidity of construction minimum time on the ground (TSOLm) is the lowest value of contact with the ground, maximum height ( $H_{\text{max}}$ ) is the greatest height reached by the center of gravity of the body, the maximum conducted power unit (PRM) is the power most developed when detachment, maximum jump power unit carried out (S. RMP) is to how much bounce out of 15 has made the greatest power and the maximum possible power unit (PMP) is about the maximum power.

## V. RESULTS OF THE RESEARCH – ANALYSIS, INTERPRETATION AND GRAPHICAL REPRESENTATION

The data recorded in the control drills was organized and analyzed through the „Microsoft Office Excel 2003” software and the „SPSS” (Statistical Package for Social Sciences) software. The data interpretation was based on the analysis of the arithmetical mean between the maximum and minimum values and the Spearman

correlation coefficient. The Spearman correlation coefficient was calculated through SPSS.

### *V. 1. Analysis of the correlations between the average jump height and the rest of the spring indicators in boys*

Results of Spearman correlation coefficient allowed us statistical correlation analysis based on the results presented in Table 3 resulting from the processing of the Table 1 and 2, the correlation coefficient of ranks (Spearman) test the degree of correlation between 2 variables is qualitative and non-parametric alternative to "Pearson correlation coefficient. It can range between -1 and 1. If non-parametric correlation coefficient values are high, close to 1 when there is correlation between variables and stability if negative values are close to -1 indicates an inverse correlation, and the value approaches 0, then a correlation of variables.

From Table 3 are detached interesting aspects.

Between the average height of detachment ( $H_{\text{jump}}$ ) and mean power unit (PU) the correlation is 0.843 and points out the balance in the force-velocity relationship.

Between the height of detachment ( $H_{\text{jump}}$ ) and the maximum height of detachment (jump), which is the highest height reached the center of gravity of the body is a correlation of 0, 901.

Between the average height of detachment ( $H_{\text{jump}}$ ) and the maximum conducted power unit (RMP), understood as the most powerful developed when detachment is a linear correlation of 0.884.

Between the average height of detachment ( $H_{\text{jump}}$ ) and the maximum possible power unit (PMP), which is about the maximum power correlation is 0.880.

In conclusion the average height of detachment ( $H_{\text{jump}}$ ) and the power unit, the maximum height of detachment, the power unit and power unit made the highest maximum possible values are between 0.901 and 0.883, so close to the value 1, which emphasizes a linear correlation positive and stability among the five indicators.

Between the average height of detachment ( $H_{\text{jump}}$ ) and the rate of structural variability (CVS), which expresses the phase-control capability, mobility and rigidity of construction is a correlation of 0.404.

Between the average height of detachment ( $H_{\text{jump}}$ ) and lift the maximum

conducted power unit (S. RMP), which is of how much bounce out of 15 of the biggest power is a correlation of 0.302.

As can be seen between the average height of detachment (H jump) coefficient of structural variability and the maximum conducted power unit, the values are between 0.404 and 0.302, so close to the value 0, which emphasizes that it is a correlation between these indicators.

Between the average height of detachment (H jump) and repetition rate (V\_rep), which is a dominant parameter force-speed speed is a correlation of -0.372.

Between the average height of detachment (H jump) and coefficient of variability

in energy (CVE), what is the difference between flying and times make the make the soil and characterized the control phase separation is a correlation of -0.027.

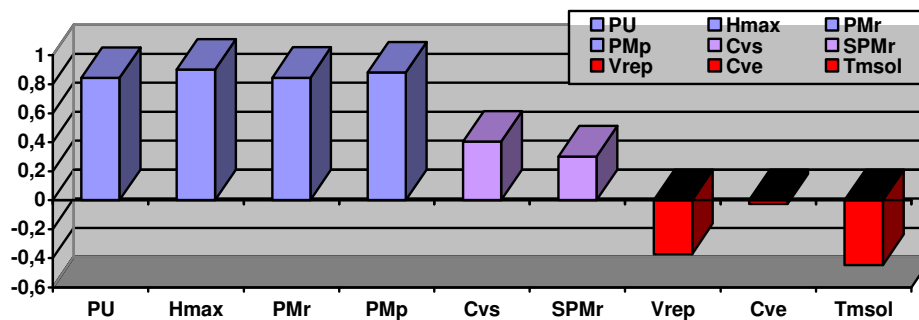
Between the average height of detachment (H jump) and the minimum time on the ground (TSOLm), which is the lowest amount of contact with the ground, is a correlation of -0.446.

Also notice that the average height of detachment (H jump) and repetition rate, coefficient of variability in energy and minimum time on land values are between -0.446 and -0.027, so close to -1, which emphasizes a inverse correlation.

**Table 3 - Correlations between the average jump height and the rest of the spring indicators in boys**

BOYS: Spearman correlation coefficient		Average jump height (H.jump)	
	N	Correlation Coefficient	Sig. (2-tailed)
Average unit power (PU)	15	0.843**	0.000
Average ground time (V_rep)	15	-0.372	0.172
Energy variability coefficient (CVE)	15	-0.027	0.924
Structural variability coefficient (CVS)	15	0.404	0.136
Average ground time (V_rep)	15	-0.446	0.095
Maximum height (HMax)	15	0.901**	0.000
Accomplished maximum unit power (PMr)	15	0.884**	0.000
Jump accomplished with the maximum unit power (S.PMr)	15	0.302	0.273
Maximum possible power unit (PMp)	15	0.880**	0.000
Valid N (listwise)	15	** . Correlation is significant at the 0.01 level * . Correlation is significant at the 0.05 level	

**Chart 1 - Correlations between the average jump height and the rest of the spring indicators in boys**



V. *2. Analysis of the correlations between the average jump height and the rest of the spring indicators in girls*

The analysis of the results presented in Table 4 and Chart 2 emphasize interesting aspects regarding the correlations establishing between indicators.

**Table 4 - Correlations between the average jump height and the rest of the spring indicators in girls**

GIRLS: Spearman correlation coefficient	Average jump height (H.jump)		
	N	Correlation Coefficient	Sig. (2-tailed)
Average unit power (PU)	15	0.963**	0.000
Average ground time (V_rep)	15	0.053	0.851
Energy variability coefficient (CVE)	15	-0.204	0.467
Structural variability coefficient (CVS)	15	0.305	0.270
Average ground time (V_rep)	15	-0.140	0.618
Maximum height (HMax)	15	0.989**	0.000
Accomplished maximum unit power (PMr)	15	0.960**	0.000
Jump accomplished with the maximum unit power (S.PMr)	15	-0.184	0.511
Maximum possible power unit (PMp)	15	0.964**	0.000
Valid N (listwise)	15	** . Correlation is significant at the 0.01 level * . Correlation is significant at the 0.05 level	

As we can see, there were correlations between the average take-off height (H jump) and:

- ✓ Average unit power (PU) with a value of 0,963;
- ✓ Maximum take-off height (jump) with a value of 0, 989;
- ✓ Accomplished maximum unit power (PMr) with a value of 0,960;
- ✓ Maximum possible power unit (PMp) with a value of 0,964.

In conclusion the average take-off height (H jump) and the unit power, a maximum height of detachment, the maximum conducted power unit and the maximum possible power unit, with values between 0.963 and 0.989, so close to the value 1 is a positive linear correlation.

Regarding the correlation between the average take-off height (H jump) and:

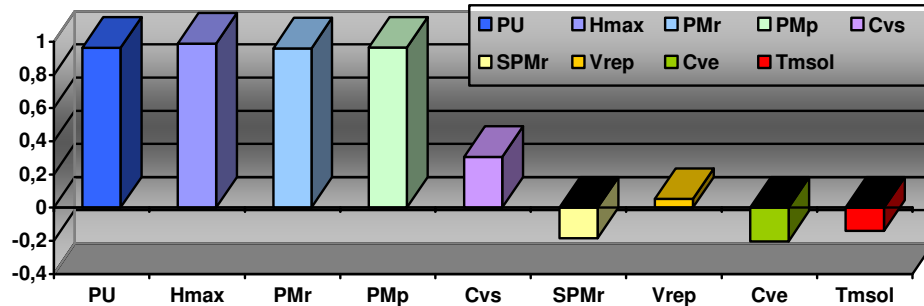
- ✓ Repetition speed (V. rep) has a value of 0,053;
- ✓ Structural variability coefficient (CVS) has a value of 0,305.

By following the correlation between the average take-off height (H jump) and the repetition speed and the structural variability coefficient we can see that the values are comprised between 0,053 and 0,305, close to 0, which underlined a non-correlation between these indicators.

The correlation between average take-off height (H jump) and

- ✓ Energy variability coefficient (CVE) has a value of -0,204;
- ✓ Minimum ground time (TSOLm) has a value of -0.140;
- ✓ Jump accomplished with the maximum unit power (S.PMr) has a value of -0.184.

Also we can see that between the average take-off height (H jump) and the energy variability coefficient, the minimum ground time and the jump accomplished with the maximum unit power, the values are comprised between -0,204 and -0,140, which is close to -1, underlining a reversed correlation.

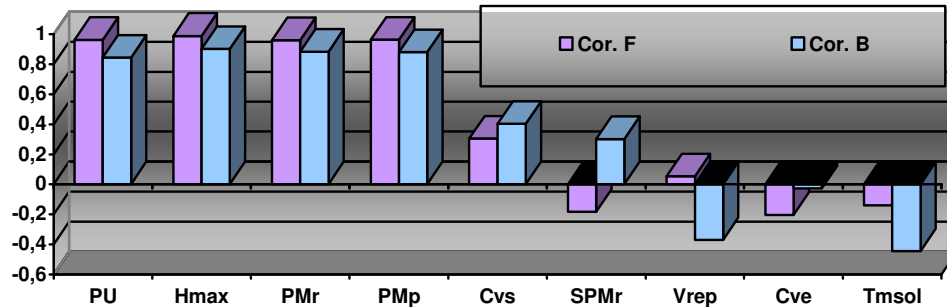
**Chart 2 - Correlations between the average jump height and the rest of the spring indicators in girls****V.3. Comparative analysis of the correlations between the average jump height and the rest of the spring indicators in girls**

Between the analyzed indicators as we can see in Table 5 and Chart 3, there are differences regarding the calculated correlations.

**Table 5 - Correlations between the average jump height and the rest of the spring indicators in boys and in girls**

Spearman correlation coefficient	N	Average jump height (H.jump)	
		Correlation Coefficient BOYS	Correlation Coefficient GIRLS
Average unit power (PU)	15	0.843**	0.963**
Average ground time (V_rep)	15	-0.372	0.053
Energy variability coefficient (CVE)	15	-0.027	-0.204
Structural variability coefficient (CVS)	15	0.404	0.305
Average ground time (V_rep)	15	-0.446	-0.140
Maximum height (HMax)	15	0.901**	<b>0.989**</b>
Accomplished maximum unit power (PMr)	15	0.884**	<b>0.960**</b>
Jump accomplished with the maximum unit power (S.PMr)	15	0.302	-0.184
Maximum possible power unit (PMp)	15	0.880**	<b>0.964**</b>
<b>Valid N (listwise)</b>	15	** . Correlation is significant at the 0.01 level * . Correlation is significant at the 0.05 level	

**Chart 3 - Correlations between the average jump height and the rest of the spring indicators in boys and in girls**



It is noted between the average height of detachment (H jump) and the power unit, the maximum height of detachment, the power unit and power unit made the highest maximum possible positive correlations with values between 0.843 and 0.989. At the same time values are closer to 1 in girls compared with boys. It is further observed also a correlation between the average height of detachment and the rate of energy variability. The others indicators are found to be non-correlative or an inverse correlation.

**CONCLUSIONS** The analysis results revealed several important aspects.

1. The average height of boys between detachment (H aircraft) and the power unit, the maximum height of the maximum separation power unit and power unit carried a maximum possible values are between 0.901 and 0.883, so close to the value 1, which emphasizes a linear correlation positive and stability among the five indicators. Between the average height of detachment (H Flight) coefficient of variability in structural and unit power achieved maximum values are between 0.404 and 0.302, so close to the value 0,

which emphasizes that it is a correlation between these indicators and the average height of detachment (H Flight), repetition rate, coefficient of variability in energy and minimum time on land values are between -0.446 and -0.027, so close to -1, which highlights an inverse correlation.

2. In girls between the average height of detachment (H aircraft) and the power unit, the maximum height of detachment, the maximum conducted power unit and the maximum possible power unit, with values between 0.963 and 0.989, so close to the value 1 is a linear correlation positive. The correlation between the average height of detachment (H aircraft) and the rate of repetition and structural variability coefficient has values between 0.305 and 0,0,053, so close to the value 0, which emphasizes that it is a correlation between these indicators and the height average separation (flight H) coefficient of variability in energy and minimum time on the floor and jump with maximum power values are between -0.204 and -0.140, so close to -1, which highlights an inverse correlation.

3. Comparing boys with girls we see that the average height of detachment (H aircraft) and the power unit, the maximum height of detachment, the maximum conducted power unit

and power unit is the maximum possible positive correlations with values between 0.843 and 0.989. At the same time values are closer to 1 in girls compared with boys. It is further noted a correlation between the average height of detachment and the rate of energy variability and to the others is to link indicators are found either inverse correlation.

#### **BIBLIOGRAPHY**

**EPURAN, M.**, 2005, *Metodologia cercetării activităților corporale, Exerciții fizice, Sport, Fines*, Edit. FEST, București.

**NICULESCU, M., VLADU, L.**, 2009, *Performanța Sportivă*, Edit. Universitaria, Pitești.

**RAȚĂ, G.**, 2001, *Studiu privind dinamica și dezvoltarea detentei la copii și juniori- teză de doctorat (îndrumător Ardelean Tiberiu)*, ANEFS, București.

**WEINECK, J.**, 1993, *Manual d' entrainement sportif*, Edition 1e, Ed. Vigot, Paris,

**WILMORE, J.H., COSTILL, D. L.**, *Phziologie du sport et del' exercice physique*, DeBoeck Universite s.a. 1998 pour la traduction et Inadaptation française Paris, Bruxeleles.

## **THE ANALYSIS OF THE EFFICIENCY OF USING FASTBREAKS IN FEMALE HANDBALL DURING THE WORLD CHAMPIONSHIP IN CHINA, 2009**

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#### **ABSTRACT**

Fastbreak has become, for all good teams, one of the main concerns, and also an efficient way of scoring goals. From the statistical data we can notice the fact that the finalist teams in the Olympic Games, World Championships and European Championships scored about 20-30% goals by this kind of actions.

#### **The hypothesis of the research:**

We have assumed the fact that studying the fastbreak efficiency on the teams from the first four places at the World Championship in China, 2009, will have a substantial contribution in modelling the performance capacity of the female national handball teams.

**The object of the research** consists of the performance capacity of the handball female players of the national teams participating in the World Championship in China, 2009.

**The objectives of the research:** to study and generalize the data from the handball studies, as regarding the model of the game in the female handball teams; to appreciate the importance of using the fastbreaks by the female handball teams in accordance with the latest results in the world; to determine the parts of the prospective game model for fastbreaks for the female handball teams.

**The research methods** we have used are: analysing speciality studies, pedagogical observation, statistical method of processing and analysing of the research data. In order to centralize the data we have used the official statistics of the International Handball Federation for this tournament, statistics that are published on the internet at the following address: [http://www.ihf.info/front\\_content.php?idart=2200](http://www.ihf.info/front_content.php?idart=2200).

**The subjects of the research** are the female national handball teams which have taken part in the final tournament of the Handball World Championship in China, 2009. We have included in the research those teams situated in the first four places at the end of the tournament.

#### **Conclusions:**

The place of the fastbreak in the modern female handball is extremely precise, because when this is being used during the match, the players score 23% (1351) from the whole number of goals at this championship. Among all the finalizing situations, the fastbreak is the most efficient, about 69%, because by the means of this attacking form, players remove a lot of fighting with the opponent. The team from Spain have scored 14,60% of the goals using the fastbreaks. Norway have scored 33,33% of the whole number of goals by counterattack. France have succeeded to score 29,84% of the total number by the means of fastbreaks, and the world champion, Russia, have scored 26,98 % of the whole number of goals by using the first two phases of the attack.

**KEYWORDS:** fastbreak, handball, women national teams, World Championship, efficiency.

#### **INTRODUCTION**

Handball game knows a continuous development. Because of the harsh competitions, the specialists are looking for methods and means by which to perfect the way of playing, as well as the training process. Beginning with the analysis of the game played by the teams taking part in the biggest

European and World Championships, we can synthesize the main aspects of the modern game.

Most specialists believe that the increasing speed in the court, combined with numerous technical methods is a dominant trend in all the players' individual actions and this fact determines a permanent increase of the rhythm of the game. (I Bota, 1984, 1998, F.Biro, C., Roman, 2003). Fastbreak represents

the phase in which the ball, re-entered in the possession of the defending team on the shortest way, goalkeeper – player or goalkeeper – intermediary – player is finalized and the opponent players don't have time to place themselves in the organized defence system. (Gh Zamfir., and colab., 2001). Due to its efficiency, the fastbreak should be used by every team aiming to obtain superior performances.

Studying the statistical data we can notice the fact that the finalist teams in the Olympic Games, European and World Championships have scored 20-30% of the goals by this kind of actions. The success of this phase depends a lot of the way it is exercised during the trainings.

The limitative factors in using the fastbreak, as they are considered by the handball specialists (, I. K., Ghermănescu,1978) are:

- the players don't have skills to manipulate the ball in speed;

- the team isn't successful in gaining the ball in order to initiate the fastbreak;

- the players don't possess a good tactic way of thinking to be able to see all the situations appearing during the game, depending on the opponents and the co-players;

- the team doesn't have players with good speed qualities, doubled by a special training.

**The hypothesis of the research:** We have assumed the fact that studying the fastbreak efficiency on the teams from the first four places at the World Championship in China, 2009, will have a substantial contribution in modelling the performance capacity of the female national handball teams.

**The object of the research** consists of the performance capacity of the handball female players of the national teams participating in the World Championship in China, 2009.

**The subject of the research** is the efficiency of the fastbreaks played by the female handball national teams at the World Championship in China, 2009, the last important tournament of the year.

### **The objectives of the research:**

- to study and generalize the data from the handball studies, as regarding the model of the game in the female handball teams;
- to appreciate the importance of using the fastbreaks by the female handball teams in accordance with the latest results in the world;
- to determine the parts of the prospective game model for fastbreaks for the female handball teams.

**The research methods** we have used are: analysing speciality studies, pedagogical observation, statistical method of processing and analysing of the research data. In order to centralize the data we have used the official statistics of the International Handball Federation for this tournament, statistics that are published on the internet at the following address:

[http://www.ihf.info/front\\_content.php?idart=2200](http://www.ihf.info/front_content.php?idart=2200).

**The subjects of the research** are the female national handball teams which have taken part in the final tournament of the Handball World Championship in China, 5 - 20th December 2009. There were 24 teams, each of these having 16 players. The average age of the female handball players at the final tournament was 25,06 years old, and the average of the international matches played there was 46,05.

### **Data from the research:**

The Female Handball World Championship is a competition extremely overloaded as regarding the number of the matches, but very challenging from the point of view of the physical effort of the players. The final tournament requires the organizing of 110 handball matches. The teams on the first 5-24 places play 9 matches each, and every national team from places 1-4 play 10 matches during those 16 days of the competition.

The opponents have different values, so as after 5 matches played in the preliminary group, there are 3 matches to be played in the

main group, with opponents of greater value. The way that such a final tournament is organized means the fact that 10 matches are played by a team in 16 days. It is presented below:

- Days 1, 2, 3, 5, 6 = matches in the preliminary group;
- Day 4= break;
- Day 7 = break + the team moves to another town;
- Day 8, 9, 11= match in the main group;
- Day 10 = break;
- Day 12,13 = break + moving to another town;
- Day 14 = match in the semifinals;

- Day 15 = break;
- Day 16 = match in the final.

The Russian national team have won the third consecutive world title and the 7th in the history of the Female Handball World Championships. On the second and third places there were the national teams of France and Norway. After a very enthusiastic beginning, the Romanian national team was on the 8th place and most of the specialists considered it to be a weak participation as compared with the value and the tradition of the female handball in Romania.

Table nr. 1 Total number of goals scored at the WC, China, 2009

	Goals	Throwings	Efficiency %
<b>Total</b>	<b>5968</b>	<b>11344</b>	<b>53</b>
<b>6 m shots</b>	1377	2415	57
<b>Wing shots</b>	775	1553	50
<b>9 m shots</b>	1116	3465	32
<b>7 m shots</b>	661	911	73
<b>Shots by breakthroughs/ outrunning</b>	688	1044	66
<b>Fastbreak</b>	<b>1351</b>	<b>1956</b>	<b>69</b>

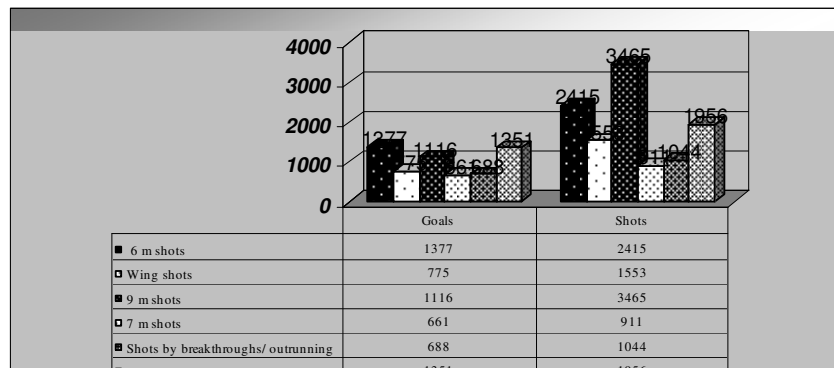


Diagram nr. 1 Distribution of the finalizing actions

During the 110 matches played at the final tournament, for the female teams there were 5968 goals scored from a total of 11344 shots. The average number of goals scored in a match is 54,25 goals, and the average number of shots in a match is 103,13. So, every team succeeded in scoring an average of 27,12 goals in a match, and the average of

shots for every participating team is 51,56 shots/ match. Analyzing the total number of goals we can notice the fact that in order to score, there were necessary about two attempts to finalize during the 60 minutes of playing. The rhythm of the game was very intense, so that there was an average of a goal scored every 67 seconds.



After we had centralized the total number of shots, we noticed that most goals were scored by using fastbreaks, and this is because it is an easy way to score, the fight with the organized defence being almost eliminated. From the total number of throws, there are 1956 attempts of the players to score by fastbreaks. The average of throwings by fastbreaks is 17,78 a match, for both teams. The number of goals scored by the female teams by fastbreak is 1351, and this fact offers this attacking phase an efficiency of 69%. We can notice the fact that from the point of view of the efficiency, scoring a goal by fastbreak is inferior only to penalty shots from 7m, where we register a very big rate of efficiency, 73%.

From the total number of shots, the fastbreak shots to the goal represent a rate of 22,6%. During the organized attack by throwing to the goal from the distance, the players succeeding in scoring a number of 1116 goals from a total of 3465 shots, and this represents the second variant as the number of attempts, and also as successes. The throwings to the goal by breakthroughs and outrunning have an increasing efficiency, so that by this way of finalizing there were 688 goals scored, from 1044 shots, and the efficiency is 66%.

The data regarding the way fastbreak is used by the female national teams placed on the first four places at the World Championship in China, 2009, are presented in the table below:

Table nr. 2 Number of goals scored by the teams on the places 1-4

Team	Spain			Norway			France			Russia		
	G	S	E %	G	S	E %	G	S	E %	G	S	E %
<b>Fastbreak</b>	<b>39</b>	55	71	<b>101</b>	133	76	<b>77</b>	113	68	<b>85</b>	127	67
<b>6 m shots</b>	<b>92</b>	135	68	<b>93</b>	135	69	<b>37</b>	70	53	<b>58</b>	103	56
<b>Wing shots</b>	<b>22</b>	46	48	<b>32</b>	49	65	<b>28</b>	66	42	<b>49</b>	78	63
<b>9 m shots</b>	<b>28</b>	85	33	<b>33</b>	126	26	<b>64</b>	178	36	<b>59</b>	138	43
<b>Shots by breakthroughs/ outrunning</b>	<b>44</b>	74	59	<b>21</b>	38	55	<b>26</b>	42	62	<b>37</b>	50	74
<b>7 m shots</b>	<b>42</b>	58	72	<b>23</b>	34	68	<b>26</b>	41	63	<b>27</b>	37	73
<b>Total number of shots</b>	<b>267</b>	<b>453</b>	<b>59</b>	<b>303</b>	<b>515</b>	<b>59</b>	<b>258</b>	<b>510</b>	<b>51</b>	<b>315</b>	<b>533</b>	<b>59</b>

Legend: G=goals scored; S=shots; E= efficiency

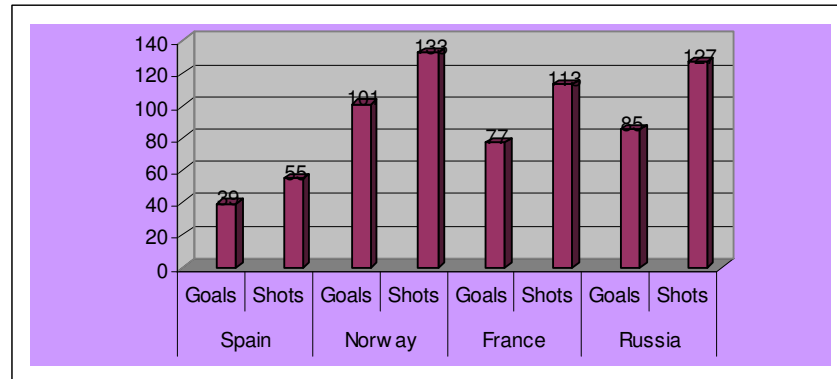


Diagram nr. 2 The distribution of the finalizing actions with the teams included in this study

The National team of Norway has the biggest number of goals scored by fastbreak. This team scored during the tournament a total number of 101 goals from 133 shots, with an efficiency of 76 %. Russia succeeded in scoring 85 goals from 127 shots, with an efficiency of 67 %. The national team of France scored 77 goals from 113 shots, with an efficiency of 68 %. The least number of goals scored by fastbreak is that of the team of Spain, which scored only 39 goals from a total number of 55 shots, with an efficiency of 71 %.

The technical elements of the fastbreak with the teams from the first four teams are very well learnt

by all the players, and so we can explain the excellent rate of efficiency of this phase. We can mention that the efficiency of the fastbreak phase presents values between 67-76%. This is considered to be very good by all specialists in handball.

For the teams from the first four places at this tournament, fastbreak is the main way of scoring a goal, as compared with the other finalizing situations, that is shots from 6m, shots from 9m, shots by breakthroughs/ outrunning or shots from 7m.

Table nr. 3 Number of goals scored by the teams included in this study, by fastbreak, at different times

Time	Spain			Norway			France			Russia		
	G	S	E %	G	S	E %	G	S	E %	G	S	E %
0'-10'	6	7	85	21	26	81	13	20	65	8	17	47
10'-20'	4	8	50	14	17	82	11	17	65	17	21	81
20'-30'	6	9	67	16	20	80	19	24	79	14	22	64
Total First half	16	24	67	51	63	81	43	61	70	40	60	67
30'-40'	9	10	90	22	31	71	8	13	61	16	23	69
40'-50'	7	9	78	17	23	74	11	17	65	13	23	56
50'-60'	7	12	58	11	16	69	15	22	68	16	21	76
Total Second half	23	31	74	50	70	71	34	52	65	45	67	67
<b>Total</b>	<b>39</b>	<b>55</b>	<b>71</b>	<b>101</b>	<b>133</b>	<b>76</b>	<b>77</b>	<b>113</b>	<b>68</b>	<b>85</b>	<b>127</b>	<b>67</b>

Legend: G=goals scored S=shots; E= efficiency

We can notice two main trends of using the fastbreak by the four teams in this study. The first trend implies scoring a big number of goals in the first half of the match, so, a game played in „running” in the first 30 minutes of the match. The second trend means scoring many goals by fastbreak in the second half of the game. The first half is the one in which the teams of Norway and France scored by using the fastbreak. Teams of Russia and Spain are the ones that succeeded in scoring more in the second half. During the whole tournament, the national team of Norway established a fast rhythm of the game, in speed, so that they succeeded in scoring 101 goals from 133 shots, with an efficiency of 77%. It is followed, of course, by the national team of Russia (the world champion), that scored 85 goals by fastbreak, from 127 shots, with an efficiency of 67 %. The French team scored 77 goals from 113 attempts, with an efficiency of 68 %, and the national team of Spain is the last in this classification, with 39 goals from 55 shots. The difference between Norway (the maximum value) and Spain (the minimum value), so, between the team in the first place and the one on the fourth place in this classification is of 61 goals, and the difference between the number of shots on fastbreak, between the two teams is of 78 shots. The average number of goals scored during a match is 10,1 for Norway, followed by 8,5 for Russia and 7,7 goals scored during a match by the national team of France.

On the basis of centralising these data we can foreshadow A MODEL OF THE GAME for fastbreak in the female handball for a final tournament of 10 matches, a model we describe below:

- Norway score 21 goals during the first half of the match (1'-10');
- The second half belongs to Russia, because they score 17 goals (a double value as compared with the first half);
- The end of the first half belongs to the team of France, which score 19 goals, and this proves the fact that they emphasize the difference of the score at the end of the first half;
- The time between minute 30 and minute 40 belongs to Norway again. They score 22 goals by fastbreak. This shows the fact that this team begins with great force every half of the match.
- The middle of the second half is prevalent of the national team of Norway, with a high

raised rhythm of the game, based on very fast attacks, scoring 17 goals during this time;

- The end of the match belongs to the world champion Russia, which, in the last 10 minutes of the game scored 16 goals by fastbreak, proving a very good physical preparation, superior to all the opponents by the intense rhythm of the game and by the great number of goals scored: 16.

## DISCUSSIONS

Fastbreak as a form of attacking, must be used more frequently during the games of the first national teams. The team must be prepared to score about 20-30 % of the goals by fastbreak, as shown by Vick, W., Busch, H., Fisher, G., Kock, R., (1995). Fastbreak will be used during the match in an average of 12-14 actions from the total number of ball possessions, that is 15-17 %. It is not impossible to do this, if the players will have their attention on each situation of possessing the ball, using the best exercises. In the same time, we have to develop the habit and the skills of going on fastbreaks, following very well established rules and principles.

The model of the game will have: the fastbreak model, the technic and tactic actions model, the physical qualities of the players, as it is said by Baştiiurea E., (2006).

- a) The model of the fastbreak with a pass directly to the first attacking player:
  - The length of fastbreak progressing with an attacking player with the girls: 4,0''-4,1'';
  - The efficiency of shots to the goal from the semicircle from 6 m: 95%;
  - The efficiency of throwing to the goal from the semicircle of 8-10 m: 80%;
- b) The model of the technic and tactic actions:
  - fast grabbing of the ball;
  - the rapid start and speed running;
  - rapid throwing of the ball;
  - catching the ball coming from behind;
  - simple or multiple dribbling;
  - throwing to the goal;
- c) Physical qualities of the players:
  - speed running on 30 m: Girls = 4,0''-4,1'' ;
  - reacting speed;
  - the ability in running and in fighting with the opponent;

## CONCLUSIONS

1. The place of the fastbreak in the modern female handball is extremely precise, because when this is being used during the match, the players score 23% (1351) from the whole number of goals at this championship. Among all the finalizing situations, the fastbreak is the most efficient, about 69%, because by the means of this attacking form, players remove a lot of fighting with the opponent. The team from Spain have scored 14,60% of the goals using the fastbreaks. Norway have scored 33,33% of the whole number of goals by counterattack. France have succeeded to score 29,84% of the total number by the means of fastbreaks, and the world champion, Russia, have scored 26,98 % of the whole number of goals by using the first two phases of the attack.

2. Norway is the team whose game is based mostly on finalizing by rapid attack. They scored 101 goals from 133 shots, with an efficiency of 76 %. This team is the leader as regarding the general rates, it is considered to be an experienced team, on the third place at the end of the tournament..

3. The coaches use a different strategy, so the team of Spain is cautious in playing in speed. They prefer more attacking in a system the teams (Russia, Norway) that don't lose any opportunities of using the fastbreak in order to score as rapid as possible a goal with a discouraging effect on the opponent team. These teams are very well taught to play in defence, to gain the ball, and from that moment, two or three players are ready to win the ball by the other players in her team. The next is the pass to the first attacking player, running to the opponents' semicircle. They often succeed in doing it, and the efficiency is over 67 % with three of the teams in this study.

4. The effects of the goals scored by fastbreak have a negative effect on the opponents and a positive one on the team that scores a goal. In the future we can see an increasing efficiency of the technic and tactic elements to gain the ball, for the teams in defence, and an increasing speed in running on the fastbreak to the opponents' goal. As finalizing proceedings we can foresee scoring of some spectacular goals that attract the audience to a handball show, of ways of finalizing by the means of which the player who has scored to be able to go back in defence, not to be taken by surprise by a rapid attack after scoring for a game.

## BIBLIOGRAPHY

**BASTIUREA E., 2006,** *Handbal –Perfecționare într-o ramură sportivă.* Editura Academica, Galați.

**BOTA, I., 1984,** *Handbal-Modele de joc și pregătire.* Editura Sport-Turism, București.

**BOTA, M., BOTA, I., 1987,** *Handbal.* Editura Sport-Turism, București.

**COLIBABA-EVULET, D., BOTA, I., 1998,** *Jocuri sportive, Teorie și Metodică.* Editura Aldin, București.

**GHERMĂNESCU, I. K., 1978,** *Handbal.* Editura Sport-Turism, București.

**MARCZINKA Z., 1994,** *Kezilabdazas, egy atfogo tanulmany a jatekrol.* Budapest Trio Budapest Kiado.

**VICK, W., BUSCH, H., FISHER, G., KOCK, R., 1995,** *Pregătirea de handbal în sală.* C.C.P.S., București.

[http://www.ihf.info/front\\_content.php?idart=2200](http://www.ihf.info/front_content.php?idart=2200)

[http://www.ihf.info/front\\_content.php?idart=2206](http://www.ihf.info/front_content.php?idart=2206)

[http://www.ihf.info/front\\_content.php?idart=2204](http://www.ihf.info/front_content.php?idart=2204)

4

## THE STUDY OF COMMUNICATION LEVEL BETWEEN THE TAEKVANDO TRAINERS AND THE SPORTSMEN ACCORDING TO SEVERAL VARIABLES

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### ABSTRACT

**Objective:** Effective communication is one of the most powerful tools of that a coach, the athletes, sports administrators and sports psychologist can have. The aim of this study also is to examine the communication level of Taekwondo trainers with athletes according to several variables. Totally 300(23 female and 277 male) Taekwondo trainers who participated in to Coach and referee Development Seminar in Antalya –Side formed a basis for the control group. First of all, available information related to the objectives of the research was given in a systematic manner by scanning the literature. .

Thus, a theoretical framework has been formed about the study. Secondly, the scale, which is based on the communication scale, formed by Flanders was applied to Taekwondo trainers through random sampling by Kavlu (2002)

**Method:** For the solution and the interpretation of data, t test, (2X2) Kİ KARE test were used and the significance was taken as  $P < 0,05$ . To evaluate the data and find the calculated values, SPSS (Statistical package for social sciences) packet program was used and the reliability of the scale (Cronbach Alpha) found as 0.90.

**Discussions and Conclusion:** At the end of the study, communication levels of Taekwondo trainers varied according to their professional experience levels but a meaningful relation was not found according to their education level. A successful Taekwondo trainer is a person who communicates rightly with the members of his group, and establishes a warm atmosphere for the members of the group so that they can communicate with each other. A successful Taekwondo trainer should consider some important points to make a well established communication atmosphere. The communication between the trainer and sportsmen can be handled by two dimensions, and these dimensions are the verbal and behavioral messages. Within the communication between the trainer and the sportman, verbal and behavioral messages should absolutely be in harmony.

**KEYWORDS:** Taekwando, Trainer, Sportsman, Communication

### INTRODUCTION

#### Coach and communication:

If the communication between the trainer and sportman is a verbal one , structural features of communication and mutual communication – interaction shows a very different form from the conference, promotion, advertising, sermons, and talking. The communication between the trainer and sportsman is not a conference. Because the conference is a communication not having the features of personality, but having language rules accordance with written language. A product presentation feature can not be seen of course within the communication between the trainer and sportsman. Product presentation is a kind of communication largely depending on consuming and attraction features on the foreground.

The trainer has to give the instructive aspects of training beside the educational aspects of it during the exercises. But s/he should be aware of the sportsmen that don't want to be educated and education does not occur in an easy way; in addition to these, he should know that he can be in a position of communication with the sportsmen who does not like to be informed As the attitudes against the exercise will be different between the the groups communication skills must also be different by quantity and quality for the probable situations and conditions. (Duralı 1992, s:211)

#### Interaction, communication, informing;

When Communication was evaluated in a conceptual sense, interaction and informing stands out against us. Everything in nature no doubtly is in the interaction. "The entry between the relationships of unlivings can not join itself to interaction; relations are inserted into another by external elements. External influences and the responses against them mean a mechanic relationship, (Duralı 1992, pp: 211). This "interaction, mechanical relations could be called as the interaction and also mechanical relationship with external factor from one unliving thing to another. In the mechanical meaning, flowing of water, movement of millstone can be shown as an example of interaction. On the otherhand, if it is an answer in a direction of functionality needed by an existing (Duralı 1992,pp 211)

We call the communication net formed by the people (it is not available readily) who adopt their behaviors according to their thoughts as informing so become an existence of community and culture

Living beings communicate with the one-dimensional codes of their genetic structures but the people communicate within their own kinetic susceptibility arising from the process by developing and bring their multi-dimensional and the social-cultural reconciliation based on artificial codes more complex connections beside this language is the fundamental point for informing (DURALI 1992, PP:212). The person encountered with the symbols

evaluates makes solutions about their meaning and makes judgements. These relationships can also be called as informing for another explanation. We should state that informing is not accepted as informing, because to be mutual meaning comes to foreground as a word meaning of informing. Interaction in relations occurs between the differences in behaviors. But the informing includes human functions such as "information, supervision, guidance, knowledge and skills, forward, to educate, expressed feelings of community, build relationships, solve problems and anxiety reduction, to entertain, to stimulate the necessary roles, (Usluata 1994, pp: 25). Taekvando trainers should be also considered about the functions of the informing. If we accept the Taekvando trainer as a resource within the informing process period, teaching, giving information, developing, selection can be referred. If we take the Taekvando sportman as a target, understanding, learning, analyzing, making it subjective, entertaining, refers to the functions coming from the target. The relationships that a Taekvando sportman makes with his/her other friends and other people mean widely informing which is more meaningful.

#### **Taekwondo Do in Coach Communication;**

When we examine the coaching within the communication dimension, coaching gains meaning with sportsmen and sportsmen group as a functionality meaning. In an environment that a sportsman or sportsmen group are not available, coaching is only an adjective as a linguistic meaning. Although Taekvando is an individual sport it shows some special features of team or group working by the point of working environment, because a sportsman needs at least one partner and also a group. It shows that in the teaching and learning environment of Taekvando, being a member of a group and belonging to a group is an important factor. Taekvando can be seen as a process of communication and interaction. Therefore the Taekvando which takes part in learning and teaching can be defined as a communication between the learner and teacher. Thus, a Taekvando coach can be defined as the person who gives a chance of communication and motivates the sportsmen; and a successful coach is a person who is able to make good contact and prepare suitable conditions for better communications between the sportsmen. Some important points should not be forgotten in order to make a good communication with his group of sportsmen. These important points can be described as follows. Density of common interest: It deals with the sportsman's point of view about the Taekvando. Is his aim only to take part in the team because of sportive activities or to become a famous person? These understanding differences certainly effect the communication in the group, so the athlete's intention about learning Taekvando is very important.

Differences between the levels of athletes: \_\_\_ it is another factor that the levels of beginners are different from the others started earlier for the

communication within the group members. Their points of views are of course different.

Age factor between the sportsmen: In a group consisting of people from different ages it is certainly very difficult to see a better communication.

To form common aims: Individually different targets among the group members may effect the communication. For instance, a sportman who wants local success and another one who wants a worldwide success may communicate differently (Usluata 1994, s:57).

A Taekvando coach has to emphasize during the training contact. Empathy is the ability to understand other people's feelings and problems because the people tend to behave that his thoughts and feelings are always right and perceive events, things and environment according to his own perception (Dikmen 1995, s: 136). The communication between the coaches and sportsmen can be taken into account by two dimensional cases. These are verbal and behavioral messages. These verbal and behavioral messages have to be in harmony and the effects of culture shouldn't be forgotten while communicating (Usluata 1994, s: 62).

The communication in the Taekvando can be seen as a communication in an organization. An organization is a hierarchic structure of an authority and a coordination of some people's activities who came together to reach a common goal and also took part and shared some roles. It is a communication skill of a Taekvando trainer's having exertion with his leadership and coordination to reach a common goal with the sportsmen who have different hierarchic levels of Taekvando. In another meaning organizational communication is the sharing of all kinds of human activities which are transferring meaning not both formal and informal; making more than one people together having the same goals so that it can be effective for the way of reaching the determined targets (Karakoç 1989, s: 83).

#### **METHOD**

The aim of this study is to be able to determine the communication between the sportsmen and the coaches for the sport teaching and learning. Totally 300 (23 female and 277 male) Taekvando trainers who participated in to Coach and referee Development Seminar in Antalya – Side formed a basis for the control group. First of all, available information related to the objectives of the research was given in a systematic manner by scanning the literature.

Thus, a theoretical framework has been formed about the study. Secondly, the scale, which is based on the communication scale, formed by Flanders was applied to Taekvando trainers (23 female and 277 male) through random sampling participated in to the seminar in Antalya – Side.

For the solution and the interpretation of data, t test, (2X2) Kİ KARE test were used and the significance was taken as  $P < 0,05$ . To evaluate the data

and find the calculated values, SPSS (Statistical package for social sciences) packet program was used and the reliability of the scale (Cronbach Alpha) found as 0.90

**FINDINGS**

The dispersion showing the communication of the coaches with the sportsmen was shown in table;2

according to their education status. The dispersion showing the communication of the coaches with the sportsmen was shown in table;1 according to their job experiences.

The dispersion showing the communication of the coaches with the sportsmen was shown in table;1 according to their job experiences

**Table 2:** The dispersion showing the communication of the coaches with the sportsmen according to their education status

	N	avarge	Sx	t	P
1-16 years	163	27,4110	2,0176	-2,583	0,010
16-32 years	137	28,0511	2,2730		

As seen in table 1; a meaningful relationship was found between the job experience variation and the levels of Taevando trainers' communication. [ t value =-2,583 P=0,010<.05]. When we look at the average values job experience variation between the 1-16 years, the avarge communication level was ( $\bar{X}$ =27, 4110) but the communication levels of the trainer' was ( $\bar{X}$ =28, 0511) for the trainers having 16-32 years job experience.

Table 1: Dispersion of the communication between the trainers and the sportsmen according to their education status

	Education:High school				Education:University				X <sup>2</sup>	Sd	P
	Yes		No		Yes		No				
	f	%	f	%	f	%	f	%			
Do you have different approaches to your sportsmen during an exercise and outside?	150	81,1	35	18,9	89	77,4	26	22,6	0,596	1	0,440
Do you believe that you care about their health conditions?	158	85,4	27	14,6	103	89,6	12	10,4	1,085	1	0,298
Do you believe that Taekwon do couches have the sportsmen scientific exercises?	98	53,0	87	47,0	55	47,8	60	52,2	0,752	1	0,386
Have you ever observed that the sportsmen sees your kindness as a model?	169	91,4	16	8,6	106	92,2	9	7,8	0,063	1	0,802
Do you get angry when the sportsman doesn't understand what you said?	111	60,0	74	40,0	67	58,3	48	41,7	0,089	1	0,766
Do you use visual and audial materials during your exercises?	132	71,4	53	28,6	79	68,7	36	31,3	0,240	1	0,624

Do the sportsmen have to compensate their deficiencies from other sportsmen?	33	17,8	152	82,2	26	22,6	89	77,4	1,022	1	0,312
Do the sportsmen who are unwilling make you worried?	171	92,4	14	7,6	100	87,0	15	13,0	2,435	1	0,119
Do you usually give spoken orders while teaching?	117	63,2	68	36,8	56	48,7	59	51,3	6,148	1	0,013
Even if he makes good ,do you criticize him not to make him spoilt?	91	49,2	94	50,8	52	45,2	63	54,8	0,448	1	0,503
Do you let the sportsmen talking with you during an exercise?	159	85,9	26	14,1	98	85,2	17	14,8	0,031	1	0,861
Do you discuss the reason and result connections with the movements?	169	91,4	16	8,6	110	95,7	5	4,3	2,015	1	0,156
Do you care about their feelings ?	179	96,8	6	3,2	115	100,0	-	-	3,806	1	0,051
Do you praise your sportsmen and encourage them?	168	90,8	17	9,2	102	88,7	13	11,3	0,353	1	0,553
Do you tell your sport experience and past in your first exercise?	63	34,1	122	65,9	50	43,5	65	56,5	2,683	1	0,101
Do you use the words of sportsman's words related to senses and feeling by repeating them anyway?	105	56,8	80	43,2	67	58,3	48	41,7	0,066	1	0,798
Are only one's feelings important for you?	147	79,5	38	20,5	91	79,1	24	20,9	0,005	1	0,945
Do you give more importance to the acitivities you taught which are only accepted from their minds?	66	35,7	119	64,3	42	36,5	73	63,5	0,022	1	0,882
Do you use the relationships of the behaviours with the behaviors you taught earlier and the others you are goint to teach?	173	93,5	12	6,5	103	89,6	12	10,4	1,502	1	0,220



Have ever been in a situation that you want to fight or swear to any sportsman?	35	18,9	150	81,1	14	12,2	10 1	87,8	2,361	1	0,124
Do you evaluate the exercises with your sportsman after the exercises you did?	165	89,2	20	10,8	105	91,3	10	8,7	0,353	1	0,553

When the answers for the question "Are your behaviours while exercise and post exercise different according to coaches' education state?" was searched it was found that their behaviours outside the exercises were different and proportion the answers were 81,1 percent from the students graduated from high school 77,4 percent from the students graduated from university . Because of the calculated P value was  $0,440 > 0,05$ ; there were no differences between the groups

According to coaches' education state ; when we examine the answers for the question " do you believe that you care about the their health conditions and problems",the answers of coaches graduted from high school (85,4 percent) and the answers of coaches graduted from university(89,6 percent) were yes. Because of calculated P value was  $0,298 > 0,05$ , there wee no differences between the groups.

According to coaches' education state ; The answers of 53.0 percent of coaches graduated from high school were "yes" and the answers of 52,2 percent of the coaches were "no" for the question" Do you believe that Taekwon do couches have the sportsmen do scientific exercises?" there were no differences between the groups as the calculated P value was  $0,386 > 0,05$

According to coaches' education state ; the answers of 91,4 percent of the coaches graduated from high school , and 92,2 percent of the coaches graduated from university were "yes" for the question of" Have you ever observed that the sportsmen sees your kindness as a model? There were no differences between the groups because the calculated value was  $0,802 > 0,05$  .

According to coaches' education state ; the answers of 60.0 percent of the coaches graduated from high school and 58,3 percent of the coaches graduated from university were "yes" for the question" Do you get angry when the sportsman doesn't understand what you said?"and calculated P value was  $0,766 > 0,05$  and so, there were no differences between the groups

According to coaches' education state ; the answers of 71,4 percent of the coaches graduated from high school and 68,7 percent of the coaches graduated from university were "yes" for the

question" Do you use visual and audial materials during your exercises?"and calculated P value was  $0,624 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state ; the answers of 82,2 percent of the coaches graduated from high school and 77,4 percent of the coaches graduated from university were "No; they should not learn from others" for the question" Do the sportsmen have to compensate their deficiencies from other sportsmen?"and calculated P value was  $0,312 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state ; the answers of 92,4 percent of the coaches graduated from high school and 87,0 percent of the coaches graduated from university were "yes ;they do" for the question" Do the sportsmen who are unwilling make you worried?"and calculated P value was and  $0,119 > 0,05$  so, there were no differences between the groups.

According to coaches' education state ; the answers of 63,2 percent of the coaches graduated from high school and 51,3 percent of the coaches graduated from university were "yes ;they do" for the question" Do you usually give spoken orders while teaching?"and calculated P value was and  $0,013 < 0,05$  so, there were differences between the groups.

According to coaches' education state ; the answers of 50,8 of percent of the coaches graduated from high school and 54,8 percent of the coaches graduated from university were "No I don't " for the question" Even if he makes good ,do you criticize not to make him spoilt?"and calculated P value was  $0,503 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state ; the answers of 91,4 percent of the coaches graduated from high school and 95,7 percent of the coaches graduated from university were "yes " for the question' Do you discuss the reason and result connections with the movements?"and calculated P value was  $0,861 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state ; the answers of 96,8 percent of the coaches graduated

from high school and 100 percent of the coaches graduated from university were "yes" for the question "Do you care about their feelings?" and calculated P value was  $0,05 < 0,05$  and so, there were differences between the groups.

According to coaches' education state; the answers of 90,8 percent of the coaches graduated from high school and 88,7 percent of the coaches graduated from university were "yes" for the question "Do you praise your sportsmen and encourage them?" and calculated P value was  $0,553 > 0,05$  and so, there were differences between the groups.

According to coaches' education state; the answers of 65,9 percent of the coaches graduated from high school and 56,5 percent of the coaches graduated from university were "no" for the question "Do you tell your sport experience and past in your first exercise?" and calculated P value was  $0,101 > 0,05$  and so, there were differences between the groups.

According to coaches' education state; the answers of 56,8 percent of the coaches graduated from high school and 58,3 percent of the coaches graduated from university were "yes" for the question "Do you use the words of sportsman's words related to senses and feeling by repeating them anyway?" and calculated P value was  $0,798 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state; the answers of 79,5 percent of the coaches graduated from high school and 79,1 percent of the coaches graduated from university were "yes" for the question "Are only one's feelings important for

you?" and calculated P value was  $0,945 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state; the answers of 64,3 percent of the coaches graduated from high school and 63,5 percent of the coaches graduated from university were "yes" for the question "Do you give more importance to the activities you taught which are only accepted from their minds?" and calculated P value was  $0,882 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state; the answers of 93,5 percent of the coaches graduated from high school and 89,6 percent of the coaches graduated from university were "yes" for the question "Do you use the relationships of the behaviours with the behaviors you taught earlier and the others you are going to teach?" and calculated P value was  $0,220 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state; the answers of 81,1 percent of the coaches graduated from high school and 87,7 percent of the coaches graduated from university were "yes" for the question "Have ever been in a situation that you want to fight or swear to any sportsman?" and calculated P value was  $0,124 > 0,05$  and so, there were no differences between the groups.

According to coaches' education state; the answers of 89,2 percent of the coaches graduated from high school and 91,3 percent of the coaches graduated from university were "yes" for the question "Do you evaluate the exercises with your sportsman after the exercises you did?" and calculated P value was  $0,553 > 0,05$  and so, there were no differences between the groups.

**Table 2: The variation of the coaches' communication with sportsmen according to their job experience**

	1-16 years job experience				17-32 years job experience				X <sup>2</sup>	Sd	P
	Yes		No		Yes		No				
	f	%	f	%	f	%	f	%			
Do you have different approaches to your sportsmen during an exercise and outside ?	140	78,2	39	21,8	99	81,8	22	18,2	0,580	1	0,447
Do you believe that you care about their health conditions?	155	86,6	24	13,4	106	87,6	15	12,4	0,065	1	0,798
Do you believe that Taekwon do coaches have the sportsmen scientific exercises?	87	48,6	92	51,4	66	54,5	55	45,5	1,020	1	0,313

Have you ever observed that the sportsmen sees your kindness as a model?	164	91,6	15	8,4	111	91,7	10	8,3	0,001	1	0,972
Do you get angry when the sportsman doesn't understand what you said?	109	60,9	70	39,1	69	57,0	52	43,0	0,448	1	0,503
Do you use visual and audial materials during your exercises?	122	68,2	57	31,8	89	73,6	32	26,4	1,008	1	0,315
Do the sportsmen have to compensate their deficiencies from other sportsmen?	42	23,5	137	76,5	17	14,0	104	86,0	4,050	1	0,044
Do the sportsmen who are unwilling make you worried?	157	87,7	22	12,3	114	94,2	7	5,8	3,499	1	0,061
Do you usually give spoken orders while teaching?	109	60,9	70	39,1	64	52,9	57	47,1	1,893	1	0,169
Even if he makes good, do you criticize him not to make him spoilt?	77	43,0	102	57,0	66	54,5	55	45,5	3,847	1	0,050
Do you let the sportsmen talking with you during an exercise?	155	86,6	24	13,4	102	84,3	19	15,7	0,310	1	0,578
Do you discuss the reason and result connections with the movements?	175	97,8	4	12,5	104	86,0	17	14,0	15,481	1	0,000
Do you care about their feelings ?	177	98,9	2	1,1	117	96,7	4	3,3	1,764	1	0,184
Do you praise your sportsmen and encourage them?	158	88,3	21	11,7	112	92,6	9	7,4	1,479	1	0,224
Do you tell your sport experience and past in your first exercise?	71	39,7	108	60,3	42	34,7	79	65,3	0,755	1	0,385
Do you use the words of sportsman's words related to senses and feeling by repeating them anyway?	100	55,9	79	44,1	72	59,5	49	40,5	0,391	1	0,5321
Are only one's feelings important for you?	141	78,8	38	21,2	97	80,2	24	19,8	0,086	1	0,770
Do you give more importance to the activities you taught which are only accepted from their minds?	59	33,0	120	67,0	49	40,5	72	59,5	1,779	1	0,182
Do you use the relationships of the behaviours with the behaviors you taught earlier and the others you are going to teach?	163	91,1	16	8,9	113	93,4	8	6,6	0,531	1	0,466
Have ever been in a situation that you want to fight or swear to any sportsman?	27	15,1	152	84,9	22	18,2	99	81,8	0,507	1	0,476
Do you evaluate the exercises with your sportsman after the exercises you did?	166	92,7	13	7,3	104	86,0	17	14,0	3,695	1	0,055

According to coaches' job experiences; the answers of 78,2 percent of coaches having 1-16 years job experiences and 81,8 percent of coaches' having 17-32 years experiences answered "Yes;

"for the question "Do you have different approaches to your sportsmen during an exercise" and the calculated value was found as  $0,447 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 86,6 percent of coaches having 1-16 years job experiences and 87,6 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you believe that you care about their health conditions?" and the calculated value was found as  $0,798 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 51,4 percent of coaches having 1-16 years job experiences and 54,5 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you believe that Taekwon do coaches have the sportsmen scientific exercises?" and the calculated value was found as  $0,313 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 91,6 percent of coaches having 1-16 years job experiences and 91,7 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Have you ever observed that the sportsmen sees your kindness as a model?" and the calculated value was found as  $0,972 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 60,9 percent of coaches having 1-16 years job experiences and 57,0 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you get angry when the sportsman doesn't understand what you said?" and the calculated value was found as  $0,503 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 68,2 percent of coaches having 1-16 years job experiences and 73,6 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you use visual and audial materials during your exercises?" and the calculated value was found as  $0,315 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 76,5 percent of coaches having 1-16 years job experiences and 86,0 percent of coaches' having 17-32 years experiences answered "no" for the question "Do the sportsmen have to compensate their deficiencies from other sportsmen?" and the calculated value was found as  $0,044 < 0,05$ ; so, there were differences between the groups

According to coaches' job experiences; the answers 87,7 percent of coaches having 1-16 years job experiences and 94,2 percent of coaches' having 17-32 years experiences answered

"Yes" for the question "Do the sportsmen who are unwilling make you worried?" and the calculated value was found as  $0,061 > 0,05$ ; so, there were no differences between the groups.

According to coaches' job experiences; the answers of 60,9 percent of coaches having 1-16 years job experiences and 52,9 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you usually give spoken orders while teaching?" and the calculated value was found as  $0,169 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers of 57,0 percent of coaches having 1-16 years job experiences answered "yes" and 54,5 percent of coaches' having 17-32 years experiences answered "No" for the question "Even if he makes good, do you criticize him not to make him spoiled?" and the calculated value was found as  $0,050 < 0,05$ ; so, there were differences between the groups

According to coaches' job experiences; the answers 86,6 percent of coaches having 1-16 years job experiences and 84,3 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you let the sportsmen talking with you during an exercise?" and the calculated value was found as  $0,578 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 97,8 percent of coaches having 1-16 years job experiences and 86,0 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you discuss the reason and result connections with the movements?" and the calculated value was found as  $0,000 < 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 98,9 percent of coaches having 1-16 years job experiences and 96,7 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you care about their feelings?" and the calculated value was found as  $0,184 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 88,3 percent of coaches having 1-16 years job experiences and 92,6 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you praise your sportsmen and encourage them?" and the calculated value was found as  $0,224 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 60,3 percent of coaches having 1-16 years job experiences and 65,3 percent of coaches' having 17-32

years experiences answered "Yes" for the question "Do you tell your sport experience and past in your first exercise?" and the calculated value was found as  $0,385 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 55,9 percent of coaches having 1-16 years job experiences and 59,5 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you use the words of sportsman's words related to senses and feeling by repeating them anyway?" and the calculated value was found as  $0,532 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 78,8 percent of coaches having 1-16 years job experiences and 80,2 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Are only one's feelings important for you?" and the calculated value was found as  $0,770 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 67,0 percent of coaches having 1-16 years job experiences and 59,5 percent of coaches' having 17-32 years experiences answered "Yes" for the question "Do you give more importance to the activities you taught which are only accepted from their minds?" and the calculated value was found as  $0,182 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 91,1 percent of coaches having 1-16 years job experiences and 93,4 percent of coaches' having 17-32 years experiences answered "Yes" for the question "

Do you use the relationships of the behaviours with the behaviors you taught earlier and the others you are going to teach?" and the calculated value was found as  $0,466 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 84,9 percent of coaches having 1-16 years job experiences and 81,8 percent of coaches' having 17-32 years experiences answered "no" for the question "Have ever been in a situation that you want to fight or swear to any sportsman?" and the calculated value was found as  $0,476 > 0,05$ ; so, there were no differences between the groups

According to coaches' job experiences; the answers 92,7 percent of coaches having 1-16 years job experiences and 86,0 percent of coaches' having 17-32 year experience answered "Yes" for the question "Do you evaluate the exercises with your sportsman after the exercises you did?" and the calculated value was found as  $0,055 > 0,05$ ; so, there were no differences between the groups

#### DISCUSSION AND CONCLUSION

A successful coach is the one who is able to contact rightly and prepare a suitable atmosphere for the sportsmen's communication within the team. Some conditions must be available for the right way of communication. We wanted to communication levels of the Taekvando coaches with the sportsmen according to their education and job experience.

The Taekvando coaches graduated from high school believe that they have the sportsmen do scientific exercise; on the otherhand, the Taekvando coaches graduated from

university do not believe that they have them do a scientific exercise.

This occurs because of the fact that there are some differences on understanding of what a scientific exercise is. Another difference is that the coaches graduated from high school uses spoken orders for the sportsmen but the coaches graduated from university uses both the spoken and unspoken orders while teaching and demonstrating.

That means the coaches graduated from high school uses only the describing method; but the coaches graduated from university uses the demonstrating method which is the most useful way of teaching psikomotor movements.

While the coaches having a 1-16 years job experience do not believe that they have the sportsmen do scientific exercise; the coaches having 17-32 years job experience believe that they have the sportsmen do scientific exercises. This difference occurs because of the job experience.

As a general conclusion; both the coaches having job experiences and education have a high level of communication states between the sportsmen and themselves.

#### SUGGESTIONS

- 1- The communication should not be like a conference
- 2- The coach should give importance for both educating and teaching.
- 3- The coach should be careful about his posture, intonation, gestures, looks and other important behaviours.
- 4- The coaches should have empathy with the sportsmen.
- 5- The coaches should try to understand what the motivational movement and gestures for each sportsman.

#### REFERENCES

- ANABRITANICA GENEL KÜLTÜR ANSIKLOPEDI, 1994, Hürriyet Yayınları, Cilt 16 İstanbul**
- BALTAŞ, Z., BALTAŞ, A., 1999, Bedenin Dili, Remzi Kitabevi İstanbul**
- BENTELE, T., 1999, (Çev: Yıldırım O) Takımınızın Yeteneklerini Geliştirmede İnsanları Motive Etme, Hayat Yayıncılık, İstanbul**
- ÇELİK V., 2000, Eğitimsel Liderlik, Pagem Yayınevi, Ankara**
- DIKMEN Ü., 1995, İletişim Çatışmaları Ve Empati, Sistem Yayınları, İstanbul**
- DURALI T., 1992, Biyoloji Felsefesi, Akçay Yayınları, Ankara**
- KARAKOÇ N., 1989, Örgütsel İletişim Ve Örgütsel Zaman Arasındaki İlişkiler, Anadolu Üniv. Yayınları Eskişehir**
- KÖKEL Ö., 1986, İnsanı Anlamak, Altın Kitaplar, İstanbul**
- MOORE K.D., 1999 (Çev. Kaya N.) Öğretim Becerileri, İzmir**
- ÖZCAN A.O., 2000, Yaratıcı Düşünce, Avcıol Basım Yayın, İstanbul**
- ÖZER A.K., 1998, İletişimsizlik Becerisi, Varlık Yayınları, İstanbul**
- ÖZTABAĞ L., 1974, Antrenörlük Psikolojisi, Teknik Kitapları Yayınları, İstanbul**
- USLUATA A., 1994, İletişim, İletişim Yayınları, İstanbul**
- YÜKSEL A.H., 1994, İknâ Edici İletişim, Anadolu Üniversitesi Yayınları, Eskişehir**

## PERSONALITY AND PERFORMANCE SPORT

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### ABSTRACT

This work has proposed to address several broad objectives and some specific objectives.

#### General objectives:

- Identify personality traits and motivational structures of athlete performance profile in order to optimize the current patterns of selection in sport performance;
- Highlighting the effects it has long practice of sport in the individuals personality;
- Identifying the specific type of motivation that has significant influence in obtaining performance;

#### Specifically, we pursued the following objectives:

- Presentation of personality factors underlying the differentiation of personality profiles of the two groups of subjects.

- Identification of specific temperamental type for each group of athletes examined.
- Highlighting the weight of the intrinsic and extrinsic motivation reported to sports success.

Research is certifying and descriptive study, which has the target population for a total of 40 athletes, who are divided into two groups: one consisting of 20 persons who practice or have practiced individual sports performance and other composed of 20 current or former collective sports performers.

#### The tests used were:

- A. Sixteen Personality Factor Questionnaire (R.B. Cattell)
- B. Personality Questionnaire of Guilford – Zimmerman
- C. Questionnaire for temperamental identification (Belov)
- D. Questionnaire for motivation identification (made by the authors)

Under these tests, can be concluded that the first test significant differences were observed in 5 of those factors 16. In this regard can be said that differences between groups are in terms of self image, how to assert personal and expression of conventional trends. In the second, are obvious differences in the 3 factors of 10, the direction of effective emotion in shares obedience. Belov test emphasize the significant differences concerning the type of temperament and objectivity in conduct various events here. The weight of internal and external motivation for sport is different aspects in the 2 groups of athletes, and this is shown by the last test applied.

**As a general conclusion** one can say that long practice relevant to a particular sport help shape a profile of personality. The essential characteristics that define the personality profile for individual sports group subjects are: courage, dynamism, a desire to be independent, assuming responsibilities and risks, the ability to make decisions in short, slight tendency to emotional instability, impulsivity and excessive consumption of energy carried. For athletes other relevant group following basic features: constant interest and attitude, emotional stability, depending on group, perseverance, hesitation to communicate with the public.

This study completes a series of proposals to optimize the less favorable aspects highlighted in the personality of the members of 2 groups to improve performance both in life and in sports performance.

**KEY WORDS:** personality, individually, collectively, performance sport

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## INTRODUCTION

### Theoretical basis

Separate study of mental processes, such as affectivity, thinking or motivation, is the description of the person as a whole is difficult. The concept of personality tends to cover all mental processes so as to reveal a picture of how the individual feels, thinks and behaves. Due to the complexity of her, personality has proved difficult to define, over time specialists in the field without reaching agreement, significant in this respect is the controversy arising between theorists of feature and those of situation. However, some psychologists use the term to refer to differences between individuals or affectivity including intellectual

functioning, while others limit the term emotional and social aspects of behavior.

Although the definitions of personality are numerous and contradictory, G. Allport made a comparative analysis of several conceptual delimitation and grouped them into three broad categories as: definitions by external impact, by internal structure and positivist definitions. In my opinion, the definition of the match is the last category, "as personality is the most appropriate conceptualization of a person's behavior in all its details, which may give a scientist at a time." (G. Allport, 1991 p.27)

With the criterion of personality traits may be off four main models, namely:

► *Analytical personality (planner)* - very attentive to details, addresses competition rational, logical and vulnerabilities of adversaries seeking. Limits lies the theme of trying new things and are considered excessive in their executions.

► *Personality type showman* - eager to be in the spotlight, is voluble admirers have defects involving the lack of focus attention on important aspects of the sport race.

► *Dominant personality* - seems tireless, willing to lead, is animated by an intense desire to achieve success, sometimes becoming aggressive. The weakness is the inability to listen and opinions of others.

► *Personality conciliatory* - interact effectively with members, advocate of consensus, with the excess defects kindness and granting priority to the detriment of personal relationships to obtain victory. ([www.ipersonic.com/type/AT.html](http://www.ipersonic.com/type/AT.html))

Meaning of the term Sport is one of the most controversial in the literature of the field, both in terms of content and origin. It occurred in the context of physical education promoted in British schools, the late nineteenth century, was the strength of Thomas Arnold's theory, and describe education achieved through emulation and competition.

Sport is defined as "organized play, accompanied by exercise, done in a formal structure, organized in a context of formal and explicit rules of conduct and procedures, and observed the audience". (Rutten, A., K.H.Bette, 1991, p.34.)

Tournament includes active behavior and performance of athletes embody the bio-psycho-social unity of the personality as the individual self-expression in terms of race. In the competition share psychological factors, physical and social is different, so depending on the specific branches of sport and sport samples, but also the organizational form of sport. Base conduct sports competitions is a competitive regulation, which establishes, among others, decisions on the allocation by age, gender, class performance, eligibility requirements, announced financial rights of participants, costs, how to measure and conduct. (Prescorniță, A., 2007)

**Research objectives:** This work has proposed to address several broad objectives and some specific objectives.

**General objectives are:**

- Identify personality traits and motivational structures of athlete performance profile in order to optimize the current patterns of selection in sport performance;
- Highlighting the effects it has long practice of sport in the individuals personality;
- Identifying the specific type of motivation that has significant influence in obtaining performance;

**Specifically,** we pursued the following **objectives:**

- Presentation of personality factors underlying the differentiation of personality profiles of the two groups of subjects.
- Identification of specific temperamental type for each group of athletes examined.
- Highlighting the weight of the intrinsic and extrinsic motivation reported to sports success.

**The motivation** of the choice of this theme is due to the fact that in our country the studies of sportive psychology are inadequate and more than this, those ones aren't recent.

The research is a fact finding and descriptive study, that has as aim people a number of 40 performance sportsmen, those ones being divided into 2 groups: one formed of 20 persons that practice or practiced individual performance sports and another one composed of 20 actual or former performers of collective sports.

**The general hypothesis:**

There is a biunique relation between the personality and the sport performance

**Specific hypotheses:**

1. The temperamental predominant type determines the practice of certain sportive branches.
2. There are differences of personality profile between the practitioners of individual sports and those ones of collective sports.
3. The sport success is influenced by specific motivational factors.

**The tests used were:**

- A. Sixteen Personality Factor Questionnaire (R.B. Cattell)
- B. Personality Questionnaire of Guilford – Zimmerman
- C. Questionnaire for temperamental identification (Belov)
- D. Questionnaire for motivation identification (made by the authors)

Description of tests used: A. Sixteen Personality Factor Questionnaire (R.B. Cattell). The inventory is based on the 12 source traits defined by factorial analysis, and the items are selected on the basis of saturation in those factors, without specifying how they were originally formulated or chosen. Many of the descriptions of the features are special formulations of Cattell. To this respect, what is important is the scientific accuracy of terminology and to this end, the elimination of all language-specific connotations usually choose to redefine the exact solution of the concepts used and, moreover, the systematic and coding terms. In this regard, the questionnaire is appropriate to be used only by professionals familiar with Cattell's theory and the exact meaning of each factor. The questionnaire has two parallel forms, the 26 items each. Can be used with both forms simultaneously. But research has shown great loyalty to those

forms for all 16 scales of the questionnaire (50 to 88). uniformity coefficients (from 22 to 4) and validity (from 32 to 86) entitling an equivalence that attempt to contain the set of specific behavioral manifestations size, gradually, from one of its poles characterized by maximum expression in the conduct of an extreme size, to the other, characterized by a maximum expression of the opposite. The test assesses the normative data of the individual position along this continuum. Specific such assessments, which consider the interpretation that significant and active role in the actual behavior of the person whose weight is a factor that exceeds in one direction or another area of medium significance.

**B. Personality Questionnaire of Guilford – Zimmerman** includes 10 major personality traits. The dimensions of the new form are: G, general activity, with 30 items, covering aspects such as love for speed, haste, vitality, lively production and efficiency, vs. slow, deliberative, easily tired, ineffective, R, with issues such as self-serious, deliberate, persistent vs. indifference, impulsivity, pleasure arousal (rhythmia); A, ancestry, issues such as self defense - lead public speaking, self-controlled vs.. hesitation, avoid full of care; S, sociability, with features such as having many friendship, seeking vs. social contacts. few friends and shyness (social introversion), E, the equality provision emotional stability, optimism, calm vs.. variability mood, pessimism, Reverse, excitability, feelings of guilt, anxiety, loneliness and poor health (a combination of factors C and D), O, characterized by hypersensitivity vs. objectivity, hypersensitivity, self-centred, suspicious, fall into trouble;; F, friendship → Tenia hostile action by tolerance, acceptance of dominance, respect for others Vs. belligerent, hostile, with resentment, the desire to dominate, contempt for others, T reflexive by reflective notes on others and himself, mentally balanced Vs. interest in specific activities, is slightly disconcerted (thinking introvert); P, personal relationships, human tolerance, trust in social institutions Vs. always looking for fault, criticize institutions, suspicious, their cries of mercy (cooperation), M, masculinity in male interest in activities, not disgust slightly rough, tough, they inhibit the expression of emotions, disregard for clothing and style Vs. interest in activities and concerns women, it is easy disgust, timid, romantic, express emotions. The inventory contains

of scores for Form A and B. Factors evaluated by factorial analysis are bipolar constructs

300 items, 30 each for each scale factors expressed by the words yes, most with direct relevance to person and few representing generalizations / ABSTRACTION.

**C. Questionnaire for temperamental identification** (Belov) includes 80 items to identify temperamental type (choleric, sparkle, phlegmatic, melancholic). The application questionnaire Belov will instruct the subject to move in the right section (bubble) on each line number 2 - corresponding to the statement, the full matching row - the figure 0 - for discrepancies sharp figure 1 for intermediate situation (but rarely both). After application questionnaire will be all the chatty column, it will be passed to the appropriate box (total) by the end of the questionnaire. After the results will be converted to standard rates, using the above table which will allow better classification of temperament respondents. (Minulescu, M., 2004)

**D. Questionnaire for motivation identification** (made by the authors). This questionnaire is structured in the form of 15 items. The first 8 are answered openly and aims to obtain certain information such as: name and surname, age, gender, sport practiced, the age of onset in that sport, relevant sports performance, sports history in the family and any persons who have guided the subject to practice that sport. Items accompanied by 8-12 scale in 5 steps (intervals), between 1 (extreme left), designating the type extrinsic motivation and the existence of significant influence coming from outside. At the opposite end is the range of intrinsic motivation and 5 which means no external influences on achieving sporting performance. Item 13 for identifying the form of extrinsic or intrinsic motivation by choosing a preset response options (a, b, c, d, e) or mention the free option with 1,2,3 f. Note, first-choice response order of importance. Extrinsic motivation is related to options, c (or f) and for the intrinsic b, e, d, (or f). The item 14 has 4 preset response options, option (d) extrinsic motivation corresponding him and the other to show the activity. The item 15 delimits the 2 types of motivation: Yes - intrinsic, Not - extrinsic.

**THE RESULTS OF RESEARCH**

**Table 1.** relevant statistical data for factors C, H, L, M, Q3 (16 PF)

1. 16 PF test results.

F a c t o r s	G r o u p 1 c	N1	A v e r a g e	S t. d e v i a t i o n	D i f f e r e n c e	t e s t	M e a n i n g
	G r o u p 2 I n d i v i d u a	N2	x	$\sigma$	$\Delta$	t	p
					=		
					x		
					2		
					-		
					x		
					1		

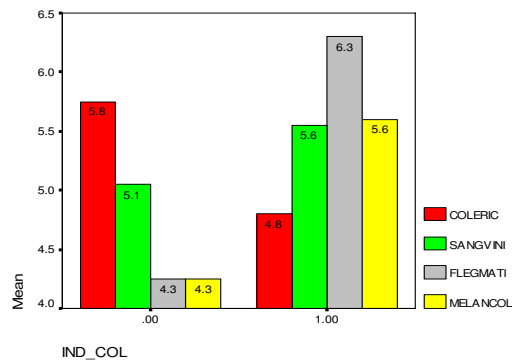


I	a						
C	Indi.	20	5,55	2,28	1,75	3,11	0,004
	Coll.	20	3,80	1,05			
H	Indi.	20	4,75	2,09	-2,5	-	0
	Coll.	20	7,25	1,06			
L	Indi.	20	6,55	1,84	1,45	2,03	0,05
	Coll.	20	5,1	2,59			
M	Indi.	20	4,25	1,25	1,05	2,86	0,007
	Coll.	20	3,2	1,05			
Q3	Indi.	20	3,65	1,69	-	-	0,031
	Coll.	20	4,85	1,69			

2. Guilford-Zimmerman test results.

Table. 2 distribution mean values and standard deviation Guilford-Zimmerman test

Feature	Average			St. Deviation	
	Indiv.	Collect.	Total.	Collect.	Indiv.
G	15.67	13.94	14.80	4.97	3.23
R	18.36	18.43	18.39	5.35	4.43
A	18.87	16.07	17.47	5.06	4.86
S	18.23	18.45	18.34	6.97	6.33
E	16.97	18.93	17.95	5.32	6.47
O	17.92	17.35	17.63	6.15	6.79
F	13.81	14.72	14.26	3.97	3.41
T	19.84	19.90	19.87	5.34	5.63
P	16.91	17.21	17.06	5.05	4.98
M	18.73	18.17	18.45	5.11	5.21

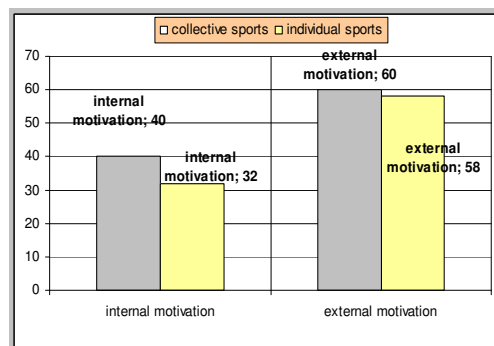


3. Belov test results.

00 - individual grup  
1.00 - collective group

Chart 1. Distribution media on standard notes, Belov

4. Questionnaire for motivation identification results.



**Chart 2.** Percentage values of internal and external motivation**CONCLUSIONS**

After the realization of this study, can be dignified the following:

1. Between the 2 studied groups, there are observed significant differences regarding the temperamental predominant type. The profile of **choleric-sanguine** temper is characteristic for the practitioners of individual sports, and the **phlegmatic-sanguine- melancholic** type is specific to the team sportsmen.
2. The prolonged practice of a certain sport contributes relevantly to the shaping of a certain personality profile. The essential characteristics that define courage, dynamism, the desire to be independent, the assumption of responsibilities and risks, the capacity to take decisions within short time, a easy tendency of emotional instability, of impulsivity and of excessive consume of energy within the activities development. For the sportsmen of the other group are relevant the following base attributes: constancy in interests and attitudes, emotional stability, group dependency, perseverance, hesitation to communicate with the public.
3. The inherent motivation represents the main form of motivation that determines the sportsmen of the two groups to practice the chosen sports. The lower values registered at the level of the group of team sports can be due to the fact that the professional sportsmen are better paid and better promoted (the mass media institutions promote more in different advertisings the sportsmen from this category), so, the external stimulations are more intense.
4. There were identified relevant similarity between the results got by the use of some different instruments (questionnaires). The most representative resemblances were observed between the feature E (Guilford-Zimmerman) and the factor C (16 PF), as well between the feature G and the definitive characteristics for the temperamental types predominant for each group: choleric and phlegmatic.
5. There were signalized significant aspects within the personality sphere or of the motivation having the gender as comparison

criteria between the members of the two groups.

6. From the analyze of the three case study, it results that the obtaining of the sportive performances is significant determined by the manifestation with regularity of the positive individual characteristics on the base of the predominant motivation of inherent type.

**PROPOSALS**

- I believe that in developing selection strategies in sport, it is appropriate to consider more strongly by psychological factors, especially if medical criteria (morpho-functional), technical and /or tactics are not enough.
- Given that subjects belonging to the group collective sports were found low on concern for others, the selflessness and effective communication (see results from the factor L - 16 PF), it is recommended that this category of performers to create suitable opportunities for possible manifestation of their individuality to the optimal parameters in the group and beyond.
- It is preferable that the individual athletes to start the group in practice drills autogenous and other relaxation techniques and mental self to counter the effects due to emotional instability and impulsivity.
- It is appropriate training methods are tailored to particular personality of athletes and to wear out more than individual training even in collective sports.
  - For both categories of performers, I think it is appropriate to use the specific training type mainly ways to motivate positive (praise, encouragement, etc.) And less judgmental sentences and words to reinforce a strong sense of self.

**References:**

- GORDON, A., 1991, *Structura și dezvoltarea personalității*, Editura Didactică și Pedagogică, București, p.27**
- MINULESCU, M., 2004, *Psihodiagnoză modernă, Chestionarele de personalitate*, Editura Fundației Romania de Măine, p.20-80**
- PRESCORNIȚĂ, A., 2007, *Știința Sportului –note de curs, Master Antrenament Sportiv*, Universitatea Transilvania Brașov**
- RUTTEN, A., BETTE, K.H., 1995, *Dictionary of Sport and Exercise Sciences*, Illinois, p.34**
- www.ipersonic.com/type/AT.html accessed in 5.03.2010

## STRATEGIES TO PREVENT AND TREAT POST - TRAUMATIC LESIONS IN HANDBALL GAME

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### ABSTRACT

**Purpose:** The game of handball is a harmonious combination between natural movements as running, throwing and jumping on the one hand and simple specific movement skills, accessible and attractive on the other hand. Also the game of handball takes place on a background of intense psychological demands, which are highly educational and formative. Obtaining great performance requires from the athlete remarkable physical effort which leads to wear of body with permanent damage to health, especially when the preparation process is guided by empiricism and improvisation rather than scientific principles. The risk of accident is always present in sports activity and is often generated by known causes like exaggerations in graduation of effort, inadequate warm-up or aggressiveness in the play field. Detection and treatment of clinical forms, therapeutic conduct and athlete recovery are just some of the directions that need to be followed in order to obtain sustainable solutions to ensure performance. The main purpose of this research consists in bringing a prospective study of injuries in handball, giving a precise definition of the concept of trauma, following on personal data upon injury mechanisms and examining of these injuries for obtaining accurate information on such mechanisms and for recommending effective prevention methods.

**Methods:** Accident prevention is possible only if causes that lead to them are known. These causes vary depending on the sport particularities, the environment, the play ground, equipment and installations, gender, pedagogical experience of the teachers etc. The subjects involved in the research were represented by the handball players that were monitored for a long period of time. A special attention must be given both to the body care which is related to recovery training and also to other parameters related to sports performance, throughout the whole competition year. The proposed prevention and conditioning program addresses to strengthening tendons and ligaments, together in the same time with muscles in order to strengthen the joints they cross, to help prevent injuries and to achieve full range of motion and stability. It is also important to increase flexibility and joints range of motion, using static stretching exercises for general flexibility, specific warm-up procedures, power training and resistive exercises according to specific activity.

**Results:** Recovery is a complex interdisciplinary action involving professional medical and social aspects. According to the research, we observed that the body segment most exposed to trauma is the lower leg, which represents 63% of total disorders. The less affected area in terms of trauma is the trunk, which is 0, 5% of the total. Statistical analysis and processing of survey's data showed that the most requested body segment in terms of traumatic diseases is the knee and the least required are the thorax and the abdomen. Taking into account the nature of the condition, we observed that the most common affection in handball player is represented by the direct trauma, followed by the sprain and then the meniscus injury. Other lesions that are not in proportion as those mentioned above are: pseudoarthrosis and essential osteolysis. In conditions of modern handball practicing that involves total commitment, players are sometimes exposed to injuries. These traumas occur less frequently in training and official games.

**Conclusions:** According to the records and the medical observed descriptions of handball players, we noticed that there was an analysis or an "examination" of the musculoskeletal system that has to include both the macro and microstructure of musculoskeletal system in order to determine an accurate diagnosis and to achieve a fair and effective therapy. For this achievement it must be established first a certain and detailed medical history, then the group of anatomical formations injured, which must determine the correct location of the lesion, the exact formation injured, either solitary or in combination with other formations localized in the immediate vicinity, superficially or in depth, through inspection and palpation. It is noted that one characteristic of the handball game is that this sport exposes to acute trauma that generates fractures, capsule-ligament injuries, muscle lesions and lesions of the meniscus.

**KEY WORDS:** handball, post – traumatic, lesions, rehabilitation, prevention.

### Purpose

The game of handball is a harmonious combination between natural movements like running, throws and jumping on one hand and specific driving habits simple, accessible and attractive addition. Also handball game takes place against a background of intense physical demands, which are highly educational and formative. (Mihăilă, I., 2006).

Getting great performance from the athlete requires great physical effort which may lead to wear body with irreversible damage to health, especially when the preparation process, rather than being driven

by scientific principles, is guided by empiricism and improvisation.

Recovery action is a complex interdisciplinary issues involving social and medical professional. Recovery period has a precise meaning in Romanian. Thus, to recover is to restore again to recover all or part of materials, substances, power, function, etc.. This definition encompasses both the recovery action to recover and result of this activity. (Drăgan I., 2002)

The risk of accident is always present in sport is often generated by known causes, including the determination exaggerations effort, insufficient

heating, aggression in the playground (Dumitru, Gh. 1994). Detection and treatment of clinical forms, therapeutic conduct and athlete recovery are just some of the directions to be followed in order to find viable solutions to ensure performance (Georgescu L. 2006).

Virtually all musculoskeletal injuries can be prevented through proper training initiated and led by an appropriate physical training. So the logical conclusion to be drawn is that training should be reconsidered in terms of injury prevention (Kreider, R., 1998).

In the spirit of this idea we designed the present development work taking into account the following factors:

- ✓ increased incidence of handball injuries during performance;
- ✓ incomplete knowledge of the particular anatomical and biomechanical aspects of the structures involved in sports injuries;
- ✓ crucial role of medical control in physical education and sport activities, the role of prophylaxis in preventing illnesses and injuries occur;
- ✓ kinetotherapist role relatively recent practice in the sport.

### Methods

Most injuries indicate a close interdependence between the number and kind of sports injuries and characteristics of each sport. Type of effort, biomechanical characteristics, specific discipline rules, equipment and apparatus used, environmental and organizational conditions are among the many causes which are to vary not only percentage but also the way sports injuries and their location. In terms of injuries 2 ranked handball Olympic sports.

Handball involves actions performed with great speed, strength, precision driving which requires players individual and collective reactions adequate to properly resolve situations that arise during the game required the rapid passage of the defense review, the dispute with the opponent. For the performance of game players are required great expansion response speed, strength, specific technical very fine sense of direction and running in minimum time, as the best choice phase.

The game of handball is also characterized by the appearance during the specific effort of often violent contact with the ball field, but especially with the opponent. Hence the need to train both the lower and the higher the player is well developed joints and musculo-tendinous structures flexible and mobile to achieve the technical maneuvers of precision and finesse. Disorders frequently encountered in handball players are scapulohumeral luxation, contusions, sprain of the elbow, fingers hand, knee sprain, sprain of ankle, meniscus lesions, low back pain,. From studies showed that the highest rate of injuries associated with

throwing action followed by blocking the gate, requiring both the jumping athlete.

Accident prevention is possible only if it determines the causes are known, they vary depending on the particular sport, the environment, playing, equipment and installations, sex, teacher pedagogical skill, etc.. We found a direct correlation between the frequency and nature of accidents on the one hand and training methods on the other hand. This led to the conclusion that the emergence of a series of changes in the methods of training, adding that the process of training methods for joint exercise, massage, stretching, exercises to increase muscle strength, would substantially reduce the strain injury cases.

Subjects of the research we were represented by handball players have been monitored for a long time. Particular attention must be given body care related training both recovery and other parameters related to sport performance, competitive throughout the year. The proposed program addresses prevention and conditionings strengthen tendons and ligaments, while the muscle to strengthen it through the joints to prevent injuries and to achieve the full range of motion and stability. We also increased flexibility and range of motion of joints, we used the static stretching exercises for flexibility in general, specific procedures for heating, power training, and resistive exercises based on specific activity.

### Results

Medical Investigation - sports specific effort, called medical observation - teacher, presents a practical and effective form of medical control - biological sports training, designed to contribute to the prevention of illnesses induced or promoted any sporting effort but also to assess any Since exercise capacity and therefore specific medical premises - Sports biological efficiency. Training serves to keep the highs of those variants that affect performance in different sports. Training time to reach the maximum reached, so that has made the search for higher quality training facilities.

Caused by sports injuries occur more frequently than generally considered. Thus, recovery training is individual training, dosed load (cargo) after injury. Dosage pregnancy increases the health status and exercise capacity days, in conjunction with the methods of activity and movement for each type of sport in hand. Recovery Training deals not only injured segment but the complex forms of training, the whole body.

Athlete responsibility is another facade of prevention. This means that he must really live sports (rest and nutrition).

Recovery action is a complex interdisciplinary issues involving social and medical professional. According to the research, I noticed that: the body most exposed to trauma is the lower limb, which represents 63% of all diseases, and most spam in terms of trauma is the torso, which is 0, 5% of the total. Analysis and statistical processing of survey data showed that the most requested body segment in terms of knee

disorders is trauma and the least addressed is the thorax and abdomen. After the nature of disease, we observed that: the most common disease in handball player is direct trauma, sprain and then follows the meniscus injury and those who are not in proportion as those mentioned above are pseudarthrosis and essential osteolysis. With total commitment to engaging with modern handball players are often exposed to injury. They rarely occur more frequently in training and official games.

From the foregoing that lately more and more authors recognize that the primary cause of injuries sports and fitness athletes inappropriate.

Of data analysis research note that the body is most exposed to the lower limb injuries, which represent 63% of all diseases, and the inertia in terms of trauma is the torso, which is 0.5% of the total. Most requested body segment in terms of knee disorders is trauma and the least required is thorax and abdomen. Disease most common in handball player is trauma, sprain and then follows the meniscus injury and those who are not in proportion as those mentioned above are pseudarthrosis and essential osteolysis. With total commitment to engaging with modern handball players are often exposed to injury. They rarely occur more frequently in training and official games. It is noted that the practice of handball injuries occur more frequently than generally considered.

According to the descriptions found in medical records of handball players have noticed that there was an analysis or an "examination" of the locomotor's system must know both the macro and micro locomotor's to establish a real diagnosis for achieve a fair and effective therapy. For this achievement must be established first accurate and detailed history, and anatomical formation or group of aggrieved parties, who must determine the correct location of the lesion, formation affected either solitary or in combination with other formations in the immediate vicinity, the area in depth or associated with inspection and palpation.

#### Discussion and conclusion

Handball game belongs to the category of team sports, is a spectacular game based on the craftsmanship is recovered within the physical, technical and mental fitness of players, held within a simple and accessible regulation, well established.

It is essential that those who prepare today's handball players know the best method for exploring the whole exercise capacity, so that the interpretation of results showing the attitude and methodology of

sports training in line with objectives set out for the team.

Of trauma, the most common musculoskeletal injury caused by the practice of handball game is sprain, including the knee, ankle, the elbow joint and hand, wrist, thumb.

If handball player injured, an important role in further sporting activities occupy recovery and rebuilding.

Recovery training can be used as a means of prevention. Accidents can be prevented through systematic training. It is important to pay attention to workout recovery led to a clear purpose and effort and intensity of training, depending on age.

In general (depending on the seriousness and urgency of surgery), recovery is performed in periods of transition. But regardless of the period when required to recover a player must associate medical facilities and hygienic with mental recovery. Any accident you yank the team player that is connected, which prohibits an effort beyond measure, and especially participation in official games, has in most cases a psychic echo of frustration, marginalization, deterrence, uncertainty of total recovery.

#### REFERENCES

- AVRAMESCU, R. ET ALL, 2005, *Kinetoterapia in activitati sportive – volum II – Investigația medico-sportivă; Aplicații ale teoriei in practica*, Ed.Didactica și Pedagogica, Bucuresti.
- CHARTERED SOCIETY OF PHYSIOTHERAPY, 2000, *Clinical Audit Tools aonlines*. Chartered
- CHARTERED SOCIETY OF PHYSIOTHERAPY (2000). *Service Standards aonlines*. Chartered
- COLSON, J.H.C., ARMOUR,W.J.,1986, *Sports Injuries and their treatment*. Edit. Stanley Paul, Londra.
- DONAGHY, M. E, GOSLING, S., 1999, *Specialization in physiotherapy: musings on current concepts and possibilities for harmonization across the European Union*. Physical Therapy Reviews 4: 5160.
- DRĂGAN I., (2002), *Medicină sportivă*, Edit. Medicală, București
- DUMITRU,GH., 1994, *Suferințele musculare ale sportivilor*. Edit. Mondograf, Constanța.
- GEORGESCU L., 2006, *Prim ajutor și traumatologie sportivă aplicată*, Edit. Universitaria, Craiova
- KISS, I., 1999, *Kiziokinetoterapia și recuperarea medicală*, Edit. Medicală, București.
- KREIDER, R., 1998, *Journal of Exercise Physiology* online Official Journal of The American Society of Exercise Physiologists, Medline.
- MIHĂILĂ, I., 2006, *Optimizarea pregătirii fizice specifice la echipele de juniori*, Edit. Universitaria, Craiova.
- POENARU,D.V.; PETRESCU,P. , BUȘE,I., 1985, *Traumatologie și recuperare funcțională la sportivi*. Edit. Facla, Timișoara.
- SBENGHE, T., 1981, *Recuperarea medicală a sechelelor postraumatice ale membrilor*, Edit. Medicală, București.

## IDENTIFYING THE PHYSIOMOTOR PREDISPOSITIONS CONSIDERED AS FAVOURABLE FOR PRACTICING SPEED SKATING

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### ABSTRACT

The present study points out the importance of the favorable predispositions in performance sport and it started from the hypothesis that, if we identify the main physiomotor predispositions considered favorable in practicing speed skating, then these can constitute a very important clue of appreciation of the future champions, being able to pointed out, by different specific tests, certain organic or functional deficiencies that later can create problems both from the athlete's health point of view or the athlete's results. By identifying these predispositions favorable we avoid the engaging in speed skating of the athletes that do not have the necessary qualities for practicing this sport.

This study forms on a hierarchical system the physiomotor aptitudes considered favorable, their classification being made on the basis of a hierarchy scheme, schemes completed with the help of certain specialists from speed skating from our country.

### Material and methods

The identification and hierarchy of the main physiomotor aptitudes favorable for practicing speed skating have been made in collaboration with two of the best coaches in the country, the used research methods and techniques being: the bibliographic study method, the questionnaire method, the observation method, the statistic-mathematical method, the graphic method.

This study has been realized using the hierarchy scheme of the favorable predispositions (or choosing the best solution, from more possibilities) made by E. D. Colibaba (1998) and which we will present in the paper.

### Results

Connected to the hierarchy of the physiomotor aptitudes we notices that, although at this age these are fluctuant, the order realized by the obtained score are: voluntary apnea, vital capacity, cardiac frequency and arterial tension.

### Conclusions

The resulted conclusions from this paper can be at the base of certain future researches, knowing that speed skating is a very complex sport that has very varied tasks as the distance that must be crossed, from 100 m to 10000 m, containing actually all the effort forms encountered in sport. From the presented conclusions we point out the fact that, the voluntary apnea is considered a very important clue for foreseeing the future sport performances, through its connection with the hypoxia resistance, knowing that in the sport with cyclic character, such as speed skating, there is a connection proved by the superior results and the increase of the individual stability at hypoxia, the resistance at hypoxia being very strongly genetically determined.

**KEY WORDS:** favorable predispositions, speed skating, physiomotor aptitudes

### INTRODUCTION

Identifying the physiomotor predispositions considered as favorable for practicing speed skating constitute a theme of present interest, because these aptitudes have a certain significant role in the initial selection process and not only.

Lately, it has been notices an increase of interest from the specialists for the performance sport, being able to observe and improvement of it at all the collateral disciplines with which the sport of high performance has tangency (biology, genetics, biomechanics, motor anthropology, psycho-pedagogy, technology, coaching methodology, etc.).

Performance sport is sustained also by the multidisciplinary researches of which results we can say that had a special influence in restructuring the old traditional strategies of selection and training of children of an early age and not only.

In Romania, with all that there is an acute lack of specific sport bases, even if the sport materials of last generation, the Romanian athletes have obtained the international results relatively well at the junior

level. Through this hierarchy I wished to bring a plus of information in the domain, pointed out the fact that there have to be selected only those athletes that answer certain specific criteria, well limited.

The activity through which it is realized the tracking of talented elements for practicing speed skating is a very important one and that must contain a series of entire agents (coaches, teachers, educators etc). Just through a continuous activity and of quality at the level of orientation and selection process, of course having at its base clear and well made knowledge over the favorable predispositions that are at the base of the respective sport branch, we can obtain superior results at higher ages, avoiding the engagement in the performance sport just of the children that manifest their desire to practice skating, not taking into account the real qualities that these children have, fact that limits the appearance of further superior results, realizing additional costs with many children that are not in the models and characteristics frame necessary to the respective sport.

The sport results of worldwide level are conditioned by certain qualities that are in part genetically determined, of course these being influenced also by the quality and quantity of the further training. Realizing the superior sport performance not only on the basis of the genetic qualities of the athlete, or only on the base of the training developed no matter its quantity and quality is a wrong conception that finally will lead only to the athlete's decline.

A. Madella (2000) considers that finding children with tendencies towards certain sports is situated in the center of the discussion had with researchers, coaches and federations, international organisms etc. Also, the same author says that the most used factors in order to search and discover talents are: anthrop-motor and morphological criteria, functional parameters, conditional capacities, coordinative capacities, psychological variables, environmental conditions and tolerance capacity of the specific tasks and of stress (A. Madella, 2000).

Usually, searching the talented elements for certain sport branches has been realized through certain strategies, that are pretty simple and that, mostly, have given results. These identification strategies are (A. Madella, 2000):

- First sight experience.
- Realized performance during the selection contest.
- The confrontation with the correlative test and with the reference models specific to the respective sport branch.
- The longitudinal analysis of the evolution rhythm.

It is recommended that, during the initial selection process, coaches to follow the testing of the children concerning (Romanian Federation of Speed Skating, 1991):

- The functional and morphological development of the subjects in concordance with the particularities specific to practicing speed skating.
- Developing the motor capacity of children reported to the structure of the skills and actions specific to speed skating.
- The development of personality traits of children in concordance with the behavior requirements specific to practicing speed skating.

As speed skating is a complex sport, with very varied tasks as the distance that must be crossed, these starting from 100 m until 10000 m, containing the fact that almost all the effort's forms encountered in sport, we can say that the identification of the predispositions favorable for the speed skating has become a necessity, knowing the fact that, in our country, there is no clear delimitation of these predispositions, their

identification being able to make easier the work of specialists that are in charge with children's selection for practicing speed skating.

### Hypotheses

In the present study I started from the hypothesis that, if we identify the main physiomotor predispositions considered as favorable for practicing speed skating, then these can constitute a very valuable clue of appreciation of the future champions or can point out, through different specific tests, certain organic or functional deficiencies that later can create problems both from the athlete's health and his results.

### Research methods

The identification and hierarchy of the main physiomotor aptitudes favorable for practicing speed skating has been made in collaboration with two of the best coaches in the country, the coach of the junior Olympic lot (the category of athletes with the best international results lately) and the coach of one of the top clubs from Romania in what concerns the obtained results in speed skating across the time (The Sport Club Petrolul Ploiesti).

The realized classification has had into account also the age at which the initial selection in speed skating is being realized but also as evolution in time of those characteristics.

The used research methods and techniques have been the following: the bibliographic study method, the observation method, the questionnaire method, the statistic-mathematical method, the graphic method.

During this hierarchy we have followed the main physiomotor aptitudes used by the specialists, that are also easy to test, not being necessary a very complex equipment, being able to use also the clubs with a weaker rigging in what concerns the equipment, this classification containing: the arterial tension (T.A.), the cardiac frequency (F.C.), the voluntary apnea (A.V.) and the vital capacity (C.V.).

The three presented scores in the present paper are obtained on the basis of the hierarchy scheme, by the author (score 1), as ex performance athlete (multiple champion and national record man in speed skating), by the coach of the junior Olympic lot (score 2) and the coach of the Sport Club Petrolul Ploiesti (score 3).

The hierarchy study of the aptitudes favorable has been realized using the hierarchy scheme of the favorable predispositions (or choosing the better solution, from many possibilities) made by E. D. Colibaba (1998) and which we present in table 1.

**Table 1:** The hierarchy scheme of the favorable predispositions (E. D. Colibaba, I. Bota, 1998).

Aptitudes, conditions and solutions	Comparison way						Question	Answer
	A	B	C	D	E	F		
A	+		+	-	+	-	Is A more important than B?	-
B	-	+		-	-	-	Is A more important than C?	-
C	-	+	+		-	-	Is A more important than D?	+
D	+	+	-	+		-	Is A more important than E?	-
E	-	+	+	+	+		Is A more important than F?	-
F	+	+	+	+	-	+	C more important than D	-
Total no. of "+" on columns	2	5	3	3	1	1	etc	etc
Aptitudes hierarchy	3	1	2	2	4	4		

The operational development used in the presented hierarchy had been the following: the predispositions have been noted on vertical and horizontal in the same order, each aptitude favorable on the horizontal (eg. Arterial tension) and are compared with the other predispositions on the vertical (eg. Cardiac frequency) asking questions – for example – is the arterial tension more important than the cardiac frequency?. If the given answer is “no” than we note with a minus the box near the arterial tension and with a plus in the box corresponding to the cardiac frequency.

After we complete with the marks + and – this table we make the sum of pluses (+) at the end of each column in part. The hierarchy of the predispositions is ordered after the number of obtained pluses.

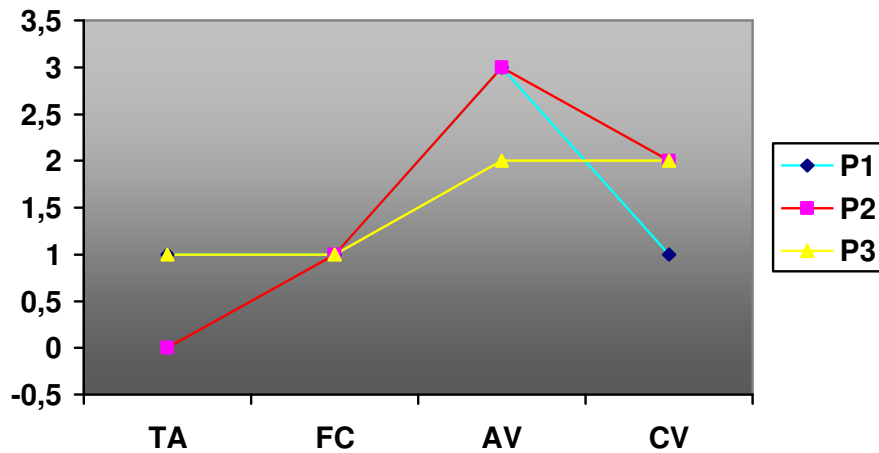
**Results and discussions**

After we have completed the hierarchy schemes proposed or have obtained the following scores from which we have realized the proper hierarchy. These scores are presented in table 2.

**Table 2:** The hierarchy of the favorable physiomotor aptitudes

Aptitudes	Physiomotor aptitudes			
	Arterial tension T.A.	Cardiac frequency F.C.	Voluntary apnea A.V.	Vital capacity C.V.
Score 1 (P1)	1	1	3	1
Score 2 (P2)	0	1	3	2
Score 3 (P3)	1	1	2	2
Total score (PT)	2	3	8	5
<i>Aptitudes hierarchy</i>	<b>4</b>	<b>3</b>	<b>1</b>	<b>2</b>





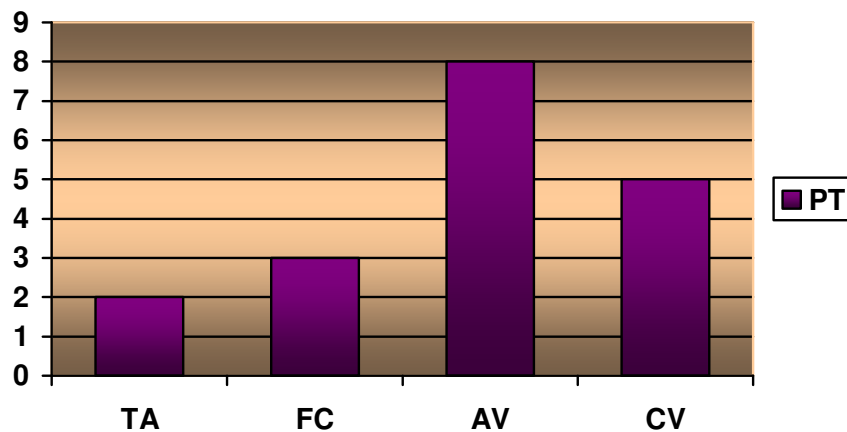
**Graphic 1:** The graphic representation of the physiomotor aptitudes favorable depending on authors

In the graphic 1 we can notice the graphic representation of the favorable physiomotor aptitudes depending on the obtained scores by the 3 authors from the realized hierarchy scheme and their overlapping in the graphic form in order to be able to better understand their variation.

By the made hierarchy we tried to point out the main favorable physiomotor aptitudes favorable for the speed skating, trying to complete the emptiness from the scientific research connected to the selection in speed skating from

our country, helping in this way the coaches and physical education teachers that are in charge of the selection in speed skating to promote the talented elements that are between certain parameters (by realizing the selection model), reducing in this way the risk to promote athletes that later will prove to me mediocre.

In graphic 2 we can notice graphically the hierarchy of the physiomotor aptitudes favorable, made classification according to the total obtained score (PT).



**Graphic 2:** Graphic representation of the hierarchy of the favorable physiomotor aptitudes

Connected with the hierarchy of physiomotor aptitudes we noticed that, although at this age these are fluctuant, the realized order after the obtained score being: voluntary apnea, vital capacity, cardiac frequency and arterial tension. The voluntary apnea is considered favorable in report with the other parameters by its connection with the resistance to hypoxia knowing that the increase of sport results in the sports with a cyclic character is made parallel with the increase of individual stability at hypoxia, and this factor is a very good criterion in foreseeing the athlete's future (V.B. Svarț, S.V. Hrușcev, 1986).

V.B. Svarț and S.V. Hrușcev (1986) considered that as the athlete has a higher qualification, the higher the individual reaction stability is at hypoxia. The hypoxia phenomenon consists in a reducing of the partial pressure of the oxygen in the inhaled air, time in which the venous blood gets a small quantity of oxygen in the lungs, fact that creates a state of hypoxia characterized by the decrease of the saturation degree with oxygen of the hemoglobin from the blood and a reduced pressure of this gas dissolved in the sanguine plasma. This state is tolerated by the organism only by the entering into function of certain additional mechanisms of adaptation (V.B. Svarț, S.V. Hrușcev, 1986).

Specialists from the domain have noticed that there is a strong hereditary predisposition for the resistance to hypoxia, their transformation being made both under the genetic factors influence and from those of the environment.

Connected with other physiomotor aptitudes we can say that also they are important (although the fluctuations at the age at which selection in skating is being made are rather high) due to the possibilities of the health state forecast of the cardio-respiratory system and of the adaptation capacity to effort of the selected athletes.

Specialists consider that certain physiologic parameters are considered non-perfectible (determined) have a favorable role in obtaining good results, but we must make the assignation that also the perfectible ones can influence the results, especially when they touch or surpass the optimum values.

Choosing the voluntary apnea as the most important physiomotor aptitude has been made on the basis that the complex studies made on twins have proved clearly that the resistance to hypoxia is strongly determined genetically, very high solicitation that are at the base of the specific effort's base in speed skating being influences by

this resistance at hypoxia, so, this influencing directly the further sport results.

As speed skating is a very complex sport, that has very varied tasks as the distance that must be covered, from 100 m to 10000 m, containing the fact that almost all the effort's forms encountered in sport, the voluntary apnea has been considered determinant in comparison with the rest of the physiomotor aptitudes. Besides this scores have been received, in decreasing order, the vital capacity, the cardiac frequency and the arterial tension, knowing that the last two are influenced by different factors such as age, somatic growth etc.

The short distances tasks (500 m) are realized through an effort of neuromuscular type, in which the performance depends especially on the qualities and training of the neuromuscular apparatus. From an energetic point of view they are anaerobe lactacyde having the base on the ergo-genesis of the ATP of the kreatin-phosphate and anaerobe glycolysis. The tasks of 1000 m and 1500 m are efforts of cardiovascular type. During them the necessary energy is obtained both on anaerobe way and aerobe, the effort being mix. The tasks of 10000 m are of an energetic type (metabolic) the necessary energy for making the mechanic work being obtained on an aerobe manner.

At the same time, there must be mentioned the fact that, it is very important that at the athletes' level that we select, these to present a good manifestation and a very good one at the aptitudes with scores higher than the ones with lower scores, with the mention that if we have children with relatively equal good values (as percentage) between the perfectible qualities and the non-perfectible ones, these can be selected for the performance sport because due to the functional maturity there can appear good results in the future, with the mention that these can be reoriented if the results are not satisfactory.

We can say that certain parameters are considered determined (non-perfectible) have a favorable role in obtaining good results, but we must say that also the perfectible ones can influence the results, especially when they reach or surpass the optimum values.

We have encountered situations when an athlete was considered inferior to another – that had a good manifestation and a very good one of the aptitudes considered favorable – it had obtained better results towards the last ones,

precisely because of reaching better values at the perfectible parameters.

This conception concerning the hierarchy of the favorable aptitudes which I present in this study remains open, being able to be improved by the specialty coaches or specialists from the sport domain in concordance with their experiences.

### Conclusion

After the ones mentioned before we can draw the following conclusions:

1. The voluntary apnea is considered a very important clue connected with the sport performances, through which its connection with the resistance to hypoxia, knowing the fact that in sports with a cyclic character, such as speed skating, there is a connection between the superior results and the increase of the individual stability at hypoxia.
2. Besides the voluntary apnea also the others physiomotor aptitudes are important due to the possibility of the health state forecast of the cardio-respiratory system and of the adaptation capacity at effort of the selected athletes.
3. The fluctuations of the physiomotor aptitudes values with lower scores (arterial tension, cardiac frequency) are rather high at an early age, age when the selection in skating is being made.
4. The resistance at hypoxia is strongly determined genetically this resistance influencing directly the sport results.
5. Athletes that we select for practicing speed skating to present a good manifestation and/or very good at the aptitudes with high scores than the ones with lower scores from the presented hierarchy.

### REFERENCES

- BARRY, P., 1999**, *Speed on skates*, Human Kinetics, U.S.A.
- BOMPA, T., 2001**, *Dezvoltarea calităților biomotrice - periodizarea*, ediție și traducere în limba română, CNFPA, Editura Ex Ponto, București.
- BOMPA, T., 2002**, *Teoria și metodologia antrenamentului*, Editura Ex Ponto, București.
- COLIBABA, E. D., BOTA, I., 1998**, *Jocuri sportive - Teorie și metodică*, Editura Aldin, București, 199-200.
- DRAGNEA, A., MATE, S., 2002**, *Teoria sportului*, Editura Fest, București.
- EPURAN, M., MAROLICARU, M., 2003**, *Metodologia cercetării activităților corporale*, Editura Risoprint, Cluj-Napoca.
- FEDERAȚIA ROMÂNĂ DE PATINAJ, 1991**, *Patinaj*, U.I.P. Nr. 29, București, 117-118.
- HOLUM, D., 1984**, *The complete handbook of speed skating*, Enslow Publishers, Inc, Hillside, U.S.A.
- MADELLA A., 2000**, *Talentul Sportiv - C.C.P.S., S.C.J. Nr. 120-121*, București, 75-79.
- MANNO R., 1996**, *Bazele teoretice ale antrenamentului sportiv*, C.C.P.S., București.
- SVART, V.B., HRUSCEV, S.V., 1986**, *Aspecte medico-biologice ale orientării și selecției*, CNFS, București, 59-60.
- THOMAS, J., NELSON, J., 1996**, *Metodologia cercetării în activitatea fizică*, Vol. I, C.C.P.S., SDP 375-377, București.
- THOMAS, J., NELSON, J., 1997**, *Metodologia cercetării în activitatea fizică*, Vol. II, C.C.P.S., SDP, 386-389, București.
- VAIDA M., 2006**, *Monografia proceselor de selecție și pregătire la vârstă timpurie în patinajul viteză*, Teză de doctorat, Universitatea din Pitești, Facultatea de Educație Fizică și Sport.

## COMPARATIVE ANALYSIS OF THE ANTHROPO-MOTOR DEVELOPMENT LEVEL BETWEEN BOYS AND GIRLS AT THE SELECTION AGE IN SPEED SKATING

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### ABSTRACT

This study has as purpose the study of the anthropo-motor availabilities of the age at which the selection in speed skating is realized and we want to be a reference point for the agents (coaches, teachers, instructors etc.) that are in charge with this complex process. The hypothesis that was at the base of this study was that the more we know the exact actual development level of the children potentially performance athletes, in our case skaters, the more we can adapt more exactly the specific requests necessary to their initial selection, both at boys and girls. Also, I wished to make a comparison between the anthropo-motor development level of the boys and girls, knowing that at the age the selection takes place in skating there are certain variations specific to the growth period in what concerns the anthropo-motor data, these being more or less different at boys in comparison with the girls.

### Material and methods

The comparative analysis has been realized by studying 100 children of the Ploiesti city (50 boys and 50 girls), with ages of 7- 8, measurements being axed on the main anthropo-motor aptitudes used by the specialists, aptitudes that can be measured relatively easy, without needing a complex device. During the experiment we evaluated the following anthropo-motor aptitudes: waist (cm), bust (cm), weight (kg.), superior and inferior limbs length (cm.), biacromial and bitrohanterian diameters (cm), thoracic perimeter (P.T.) (cm.), thoracic perimeter in profound inhale and forced exhale (cm.).

The used research methods and techniques were: the bibliographic study method, the measurements and recordings method, the statistic-mathematic method, the graphic method and the experimental method.

### Results

From the obtained data it came out that, in what concerns waist, this is higher at boys than at girls, at the weight parameter the difference between girls and boys is insignificant, the bust values differing at the two sexes, boys having smaller bust than the girls, the superior and inferior limbs lengths having inferior values at both parameters at girls than at boys.

From the point of view of the biacromial and bitrohanterian diameters we can observe that the values tendency is an inferior one at both diameters measured at girls than boys, while the medium values of the thoracic perimeter in rest are relatively close, the thoracic perimeter means in profound inhale and forced exhale having superior values at boys in comparison with the girls.

### Conclusions

Analyzing the obtained results we can say that at the age of 7-8 there are no considerable differences between boys and girls in what concerns the measured parameters values, these differences being in their large majority insignificant, noticing also relatively minor differences of proportionality between the two sexes.

**KEY WORDS:** anthropo-motor development, comparative analysis, selection, speed skating.

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### INTRODUCTION

In general, the theory and practice of the sport selection process have been psychological and social grounded on the basis of the requests of the aimed sport branches having at the base also the individual particularities through which the difference between individuals is being realized.

The child must not be treated as an adult of smaller dimensions, but differentiated depending on his growth and development processes, also of the age particularities that must be well known by the coach.

The age notion has different senses in the specialty literature; mostly existing difficulty in what

concerns the clear delimitation of the age even at the teaching staff.

The chronological age is defined by R. Manno (1996) as the determined age after the number of years, months and days of life.

The chronological age (calendar) is also defined as the age which appreciates the years number from birth to a certain moment of life so it refers to the calendar date, having a statistic value (E. D. Colibaba, I. Bota, 1998).

The biologic age supposes the appreciation of the individual particularities of each athlete in part or

of those that deviate from the general age particularities (E. D. Colibaba, I. Bota, 1998). Also, the biologic age is also defined as the determined age depending on the significant biologic characteristics. Among others: osseous maturity, primary and secondary sexual characters, figure and body weight (R. Manno, 1996).

This age is a very important indicator for the physical education coaches and teachers that are in charge with training and selecting the athletes through the fact that they can appreciate the maturity level of the athlete.

In order to realize the appreciation of the biologic age we must take into consideration an entire series of indicators (morphological, functional, endocrine, biochemical etc.) that are in general appreciated in laboratory conditions by the specialists of the reminded domains.

From the existent data in the specialty literature we can say that, in this period (7-8 years), growth is approximately uniform, this being made especially according to the inferior limbs elongation (M. Ifrim, 1986).

Towards the end of the early scholar period, age at which also the selection in speed skating is being made, we can notice an acceleration of the growth process.

At this age, the domain specialists consider that the waist increases with approximately 5 cm annually, the body weight with 2,3 kg – 3,5 kg. Also, the musculature structure is similar with the adult's one, being different only the proportion of the muscular fibers (C. Bota, 2000).

At the same time, at the age of realizing the selection in speed skating, specialists have considered an increase of the osseous system at the solicitations of swinging, pressure or traction. The definitization of the cyphose takes place around the age 6-7.

We know that the skeleton of the children of an early scholastic age has in composition a rather high percentage of cartilaginous tissue, the ligaments stretching easily and the articulation being very mobile. Also, the backbone has the highest mobility at children until the age of 9.

Through this study we tried to make a connection between the anthropo-motor development level between boys and girls at an early, very important age for realizing the selection in speed skating.

The specialty federation recommends that during the selection frame we should follow: the general physical development level of the children, of course related to the age and sex particularities, finding the possible physical deficiencies that contraindicate practicing performance sport in general and of the speed skating in particular, also finding the aptitudes with genetic determination favorable for the obtaining of performances at tasks specific to speed skating. As

## RESULTS

we can notice, the general physical development level at children related to the age and sex particularities holds an important role in the selection process at this age (Romanian Federation of Speed Skating, 1991).

At the same time, we can say that this study wants to re-update the existent data in order to realize an unitary selection system depending on the shown changes at the children's level having at the base the changes provoked by the actual social evolution.

## MATERIAL AND METHODS

The study I have realized had as starting point certain questions that have their roots in the practical activity concerning the selection process in speed skating, questions that have risen after the discussions held with specialists from the domain and also from the observations of the researched phenomenon.

This study started from the hypothesis that, an agent (coach, teacher etc.), the better he knows the exact actual development level of the children potentially performance athletes, in our case skaters, the more exact he can adapt the specific requests necessary to their initial selection, referring to boys – girls. Also, I wished to make a comparison between the development level at boys and girls, knowing that at the age the selection in speed skating takes place, there are certain variations specific to the growth period, in what concerns the anthropo-motor data, these being different both at boys and girls.

The comparative analysis has been realized by studying 100 children of the Ploiesti city (50 boys and 50 girls), with ages of 7- 8, measurements being axed on the main anthropo-motor aptitudes used by the specialists, aptitudes that can be measured relatively easy, without needing a complex device.

During the experiment we evaluated the following anthropo-motor aptitudes: waist (cm), bust (cm), weight (kg.), superior and inferior limbs length (cm.), biacromial and bitrohanterian diameters (cm), thoracic perimeter (P.T.) (cm.), thoracic perimeter in profound inhale and forced exhale (cm.).

The used research methods and techniques were: the bibliographic study method, the measurements and recordings method, the statistic-mathematic method, the graphic method and the experimental method.

The statistic processing had at its base the following indicators: the ponderate arithmetic mean, the trust interval of the mean - 95% - + 95%, median, the superior limit ( $x_{max}$ ), the inferior limit ( $x_{min}$ ), quartiles – are those values of the characteristic that divide the series in four equal parts, amplitude (W), dispersion, the quadratic mean deviation (S), the standart error, the variability coefficient (Cv).

The experiment took place in 2007 having at its base more studies of my own and consisted of a series of measurements, comparisons and interpretations.

The obtained results in this experiment are shown in the following tables and graphics, tables 1, 2, 3 and 4 presenting the obtained values with the help of the statistic calculi of the anthropo-motor aptitudes both at boys and girls, and figures 1 to 6 present graphically the differences between the medium values of all researched aptitudes between boys and girls.

**Table 1:** Obtained values with the help of statistic calculi of the anthropo-motor aptitudes at boys

Boys	Waist	Weight	Bust	Superior limbs length	Inferior limbs length
Number	50	50	50	50	50
Arithmetic mean	127.8	26.3	68.1	56.9	59.7
Trust interval of the mean	95.0% 122.4 95.0% 133.2	23.5 29.2	66.0 70.2	53.9 59.8	56.3 63.1
Median	126.3	25.5	67.5	55.5	59.1
Inferior limit	120.0	23.0	65.0	53.0	55.0
Superior limit	137.5	32.0	72.0	63.0	66.5
Lower Quartile	123.0	23.3	66.2	54.5	56.5
Upper Quartile	133.3	29.3	70.3	59.5	62.5
Amplitude	17.5	9.0	7.0	10.0	11.5
Dispersion	41.6	11.8	6.3	12.4	16.7
Quadratic mean deviation	6.5	3.4	2.5	3.5	4.1
Standard error	2.3	1.2	0.9	1.2	1.4
Variability coefficient	5.0	13.0	3.7	6.2	6.8

From table 1 we can notice that the arithmetic means at boys are of 127,8 cm at waist, 26,3 kg at weight, 68,1 cm at bust, and of 56,9 cm and 59,7 cm at the superior and inferior limbs length.

**Table 2:** Obtained values with the help of statistic calculi of the diameters and perimeters at boys

Boys	Biacromial diameter	Bitrohanterian diameter	P.T.	P.T. in inhale	P.T. in exhale
Number	50	50	50	50	50
Arithmetic mean	27.6	21.8	61.6	66.0	59.6
Trust interval of the mean	95.0% 26.1 95.0% 29.0	20.7 22.8	58.9 64.2	63.8 68.2	57.3 61.8
Median	27.3	22.0	62.0	66.0	58.8
Inferior limit	24.5	20.0	57.0	63.0	56.0
Superior limit	30.5	23.0	67.0	70.0	64.0
Lower Quartile	27.0	20.5	59.0	63.5	57.8
Upper Quartile	28.5	23.0	63.3	68.0	61.8
Amplitude	6.0	3.0	10.0	7.0	8.0
Dispersion	3.0	1.6	10.2	7.2	7.3
Quadratic mean deviation	1.7	1.3	3.2	2.7	2.7
Standard error	0.6	0.5	1.1	0.9	1.0
Variability coefficient	6.3	5.9	5.2	4.1	4.5

The mean values obtained with the help of statistic calculi of the diameters and perimeters at boys are of 27,6 cm respective 21,8 cm at the biacromial and bitrohanterian diameters, 61,6 cm at the thoracic perimeter in rest, 66,0 cm and 59,6 cm at the thoracic perimeter in profound inhale and in forced exhale.

**Table 3:** Obtained values with the help of statistic calculi of the anthropo-motor aptitudes at girls

Girls	Waist	Weight	Bust	Superior limbs length	Inferior limbs length
Number	50	50	50	50	50
Arithmetic mean	126.9	26.4	69.2	54.3	57.7
Trust interval of the -95.0% mean 95.0%	121.3 133.9	20.3 32.5	66.6 72.7	50.6 57.9	54.1 61.9
Median	125.7	24.0	67.8	54.0	55.5
Inferior limit	120.0	20.0	66.0	49.5	54.0
Superior limit	142.5	41.0	75.5	63.0	67.0
Lower Quartile	122.3	21.5	66.7	50.8	53.9
Upper Quartile	131.0	29.5	72.9	56.0	60.8
Amplitude	22.5	21.0	9.5	13.5	13.0
Dispersion	57.2	53.5	13.3	18.9	21.9
Quadratic mean deviation	7.6	7.3	3.6	4.4	4.7
Standard error	2.7	2.6	1.3	1.5	1.7
Variability coefficient	5.9	27.7	5.2	8.0	8.1

Also, we can notice in table 3 the arithmetic means of the anthropo-motor parameters measured at girls, these being of 126,9 cm at waist, 26,4 cm at weight, 69,2 cm at bust, also 54,3 cm and 57,7 cm at the superior and inferior limbs length.

**Table 4:** Obtained values with the help of statistic calculi of the diameters and perimeters at girls

Girls	Biacromial diameter	Bitrohanterian diameter	P.T.	P.T. in inhale	P.T. in exhale
	50	50	50	50	50
Arithmetic mean	27.0	21.4	61.9	65.4	59.4
Trust interval of the -95.0% mean 95.0%	25.5 28.5	19.5 23.4	55.3 68.5	59.4 71.5	53.5 65.3
Median	26.3	21.0	60.0	62.8	56.5
Inferior limit	25.5	19.0	54.0	59.0	52.5
Superior limit	30.5	25.0	74.0	77.0	71.0
Lower Quartile	26.0	19.5	56.0	60.0	55.3
Upper Quartile	27.8	23.3	67.8	71.0	64.0
Amplitude	5.0	6.0	20.0	18.0	18.5
Dispersion	3.1	5.2	62.5	52.4	49.9
Quadratic mean deviation	1.8	2.3	7.9	7.2	7.1
Standard error	0.6	0.8	2.8	2.6	2.5
Variability coefficient	6.6	10.7	12.8	11.1	11.9

The statistic calculi of the diameters and perimeters at girls give us certain medium values of 27,0 cm respectively 21,4 cm at the biacromial and bitrohanterian diameters, 61,9 cm at the thoracic perimeter in rest and of 65,4 cm and 59,4 cm at the thoracic perimeter in profound inhale and forced exhale.

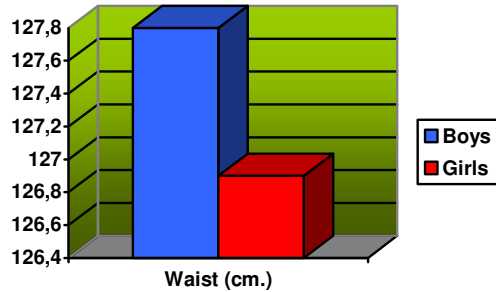


Figure 1: Medium values of the waist at boys and girls

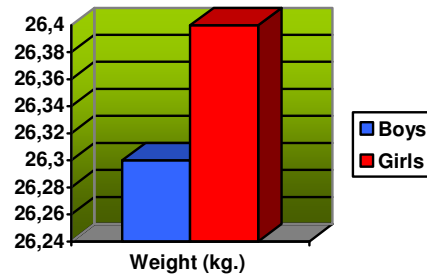


Figure 2: Medium values of weight at boys and girls

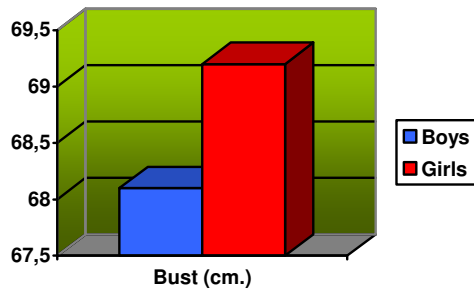


Figure 3: Medium values of the bust at boys and girls

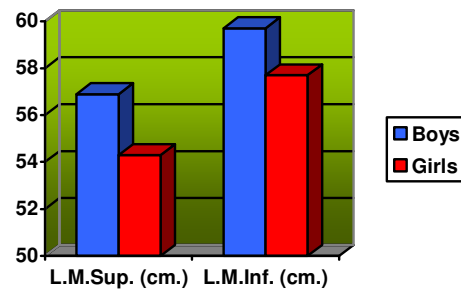


Figure 4: Medium values of the superior and inferior limbs at boys and girls

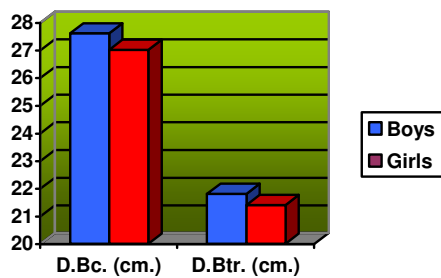


Figure 5: Medium values of the biacromial and bitrohanterian diameter (boys and girls)

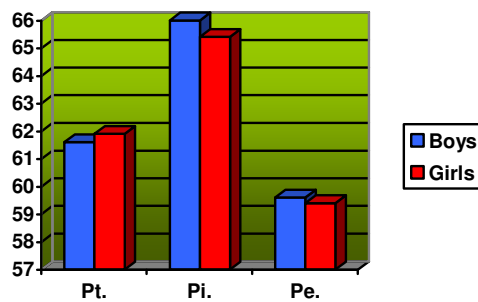


Figure 6: Medium values of the thoracic perimeter in rest, profound inhale and forced exhale



## DISCUSSIONS

From the previously presented data we can say that, in what concerns the waist, the difference between boys and girls is of 0,9 cm in favor of the boys, the homogeneity degree being high both at the girls and boys. Also, the difference between girls and boys at the weight parameter is insignificant, this being of just 0,1 cm., the homogeneity level being medium at boys and weak at girls.

Studying the figure 3, also the tables 1 and 3, we can say that, the bust values differ at the two sexes, the boys having a smaller bust with 1,1 cm. than the girls, the values homogeneity being higher at both groups.

From the point of view of the superior and inferior limbs length we notice inferior values at both parameters at girls towards the boys, the difference being of 2,6 cm. at the superior limbs and of 2 cm for the inferior ones, the homogeneity degree level being higher at both sexes both at the superior and inferior limbs.

In what concerns the biacromial and bitrohanterian diameters we can notice that the values tendency is an inferior one at the both diameters at girls in comparison with boys, the difference being of 0,6 cm. for the biacromial and of 0,4 cm. for the bitrohanterian diameter.

From the obtained data results that the homogeneity is higher, at boys, at both measure diameters, while at girls this is higher only at the biacromial diameter, at the bitrohanterian one the values homogeneity being medium, but at closed level from the higher homogeneity.

The medium values of the thoracic perimeter in rest are relatively close, the difference being of 0,3 cm. in favor of the girls, while at the thoracic perimeters means in profound inhale and forced exhale these values are superior at boys, the differences being of 0,6 cm. for the thoracic perimeter in profound inhale and of 0,2 cm. for the thoracic perimeter in forced exhale.

The resulted values have a high level of homogeneity at all the three thoracic perimeters measured for boys and medium for girls.

From the calculus of the indexes Amar and Adrian Ionescu we noticed relatively low differences of proportionality between the two sexes, the values of the index

Amar being of 53,28 at boys and 54,53 at girls, and the one of the index Adrian Ionescu being of 4,2 at boys and 5,75 at girls. The values of the thoracic elasticity are of 6,4 cm at boys and 6 cm at girls.

## CONCLUSIONS

-Analyzing the obtained results we can say that at the age of 7-8 there are no considerable differences between boys and girls in what concerns the measured parameters values, these differences being in their large majority insignificant, noticing also relatively minor differences of proportionality between the two sexes.

-At this age, the selection itself must be treated as a process with a progressive character, avoiding the wrong conception to be understood as a moment operation, knowing that the somatic, anthro-motor parameters have a different evolution at this age, evolution influenced by a series of internal and external factors.

-At the same time, we must make the difference, by the specialists that work with children of this age, between the chronologic and the biological age, between the two being able to appear significant differences.

-The selection process must allow the participation in the performance sport of only those children that have a very good well-being, the health factor being very important at the level of the initial selection process.

-From the presented data we noticed small differences of proportionality between the two sexes.

## REFERENCES

- BOTA, C., 2000**, *Ergofiziologie*, Edit. Globus, București, 280-281.
- COLIBABA, E. D., BOTA I., 1998**, *Jocuri sportive – Teorie și metodică*, Edit. Aldin, București, 213-216.
- IFRIM, M., 1986**, *Antropologie Motrică*, Editura Științifică și Enciclopedică, București, 40-42.
- MANNO, R., 1996**, *Bazele teoretice ale antrenamentului sportiv*, C.C.P.S., București, 29-30.
- FEDERAȚIA ROMÂNĂ DE PATINAJ, 1987**, *Criterii, probe și norme pentru selecția în patinaj*, C.N.E.F.S., C.C.E.F.S. and F.R.P, București.
- FEDERAȚIA ROMÂNĂ DE PATINAJ, 1991**, *Patinaj*, U.I.P., 29, București, 111-112.

## SELECTION PROCEDURE OF MEASUREMENT MOST OBJECTIVE METHODS OF LEVEL JUMPING ABILITY IN SPORTSMEN

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## ABSTRACT

**Objective:** A high level of jumping ability is a prerequisite of success in many sports.

**Method:** The study aimed at comparing two methods of measuring jumping ability - a simple, direct test and another one by tensometric platform.

**Discussions and Conclusion:** The results were compared to selected anthropometric variables. In a group of 39 athletes representing 5 sports a high correlation between the results obtained by those 2 methods was found ( $r=0.93$ ,  $P<0.001$ ). However, the results obtained by the direct method-Starosta's test were about 15.8% higher ( $P<0.001$ ) than those obtained by tensometric method.

## INTRODUCTION

A high level of jumping ability is a prerequisite of success in many sports, e.g. track and field jumps, volleyball, basketball, handball, ice figure skating, rhythmic gymnastics. Thus, determining jumping ability is of paramount importance for assessing the athlete's motor potential.

The height of vertical jump is associated with a large number of degrees of freedom, due to the involvement of many joints, thus being a task of a complex coordination (3). The height of a vertical jump depends on its performance (1,4,8,9), as well as on the knee flexion angle and swing range (2,7).

The methods used for measuring of jumping ability vary regarding their objectiveness and reliability as reported by many authors (2,6,9,10) who pointed out weak points in some of them which resulted in a decreased reliability (table 1).

The reports comparing various methods of measuring of the jumping ability are rather scarce. Fidelus and Gradowska (6)

studied the displacements of the centre of body mass in the jump tests of Sargent and Abalakov (9, 10) and found the results to diverge considerably, differences between both methods ranging from - 5 to 6 cm.

Those methods were compared with a modified test of Starosta (9, 10) and the latter was found to be more precise than the other two tests.

No published, comparative study has been found in the available literature, concerning the jumping ability.

The aim of this work was thus to compare the results of measuring the jumping ability by two methods - a simple, direct method - Starosta's test (9, 10) and another one employing the Kistler's tensometric platform.

## MATERIAL AND METHODS

A total of 39 athletes - 34 male and female ones, engaged in various sports (track and field jumps, volleyball, soccer, rowing

and ice hockey), volunteered to participate in the study.

Their training experience ranged from 3 to 14 years and their sport class - from the national (Class 2) to international elite. Basic characteristics of the subjects studied are presented in Table 2.

Every subject performed 3 jumps on a recording device mounted on Kistler's tensometric platform. This enabled simultaneous recording of results by both methods.

The mode of the jumping abilities test: wooden square platform (the jumping-meter) with each side 1m long, a leather belt with a centimetre tape placed on the cord. In the middle of the platform there was an opening with a tape passed through it.

The tape was connected by a thin cord with a belt which was put on round the hips of the individual examined.

A slack connection of the tape with the belt made impossible overstating of measurement results because of hips motion forward or back during the jump.

The test and the measurements: after mounting the belt with the tape, the individual examined stood barefoot on the jumping-meter with their ankles in a line with the opening for the tape. Then jumped upwards with a swing of arms, pulling out the tape from the opening.

The result of the jump was the remainder between the numerical value of the tape after and before the jump. The place of landing was limited by two concentric circles (larger with 62cm in diameter for the youths and adults, smaller with 42cm in diameter for children).

Crossing the limit of the appropriate circle made impossible to recognition of the test.

In the opening for the tape there was the tape transport limiter fitted to eliminate pulling it out by force of inertia.

Measurements were repeated three times and the best result was taken into consideration

## RESULTS

The results of jump tests obtained by the direct method – Starosta's test and from the tensometric platform are presented in Table 3. Individual results obtained by those 2 methods were highly correlated ( $r=0.93$  ;  $P<0.001$ ) although the direct method rendered systematical higher results (by 15.8% on the average;  $P<0.001$ ).

Individual differences ranged from 3.8 to 16.4 cm, mean values for groups - from 7.7 to 11.1 cm ( $x = 8.8+2.3$  cm).

The following interrelationship was observed: the higher was result of jumping

ability, the greater was difference of both methods results.

## DISCUSSION

A high correlation ( $r=0.93$ ) between the measurements of jumping ability obtained from tensometric platform and by a direct method evidences that both methods provide measures of the same trait. However, all individual results obtained by the direct method were considerably higher than those obtained from the tensometric platform due, probably, to different execution of the measurements. Namely, in the tensometric method, the moment of full take-off was recorded and thus the rise of heels and metatarsal support before the take-off did not affect the final result. That latter phase considerably improved the jump height (by 15.8%) measured by the direct method.

The length of foot is probably another contributing factor.

This rises the question whether the tensometric platform method, not taking into account the displacement of the center of gravity until the take-off adequately reflects the jumping ability.

There is also a question of applying jumping ability measurements in practice in view of the differences between tensometric measurements and those obtained by simpler

techniques, e.g. that of Sargent or of Starosta (9,10).

Tensometric platform produces accurate results but difficult to employ due to its high cost (cf. Table 1).

For that reason, the test of Starosta (9,10) may be easily adopted, especially for screening purposes, monitoring the sport training, at schools, etc, owing to its simplicity, accuracy and low cost of the device.

## REFERENCES

- AURA, O. VIITASALO, J.T. 1989,** *Biomechanical characteristics of jumping.* Int. J. Sport Biomech. 5:89-98.
- BARTOSIEWICZ, G., DANIELEWICZ, E. GAJEWSKI, J. TRZASKOMA, Z. WIT, A., 1990,** *Evaluation of strength-velocity characteristic in athletes.* In: N.Berme, A.Capozzo (eds.) Proc. Study Inst. Conf. Biomechanics of Human Movement. Formia, Italy. Bertec Corp., Worthington OH, pp.426-430.
- BOBBERT M.F., SCHENAU J.I. 1988,** *Coordination in vertical jumping.* J. Biomech. 3:249-262.
- DOWLING, J.J., VAMOS, L., 1993,** *Identification of kinetics and temporal factors related to vertical jump performance.* J. Appl. Biomech. 9:95-110.

- DWORAK, L.B., 1991,** *Niektóre metody badawcze biomechaniki i ich zastosowanie w sporcie, medycynie i ergonomii. (Some biomechanical research methods and its application in sport, medicine and ergonomics).* Skrypty AWF Poznań 91:51-54.
- FIDELUS, K., GRADOWSKA, T., 1965,** *Porównawcza ocena danych o wyskoku dosiężnym. (Comparative evaluation of results in vertical reach jump).* Materiały Szkoleniowe PKOI 5:56-62.
- HARLEY, R.A., DOUST, J.H., 1994,** *Effects of different degrees of knee flexion during continuous vertical jumping on power output using the Bosco formula.* J. Sports Sci. 12:139-140.
- KOMI, P.V., BOSCO, C., 1978,** *Utilization of stored elastic energy in leg extensor muscles by men and women.* Med. Sci. Sports. 10:261-265.
- RADZIŃSKA, M., STAROSTA, W., 2002,** *The importance, kinds and structures of the jumping ability and its determining factors.* International Association of Sport Kinetics, University School of Physical Education in Poznań – Institute of Physical Culture in Gorzów.
- STAROSTA, W., 1978,** *Nowy sposób pomiaru tzw. skoczności. (New method of measurement of jumping ability).* Monografie AWF Poznań 96:351-355.

## THE RELATIONSHIP AMONG BODY COMPOSITION, MAXIMAL OXYGEN UPTAKE, SPRINT ABILITY AND T-DRILL AGILITY TESTS IN FIRST DIVISION BASKETBALL PLAYERS

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### ABSTRACT

**Objective:** The purpose of the present study was to investigate the relationship among body composition, maximal oxygen uptake ( $VO_{2max}$ ), sprint ability, and agility test in first division basketball players.

**Material and Methods:** 22 first division male basketball players participated in this study voluntarily (age:  $24.0 \pm 3.81$  yrs; height:  $197.9 \pm 8.1$  cm; body weight:  $98.4 \pm 12.3$  kg). Body weight and percentage body fat (PBF) were used for the determination of body composition (Tanita BC-418, Japan). Multi-stage 20-m shuttle run test was used for the determination of estimate maximal oxygen uptake, sprint-ability of the basketball players was determined by 10-30 meter single-sprint and T-drill test times were used for the determination of agility (Newtest Powertimer, Finland).

**Results:** Results of Pearson Product Moment correlation analysis indicated significant correlation between body weight with 10 meter sprint times ( $r=0.560$ ;  $p<0.01$ ), 30 meter sprint times ( $r=0.543$ ;  $p<0.01$ ),  $VO_{2max}$  ( $r=-0.684$ ;  $p<0.01$ ), T- drill test times ( $r=0.569$ ;  $p<0.01$ ). Similarly PBF was significantly correlated with 10 meter sprint times ( $r=0.604$ ;  $p<0.01$ ), 30 meter sprint times ( $r=0.513$ ;  $p<0.05$ ),  $VO_{2max}$  ( $r=-0.508$ ;  $p<0.05$ ). In addition, T- drill test times was found to be significantly correlated with 30 meter sprint times ( $r=0.475$ ;  $p<0.05$ ). Similarly  $VO_{2max}$  was significantly correlated with 10 meter sprint times ( $r=-0.487$ ;  $p<0.05$ ), 30 meter sprint times ( $r=-0.565$ ;  $p<0.05$ ).

**Conclusion:** As a conclusion, the findings of the present study indicated significant correlation among body composition,  $VO_{2max}$ , sprint ability and agility test performance in basketball players.

**KEYWORDS:** Body composition, maximal oxygen uptake, sprint ability, agility, basketball

### INTRODUCTION

Basketball may be considered a predominantly anaerobic exercise that requires participants to repeatedly perform short sprints over the duration of a basketball match (Castagna et al., 2009). However some studies have supported this assumption, showing that basketball performance, considered seasonal playing time, is not affected by aerobic endurance (Hoffmann et al., 1996). In addition to Ostojic et al., (2006) showed that body composition, endurance, balance between anaerobic power and aerobic power are of primary importance in evaluating elite basketball players.

**Objective:** The purpose of the present study was to investigate the relationship among body composition, maximal oxygen uptake ( $VO_{2max}$ ), sprint ability, and agility test in first division basketball players.

#### Material and Methods:

**Subjects:** 22 Turkish first division in male basketball players participated in this study voluntarily (age:  $24.0 \pm 3.81$  yrs; height:  $197.9 \pm 8.1$  cm; body weight:  $98.4 \pm 12.3$  kg). The subjects were fully informed about the procedures to be used and the experimental risk. Written informed consent was obtained from all the subjects.

#### Procedure

##### Anthropometric Measurements

Subjects reported to the laboratory at 8:00 AM. On entering the laboratory, height (m), body mass (kg), and percentage of body fat (PBF) were measured in each subject. The height of the basketball players was measured using a stadiometer accurate to within 1 cm (SECA, Germany), while electronic scales (Tanita BC

418, Japon) accurate to within 0.1 kg were used to measure their body mass and body fat percentages (Lohman ve ark., 1988). Body weight and percentage body fat were used for the determination of body composition.

##### Multi-Stage 20-M Shuttle Run Test

Subjects' maximal oxygen uptake ( $VO_{2max}$ ) was indirectly obtained using a multi-stage 20-m shuttle run test. Briefly, this consisted of shuttle running between two parallel lines set 20 m apart, running speed cues being indicated by signals emitted from a commercially available pre-recorded audiocassette tape. The audiocassette tape dictated that subjects started running at an initial speed of  $8.5 \text{ km}\cdot\text{s}^{-1}$  and that running speed increased by  $0.5 \text{ km}\cdot\text{s}^{-1}$  each minute. This increase in running speed is described as a change in test level. The speed of the cassette player was checked for accuracy in accordance with the manufacturer's instructions before each application. All subjects performed a 10 min warm up that included prescribed jogging and stretching. Test results for each subject were expressed as a predicted  $VO_{2max}$  obtained by cross-referencing the final level and shuttle number (completed) at which the subject volitionally exhausted with that of the  $VO_{2max}$  table provided in the instruction booklet accompanying the multi-stage 20-m shuttle run test. Only fully completed 20 m shuttle runs were considered.

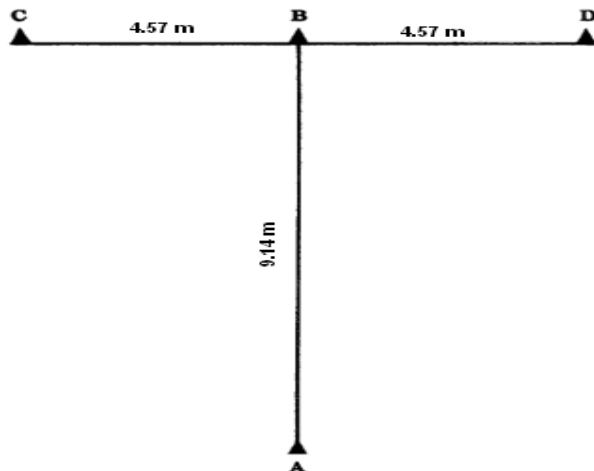
##### 10-30 m. Sprint Tests

Sprint-ability of the basketball players was determined by 10-30 meter single-sprint tests. The subjects performed 2 maximal 30-m sprints (with 10-m split times also recorded) on the basketball court. During the

recovery period between 30-m sprints (3 minutes). Prior to each sprint test, players performed a thorough warm-up consisting of 10 minutes of jogging at 60–70% of HRmax and then 5 minutes of exercise involving fast leg movements (e.g., skipping, cariocas) over short distances of 5 to 10 m and 3–5 single 15-m shuttle sprints with 2 minutes of passive recovery. Time was measured using an electronic timing system (Newtest Powertimer, Finland).

#### T Drill Agility Test:

T-drill test times of the basketball players were used for the determination of agility. This test was administered using the protocol outlined by Semenick (1990). Four 22.86 cm (nine inch) collapsible agility cones were arranged as shown in Figure 1. At the tester's signal, the subject sprinted forward 9.14 m (10 yards) and touched the tip of the cone (B) with their right hand. Then they performed a lateral shuffle to the left 4.57 m (five yards) and touched the tip of the cone (C) with the left hand. Subjects then continued to shuffle 9.14 m (10 yards) to the right and touched the tip of the cone (D) with their right hand. They then shuffled 4.57 m (five yards) to the left and touched point B with their left hand. Finally, subjects back peddled 9.14 m (10 yards), passing through the finish at point A (Patterson et al. 2008). Time was measured using an electronic timing system (Newtest Powertimer, Finland).



body composition,  $VO_{2max}$ , sprint ability and agility test performance in basketball players.

#### References

CASTAGNA, C, CHAOUACHI, A, RAMPININI, E, CHAMARI, K, IMPELLIZZERI, F. 2009, Aerobic and explosive power performance of elite Italian regional-level basketball players. *Journal of Strength and Conditioning Research* 23(7): 1982–1987,  
 HOFFMAN, J.R., G. TENENBAUM, C.M. MARESH, AND W.J. KRAEMER. 1996, Relationship between athletic performance tests and playing time in elite college

#### Figure 1: T Drill Agility Test

##### Statistical Analyses

All statistical analyses were carried out using SPSS Statistical Analysis Software (SPSS Version 15.0 for Windows, SPSS Inc., Chicago, Illinois, USA). First of all the mean and SD were calculated for each variable. Then the relationship among body composition, maximal oxygen uptake ( $VO_{2max}$ ), sprint ability, and agility test in first division basketball players was detected by Pearson's product moment correlation. The level of statistical significance was set at  $p \leq 0.05$ .

##### Results

The participants' physical and physiological data are set out in Table 1.

**Table 1:** Basketball Players' physical and physiological features

Variable	Mean	Std. Deviation
Age ( yrs)	24.00	3.81
Body Height ( cm)	197.90	8.10
Body Weight ( kg)	98.40	12.30
Percentage of Body Fat ( %)	10.85	5.22
10 Meter Sprint ( sec)	1.78	0.08
30 Meter Sprint ( sec)	4.36	0.21
T Drill Agility (sec)	9.49	0.61
$VO_{2maks}$ (ml.kg <sup>-1</sup> .min. <sup>-1</sup> )	42.52	8.59

Results of pearson product moment correlation analysis indicated significant correlation between body weight with 10 meter sprint times ( $r=0.560$ ;  $p<0.01$ ), 30 meter sprint times ( $r=0.543$ ;  $p<0.01$ ),  $VO_{2max}$  ( $r=-0.684$ ;  $p<0.01$ ), T- drill test times ( $r=0.569$ ;  $p<0.01$ ). Similarly PBF was significantly correlated with 10 meter sprint times ( $r=0.604$ ;  $p<0.01$ ), 30 meter sprint times ( $r=0.513$ ;  $p<0.05$ ),  $VO_{2max}$  ( $r=-0.508$ ;  $p<0.05$ ). In addition, T- drill test times was found to be significantly correlated with 30 meter sprint times ( $r=0.475$ ;  $p<0.05$ ). Similarly  $VO_{2max}$  was significantly correlated with 10 meter sprint times ( $r=-0.487$ ;  $p<0.05$ ), 30 meter sprint times ( $r=-0.565$ ;  $p<0.05$ ).

**Conclusion:** As a conclusion, the findings of the present study indicated significant correlation among

basketball players. *Journal of Strength and Conditioning Research* 10:67–71..  
 players. *J. Strength Cond. Res.* 20(4)-.740-744,  
 LOHMAN TG, ROCHE AF, MARORELL R. (EDS.). *Anthropometric Standardization Reference Manual.* Human Kinetics Books, Champaign: IL. 1988  
 OSTOJIC, S.M., S. MAZIC, N. DIKIC. 2006, Profiling in basketball: Physical and physiological characteristics of elite

PATTERSON, SM., UDERMANN, BE.,  
DOBERSTEIN, ST., REINEKE DM.,  
2008, The effects of cold whirlpool on power,

speed, agility, and range of motion. *Journal of Sports Science and Medicine* 7, 387-394

## ❖ PHYSICAL EDUCATION

### EXAMINING PROBLEM SOLVING SKILLS OF THE STUDENTS PRACTISING DANCE FOR 12 WEEKS IN TERMS OF GENDER VARIABLE

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#### ABSTRACT

It is thought that emotional responses to themselves, their environments and life in daily life of individuals overcoming problems and finding effective solutions will be positive, too. This study has been carried out with the aim of examining problem solving skills depending of 12-week dance practice of university students. The study group of the research is consisted of 50 students practicing modern dance for 12 weeks in Dilek Sabancı State Conservatory, Selçuk University in 2009. In order to determine problem solving skills of the subjects in research sample, "problem solving scale" called Form-A (PSI-A), originally named "Problem Solving Inventory" and developed by P.P. Heppner and C.H. Petersen (1982) was used. The received data were analyzed in SPSS software package by using frequency distribution, One Sample Kolmogorow-Smirnov test and t test. In conclusion, it has been found that the problem solving skills of the subjects participated in research differed at the beginning and at the end of dance practice.

**KEY WORDS:** Dance, Problem Solving Skill, Student.

#### INTRODUCTION

Solving problem is the process of individual's understanding and solving the gap between his target and the obstacles he faces while progressing to the target (A. Bingham, 2000). While P.P. Heppner and C.J. Krouskopf (1987) describe solving problem as the cognitive and effective behavioral processes for the harmony of complicated internal and external wishes and desires, Bingham describes it as a process requiring a series of effort to abolish the difficulties for reaching a specific target. Solving problem helps to become optimistic about overcoming negative life conditions, to have a high self-efficacy, to improve recovery skill in negative conditions (B. Benard, 2004; M. Steinhardt and C. Dolbier, 2008). The strategies that people produce for the same problem in different times may differ. This differentiation may result from the idea of person's having dynamic development and so experience (A. Mathews and C. Macleod, 1994). It is now well-known that positive emotional state helps cognitive flexibility and makes creative problem-solving easy in many situations (The American Heritage Dictionary, Second College Edition, 1983). One of the most important points of creative and flexible thinking is to produce alternative strategies and solutions especially in failure. It shows that positive emotional state makes different ways for the solution of the problem easy while revealing that negative emotional state prevents flexible thinking skill (A.M. Isen, 1987). Doing exercise isn't only a physical activity but also a process of becoming social and adapting to the society. Exercise is one of the mechanisms of self-control (S. Bauman, 1994). Even if dance is basically an art branch, a dancer is also an

athlete because of the performance needed for its accomplishment (H. Lindberg, 1992). Dance is a physical activity in which aesthetic and artistic features are in the foreground (F. Hugel et al. 1999) and an art form that is completely based on dancer's physical movement and his expression success (S.S. Fitt, 1996). How effective sports activities, especially constant ones are over education-teaching, individual's social development, the skills of solving problem, overcoming stress and personal adaptation of the student doing sports and the students not doing sports under the same environment and conditions, also the difference between academic success levels highly draw attention (Ü. Türkçapar, 2009).

In the light of this information, the aim of the research is to examine problem-solving skills of university students practicing dance for 12 weeks in terms of gender variable.

**METHOD.** The study group of the research is consisted of 50 students practicing modern dance for 12 weeks in Dilek Sabancı State Conservatory, Selçuk University in 2009. In order to determine problem solving skills of the subjects in research sample, "problem solving scale" called Form-A (PSI-A), originally named "Problem Solving Inventory" and developed by P.P. Heppner and C.H. Petersen (1982) was used. The scale by P.P. Heppner and C.H. Peterson (1982) was developed in order to determine both the dimensions of problem-solving method and how person see himself about the problem-solving competence taking problem-solving stages such as general tendency, description of the problem, alternative-production, deciding and evaluation into consideration. The scale includes 35 items, .9, 22 and



29<sup>th</sup> items are excluded in scoring. Scoring is done over 32 items. 1, 2, 3, 4, 11, 13, 14, 15, 17, 21, 25, 26, 30 and 34 items are the ones scored inversely. The score range that may be taken from the inventory is between 32 and 192, Cronbach alpha reliability coefficient was found 82. According to the factor analysis results by N. Şahin et al. (1993), the inventory is consisted 6 sub-dimensions as Hasty Approach, (13, 14, 15, 17, 21, 25, 26, 30 and 32. items), Thinking Approach (18, 20, 31, 33 and 35. items), Reserved Approach (1, 2, 3 and 4. items), evaluative Approach (6, 7 and 8. items), self-confident approach (5, 11, 23, 24, 27, 28 and 34. items) and planned approach (10, 12, 16 and 19. items). The height of total score received from the scale shows that individual perceives himself inadequate about problem-solving skills.

**Statistical analysis.** In the analyses of data, arithmetic averages and Standard deviations were ABSTRACTed, One Sample Kolmogorow-Smirnov test was used to see whether data show normality distribution or not, t test was used in dependent and independent groups. The error level was taken 0.05 in the study.

**Result** As seen in Table 1, significant differences were found between problem-solving skills and sub-dimensions Thinking Approach, Reserved Approach, Evaluative Approach, Self-confident approach, Planned approach pre-test and post-test values of the female subjects participated in the research ( $p < 0.05$ ). No significant difference was found between Hasty Approach pre-test and post-test values being a sub-dimension of problem-solving skill ( $p > 0.05$ ). It has been determined that problem-solving skills of female subjects increased at the end of dance exercise. As seen in Table 2, significant differences were found between problem-solving skills and sub-dimensions Thinking Approach, Reserved Approach, Evaluative Approach, Self-confident approach, Planned approach pre-test and post-test values of the male subjects participated in the research ( $p < 0.05$ ). No significant difference was found between Hasty Approach pre-test and post-test values being a sub-dimension of problem-solving skill ( $p > 0.05$ ). It has been determined that problem-solving skills' rates of male subjects increased at the end of dance exercise. As seen in table 3, no significant difference was found between problem-solving skills and gender variable of male and female subjects in the research ( $p > 0.05$ ). When male subjects' problem-solving skill averages are examined, it is seen that they are higher than females' problem-solving skill values.

#### DISCUSSION AND CONCLUSION

In this study carried out with the aim of examining problem-solving skills of university students practicing dance for 12 weeks in terms of gender variable;

Significant differences were found between problem-solving skills and sub-dimensions Thinking Approach, Reserved Approach, Evaluative Approach, Self-confident approach, planned approach pre-test and post-test values of the female subjects participated in

the research. No significant difference was found between Hasty Approach sub-dimension pre-test and post-test values. It has been determined that problem-solving skills of female subjects increased at the end of dance exercise (table 1). In the study carried out about problem-solving skills of university students, while no significant difference was found between problem-solving skills and variables such as monthly income levels, social environments and activities that they do mostly in their spare times; significant difference was found between gender and class levels (Ü. Türkçapar, 2009)

In a research, the adults suffering depression at a low degree were given dance and movement therapy during 12 weeks and the effect over these people's psychological health and relaxation was examined. In the end, dance-movement therapy has been found to have positive effect over the psychological development of the young suffering depression at a low degree. The researches carried out in recent years have shown that dance and movement therapy help the treatment of physical trauma, cancer, nervous breakdowns, chronic pain, heart disease and post-surgical pain. It has been proved that people doing exercises regularly have much better ideational skills and are faced with depression and anxiety less. Significant difference was found between problem-solving skills and sub-dimensions Thinking Approach, Reserved Approach, Evaluative Approach, Self-confident approach, planned approach pre-test and post-test values of the male subjects participated in the research. No significant difference was found between Hasty Approach pre-test and post-test values being a sub-dimension of problem-solving skill. It has been determined that problem-solving skills' rates of male subjects increased at the end of dance exercise (table 2). It is known that males have anxiety of finding a job and economical concerns more in our society. The reason why problem-solving skill values of males are higher than females' may be future anxiety. In the study done by Brems and Johnson and conveyed by Ferah (2000), it was seen that males were better in solving problem. It is expressed that males are generally affected more than females by psychological problems, disasters or separation situations and are weaker for the risk factors such as poverty and parents' psychopathology (B. Benard, 1996, S. Luthar, 1999). In a study by Gasper and Clore, two groups of subject were used and the subjects who were in negative emotional situation cared about data more and used the data to revise and change their knowledge instead of being directed by basic rules. It was reported that the subjects in positive emotional situation would try unusual experiences, combine the data with new ways and produce more hypothesis to find the answer (K. Gasper and G.L. Clore, 2002). According to the result of a study where Murray and his friends compared the subjects in positive and neutral emotional situations, The subjects in positive emotional situation gave more

true answers in several thinking measurements and were more flexible since they made more creative associations (N. Murray et al. 1990). No significant difference was found between problem-solving skills and gender variable of male and female subjects in the research. When male subjects' problem-solving skill averages are examined, it is seen that they are higher than females' problem-solving skill values (Table 3). Individuals in negative and positive emotional situations were examined, it was determined that individuals in positive emotional situation would try unusual approaches, combine data with new ways and produce more hypothesis to find answer (A.D. Farrel et al. 2001). In a study carried out in 15 countries from European Community and where 16230 participants aged 15 and over were evaluated through self declaration, it was found that exercise affected mental health positively and this effect was related to the

period of sports (K. Abu-Omar et al. 2004). In a study carried out by K. Radmila et al. (2003) with the aim of determining the success of efforts and skills in showing dance figures, they have pointed out that effort skill in showing dance figures and folk dances are effective on success and this prevents anxiety and depression (K. Radmila et al. 2003). The findings of this research show similarity with the study.

In conclusion, whereas no significant difference was found between problem-solving skills and gender variable of the subjects in the research, it has been determined that dance affects problem-solving skill levels of male and female university students. The problem-solving skill values of males have been determined to be higher than females'. It is thought that dance being an activity preventing negative emotions in individual increases problem-solving skill and positive thinking.

**Table 1: Examining problem-solving skills sub-dimensions of female subjects in the research.**

variables	n	average	S.Dev.	T	p
hastiness pre-test	24	26.25	6.415	-.141	.889
hastiness post-test	24	26.33	5.313		
thinking pre-test	24	6.75	2.132	-7.230	.000*
thinking post-test	24	10.92	3.694		
reserved pre-test	24	12.58	4.754	3.797	.001
reserved post-test	24	10.71	3.701		
evaluative pre-test	24	9.17	2.944	7.071	.000*
evaluative post-test	24	7.67	2.777		
self-confident pre-test	24	7.92	3.243	-9.696	.000*
self-confident post-test	24	13.29	4.777		
planned pre-test	24	7.83	2.599	.000	1.000
planned post-test	24	7.83	2.929		
problem-solving pre-test	24	70.88	15.126	-6.065	.000*
problem -solving post-test	24	77.38	18.009		

**Table 2: Examining problem-solving skills sub-dimensions of male subjects in the research.**

variables	n	average	S. Dev.	T	p
hastiness pre-test	26	25.88	7.185	.501	.621
hastiness post-test	26	25.58	6.326		
thinking pre-test	26	7.96	3.388	-8.034	.000*
thinking post-test	26	12.42	4.734		
reserved pre-test	26	12.38	4.148	5.670	.000*
reserved post-test	26	10.15	4.342		
evaluative pre-test	26	10.35	3.989	7.071	.000*
evaluative post-test	26	8.35	3.949		
self-confident pre-test	26	7.85	3.003	-10.894	.000*
self-confident post-test	26	14.08	4.707		
planned pre-test	26	8.73	2.308	-2.483	.020
planned post-test	26	9.65	3.417		
problem-solving pre-test	26	73.08	15.707	-6.467	.000*
problem -solving post-test	26	80.31	19.760		

**Table 3: Examining problem-solving skills of the subjects in the research in terms of gender variable.**

variables	gender	n	Average	St.Dev.	t	P
problem-solving pre-test	female	24	70.88	15.126	-.504	.460
	male	26	73.08	15.707	-.505	
problem -solving post-test	female	24	77.38	18.009	-.547	

male

26 80.31

19.760

-.549

.370

## REFERENCES

- ABU-OMAR, K., RÜTTEN, A., ROBINE, J. M., 2004, *Self-rated health and physical activity in the European Union*. Soz Präventivmed, 49:235-242.
- AMERICAN HERITAGE DICTIONARY, 1983, *Second College Edition*. Boston: Houghton Mifflin Company. BAUMANN, S., 1994, *Praxis der Sport psychologie*.
- BENARD, B., 2004, *Resiliency: What We Have Learned*. San Francisco: West Ed. Publishers.
- BINGHAM, A., 2000, *Gender differences in advanced mathematical problem solving*. Journal of Experimental Child Psychology, 75, 3.
- FARREL, A.D., MEYER A.L., WHITE K.S., 2001, *Evaluating RIPP: A school based prevention program for reducing violence among urban adolescents*. Journal of Clinical Child Psychology, 30(4), 451-463.
- FITT, S. S., 1996, *The Science of Motion in Support of the Art of Dance, Dance kinesiology*, Section I. 2nd ed. Schirmer Books, New York: Prentice Hall International.
- GASPER, K., CLORE, G. L., 2002, *Attending to the big Picture: Mood and global vs. Local processing of visual information*, Psychological science, 13,34-40
- HEPPNER, P.P., PETERSEN, C.H., 1982, *The development and implications of a personal problem solving inventory*. Journal of Counseling Psychology, 29, 66-75.
- HEPPNER, P. P., KRAUSKOPF, C. J., 1987, *The Integration of Personal Problem Solving Processes Within Counseling*. The Counseling Psychologist, 15, 371-447.
- HUGEL, F., CADOPI, M., KOHLER, F., PERRIN, P. H., 1999, *Postural control of ballet dancers: A specific use of visual input for artistic purposes*, Int J Sports Med 20: 86-92.
- LINDBERG, H., ROOS, H., GÄRDESELL, P., 1992, *The Prevalence of Coxartrosis in Former Soccer Players*. Acta Orthop Scand, 64: 165-167
- LUTHAR, S., 1999, *Poverty and Children's Adjustment*. New-Bury Park, CA: Sage.
- MATHEWS, A., MACLEOD, C., 1994, *Cognitive Approaches to Emotion and Emotional Disorders*, Journal article C.; Annual Review of Psychology, 45, 26-50.
- ISEN, A. M., 1987, *Positive effect, cognitive processes and social behavior*, Advances in Experimental Social, 20, 203-253.
- MURRAY, N., SUJAN, H., HIRT, E.R., SUJAN, M., 1990, *The influence of mood on categorization: A cognitive flexibility*, Journal of Personality and Social Psychology, 59,411-425.
- RADMILA, K., DRAGON, J., SLAVOLJUP, O., 2003, *Relation of Co native Characteristics and Success of Performing Dance Structures*: Facta Universitatis, Series Physical Education., 1(6), 15-23.
- STEINHARDT, M., DOLBIER, C., 2008, *Evaluation of a resilience intervention to enhance coping strategies and protective factors and decrease symptomatology*. Journal of American College Health, 56(4), 445-453.
- ŞAHIN, N., ŞAHIN, N., HEPPNER, P.P. 1993, *Psychometric properties of the Problem Solving Inventory in a group of Turkish university students*. Cognitive Therapy and Research, 17 (4), 379-396.
- TÜRKÇAPAR, Ü., 2009, *Problem-solving skills of Physical education and sports academy students in terms of different variables*. Journal of Ahi Evran University Kırşehir Education faculty, 10, 1, 129-139

## COMMUNICATION SKILLS AND EMPHATIC TENDENCY: PHYSICAL EDUCATION AND FINE ARTS STUDENTS

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### ABSTRACT

The researchers aimed to determine the communication skills and emphatic tendency in the 200 students of Physical Education School ( $n_{girl}=50$ ,  $n_{boy}=50$ ) and Fine Arts Faculty ( $n_{girl}=50$ ,  $n_{boy}=50$ ). Communication Skills Assessing Scale and Emphatic Tendency Scale were used as instruments in the study. The researchers gave information about the aim and scope of the study to the students, and then they completed the scales in the classrooms. The scores of communication skills for physical education and fine arts students were:  $x_{boy}=71,80\pm 12,07$ ;  $x_{boy}=56,42\pm 9,99$  and  $x_{girl}=68,24\pm 12,18$ ;  $x_{girl}=59,16\pm 11,33$  respectively. It meant a significant difference at  $p < 0,001$ . Emphaty skills scores for physical education and fine arts students were:  $x_{boy}=70,86\pm 12,28$ ;  $x_{boy}=62,52\pm 11,49$  and  $x_{girl}=69,16\pm 12,35$ ;  $x_{girl}=64,46\pm 11,18$  respectively. It meant a significant difference at  $p < 0,001$  for boys and  $p < 0,05$  level for girls. As a general result, the scores of physical education and fine arts students for communication skills were  $x=62,99\pm 10,89$ ;  $x=58,51\pm 9,08$  and they are  $x=70,67\pm 10,06$  and  $x=64,18\pm 9,34$  for emphaty skills ( $p < 0,01$ ). As a result there were significant differences between physical education and fine arts students considering communication and emphaty skills, both for sex. We think that the more frequency of physical education students' participation in sports settings where many social relations are provided give them more opportunity to develop and improve their communications skills when compared with fine arts students. Yet, future research on this subject is suggested.

**KEYWORDS:** undergraduate students, physical education, fine arts and, communication, emphaty.

### Purpose

For over 200 years, the notion of responsivity to the experiences of another has been discussed by social theorists, and from the beginning the multidimensional nature of this phenomenon has been recognized. Smith (1759), for instance, made the initial differentiation between instinctive sympathy (or empathy), which he described as a quick, involuntary, seemingly emotional reaction to the experiences of others, and intellectualized sympathy, or the ability to recognize the emotional experiences of others without any vicarious experiencing of that state. Spencer (1870), a hundred years later, drew the same distinction, and this instinctive / intellectual, or cognitive / emotional partitioning of empathy has continued to this day.

Research efforts since the turn of this century, moreover, have almost exclusively focused on either one or the other aspect of the empathic process. While the earliest treatments dealt primarily with the emotional side of the empathy coin-- devoted primarily to explaining how the "sharing" of emotions came about (McDougall, 1908; Lipps, 1926) -- the emphasis since then clearly has been on the more cognitive aspects of the phenomenon.

The writing of both Mead (1934) and Piaget (1932) contributed heavily to this shift. The

appearance, at roughly the same time, of two influential cognitive approaches greatly affected the character of subsequent research efforts devoted to empathy. The large body of work concerned with "accuracy of perception" of others (e.g., Dymond, 1949; 1950) was an outgrowth of the cognitive orientation to empathy. Likewise, the attention given to the study of empathy within the counseling setting -- in which it is usually considered to be an experiencing of others' feelings "as if" they were your own -- assumes a clear cognitive, relatively non-emotional definition of empathy.

Recent years have seen an increased interest in emotional empathy, and concomitantly, increased movement towards an integration of these two research traditions. The belief appears to be growing that the cognitive and affective components of empathy comprise an interdependent system in which each influences the other, and which never can be fully understood as long as research efforts concentrate on one aspect to the relative exclusion of the other (Deutsch and Madle, 1975; Feshbach, 1976; Hoffman, 1977). Some evidence demonstrating the predictive superiority of considering both cognitive and emotional aspects of the empathy process is already available (e.g., Coke, Batson, & McDavis, 1978; Iannotti, 1979).

The concept of empathy has been the subject of considerable research.

Scholars have attempted to define empathy in different ways. Empathy is often confused with other forms of caring such as sympathy or pity. However, in its most precise form, empathy is much more than all of those. It is a specific set of attitudes and behaviors that separates it from many other forms of "caring." (Chung, Bemak, 2002; Rogers, 1951). Carl Rogers (1951) defined empathy as the ability to perceive the client's world with unconditional positive regard and respect. Scholars have also described empathy as "more than just an intellectual identification; empathy must be accompanied by feeling." (Spiro et al., 1993). Empathy has been defined as the ability to "see the world as others see it, be nonjudgmental, understand another's feelings and communicate the understanding." (Wiseman, 1996). Hoffman (2000): "feelings that are more congruent with another's situation than with [one's] own situation" Losoya and Eisenberg, 2001 The use of empathy has also been assessed as a communicative strategy in pharmacy practice. Researchers evaluated an educational intervention consisting of a 20-hour continuing education course on empathy (Lilja, Larsson, 2000). The course was aimed at improving the level of empathy in a sample of 75 staff pharmacists. The participants completed questionnaires before and after the course. Interactions between staff and patients were video-recorded before and after training in one community pharmacy. The researchers define empathy as the ability to behave in a caring manner toward a patient while demonstrating to the patient that his feelings are understood. This was assessed cognitively through questionnaires and behaviorally through the use of videotapes. Pharmacists were observed on videotape by several trained researchers and various behavioral criteria were used to assess empathy. The results from both questionnaires and videos indicated that after the course there were small increases in both the pharmacist's capacity to show empathy and in some aspects of the empathic behaviors displayed.

Researchers Monahan, Edmunds (2000) have also attempted to illustrate the effect of instruction on empathic learning. Their purpose was twofold: (1) to measure empathy skills before and after a communications course and (2) to compare the applicability of 2 reliable instruments used to measure empathy in pharmacy students. At the beginning of the semester, 100 students enrolled in a communications course completed 2 paper tests recognized through psychometric data as being reliable measurements of cognitive and emotional aspects of empathy, the Interpersonal Reactivity Index (IRI) and the Balanced Emotional Empathy Scale (BEES). Two tests were used to determine whether one test offered any advantages over the

other. At the end of the semester, the tests were again administered to determine differences between the pretest and posttest scores. Dependent *t* tests were used to assess whether there were any significant changes in the pretest and posttest BEES and IRI scores. There was no significant change in the pretest or posttest BEES scores ( $p = 0.156$ ). However, students, scored higher on the posttest IRI administered following the educational intervention ( $p = 0.014$ ). The impact of training on empathic communication in nurses was also studied using a quasi-experimental design investigating the purpose of measuring the effectiveness of training on teaching nurses empathy for their interactions with patients (La Monica, 1986). Only the nurses (150) working in medical and surgical units, outpatient clinics, operating rooms, obstetric units, and the psychiatric unit were included. The nurses were distributed randomly into either an intervention group or control group and given a 3-part pretest questionnaire. The first section of the questionnaire asked for background characteristics. The second section presented sample cases common in surgery and medical units that were determined to be appropriate for nurses. The third section of the questionnaire asked questions based on the Empathic Tendency Scale. The intervention group was then educated about empathic communication. Afterward, the same questionnaire was administered to both the intervention and control groups. The results showed that empathic skills were developed in the intervention group as a result of empathy training.

Professions differ in terms of the levels of communication skills they require. Although communication skills are of basic importance for professions based on human relations, they are not that important for professions based on technical content. Accordingly, it should be considered as normal the difference between people who have different tendencies of vocations in aspect of communication skills. In Turkiye there are some researchs on undergraduate students' empathic tendency and communication skills from different departments and faculties; Cevahir et al (2008) on midwifery students, Duru (2002) in candidate teachers, Yılmaz and Akyel (2008) in physical education and sport (PE) candidate teachers, Toy (2007) in several departments. While there are some educational research conducted by scholars in the fields of communication arts, pharmacy, and nursing that focuses on empathy, there is limited data on the emphatic tendency and communication skill of undergraduate physical education and sport students. Thus this study aimed to determine the emphatic tendency and communication levels of PE and Fine arts (FA) students and compare them according to their sex and departments.

## METHODS

The participants were 200 students of Physical Education School ( $n_{girl}=50$ ,  $n_{boy}=50$ ) and Tendency Scale. Communication Skills Assessing Scale (CSAS) with 25 items developed by Korkut (1996). Each item has five choices between “always” and “never”. The total point is 100, the least point is 0. The validity(0.58= and reliability(0.76) study of the scale were done the same researcher. The permission for the study was gotten from the rectorship. We applied the scales in classrooms after giving information about the scope and procedure of the study. Only the students who were volunteer participated in the study. The students didn't indicated their names. Empathic Tendency Scale with 24 items was developed by Dökmen (1988). The validity (0.68) and reliability (0.82) study of the scale were done by the same researcher.

## FINDINGS

The scores of communication skills for physical education and fine arts students were:  $x_{boy}=71,80\pm12,07$ ;  $x_{boy}=56,42\pm9,99$  and  $x_{girl}=68,24\pm12,18$ ;  $x_{girl}=59,16\pm11,33$  respectively. It meant a significant difference at  $p<0,001$ . Empathy skills scores for physical education and fine arts students were:  $x_{boy}=70,86\pm12,28$ ;  $x_{boy}=62,52\pm11,49$  and  $x_{girl}=69,16\pm12,35$ ;  $x_{girl}=64,46\pm11,18$  respectively. It meant a significant difference at  $p<0,001$  for boys and  $p<0,05$  level for girls. As a general result, the scores of physical education and fine arts students for communication skills were  $x=62,99\pm10,89$ ;  $x=58,51\pm9,08$  and they are  $x=70,67\pm10,06$  and  $x=64,18\pm9,34$  for empathy skills ( $p<0,01$ ).

Empathy is the process of setting yourself instead of someone else's place and comprehending everything from his point of view, Understanding and feeling his senses and thoughts correctly and conveying this state to him. That's why empathy appears to be a significant variable in educational activities. Especially, spreading the sporting activities into the society. Physical educators have high empathic skills, empathic levels and their qualifications, research ability and production abilities are becoming important peculiarities. Sports activities that are applied by educators of high empathic skills and tendency levels, qualified, researcher and productive are important to spread sports activities into the society. Cevahir et al (2008) was carried out a study as a descriptive and comparative one, with the aim of evaluating the empathic skills of the students of the Midwifery Department of Sakarya University School of Health. The universe of the study comprised 130 students who had been having education in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> grades of the Midwifery Department of Sakarya University School of Health Sciences, and the sampling comprised 110 students who had

Fine Arts Faculty ( $n_{girl}=50$ ,  $n_{girl}=50$ ). The instruments in the study were Communication Skills Assessing Scale (CSAS) and Empathic Tendency Scale. All students were able to take part in the study. As the means of data collecting, a 22-question survey form containing the questions about the individual information about the students and questions about “empathy”, and the “Empathic Skill Scale B-Form” which Dökmen (1988) had put into application by testing the validity and reliability for our country. In the evaluation, percentage, Students 't' Test, Mann-Whitney U Test were employed. The average of the empathic skill points of the students included in the study was found to be  $135.35 \pm 17.6$ . And the average empathic skill points with respect to the grades were determined to be  $146.79 \pm 16.21$  for the 1st Grade,  $128.63 \pm 14.10$  for the 2nd Grade,  $129.60 \pm 18.77$  for the 3rd Grade, and  $135.88 \pm 15.74$  for the 4th Grade. The difference has been determined for empathic skills of midwifery students according to their classes in progress in this study. It's determined that empathic skills of student in 1st class that contains general and occupational lessons intensively and 4th class that contains sanity lesson are better than others. In consequence of the study empathy and communication lessons should be continued in intermediate classes due to low empathic skills and comprehensive study should be made for this issue.

Duru (2002) in a study aimed to examine the difference between empathic tendency scores of the students (candidate teachers) in groups in terms of some psychosocial variables. Data was collected Interpersonal Reactivity Index and Personal Information. The sample consisted of a total 402 students (248 female and 154 male) from different departments of the faculty of education.

The results show that empathic tendency is significantly related to gender, perceived the orientation of personal value, and perceived responsibility level. In addition, perspective taking, empathic concern and personal distress are significantly related some psychosocial variables. The findings were discussed in the context of literature.

In another study, Yılmaz and Akyel (2008) aimed to find out empathic tendency level of physical education candidate teachers in terms of different variables. The groups studied on was set up from 196 students of Ahi Evran University, School of Physical Education, Physical Education and Sport Teaching Department. In this descriptive study, “Empathic Tendency Scale” developed by Dökmen (1988) has been used as a means of datum collector. Arithmetic mean, standart deviation have been used in data analysis, t test in double data comparisons and one way variance analysis in multiple comparissons. As a result of this study it has been found out that the empathic tendency level

points of physical education candidate teachers are high and there are no differentiation according to the examined variants. Toy (2007) aimed to understand the vocational differences according to students' field, education and gender, to determine the relationships between communication skills and some psychological and demographical variables, to compare students' emphatic skills and also to compare students' communication skills again by controlling effects of personal traits, which are in correlation with communication skills significantly. In this research for which the data from 410 students were collected, Personal Information Form, Communication Skills Inventory, Emphatic Skill Scale-B Form and NEO Five Factor Personality Inventory-TR were used as scaling instruments. As a result of statistical analyses, it has been found that in communication skills students of law faculties have been better than students of engineering faculties and females have been better

than males. It has been also proven that when the effects of personal traits are controlled, the differentiation still exists in the case of law faculty students, while the gender influence disappears (Toy 2007). In our study there is a significant difference in communication and empathy levels between PE and FA students for both sexes. It can be the result of the sport settings that provide the students many interpersonal interactions and communication opportunities. It is an expected outcome as a result of this that the emphatic tendency level of PE students is better than those in FA faculty. Communication is the first condition of empathy. Empathy originated from the Greek word "empathia," which means to understand others by entering their world (Chung, Bemak, 2002). To enter others world requires communication first. Yet, the results can not be generalized and further research is needed.

**Table 1 Comparison of Physical education and Fine arts Students according to sex.**

	N	Mean	Sd	t	P
<b>Communication</b>					
Physical Education Male-Fine Arts Male	50	71,80	12,07		
	50	56,42	9,99	6,938	0,000*
<b>Communication</b>					
Physical Education Female-Fine Arts Female	50	68,24	12,18		
	50	59,16	11,33	3,858	0,000*
<b>Empathy</b>					
Physical Education Male- Fine Arts Male	50	70,86	12,28		
	50	62,52	11,49	3,505	0,001*
<b>Empathy</b>					
Physical Education Female- Fine Arts Female	50	69,16	12,35		
	50	64,46	11,18	1,994	0,049*
<b>Communication</b>					
Physical Education (Total)-Fine Arts (Total)	100	62,99	10,89		
	100	58,51	9,08	3,159	0,002*
<b>Empathy</b>					
Physical Education (Total)-Fine Arts (Total)	100	70,67	10,06		
	100	64,18	9,34	4,726	0,000*

#### REFERENCES

- CEVAHİR R, ÇINAR N, SÖZERİ C, ŞAHİN S, KUĞUOĞLU S., 2008**, Evaluation Of The Empathic Skills Of Midwifery Students With Respect To The Classes They Are Attending. *Fırat Sağlık Hizmetleri Dergisi*, Cilt:3, Sayı:7
- CHUNG R, BEMAK F., 2002**, The relationship of culture and empathy in cross-cultural counseling (practice and theory). *Journal of Counseling Development*, 80:154-6.
- COKE, J., BATSON, D., & MCDAVIS, K., 1978**, Empathic mediation of helping: A two-stage model. *Journal of Personality and Social Psychology*, 36, 752-766.
- DEUTSCH, F., & MADLE, R., 1975**, Empathy: Historic and current conceptualizations, measurement, and a cognitive theoretical perspective. *Human Development*, 18, 267-287.
- DÖKMEN, Ü., 1988**, Empatinin yeni bir modele dayanılarak ölçülmesi ve psikodrama ile geliştirilmesi. *A.Ü. Eğitim Bilimleri Fakültesi Dergisi*, 21, 155- 190.
- DURU, E., 2002**, Öğretmen Adaylarında Empatik Eğilim Düzeyinin Bazı Psikososyal Değişkenler Açısından İncelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*. 12, 21-35.
- DYMOND, R., 1949**, A scale for the measurement of empathic ability. *Journal of Consulting Psychology*, 13, 127-133.

- DYMOND, R., 1950**, Personality and empathy. *Journal of Consulting Psychology*, 14, 343-350.
- FESHBACH, N. D., & Roe, K., 1960**, Empathy in six- and seven-year olds. *Child Development*, 34, 133-145.
- FESHBACH, N. D., 1976**, *Empathy in children: A special ingredient of social development*. Invited address to the meeting of the Western Psychological Association, Los Angeles, April.
- HOFFMAN, M. L., 1977**, Sex differences in empathy and related behaviors. *Psychological Bulletin*, 84, 712-722.
- HOFFMAN, M. L., 2000**, *Empathy and moral development: Implications for caring and justice*, Cambridge University Press, New York.
- IANNOTTI, R., 1979**, *The elements of empathy*. Paper presented at the Biennial meeting of the Society for Research in Child Development, San Francisco, March.
- LA MONICA E, WOLF R, MADEA A, OBERST M., 1987**, Empathy and nursing care outcomes. *Scholarly Inquiry Nursing Practice*, 1, 197-213.
- LILJA J, LARSSON S., 2000**, Empathy as a communication strategy in the pharmacy: A study based on cognitive behavioral analysis. *International Journal of Pharmacy Practice*. 8, 176-87.
- LIPPS, T., 1926**, *Psychological studies*. Baltimore: Williams and Wilkens.
- MCDUGALL, W., 1908**, *Introduction to social psychology*. London: Methuen.
- MEAD, G. H., 1934**, *Mind, self, and society*. Chicago: University of Chicago Press.
- MONAHAN M, EDMUNDS C., 2000**, Measuring empathy skills in pharmacy students. Presented at the American Association of Colleges of Pharmacy Annual Meeting. San Diego, California.
- PIAGET, J., 1932**, *The moral judgment of the child*. (trans.) London: Kegan Paul, Trench, Trubner.
- ROGERS C., 1951**, *Client-Centered Therapy*. Boston, Mass: Houghton Mifflin Co., 23-43.
- SMITH, A., 1759**, *Theory of moral sentiments*. London: A. Miller.
- SPENCER, H., 1870**, *The principles of psychology*. London: Williams and Norgate.
- TOY S., 2007**, *Comparison of Engineering and Law Students in terms of Their Communication Skills and the Relationships Between Communication Skills and Some Variables*. Ankara University Social Sciences Institution. Master's Thesis. Advisor: Prof. Dr. Ali Dönmez, 138 p.
- WISEMAN T., 1996**, *A concept analysis of empathy*, *Journal Advisory Nursing*, 23, 1162-7.
- YILMAZ İ, AKYEL Y., 2008**, Examination of Empatic Tendency Levels of Physical Education Candidates Teacher in Terms of Different Variables. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD)*, 9, 27-33.

## THE EFFECT OF RECREATIVE ACTIVITIES ON HOPELESSNESS LEVEL OF THE STUDENTS

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### ABSTRACT

**Purpose.** The purpose of this study to verify the effects of the recreative activities to the student's hopelessness level at 13 years old children. In our study 30 female (age:13) and 24 male (age:13) students from Kocaeli Atatürk Primary School have participated as volunteer.

**Methods.** The labour that was organised to observe the exchange of children's ranks of despair, continued 8 weeks, 2 days per weeks, 1 hours per days.

The students that have attended the research were tested before and after the activities. The test, had each 20 questions, were about "Beck Hopelessness Scale".

**Results.** The datas were appraised according to Beck Hopelessness Scale. After the evaluation of the datas, the dispersion about the frequency and percentiles were tabulated. According to results of Wilcoxon Signed Ranks Test, there were no meaningful discrepancy between the first and the last test scores of boys. However, it is founden between the first and the last test scores of girls, meaningful discrepancy about ( $p < 0.05$ ).

**Conclusions.** This study showed that hopelessness level can be develop by recreative activities in children. By focusing on these kinds of activities in schools, it will provide an improvement of hopelessness level of children, also a quiet and independent life.

**KEY WORDS** Hopelessness, recreative activities



## PURPOSE

Recreation is a reaction that, the aesthetic experience, to achieve personal goals or It is a positive feedback to others. One of the causes of despair is that young people don't know, they are not aware or they can't find the units which they would get economic, health, cognitive and social support. Despair is an occasion that happens to people consistently. In order to be able to eliminate the despair which comes out due to the psychological problems that are based on different reasons, recreative activities have big importance. By these recreative activities, the students are going to get relaxed and they will be able to feel better themselves (Karaküçük, 1999 ). Hope and despair, they both are reflectance of possibility of the opportunities which People's access to their real goals in the future. Hope an despair symbolize the opposite expectations. When there is prevision of ability of the plans which is put into practice to achieve the goal in hope, there is judgement of failure in despair. These two extreme expectations would vary from person to person, from situation to situation depending on when and how you perform to make the expected result real (Dilbaz and Seber, 1993).

## Method

Research comprises 30 girls, 24 boys, a total of 54 students consist of 7th class of the Ataturk Primary School. Before starting to the studies, the students who attend to the study have been informed about the content of the study by getting permission

**Table 1.** Distribution of the male students according to the BHS points. There are front test and final test results of male students according to the BHS in table 1.

FIRST TEST			FINAL TEST		
BHS POINTS	N	%	BHS POINTS	N	%
1	3	12.5	1	3	12.5
2	4	16.7	2	6	25.0
3	4	16.7	3	10	41.7
4	6	25.0	4	3	12.5
5	2	8.3	5	1	4.2
6	2	8.3	6	1	4.2
8	1	4.2	-	-	-
10	1	4.2	-	-	-
12	1	4.2	-	-	-
<b>51</b>	<b>24</b>	<b>100.0</b>	<b>21</b>	<b>24</b>	<b>100.0</b>

from the institution which the study were going to be done in there. The study that was made to see how the students's despair level could change with the activities has continued 2 days per week, 1 hour per day, a total of 8 weeks. The students joined to the activities as regularly and enthusiastic. Activities were done in the school's garden and in the class. Work program was presented in additional 3. Before and after events, "Beck Hopelessness Scale" (BHS) (Beck, 1974) consists of 20 questions was applied to the participant students. Turkey adaptation (Durak, 1994) was made. After the participant have been explained about the survey, consists of 20 questions, they were asked to mark convinient options. BHS is a scale that individuals can answer by themselves, easy to apply and it is graded between 0-1. There is information at the beginning of the form about how to respond. There is no time limit. 11 of the question is "YES" option, 9 of them is "NO" option and it is given 1 point. Recieved scores are assumed to be high. The survey form is presented in additional 1. BHS is used to measure individual's negative expectations for the future. It is self-evaluation scale. It is applied to adolescents and adults. Introduction of the scale is in the additional 2. After recieved data has been evaluated in SPSS 13.0 package program according to the BHS Scale, frequency and percentage distributions were brought into the spreadsheet. Also, Wilcoxon Test was used to determine the level of development within girls and boys research group's despair conditions. 0.05 was taken as significance level.

**Table 2.** Distribution of the female students according to the BHS points. There are front test and final test results of female students according to the BHS in table 2.

FIRST TEST			FINAL TEST		
BHS POINTS	N	%	BHS POINTS	N	%
1	4	13.3	0	2	6.7
2	6	20.0	1	4	13.3
3	6	20.0	2	10	33.3
4	7	23.3	3	8	26.7
5	2	6.7	4	6	20
6	1	3.3	-	-	-
8	3	10.0	-	-	-
9	1	3.3	-	-	-
<b>38</b>	<b>30</b>	<b>100.0</b>	<b>10</b>	<b>30</b>	<b>100.0</b>

**Table 3.** The Wilcoxon Signed Ranks Test results regarding the value of Men Research Group's first and last hopelessness test.

PARAMETER	Z VALUE	ACCOUNT F	LEVEL PARAMATERS MEANING
	- 1,645	0,100	P>0,01*

**Table 4.** The Wilcoxon Signed Ranks Test results regarding the value of Girl Research Group's first and last hopelessness test.

PARAMETER	Z VALUE	ACCOUNT F	LEVEL PARAMATERS MEANING
	- 2,819	0,005	P<0,05*

\*Significant at 0.05 level.

## RESULTS

The datas were appraised according to Beck Hopelessness Scale. After the evaluation of the datas, the dispersion about the frequency and percentiles were tabulated. According to results of Willcoxon Signed

Ranks Test, there were no meaningful discrepancy between the first and the last test scores of boys. However, it is founden between the first and the last test scores of girls, meaningful discrepancy about ( $p<0.05$ ).

## DISCUSSION AND CONCLUSION

Demirci and his-her friends have answered in their study which was done in 2007, titled research of the review of education with game for child's healthy growth to first level primary education teachers, for education of game on the importance of the child's healthy growth, % 58.6 very important, % 35.7 important, % 5.7 short important. As it will be understood from these results, there is a big importance of recreational games for children healthy growth (Gözaydın et al., 2007).

Dilbaz and Seber hopelessness is defined as the negativity expectation less than zero to make a job or a goal real. Hope and despair symbolize opposing expectations. When there is foresight of being able to succeed in the plans which is put into the practice to reach the goal in hope, there is judiciary of the failure in despair. These two extreme expectations would vary from person to person, from situation to situation depending on when and how you perform to make the expected result real (Dilbaz and Seber, 1993).

In Toros and his-her friends's study which determines the familial risk factors of child and adolescent suicide attempts, they identified that there is the presence of suicide behavior in the family, domestic communication problems, the number of imposed penalties, changing of the economic situation generate the familial risk factors in depression (Bayazıt and Ulusoy, 2005).

Sayar and his-her friends, they have founded in their study that female students have shown significantly higher degree of depression and anxiety scores comparing to the boys, on the other hand, male students have shown significantly higher degree of despair an extroversion scores comparing to the girls (Sayar et al., 2002).

In Bayazıt, Yenigün, Bayazıt, Karagün's (2004) study, it may be possible to connect the reason of the male volleyball players having lower despair level because of the volleyball is the branch of the team sport, the athletes have the responsibility and the spirit of the team, the awareness of living success and failure together, besides athlete's trust for himself increasing the trust for his teammates, his closeness and consistency in his social relations, his confidence to take care of his responsibilities and the opportunities which are provided by clubs and universities for him.

In a study named comparison study in 9-14 age group children's self-sufficiency and social skill levels, it's seen that children who make sport are more successful and social than who don't make. Also our study supports Onursal and his-her friends's study by identifying the students self-sufficiency after activities (Onursal et al., 2007).

In study named effects of playing basketball when they have free time in 11-14 age group of male students's development, it has come up that recreative content of basketball game contributes positive results for children's personality development (Togo et al., 2007).

In study titled effects of dance, swimming and tennis activities which is applied to age 13-14 Age School Teen on child's social development, it has obtained that the activities that the students have done short of the class, contributes positive results to their social development (Gözaydın et al., 2007).

The life experiences which will be provided by reaction in the face of reasons that cause of despair by affecting people's self-confidence, we believe that these activities are going to provide greatest opportunity for children and young people to solve the problems that they would face in society, to be able to improve their creative thoughts and to be integrated in the society.

## REFERENCES

- BAYAZIT, B., YENİGÜN, Ö., BAYAZIT, B., YENİGÜN, N., KARAGÜN, E. 2004,** *Investigation Of The Men Volleyballers' Hopelessness Levels Who Are Playing Volleyball Actively In Marmara Region's Universities.* The 10th ICHPER•SD European Congress and The TSSA 8th International Sports Science Congress, pp. 73. Antalya, Turkey.
- BAYAZIT, B., ULUSOY, Y., 2005,** *The Investigation Of The Hopelessness Levels Of Students In Kocaeli University.* 4th National Teacher Of Physical Education and Sports Symposium, pp. 467- 473. Bursa.
- BECK, A.T., LESKER, D., TREXLER, L., 1974,** *The Hopelessness Scale.* Journal of Consulting and Clinical Psychology, 42, 861-874.
- DİLBAZ, N. AND SEBER, G., 1993,** *The Concept Of Hopelessness: Importance Of The Depression and Suicides.* Crisis Journal, 1(3), pp.134-138.
- DURAK, A. 1994,** *The Scale Of Beck Hopelessness Validity and Reliability Study.* Association Of The Turkish Psychology, İstanbul.
- GÖZAYDIN, G., BAYAZIT, B., CANTÜRK, M. 2007,** *The Effect Of The Dance, Swimming and Tennis Activities On The Improvement Of The Children's Social Growth Between 13-14.* 9th International Sports Science Congress, pp. 52-55. Muğla.
- KARAKÜÇÜK, S., 1999,** *Recreation.* 4th Edition. Gazi Bookstore, Ankara.
- ONURSAL, M., MORALI, S., BAŞARAN, İ. 2006,** *The Comparison Of Self Sufficiency and Social Skill Levels Of Players In The Range Of 9-14 Ages With Control Group.* 9th International Sports Science Congress, pp.738-740. Muğla.
- SAYAR, K. VE ARK. 2000,** *Anger Attacks In Depressed Turkish Outpatients* Annuals Of Clinical Psychiatry. İstanbul.
- TOGO, O., ÖCAL, K., EKİCİ, S. 2006,** *The Effect Of The Basketball Activities In Personality States On Doing The Free Time Of The Male Students Aged Between 12-14.* 9th International Sports Science Congress, pp.111. Muğla.

## STUDY REGARDING THE SPORT AND PHYSICAL EDUCATION IN THE PLACEMENT CENTRES IN CARAS-SEVERIN COUNTY

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### ABSTRACT:

It is well known that every institutionalized child is or should be the beneficiary of a diverse range of services, of which I can mention: the educational, psychological and social services. Hence we can understand that for achieving these targets we require a holistic approach, multidisciplinary teams of specific intervention. In these activities, physical education and sport can play an important role in the growth and harmonious development of children and, not the least in their socialization and social integration.

In this way, the achieved research is of an exploratory type, and it proposed itself to collect information on how the physical education and sport facilities are employed during specialized activities carried out in foster care centres in Caras-Severin county and how the physical education teachers are involved in the activities of specialized intervention.

**KEYWORDS:** physical education, institutionalised child, specialized staff, specific intervention plan

### INTRODUCTION

Every institutionalized child is or should be the beneficiary of a diverse range of services, of which I can mention: the educational, psychological and social services. This is the aspect that should make those responsible to understand that in order to achieve the objectives, aimed by the institutionalized child protection system, it takes a holistic approach and multidisciplinary teams of specific intervention. Even if V.Miftode (1998) considers that the presence in the same team of a psychologist with a sociologist and an economist, or a social worker with a lawyer or an urban designer, generates confrontations and difficulties, however, without an approach that includes many specialists from various complementary fields, thus ensuring a holistic approach, it's unlikely that they could solve all problems referred to the highest standards.

In this respect, D. Tompea states that "social support appears to be a profession and a team of truly professional social intervention affirms itself especially through interdisciplinary states (apud. C. Bocancea,, G. Neamtu, 1999).

The fundamental idea from which we should start, when the individualized protection plans are elaborated by the case manager. Furthermore, specific intervention plans, which "are developed by various professionals who have expertise in different areas of intervention" (St. Cojocaru, D. Cojocaru, 2008) should provide a wide range of services. Only by ensuring a bigger variety of specialized interventions, it may seek to resolve certain problematic situations in which the institutionalized children find themselves.

In these activities, physical education and sport can play an important role in the growth and harmonious development of children and, not the least in their socialization and social integration.

In the activities, we can not talk at common sense level, where everyone can organize a game of football, since everyone is able to make the children

run or roll. You must get over the barrier imposed by the impression that "everyone is good at sports". It takes a thought and a drive at the scientific sense level so that the whole activity is based on very well defined theoretical and methodological concepts. Otherwise, we risk producing negative effects through the developed activities instead of correcting certain deficiencies, to compensate various deficiencies and develop motor and moral volition skills.

The lack of training and information of those dealing "at random" in these institutions, the lack of organization of leisure time and practicing physical exercise among children, is directly reflected in the quality of the activities they carry out and which not only may have negative repercussions on the beneficiaries of these activities. An increased degree of professionalism could lead to an increased number of beneficiaries who would participate in physical activities and an increased interest for the independent practice of physical exercise.

Focusing here on the role that physical education and sport and implicitly the specialist in this field can play, it is worth noting that the educational opportunities offered through sports should be a priority for partnerships between the centers of child protection and local sports organizations or other community organizations. Joint participation of non-institutionalized and institutionalized children in sports programs, simply means "a process of unification through which the majority and minority develop a new lifestyle that includes values of all groups and they are part of the process" (CENPO, 2008).

### RESEARCH METHODOLOGY

The need for understanding the diversity and complexity of the activities programs addressed to the institutionalized children imposed a research "on the spot" through interviews and questionnaires sent to heads of institutions and specialist practitioners and not the last to the beneficiaries of these services.

Knowing the way in which the IPP and SIP are developed and the activities programs which are put into practice, we can understand the place and the role that physical education and sport have in these specific intervention plans and, of course, the importance which is attributed to them.

In this sense, the subjects were 3 placement centers from Caras-Severin county, namely: "Hope" Placement Center in Resita, "Apartment" Placement Center in Resita, "Our House" Placement Center in Zagujeni.

Table 1. The structure of children's age groups in residential service ( 31 December 2008)

Placement Center	Number of children on age groups							Total No. of children
	< 1	1 -2	3 - 6	7 - 9	10 - 13	14 - 17	≥ 18	
"Hope" Placement Center in Resita	0	0	0	6	7	20	12	45
"Our House" Placement Center in Zagujeni	0	0	3	5	9	16	10	43
"Apartment" Placement Center in Resita	0	0	3	5	22	28	17	75

Source: DGASPC Caras-Severin (31december 2008)

**Research hypothesis:** The regular use of sports activities in specific intervention plans for the institutionalized children provides increased opportunities for networking with the medium outside the institution, which intensifies the process of their socializing, which is so necessary for the social integration.

From this general assumption of the research the following working hypotheses came out:

- The existence of daily programs to practice physical exercises or activities and sporting events is conditioned by the existence of a specialist, especially the physical education teacher.
- Sports programs conducted by specialized personnel (physical education teacher) contribute to the diversification and increase in quality of services offered to institutionalized children.

Likewise, there were a number of 12 interviews of directors, case responsible, an education instructor and a number of 6 advisers (social parents).

a protection measure has been taken.

Because the number of children over 14 years, but also the specialised staff from the three placement centers is not very large, we considered that it was not

- Determining the interest shown by the institutions for the children's protection towards the inclusion of sport activities in the specific intervention plans;
- How is perceived the children's need for movement among the specialised staff of these institutions;
- If there is qualified personnel, especially the physical education teacher, to deal with the sports programs for children;
- How is the presence of the physical education teacher understood among the specialized staff of the placement centers;

- The interest and concern expressed by the institutions in offering sport programs for the institutionalized children, are directly proportional to the characteristics of the specialised staff's life style.

The following methods and techniques of research were used in the research:

- Questionnaire based survey;
- Interview based survey;
- Analysis of specialised documents.

The questionnaires focused on two target groups, namely the specialized personnel in shelters who is responsible with the care, growth and education of children in institutions, respectively the beneficiaries of these services, children and young people for whom such

necessary the achievement of a sampling. Therefore, the questionnaires included the entire population.

The questionnaire for specialised staff was applied to a number of 36 people and included 18 items, which pursued:

- The understanding of the specialized staff's opinion in the institutions of child protection towards the importance of practicing exercise and sport in childhood;
- Identifying ways of leisure among the specialized personnel.

Participants in the investigation: 19 education instructors, 1 specialized educator, 3 educators and 13 referees (social parents).

The Questionnaire addressed to institutionalized children from the three placement centers in Caras-

**Table 2.** Number of specialized staff participating in the investigation

Specialized staff		Institution			TOTAL
		“Hope” P.C. Resita	“Our Home” P.C. Zagujeni	“Apartment” P.C. Resita	
Education instructors	Total	7	9	4	20
	Questioned	7	8	4	19
Specialized Educators	Total	2	1	-	3
	Questioned	1	-	-	1
Educators	Total	2	2	-	4
	Questioned	1	2	-	3
Referees (social parents)	Total	-	-	41	41
	Questioned	-	-	13	13
<b>TOTAL IN CENTERS</b>		11	12	45	68
<b>TOTAL QUESTIONED</b>		9	10	17	36

everin, aimed at children aged  $\geq 14$  years. Thus, the survey involved 67 children aged 14-17 years and 34 aged  $\geq 18$  years.

**Table 3.** Number of institutionalized children in residential centers participating in the investigation

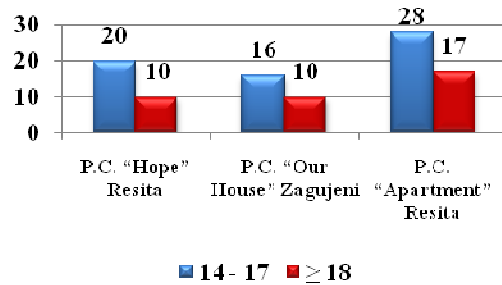
INSTITUTION	Number of children on age groups		No. all children
	14 - 17	$\geq 18$	
P.C. “Hope” Resita	20	10	30
P.C. “Our House” Zagujeni	16	10	26
P.C. “Apartment” Resita	28	17	45
<b>TOTAL</b>	<b>64</b>	<b>37</b>	<b>101</b>

Source: DGASPC Caraş-Severin (31december 2008)

Through those 21 items, the questionnaire addressed to children and young people surveyed the

following:

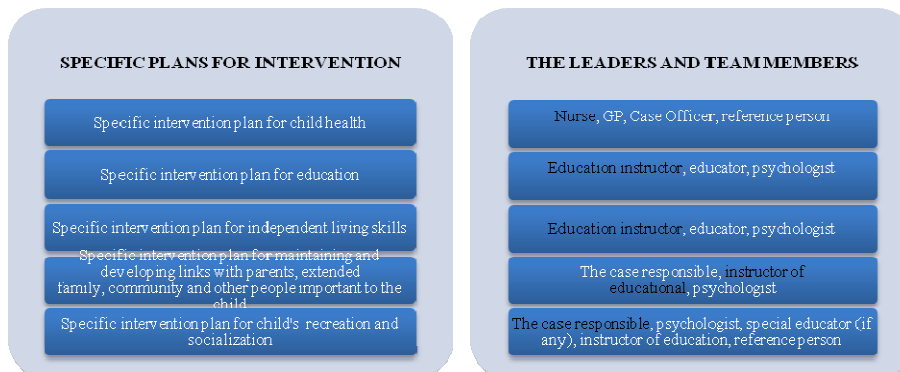
- Identifying the preferred means of spending free time;
- Determine the level of participation and involvement



**Fig. 1.** Number of institutionalized children participating in research, by age group

- of children in sporting activities;
- Perception of children's desire to practice exercise;
- Finding the main opportunities for interaction between institutionalized children and those outside institutions

Regarding the sports activities, these are reflected in the Specific Intervention Plan for Child’s Recreation



**Fig. 2.** The Structure of the Individualized Protection Plan and the members of the specific intervention team

Daily Activities	Activities arising from certain events	Regular Activities	Expanding social relationships
<ul style="list-style-type: none"> <li>• Outdoor games;</li> <li>• Walking;</li> <li>• Watching TV and DVD;</li> <li>• Listening to music;</li> <li>• Swimming pool (Summer)</li> <li>• Table tennis.</li> </ul>	<ul style="list-style-type: none"> <li>• Birthdays;</li> <li>• Celebrating Children's Day;</li> <li>• Christmas and Easter celebrations;</li> <li>• Youth Days;</li> <li>• Participation in religious services.</li> </ul>	<ul style="list-style-type: none"> <li>• Adventure;</li> <li>• Camps;</li> <li>• Walking in city parks.</li> </ul>	<ul style="list-style-type: none"> <li>• Adventure;</li> <li>• Camps;</li> <li>• Visits to other institutions of social protection;</li> <li>• To keep in touch with the family;</li> <li>• To keep in touch with people important to the child.</li> </ul>

Fig. 3. Structure of the Specific Intervention Plan and the aimed activities

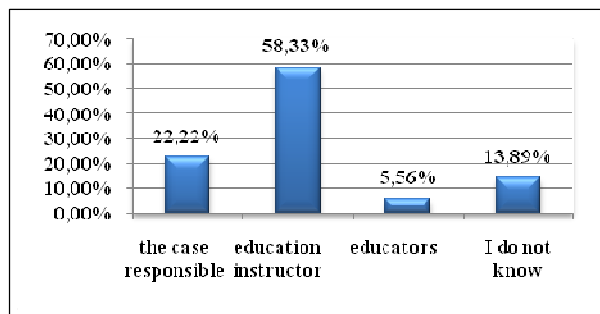


Fig. 4. Graphical representation of the responses concerning awareness about the staff responsible for organizing sports activities at the placement centers

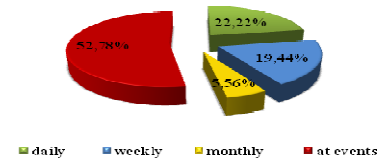


Fig. 5. Graphical representation of the organization frequency of sports activities in placement centers

### Results interpretation

In the interviews addressed to heads of institutions, case responsables, education instructors and advisers, revealed that the three investment centers in which research was undertaken, the individualized plans of protection (IPP) are developed by the case manager (CM) together with other specialists within the multidisciplinary team, taking into account their reports.

In each placement center there is an individualized protection plan (IPP) for each beneficiary of such protection, which contain 5 SIP. The specific intervention plans (SIP) are:

and Socialization, where the recreational and socialization activities aim:

If you were to look only over the specific intervention plans we would be tempted to say that the activities developed with children in institutions are quite complex.

To what extent physical education and sport, through their means of action and their specialists, participate actively in this complex process of specialised intervention in placement centers,

remains to be established after the analysis of responses to the representative questions of the interviews and questionnaires.

First of all it must be specified that in none of orphanages, whether it's the "Hope" Placement Center in Resita, the "Apartment" Placement Center in Resita or "Our House" Placement Center in Zagujeni, there is no teacher of physical education and sport to deal with the organization and conduct of sports programs. Although these activities are included in the SIP for Children's Recreation and Socialization, which is coordinated by the case responsible, it would appear that this is not fully known by all members of multidisciplinary teams responsible for these specific intervention plans. As proof we have the answers to the question nr. 13 of the questionnaire addressed to the

specialized staff, where only a quarter of the respondents knew who is currently responsible for sport.

The confusion caused by the lack of specialized people to deal strictly with the social-sports activities is reinforced by the responses in interviews to the question "Who is responsible at the moment for the organization of sport activities in your centre?"

"All are responsible with sport. For example, when we organize an event all the employees are involved. We have a young team that loves sports, so there's no problem from this point of view". (head of the placement center)

"One of the education instructors, which is also a man, is dealing with children. Most children do sport at school. We deal with vocational skills for independent living". (head of the placement center)

"The education instructor is in charge. In fact when we want or we have something to organize, everybody in the centre is involved, from director to administrator". (case responsible)

"Education instructor. I believe he is in the best position to handle this task". (education instructor)

"There is no specific person". (adviser)

"From the center, they announce us or directly the children when they have a championship. I do not know exactly who is in charge. I think the education instructors". (adviser)

"I do not know who is in charge. Children go alone to play when they are old enough. We are going with the little children". (adviser)

Regarding the existence of programs of physical exercise or sports activities organized for children in institutions, these are quite few in number. They are often held at events, as it appears from the responses to question no. 8 referring to how to organize sport programs in the center.

Here it should be emphasized that there is actually a single sporting event held regularly, ie mini-football "Hope" Cup organized by the "Hope" Placement Center in Resita in partnership with the Caras- Severin Sports Board, activity covered under the program "We also do sports".



Fig. 6. Logo program manager "We also do sports".

This competition is able to gather at start children from orphanages in Caras-Severin county, namely "Hope" PC Resita, "Apartment" PC Resita ,St. Mary CP Resita and "Our House" C.P. Zagujeni.

Unfortunately, these activities are too few, especially since they involve only the institutionalized children and although some argue that the system tries to give "due consideration", as the responses to question 7 show us:

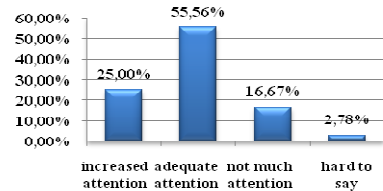


Fig. 7. Graphic concerning the attention paid to the sport activities by the system, in the specialized staff's opinion

or that there is interest of the institution for the daily sports activities, the answers to question no.14 and some responses from interviews show us a completely different side of the situation, namely, the absence and especially the disinterest for sport activities in general.

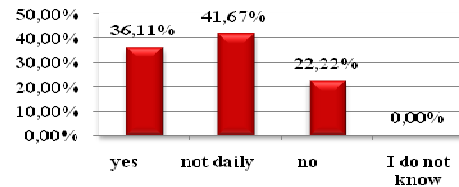


Fig. 8. Graphical representation of the existence of sports programs in the placement centers

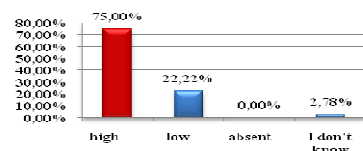
"The elder boys come with us to play football in their spare time. Unfortunately, lately, our sports ground was pretty damaged and we have not managed to restore it. The roots of the trees came out and broke the ground in the courtyard of the center". (head of placement center)

"We do not have the possibility to organize sports activities because we have no sports grounds". (head of placement center)

"Our children play soccer every day. We have the ground in the yard and Mr instructor C.D., who is younger and he organizes games with the children. There are no regular activities, only on the 1<sup>st</sup> of June, the football team goes to Reșița for the «Hope» Cup". (case responsible)

"I do not know if there are any. The children go outside in the park to play". (adviser)

Likewise, this can only contrast with the assessment made by the specialised staff in question no. 5 for the interest of children towards the practice of sports activities.

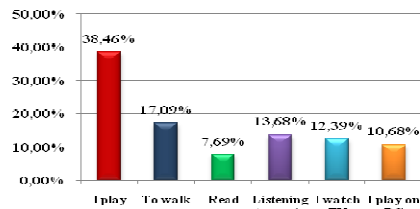




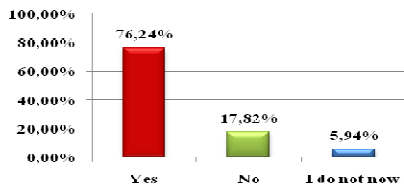
**Fig. 9.** Assessment made by the specialized personnel on the interest shown by the institutionalized children for sport activities

After analyzing the answers to the most relevant questions from the questionnaire addressed to children in institutions, we could present some issues which contrasts with the responses provided by specialized personnel.

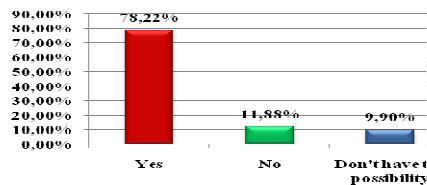
First, children present an interest towards sport activities, an aspect revealed by the responses to question no. 1 of the questionnaire addressed to children in institutions.



**Fig. 10.** The preferences of children's leisure activities  
The answers to question 15, 76.24% of children state that they should practice physical exercises, and in question 14 even argue that they want to be part of a sports club.

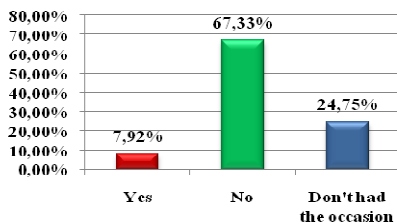


**Fig. 11.** Graphic representation of the children's opinions on the need to practice exercise



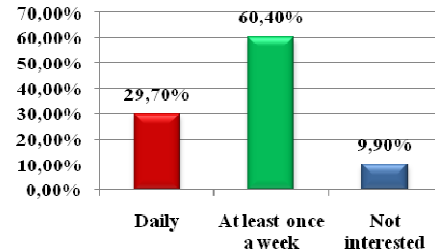
**Fig. 12.** Graphical representation of the children's desire to be part of a sports club

However, currently a relatively small percentage of the children surveyed are enrolled in a sports club.



**Fig. 13.** Graphical representation of the proportion of institutionalized children enrolled in a sports club

According to responses to question. 9, 60.40% of children surveyed would like to organize sports activities in centers, "at least once a week, 29.70% would like them daily, while 9.90% said they are not interested.



**Fig. 14.** Graph representing the desire to organize sports activities for children in orphanages

### Conclusions

Following statistical evaluation and interpretation of the two questionnaires, and the analysis of the applied interviews, the following conclusions could be drawn:

- Although currently, in the Specific Intervention Plan for Children's Recreation and Socialization is foreseen with a range wide enough of sport activities, unfortunately, the reality is very cruel, namely: with the exception of manifestations held at specific events, the organization of sports programs is almost entirely missing. Any trace of sporting activity, which can be met in the center, is spontaneous, being in fact the result of momentary initiatives of the children. Thus, we understand that these activities can not have too many beneficial influences on the children, and moreover, they do not offer the possibility of interaction with other persons than those institutionalized.
- While it is virtually impossible at present not to recognize the importance of conducting sports activities in partnership programs, institutional community - local community, they practically do not exist. This induces not only the idea that we can not give children the opportunity to interact with people institutionalized, they are actually deprived of a special type of social contacts, so much needed for the socialization process, and not least social integration.
- In none of the placement centers in Caras-Severin county there is a hired teacher of physical education and sport, to be part of the multidisciplinary teams responsible for the implementation of specific intervention plans. Therefore, at present, the development of children and the formation of their active style, healthy living, is dealt with by people without much experience, unqualified, who do not really know their role or the ways and means which could influence and lead to the fulfilment of the proposed objectives.
- Although most children expressed a preference for leisure sport activities, there are very few who are enrolled in a sports club. There are two main causes: the location of the protection center (as in "Our House" PC Zagujeni, located in the village with the same name), and the lack of people to deal specifically with these problems, children are not able to find a sports club based on preference and skill.

### References:

Bocancea, C., Neamțu, G., 1999, *Elemente de asistență socială*, Editura Polirom, Iași, 85.  
 CENPO, 2008, *Ghid de bune practici în implementarea politicilor publice locale*, Editura AMM@SIGN, Cluj-Napoca, 47.  
 Cojocaru, Șt., Cojocaru, D., 2008, *Managementul de caz în protecția copilului. Evaluarea serviciilor și practicilor din România*, Editura Polirom, Iași, 49.  
 DGASPC Caras-Severin, 2009.  
 Mițode, V., 1998, *Acțiune socială în perspectivă interdisciplinară*, Editura Proema, Baia Mare, 36.

## THE USE OF COMPETITION THROUGH BASKETBALL AS MEANS OF ACHIEVING THE PHYSICAL EDUCATION LESSON OBJECTIVES

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### ABSTRACT

**Objectives.** To establish whether the teaching of basketball through competition has any value, in relationship with the school curriculum objectives.

**Methods of research.** Documenting; Philosophical method; Experiment method; Methods of statistical analysis of data; testing method; graphical method.

**Subjects and tests.** The study was conducted during the year of 2008 / 2009, at the Mihai Drăgan School in Bacău. The subjects were the pupils of 5th A and 5th B, grades at which teachers are using basketball for the physical education lesson, since the 3rd grade.

The experimental group: 5th A. The group is composed of twenty five pupils, with an approximately equal number of boys and girls.

The control group: 5th B. The group is composed of twenty two pupils, with two physical education classes per week. Both the experimental and the witness groups had identical material conditions during the instructive – educational process.

The tests applied in this research were:

- tests for determining the level of development of the motor skills (50m speed running with an up start, standing long-jumping)
- specific basketball drills 1 minute throws – accomplished throws, Technical complex.

### Results

- The results obtained in the motor skills development control drills show a growth in the favor of the experimental group.
- Regarding the capacity of autonomous practice of basketball, the results are clearly superior for the experimental groups.
- The pupils' marks and the grade averages also prove that the level of learning regarding the technical elements, technical-tactical structures and game model, imposed by the curriculum, is superior in the case of the experimental groups.

### Discussions, conclusions

- The conducted research reached its aim and has verified the announced hypothesis: Teaching basketball during the 5th grade physical education lesson leads to increasing the interest and motivation of pupils and achieving superior results to the ones obtained through the use of classical curriculum method.
- The results of this study determine us to say that the use of competition on a large scale during the physical education lesson is one of the most advantageous forms of organizing the training for the 5th graders.

**KEYWORDS:** Basketball, competition, physical education lesson

### INTRODUCTION

- As means of physical education, basketball contributes, together with the other sportive games, athletics, gymnastics and tourism, to achieve certain objectives of the physical education, of which we mention (C.Negulescu, 2001):
- Increasing the quality of life, by ensuring an optimum state of health, expressed through robustness and physical vigor, prolonging the active life;
- Forming an enhanced individual motor ability, expressed through a high development of basic and specific motor skills, together with the development of the basic motor qualities;
- Equipping the young people with knowledge, skills and habits that are necessary for a good social functioning;
- Educating the moral qualities, the positive character and behavioral traits. (C.Negulescu, 2001)

The practice of basketball contributes to forming and perfecting certain coordinated movements, to forming an ability to rapidly react to the rhythm of

social activities, through the accumulation of influences and positive effects with an educational character and which maintains a healthy body.

The diversity of motor actions, the influence that the practice of basketball can exert on the body systems and functions, as well as the possibility for it to be played in the open air, creates multiple possibilities through which it can contribute to a harmonious physical development, in full health.

Basketball is the sport that can be played by children and youths of both genders, by men and women of adult age, in competitions, as well as a recreational activity or just to keep your body in shape. (C.Hânsa, L.Călin,2004.)

The relatively reduced dimensions of the court, as well as the small number of players competing, determine quick movements, as well as a very fast circulation of the ball. The players participate in equal measure, both in attack and in defense. The regulation itself, through the rules of 3, 5, 8, 24 seconds, determined an accentuated dynamism for the phases of the game, from the first to the last minute of a match. From here we can extract some of the

characteristics of basketball, the dynamism and the vitality. The radical socio-economic changes in the last fourteen years in Romania, determined important modifications in the people's attitude towards the training process of the younger generation.

The Romanian teaching was put in the situation to reform the teaching units' network, but especially the plans programs and contents, due to the necessity to realize a concordance between them and the actual needs of the socio-economic life, specifically regarding the mutations of the young population's interests and motivations. (C.Ciocan, D.Ciocan, 2007). The physical education lesson lost its attractiveness because of the syllabus content, because it imposes burdening control drills, both for the pupils and teachers, and unadjusted standards.

We see a limitation of the physical activities and a diminution of the interest for the main objective of these activities, which is to create and develop a taste for practicing physical exercises. We can emphasize that a possible way of giving more importance to the affective-emotional side, than the physical side of the action, is to introduce on a large scale the competition, in the physical education lesson (by the competitor, by the organizer, the referee) thus considerably increasing their possibilities of manifesting their personalities. At the same time, the competition satisfies their need for knowing, immediately, the result of their acquired competences, not having to wait for the control drill, thus the reason for frequenting the lessons becomes the activity itself, not the mark they will receive. Ideals for this purpose are the sportive games, at which the young people happily adhere. The ball, the rules, the team work, they all satisfy the need for socializing, a need that is present even in the most shy, or egotistic young people. (C.Ciocan, D.Ciocan, 2007)

Basketball, being a collective game, contributes to forming group relations, therefore to tie together the whole group of pupils in the class. During the training process, as well as during the game (through regulations) there is a development of conscious discipline, a sense of duty, of collaboration and helping each other, a responsibility for one's actions, a respect for the adversary, will, tenacity, self-control, mastering the egotistic feelings, practical thought. (C.Hansa, L.Călin, 2004)

### Objectives

To establish whether the teaching of basketball through competition has any value in relationship with the school curriculum objectives.

### Research hypothesis

We consider that the use of competition in teaching basketball during the 5th grade physical education lesson leads to increasing the interest and motivation of pupils and achieving superior results to the ones obtained through the use of classical curriculum method.

### Research Methods (subjects, applied tests)

Documenting; Philosophical method; Experiment method; Methods of statistical analysis of data; testing method; graphical method.

In our research we used as the main method for learning the game of basketball at the 5th grade, namely global learning - the game. The game used to end each lesson believes that learning was effective.

After discussions with middle-school physical education teachers, we elaborated the model experimental lessons module (basketball learning programs), lessons that end with a basketball competition. These lessons make more effective the learning of basketball in middle-school.

The study was conducted during the year of 2008 / 2009, at the Mihai Drăgan School in Bacău. The subjects were the pupils of 5th A and 5th B, grades at which teachers are using basketball for the 5th grade physical education lesson. The experimental group: 5th A.

The group has a number of twenty five pupils, an approximately equal number of girls and boys, who have two hours of physical training per week and they practice basketball since 3th grade.

The control group: 5th B. The group is composed of twenty two pupils, with two physical education classes per week, and they play basketball since the 3rd grade. Both the experimental and the witness groups had identical material conditions during the instructive – educational process.

The tests applied in this research were:

- tests for determining the level of development of the motor skills (50m speed running with an up start, standing long-jumping)
- specific basketball drills 1 minute throws – accomplished throws - girls, Technical complex - girls.

The teaching of basketball in the first two groups was done by using classical means and methods (technical elements, technical tactical structures, theme game, and school game) whereas in the other groups we largely used the competition. The assessment was done through systematic observation and passing the evaluation tests.

### Results

For the control drills regarding the development of motor skills Grade 5th A, with a number of 25 pupils. After the results from the initial and final tests, we can see a progress of 0.63 seconds for the speed running and of 7 centimeters for the standing long-jumping, for the experimental group. Grade 5th B, with a number of 22 pupils. After the results from the initial and final tests, we can see a progress of 0.14 seconds for the speed running and of 2 centimeters for the standing long-jumping, for the control group.

### The physical training indicators dynamics - girls

No.	Drill	Testing	Control group	Experimental group	Test t independent	P
1	50m speed running	Initial	9,15±0,06	9,20±0,07	0.529	>0,05
		Final	9,01±0,05	8,57±0,08	4.218	<0,001

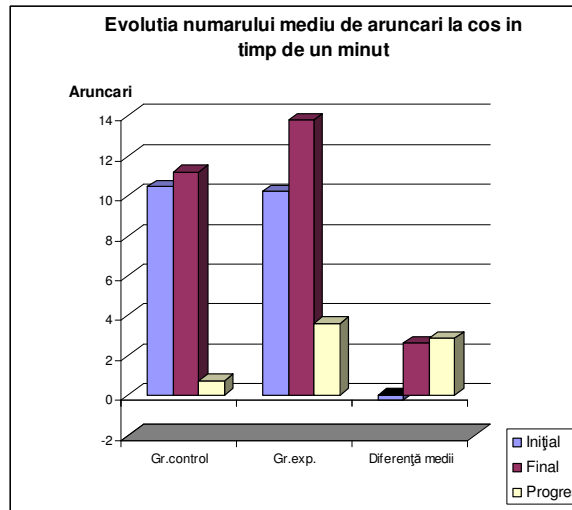
		Test t dependent	3.981	12.225		
		p	<0.005	<0,001		
2	Standing long-jumping (cm)	Initial	128,92±1,78	134,71±2,24	2.011	>0,05
		Final	130,85±1,8	141,42±2,54	3.383	<0,005
		Test t dependent	5.687	9.502		
		p	<0.001	<0,001		

For the specific basketball drills

**Throws in 1 minute - accomplished throws - girls**

During the initial testing, the control group obtained an average result of 10.46±0.32 throws, whereas the experimental group had a result of 10.22±0.15 throws. The t test for dependent groups in this stage is negative, as it was expected to be, both groups starting from the same training level.

Testing	Control group	Experimental group	Differences in averages
Initial	10.46	10.22	-0.24
Final	11.2	13.81	2.61
Progress	0.74	3.59	2.85



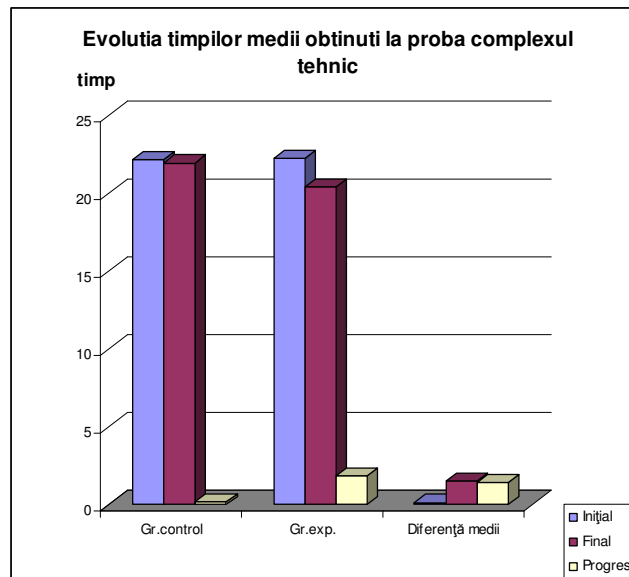
**The evolution of the average number of throws in 1 minute - girls**

During the initial testing, the control group obtained an average result of 11.20±0.14 throws, its progress being of 0.74 throws, whereas the experimental group had a result of 13.81±0.29 throws, its progress being higher than the control group. The t test for independent groups, applied at the final testing, shows that the progress of the experimental group is due to our basketball elements training programs, which confirms the research hypotheses.

**Technical complex - girls**

The control group obtained during the initial testing an average time of 22.14±0.53 seconds, whereas during the final testing an average time of 21.95±0.28 seconds, with a progress of 0.19 seconds, according to the t test for positive dependent groups, which proves the effectiveness of the classical training methods used during the physical education lesson.

Testing	Control group	Experimental group	Differences in averages
Initial	22.14	22.27	0.13
Final	21.95	20.42	1.53
Progress	0.19	1.85	1.4



#### Evolution of average time obtained during the technical complex drill - girls

The experimental group obtained during the initial testing an average time of  $22,27 \pm 0,41$  seconds, not being differentiated, from a statistical point of view, from the control group (the t test for independent groups, during the initial stage, is negative). For the final testing, it obtained a much better time than the control group ( $20,42 \pm 0,52$  seconds), the 1.85 seconds progress being correlated with the more pronounced effect exerted by the training programs we suggested (the t test for independent groups is positive and confirms the research hypotheses)

#### Discussions

By comparing the results obtained by the studied pupils, we can discuss the following aspects:

- The results obtained in the motor skills development control drills show a growth in the favor of the experimental group.
- Regarding the capacity of autonomous practice of basketball, the results are clearly superior for the experimental groups.
- The pupils' marks and the grade averages also prove that the level of learning regarding the technical elements, technical-tactical structures and game model, imposed by the curriculum, is superior in the case of the experimental groups.

#### Conclusions

- The conducted research reached its aim and has verified the announced hypothesis: Teaching basketball during the 5th grade physical education lesson leads to increasing the interest and motivation of pupils and achieving superior results to the ones obtained through the use of classical curriculum method.

- Following the analysis of the results, we can see clearly the use of competition during the physical education lesson, with basketball elements, leads to achieving all of the reference objectives imposed by the curriculum; it raises pupils' interest for physical activity, it stimulates initiative, it creates competences regarding the basketball game self-organization and self-refereeing, it presents advantages regarding both the motor density and teaching density, it shortens the game's learning period, it leads to a relative homogeneity of the pupils' motor skills.
- The results of this study determine us to say that the use of competition on a large scale during the physical education lesson is one of the most advantageous forms of organizing the training for the 5th graders.

#### BIBLIOGRAPHY

- CIOCAN ,C, CIOCAN D., 2007, Baschet – caiet de lucrări practice**, Edit. Pim, Iași.
- CIOCAN C., 2007 Tehnica și tactica jocului de baschet**, Edit. Pim, Iași.
- FLEANCU, J.L., CIORBĂ C., 2001, Baschet - îndrumar metodic**, Editura Cultura, Pitești.
- GHENADI, V., 1982 Algoritmizarea predării jocului de volei in lectiile de educatie fizica, la clasele V- VIII" Revista Educatie Fizica și Sport Nr. 1,2,3.**
- HANSA, C., CĂLIN L. , 2004, Baschet – Tehnică și Tactică**, Edit. Fundației Universitare Dunărea de Jos, Galați, 11
- NEGULECU, C., 2001, Baschet – Bazele generale ale teoriei și practicii**, Editura Fundației României de Mâine, București, pag 31
- SURUGIU, V., 1971 „Volei in scoala”**, Edit. Stadion, București,

## FOR A NEW MODEL OF (INTER)ACTIVE LEARNING

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### ABSTRACT

Strongly concerned with improving the assimilation of pedagogical notions, we intend to exploit a relatively new model of interactive learning.

Research *objectives*:

1. identifying a relatively new model of interactive learning with an increased degree of efficiency, capable of being exploited in the process of teaching-learning pedagogy concepts;
2. presenting/analysing aspects characteristic of the new model;
3. specifying its implementation and usefulness in didactic practice;
4. highlighting issues of formative relevance of the model.

*Research content*: By studying the reference literature, we have identified, presented and analysed the *structural-functional* model of *interactive learning* developed by L. Dee Fink (1999, 2003). It is built by reference to two experiment categories (practice and observation) and two types of dialogue (with oneself and with others).

*Conclusions*: The model's structure and functionality leads to a series of effects and suggestions for any type of pedagogic practice. These are extensively discussed in the research.

**KEY WORDS**: active learning, interactive learning, structural-functional model of interactive learning

### INTRODUCTION

The concern with ensuring efficient learning is a constant in the work of teachers. Even more so for those involved in initial didactic training and in a context where the overall level of students' training, their motivation for learning, the learning techniques used and their interest in didactic training do not show progress.

The methods, (inter)active didactic strategies respectively, have shown a higher contribution to the improvement of learning during the last years. Teachers have either learned about them punctually and have been trained to use them, or have discovered them independently and have been caught by their unquestionable value. At the same time, theoretically, the local reference literature does not contain any substantial analysis of (inter)active learning as a process and a systematization of possible models of this type of learning.

Based on these findings and an experience of nearly 25 years in the didactic field, I have obviously reached the question: Is there a model of (inter)active learning in foreign reference literature? If yes, which is it? How does it show its novelty and efficiency? In this context, we have formulated the following *research objectives*:

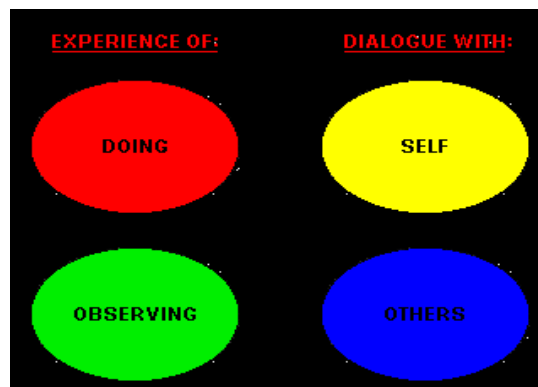
1. identifying a relatively new model of (inter)active learning, highly efficient and capable of being used in teaching-learning pedagogy concepts;
2. presenting/analysing the specific aspects of the new model;
3. indicating the means of implementing and making the best use of it in didactic practice;
4. highlighting issues of formative relevance of the model.

To this purpose, we have proceeded to identify some reference sources and to study them analytically,

critically and comparatively with the aim of singling out and presenting a model of (inter)active learning.

We shall start by distinguishing between the concepts of "active learning" and "(inter)active learning". *Active learning* is that type of learning which implies the direct, unmediated and obvious involvement of the learner in the process (an involvement which can eventually be achieved also individually). *Interactive learning* is that form of learning which implies the direct, unmediated and obvious involvement of the learner in the process as a result of building and activating certain relationships with the others involved in the same process. Therefore, one can notice the fact that *interactive learning is a species of active learning*. In order to emphasize the close and complex relations among them, we shall further use, throughout the entire text, the (inter)active word thus written.

### 2. The structural-functional model of (inter)active learning



L. Dee Fink (1999) suggests a *model of interactive learning* precisely because many teachers (and not only beginners, certainly!) would like to

improve their teaching method by resorting to some model that may allow them to identify the best ways to get learners involved in the learning process, but they do not exactly know how this may be done.

The proposed model offers a way of conceptualizing the learning process which, according to the above-mentioned author, can offer teachers support in their effort of identifying important (inter)active learning strategies.

This explanatory structure of the learning process reveals, according to L. Dee Fink (1999), that in order to be interactive, a didactic process must compulsorily ensure a *learning combination by/through action and conversation*. The ways of conceiving these two are also systematized into two categories (effectively achieving something and observation, dialogue with oneself and dialogue with others respectively), the total number of the combinations being 4.

<p><b>acting...</b></p> <p>- Refers to any type of learning activity where the one in question does something (designs, directs, runs an experiment, criticizes or supports a work of art, investigates historical sources, makes an oral presentation).</p>	<p><b>dialogising with oneself...</b></p> <p>- Involves reflecting upon a topic;</p> <p>- Implies the analysis of his/her emotional relation to a topic;</p> <p>- Refers to thinking about one's own thinking or feeling;</p> <p>- Can be accomplished through: diary, portfolio.</p>
<p><b>observing</b></p> <p>- Watches or listens to what somebody else does related to what they should learn (directly or indirectly)</p>	<p><b>dialogising with others</b></p> <p>- Communicates indirectly and implicitly with the author of the text in the handbook;</p> <p>- Communicates directly with the teacher;</p> <p>- Communicates with the team mates in order to accomplish tasks;</p> <p>- Communicates with others (experts, practitioners) (directly, in writing, via e-mail)</p>

As one can see from the presentation above, this is a *structural-functional model*. A mere attempt at connecting it to the topic of didactic strategies validates its *general, systemic, holistic nature* where any method, be it classic be it modern, relatively passive or openly dynamic, can be integrated with activation conditions, generated by the teacher's creativity.

For the teacher who tries to provide a more active learning, the author we have mentioned proposes the following 3 *suggestions* (L. Dee Fink, 1999):

1. *Expanding the types of learning experiences created* – Traditionally speaking, teaching consists, most often, in reading a text or presenting a text, a reading, as well as a rather limited range of types of conversation with the others. In order to activate learning, it is recommended to:
  - Create small groups of students and stimulate them in order to find solutions to problems or to take decisions periodically;
  - Find ways to engage students in authentic (direct, written, e-mail) conversations, also with other persons than one's classmates who know the topic they are supposed to learn;
  - Determine students to write a diary or to make a "learning portfolio" about their own experiences, knowledge, thoughts, feelings;
  - Find ways of helping students to grasp (directly or indirectly) the topic or the action they are trying to learn;
  - Find ways of providing students with the real possibility of (directly or indirectly) doing what they are supposed to do in order to learn.
2. *Capitalize on the advantage given by the "power of interaction"* – since each of the 4 elements of the structural-functional model has its own value, then the more ingeniously they are combined, the more numerous will the formative effects be. For example, if students write, first of all, their own thoughts concerning a certain topic before engaging in a group conversation, then the group conversation will be richer and more active. If they can do both and then they can observe the phenomenon, the observation will also be more dense and participatory. If, subsequently, the observation is followed by the student's engagement in a direct process of action led by him/herself, then the student will understand better what s/he has to do and learn by doing. If, eventually, the student describes his/her learning experience by writing or discussing with his fellows, this will provide better understanding and retention.
3. *Creating a dialectical relationship between action and conversation* – The new experiences undergone by students (through observation or action) have the potential to offer them new perspectives concerning what is true (beliefs) and/or what is good (values). Conversations help students build more possible significations of actions and their effects. A teacher who creatively ensures dialectical learning relations where students take steps forwards – backwards between having rich experiences and engaging in dense meaningful conversations can maximize the



likelihood that they have meaningful practice and learn consciously.

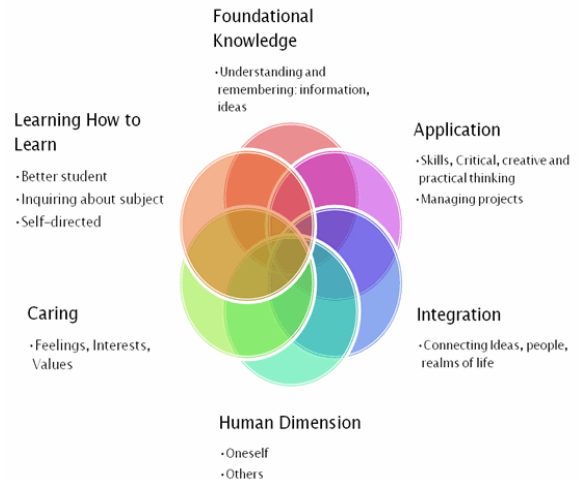
The essence of the presented model is but a simple review of the classic educational paths, generously offered by the sages of Antiquity (Socrates) or by the representatives of classic pedagogy (Comenius, Rousseau), by the representatives of the new education (Key, Montessori), until the master of the learning by doing, J. Dewey. *A reactualization of some partially forgotten lessons*, an awareness of the need of balance and interrelationship between the inside and the outside, reflection and action, a *restructuring of the didactic conception* concerning the flexibility and versatility of teaching approaches, a *revival of the attempts of differentiation and individualisation* (at least in relation to learning styles!), an *invitation to creativity and education for change* addressed to teachers themselves, irrespective of their training and experience, the supraordinate professional paradigm or the environment where they carry out their activity. Although the presented model shows nothing cognitively new, one cannot say that it does not own a certain *degree of utility*, precisely by its simplicity, structurality and suggestiveness with which it can persuade and draw the expected concrete results in school practice.

### 3. Strategic steps for an (inter)active learning

As shown both by school practice and reference literature, D. Bell and J. Kahrhoff (2006), *selecting, designing and using the most appropriate didactic strategies* represent vital processes in ensuring efficient learning. The option most often used for structuring a curriculum is a *pedagogic model* (most commonly that of Bloom, containing the 6 hierarchical categories characteristic of the cognitive domain) and the subsequent design of objectives, strategies and assessment with a view to ensuring their practical application. Although this model has been recently improved, too, according to J., M. Pickard (2007), this does not mean that it is the only model which can be used. On the contrary, the diversity of approaches is generated by the ebullience of researches in the field of the sciences of education. Many of those concerned with improving approaches and, implicitly, didactic strategies with a view to applying them, choose more and more often L. Dee Fink's model (proposed in 1999, improved in 2003) which puts forward what he calls "significant learning" (significant learning!).

Subsequent references made to this model by authors such as D. Bell and J. Kahrhoff (2006), R., C. Walker (2007), D., J. Klooster and P. Bloem (2007), Patten, K., Boudreau, D., V. Craig (2007), N. Simpson, L., Willingham-McLain (2007), A-M. Armstrong (2008), D. Hamilton (2008), G. Rathbun (2008), A., L. Phelps, L. Dostilio (2008), Guide to Taxonomies of Learning outcomes (2009) emphasize the author's concern with "learning to learn" and his choice of a 6-step model (it is not by accident that his

model also departs from Bloom's model!), steps which are, however, structured according to a logic different from the one of thinking, much more complex and comprehensive, rather illustrating *interdependencies* than hierarchies among the component aspects: 1. basic knowledge; 2. application; 3. integration; 4. human/interhuman dimension; 5. concern for feelings, interests, values; 6. "learning to learn". The plan of the intersection is precisely the one which configures "significant learning".



As can be seen, the taxonomy proposed by Fink (2003) promotes the idea that students will learn more and retain more thoroughly if they learn by applying the content, connecting it with the previous ones, understanding the social meanings of what they have learned, also taking care of the feelings and values involved as well as of how to maintain long-term learning (apud R., C. Walker, 2007).

An important aspect of Fink's model is *feedback*, both in monitoring the students' learning process, improving their performance and in the self-regulation of the teacher's future activity. In order to have high-quality feedback, this should be characterized by "*FIDeLity*", that is, it should occur *frequently* (daily, if possible, weekly, each time it is necessary!), *immediately*, *discriminatorily* (based on criteria which should highlight the difference between low, average and outstanding activity) and *affectionately* (empathetically in the way in which it is given) (L., Dee Fink, 2003; L., Dee Fink, f.a.).

Concerning assessment, Fink believes that it should be done in at least two ways: an *educational* and an *anticipatory assessment*.

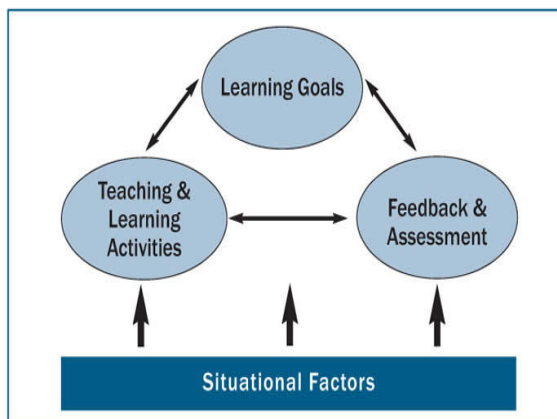
For added efficiency, assessment should be anchored in the future, should consider the way in which students will apply knowledge and skills in the real world. To that effect, Fink constantly and repeatedly highlights the efficiency of effectively integrating certain learning strategies in the process – an evaluation fully in agreement with the essence of the model such as the *diary* and the *portfolio* (L., Dee Fink,



1999; L., Dee Fink, 2003; L., Dee Fink, f.a.; L., Dee Fink, 2007.

Once the choice of the model established, “significant learning” respectively, the subsequent strategic steps aim at *designing, implementing* and *evaluating* it.

Starting with the 6 possibilities of providing efficient learning, through combination and interaction, (as it has been previously analysed), L. Dee Fink (2007) shows that the means of endowing students with this learning is *to teach teachers*, first of all, how to design their classes in a more interactive way, achieving in fact the *design* of an *integrated class*. The basic idea of such a class is that instead of developing, within a class, a list of topics and then asking students for a lot of knowledge concerning these topics, we need to design classes *centred on learning, systematic and integrated*. If we succeed in doing this, students will answer by becoming increasingly involved and engaged in the learning process and will succeed in “learning several types of learning” (idem). The steps that need to be followed are illustrated in the following scheme and based on it we shall present the viewpoint of the already mentioned author (idem):



1. *The situational factors* emphasize the context differences involved in the didactic process which vary it and which we must be aware of and take into consideration when making decisions:

- *specific context*: How many students are signed up and how many attending? What is the level of the class and its temporal structure? Will it be done directly, on-line or in a combined manner?
- *the others' expectations*: This class is expected to ensure the achieving of the goals of a department, university, a certain professional training?
- *the nature of the content*: Real sciences are often “convergent” (they work in search of a single correct answer), whereas humanities are often “divergent” (looking for, as if willingly, multiple interpretations of a topic).

How can these differences be taken into consideration?

- *the nature of the students*: How do students feel towards the content of the class? What knowledge and experiences related to it can students bring and use in the classroom?
- *the nature of the teacher*: What beliefs and valued does s/he bring into the lesson? What is the relation between these and those of the students?

If we compare the classic view with the one of L. Dee Fink’s model (1999, 2003, 2007) one can see that in the first approach some of these preoccupations constitute the *object of constant reflection* of the majority of teachers (specific context, the others’ expectations), others are the object of only a *partial reflection* (nature of content, nature of students) and others cannot be found at all in the teacher’s anticipative – projective effort (nature of teacher).

2. *Setting the objectives (goals): what we intend the students to learn?* (L. Dee Fink, 1999, 2003, 2007) In a relevant manner, they should learn the essential about the major topics, that is why we should formulate *the objectives in attractive and captivating terms*. At this moment, the 6 sides of the taxonomy of significant learning become important (1. basic knowledge; 2. application; 3. integration; 4. human/interhuman dimension; 5. concern for feelings, interests, values; 6. “learning to learn”) because they suggest 6 approaches to learning which can be used during any class. The mentioned author suggests that when formulating objectives, we should do it in the terms of a full statement, of the type: “I hope that by the end of this class students will ...” after which the content of the respective objective is added. The following list presents several examples of using the taxonomy of significant learning in the generic formulation of a set of objectives. “I hope that by the end of this class students will ...”

- understand and remember key concepts, notions, relations;
- know how to use the content;
- be able to correlate this topic to others;
- identify personal and social implications derived from knowing this topic;
- make the best use of this topic – and any other future learning concerning it;
- know how to continue learning about this topic after the class ends (idem).

If the *procedural point of view* reveals a great resemblance to Mager’s operationalization procedure (except the violation of some of the basic rules of operationalization: the existence of two verbs within a statement; using verbs that indicate subjective, internal processes and not behavioural, observable realities (to understand, to know), in strict terms of content one can notice how the examples do not follow Bloom’s taxonomy but are an obvious illustration of the announced taxonomy. Although there are obvious

elements of continuity between the 2 taxonomies, we would like to make a few brief *comments*:

- a. While Bloom's taxonomy is characteristic only of cognitive objectives, that of significant learning has a holistic nature which extends the cognitive into the social, personal and interpersonal;
- b. While using Bloom's taxonomy will produce effects only on a cognitive level, using the significant learning taxonomy will extend the sphere of formative effects to all previously mentioned fields, contributing to an integrative impact;
- c. If, when using Bloom's taxonomy, we have to complete the objectives with the affective, psychomotoric and psychosocial objectives, the significant learning taxonomy is complete from the outset.

3. *The learning activities: How will students learn?* (L. Dee Fink, 1999, 2003, 2007) Once we have established the most important learning objectives, we will have to identify the *learning activities* that will make students capable of reaching them. A good starting point could be, according to L. Dee Fink (2003), the approach proposed by Bonwell and Eison (1991), as being, in his opinion, one of the most significant in the reference literature. If we want students to acquire new, more "powerful" learning types, we will have to organize "more powerful" learning activities. For this, the mentioned author suggests an adaptation of the central principles of active learning within a model that he calls "*the holistic model of active learning*". According to this model, students should act in the following 3 *directions*:

- acquire the *required basic knowledge* – which may be done usually through study in class or outside it;
- making *observations* – case studies, problem solving, decision-taking exercises, role-play, listening to others' experiences;
- providing a serious reflection regarding the signification of knowledge and experiences – the 1-minute essay, weekly diaries, portfolios.

L. Dee Fink (2003) stresses the fact that it is very important for the teacher to find different ways of including all the three types of learning activities for each topic but also for each section of the class.

If we compare our current practices of didactic planning and the model presented above, we find *two major differences*: one is given by the argument of *presence* and the other by that of *weight*.

When we say the *argument of presence* we mean that very few times, if not usually never, "we do not have the time" required by and sufficient to plan reflection and self-reflection (one of the probable causes may be the "omission" of such an objective, explicitly stated, from the set of operational and/or reference objectives!). *The argument of weight* expresses the painful (but true!) reality according to which most of the objectives in our studies and activities plans are cognitive and, here and there, they

are completed by one, two at the most, affective, psycho-social or psychomotoric objectives (rather due to procedure reasons than to conviction, although they are achieved at the level of the action!!!).

4. *Feed-back and evaluation: How are we to know whether students have reached the objectives that we established?* (L. Dee Fink, 1999, 2003, 2007) The solution offered, borrowed from Wiggins (1998, apud Fink, 2007) is "*educative assessment*". According to his principle, assessment is good if it ensures more than just a highlighting of a training level reached at a given moment. It educates, at the same time. For this, it should include the following *key elements* (L. Dee Fink, 2007):

- *authentic tasks* – A part of the assessment is about knowing whether students have understood and retained the content. Educative assessment should focus upon identifying their possibility of actually doing something with this content;
- *criteria and standards accuracy* – When assessing complex learning, we should develop accurate criteria (measures) and standards (the level of reaching a certain measure);
- *opportunities for self-assessment* – After completing the classes, graduates will have to assess their own performances in numerous situations. We can help them to do that well by endowing them with practices to this effect and offering them feed-back about the assessment;
- "*FIDeLity*" *feed-back* – students need Frequent, Immediate feed-back in their learning efforts which should correctly highlight (Discriminate) the differences among them and which should be given in a friendly, empathetic manner (Lovingly) (idem).

Essentially, the known *formative assessment aims at the same aspects*. The items of emphasis outlined in the model presented (authentic tasks meaning practical tasks, assessment opportunities and "FIDeLity" feed-back) are the expression of a continuous assessment, always achieved in agreement with learning and for increasing its soundness. Basically, it is the same concept and the limit could be translating through synonymy (educative assessment and formative assessment).

After analysing these components of significant learning planning, the author points out that we must make sure, before actually proceeding to the implementation of the model itself, that these are well articulated and integrated, that they reflect and support each other. To this effect, Lee D. Fink (2007) suggests that we should:

1. *build and fill in a table* where the boxes should be filled in from left to right, ensuring coherence and cohesion among the contents (a process that is identical to the curricular way of realizing planning).
2. achieve a serious *reflection* upon the didactic strategies that we intend to use (from our point of view, identifiable as a part of the first approach, inside the process of curricular planning which cannot be

achieved without this step!!!). A good strategy implies including certain various learning activities subordinated to different ends, throughout the entire process (to ensure data and information, for action, observation and reflection). It is also highly important that each designed learning activity should prepare students for the future process.

The experimentation of this model has brought the cited author the satisfaction of validating and supporting with evidence (presented in the mentioned paper for the field of social sciences, 2004-2005; engineers–2003) the fact that designing and carrying out the significant learning process leads to obvious differences in terms of engagement/involvement and learning as compared to the traditional way for all the 6 parametres (basic knowledge; application; integration; human/interhuman dimension; concern towards feelings, interests, values; “learning to learn”). Very interesting, from this point of view, are not only the better results obtained in the didactic process (as objective effects!) but also the students’ opinions about the improvement of the process (as subjective feedback!). In the analysed paper, L., Dee Fink (2007) shows that they have appreciated the change of the process as “phenomenal” (which even the researcher could not have expected!), motivating and determining them to get involved and work hard but happily in class, in order to learn. The students’ becoming aware of this major change has also produced a predictable effect for the teacher: improving his/her state of mind! “Teaching for such an active and engaged group has been an unforgettable experience. It has made my work seem to be worth being done and I feel professionally fulfilled. I wish I always had such students” (idem).

On this basis, teachers in the higher education found out that by using the model of planning an integrated class in order to restructure/use the students’ learning experience, they will determine students to become more engaged in the process and to assimilate different types of significant learning. This happens because students become co-creators of their own learning process, having the possibility to choose the ways of learning, most often working closely with others, promoting mutual learning.

Other experimental studies based on Fink’s model and used as resources on the topic (apud R., C. Walker, 2007) also show that there were no negative comments in the students’ diaries concerning the model of active learning presented.

## CONCLUSIONS

1. The model proposed by L. Dee Fink profits by the *structural-functional perspective* which gives it so much additional *explanatory power* as compared to other approaches as well as the *practical value of efficiency* (validated by experiments carried out by the author);

2. The great achievement of the presented model is the complementary and productive *connection* of *communication* (of the self and the social) with *experimentation* (by action and through observation) which opens numerous, and sometimes new ways for observance of the didactic principles, particularly that of intuition, on the one hand and on the other, of the individual learning styles; ;

3. One of the positive effects of using the model consists in *creating a triple prolific relation* for the individual and the group, action and communication, communication with oneself and communication with others;

4. The concept of “*significant learning*” proposes a common and complex nucleus of relevant acquisitions not only cognitively but also, highly important, from complementary viewpoints which ensure the *holistic nature* of this approach;

5. Suggesting *another approach* than the curricular one for the *planning of an integrated class* (without meaning that its key aspects are ignored or left out) significantly opens the horizon of didactic learning towards the “learning of learning”;

6. On the level of didactic strategies, we should stress the *need and importance of metareflection* as a practice “to be trained and formed” for the beneficiaries of the process;

7. Practicing a type of “*FIDeLity*” *feed-back* increases the value of formative assessment with the attributes “Discriminating” (which should highlight correctly the differences among students) and “Lovingly” (given in a friendly, empathetic manner), transforming even more the process in the direction of positivating and humanizing it.

Without revolutionizing the teaching theory and practice, the model analysed is clearly valuable both by the new systematizations provided, the efficiency of the complementarity of its sides, as well as, a fact not to be omitted at all, for the positive effects that it brings to the teacher, too, to his/her professional satisfaction and motivation.

## REFERENCES

- ARMSTRONG, A-M., 2008**, *It’s Worth Reading: Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*, Office for Teaching & Learning, [http://www.lib.wayne.edu/blog/otl\\_newsletter/2008/10/23/its-worth-reading-creating-significant-learning-experiences-an-integrated-approach-to-designing-college-courses/](http://www.lib.wayne.edu/blog/otl_newsletter/2008/10/23/its-worth-reading-creating-significant-learning-experiences-an-integrated-approach-to-designing-college-courses/), accesat în 23X2009;
- BELL, D., KAHRHOFF, J., 2006**, *Active Learning Handbook*, Institute for Excellence in Teaching and Learning, Faculty Development Center, Webster University,

- <http://www.webster.edu/fdc/alhb/alhb2006.pdf>, accesat în 16.X.2009;
- BONWELL, CH., C., EISON, J., A., 1991**, *Active Learning: Creating Excitement in the Classroom*. ERIC Digest, <http://www.ericdigests.org/1992-4/active.htm>, accesat în 10.X.2009;
- BOUDREAU PATTEN, K., CRAIG, D., V., 2007**, *Pulling Them In. Active Learning for the University Classroom*, <http://mtsu32.mtsu.edu:11218/Active%20Learning%20Resources.pdf>, accesat în 23. X. 2009;
- FINK, L., D., 2007**, *Designing Courses for Significant Learning*, <http://ctl.byu.edu/wp-content/uploads/2007/08/designing-courses-for-significantstudent-learning-long-version.pdf>, accesat în 23X2009;
- FINK, L., D., 1999**, *Active Learning*, <http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/active.htm>, accesat în 10.X.2009;
- FINK, L., D., 2003**, *Creating Significant Learning Experiences : An Integrated Approach to Designing College Courses*, San Francisco: Jossey-Bass;
- FINK, L., D., 2007**, *The Power of Course Design to Increase Student Engagement and Learning*, Peer Review, Association of American Colleges and Universities, Winter 2007, Vol. 9, No. 1, [http://www.aacu.org/peerreview/pr-wi07/pr-wi07\\_analysis3.cfm](http://www.aacu.org/peerreview/pr-wi07/pr-wi07_analysis3.cfm), accesat în 23X2009;
- FINK, L., D., F.A., 2007**, *A Self-Directed Guide to Designing Courses for Significant Learning*, <http://www.ou.edu/idp/significant/selfdirected1.pdf>, accesat în 22X2009;
- GUIDE TO TAXONOMIES OF LEARNING OUTCOMES, 2009**, <http://www.ucd.ie/t4cms/taxonomies3.pdf>, accesat în 23X2009.
- HAMILTON, D., 2008** *Creating Powerful Learning Experiences. Possibilities, Pitfalls and Promising Practices*, UNBC Teaching and Learning Conference 27 August, 2008, <http://tandl.unbc.ca/wp-content/docs/Creating%20Powerful%20Learning%20Experiences%20Handout.pdf>, accesat în 23X2009;
- KLOOSTER, D., J., BLOEM, P., 2007**, *Significant Learning*, Thinking Classroom Journal, Volume 8 - 2007, [http://ct-net.net/tc\\_ann\\_8-3\\_Blo-Kl](http://ct-net.net/tc_ann_8-3_Blo-Kl), accesat în 23X2009;
- PHELPS, A., L., DOSTILIO, L., 2008**, *Studying student benefits of assigning a Service-Learning project compared to a traditional final project in a Business Statistics Class*, Journal of Statistics Education Volume 16, Number 3/2008, [www.amstat.org/publications/jse/v16n3/phelps.html](http://www.amstat.org/publications/jse/v16n3/phelps.html), accesat în 23. X. 2009;
- PICKARD, J., M., 2007**, „*The new Bloom’s Taxonomy: an Overview for Family and Consumer Sciences*”, Journal of Family and Consumer Sciences Education, Vol. 25, No. 1, Spring/Summer 2007;
- RATHBUN, G., 2008**, Review by Wehlburg, C. (2007) *Meaningful Course Revision: Enhancing Academic Engagement Using Student Learning Data*, Jossey-Bass, 2007 in International Journal for the Scholarship of Teaching and Learning, Vol. 2, No. 2/2008, <http://www.georgiasouthern.edu/ijsofl>, accesat în 23X2009;
- SIMPSON, N., WILLINGHAM-MCLAIN, L., 2007**, *Toward the Best in the Academy*, Essays on Teaching Excellence, Vol. 18, No. 3, 2006-2007, [http://www.ucdenver.edu/faculty\\_staff/faculty/center-for-faculty-development/publications/Documents/18\\_program\\_assessment.pdf](http://www.ucdenver.edu/faculty_staff/faculty/center-for-faculty-development/publications/Documents/18_program_assessment.pdf), accesat în 23. X. 2009;
- WALKER, R., C., 2007**, *Creating Significant Learning Experiences in the Business Communication Classroom*, Proceedings of the 2007 Association of Business Communication Annual Convention, <http://www.businesscommunication.org/conventions/Proceedings/2007/Washington/17ABC07.pdf>, accesat în 22 X 2009.

## STATE OF ART STUDY OF THE CHANGE OF PHYSICAL EDUCATION AND SPORT IN SECONDARY SCHOOL IN ITALY

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### ABSTRACT

#### Purpose

The aim of this study is to investigate on variation of sport student practitioners in increasing or decreasing sport activity in schools of Naples and what is the solution that the school have adopted to resolve the problem to pay the teachers of physical education in order to new situation. By CONI (Italian National Olympic Committee) researching, it carries out the decrease of the sport practitioners and the (MIUR) Minister of Education University and Research has just enacted the experimental project, called “Guidelines of Physical Education and Sport” with the purpose to improve the sport activities into school. To realize the aim to improve sport activity, it needs economical resource to pay the teachers for organizing, training and doing the competitions, but the special economical resources, that the Minister gives usually, nowadays has decreased of 66 %.

**Methods**

Case study through quantitative and qualitative method. Firstly, it requests to a sample of 10 school to start an investigation in order to collect data on sport activity and its costs in the past years. Secondly, it collects data on new and old sport activities. Thirdly, to compare all data to identify the school that increase the sport activities. Finally to find out to those school, that increased the sport activity, the economical resource to resolve the question and to describe the steps of the process.

**Results**

The plenty sample of 10 school confirms the sport activities in past form but decrease the quantitative of sport activity for each student. They use only the ministerial specific economical resources. Only 4 schools increase the sport activities in several kinds to except the additional amount economical resources. Only one school adds own economical resource to improve the resources that the Minister gives usually. This school deliberate the school sport center with the joint collaboration to sport association to develop the educational purposes of sport activity and not sport competitive.

**Conclusions**

It suggests to start an investigation on public sport education service offered by school and by sport association and to establish a specific committee to research on this phenomenon to carry out the data to know every aspect of it.

**KEY WORDS:** case study, qualitative research, physical education, sport, school

**Purpose**

Nowadays the Physical Education and sport in Italian school meets several following problems: decreasing amount of compulsory physical education, decreasing quality of physical education, high amount of non-exercising pupils, exempted pupils from physical education classes, stagnate physical fitness and motor productivity of youth, insufficient solicitude of disabled pupils, lack of control of Physical Education, weak of social and financial honor of Physical Education and Sport teachers and low interest of graduates, especially of teaching specialization to work in their own profession. To change this status, it should contribute a new project of education. It is established on the basis of educational domains – human and nature, human and technique, an individual, Society, Culture, Mathematical and Logical Thinking, Language and Communication, Health and Movement, Educational area “Health and movement” is elaborated in subject “physical and sport education” in “New National Indication” (MIUR 2003), “Indication for Curriculum” (MIUR 2007) into modules that includes health and its impairment, healthily life style, physical fitness and motor performance, sport activities of movement regime.

Furthermore the Minister of Education, University and Research implements the “Sport Student Championship Games” every year and gives economical special resource to do teaching in extra time school by the teachers of physical education.

This process is evaluated by school in its internal path and, at ended of it, it is approved. Due to the decreasing of economical resource to destination to school, the economical special resource for “Sport Student Championship Games” in many schools there is not the intention to do education in extra time school.

For this reason the Minister want to give a response at this problems doing a series of administrative measures to increase motor sport practice in school.

Furthermore By CONI (Italian National Olympic Committee) researching, it carries out the decrease of the sport practitioners and to charge this

debt of practitioners to deficit by school. Thus the Minister of education University and Research has just enacted the experimental project called “Guidelines of Physical Education and Sport” into the school.

The aim of this study is to investigate on variation of sport student practitioners in increasing or decreasing sport activity in schools of Naples and the associated indicators of phenomenon. What is the solution that the school have adopted to resolve the problem to pay the teachers of physical education for the extra time school and the Minister of Education University and Research results after an year that it is enacted the experimental project called “Guidelines of Physical Education and Sport” with the purpose to improve the sport activities into school.

To realize the purpose to improve motor sport activities into the school, it needs of economical adding resource to pay the teachers. Because they have to organize, train and do the activities, including the competitions. The special economical resources, that the Minister has given, gives and is going to give has decreased of 66% than the past time.

This new “Guidelines of Physical Education and Sport” to improve the sport activity establishes a new organizational tool inside the school called “School Sport Center”. It consists in internal sport association but it needs of new economical resource to pay the teachers for their jobs. The actual question is how it is possible to increase the sport practitioners if the economical resource decreases.

Particularly how the School Sport Center can increase the sport activity into the school and to offer a more sport service for the student if the moneys are not enough as such as the past years.

The special objective of this study is to know if there is the increase or decrease of sport activity in schools of Naples and what is the solution that the school have adopted in this year to resolve to pay the teachers.

**Methods**

A case study is a research methodology common in social science. It is based on an in-depth investigation of a single individual, group, or event to

explore causation in order to identify underlying principles. Rather than using samples and following a rigid protocol to examine limited number of variables, case study methods involve an in-depth, longitudinal examination of a single instance or event: a case. They provide a systematic way of looking at events, collecting data, analyzing information, and reporting the results. As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research. Case studies lend themselves to both generating and testing hypotheses.

Another suggestion is that case study should be defined as a research strategy, an empirical inquiry that investigates a phenomenon within its real-life context. Case study research means single and multiple case studies, can include quantitative evidence, relies on multiple sources of evidence and benefits from the prior development of theoretical propositions. Case studies should not be confused with qualitative research and they can be based on any mix of quantitative and qualitative evidence.

Single [HYPERLINK "http://en.wikipedia.org/wiki/Single-subject\\_research"](http://en.wikipedia.org/wiki/Single-subject_research) subject research provides the statistical framework for making inferences from quantitative case-study data. This is also supported and well-formulated in: "The case study is a research approach, situated between concrete data taking techniques and methodologic paradigms." In this study it uses a case study through qualitative and quantitative method with mix approach: case study and statistical data.

Firstly, it requests to a sample of 10 school of Naples, that are interested at research, and to start an investigation in order to collect data on sport activity and its costs in the past years.

Secondly, it collects data on new and old sport activities. Thirdly, to compare all data to identify the school that increased the sport activities. Finally to find out at the school, that increased the sport activity, what is the economical solution and to describe the steps of the process. The data on participation of external sport association and economical resource are been tabled by three ranges as following:

- 1) from 0% until 33% for the indicator of without participation of sport associations participation and for the indicator regarding the additional economical resource without additional economical resource
- 2) from 34% until 66% for the indicator of real participation of sport associations but with a marginal role in sport organization and for the indicator regarding the additional economical resource with additional resource but a little bit
- 3) from 67% until 99% for the indicator of full participation of sport associations with a significant role and for the indicator regarding the additional

economical resource with additional economical resource with a significant amount of money (table 1a).

### Results

The all data is into the table 1b.

The all 10 school confirms the past sport activities in different forms with several percentage among the schools but with a significant decrease of number of students, that are generally distribute for every schools. The 7 schools utilizes only the economical ministerial resource, while 2 schools utilize economical ministerial resources and to add own economical resources but in a little bit quantitative. Only 1 school adds own economical resource in congruent amount. The two schools that adds a little bit of economical resource has a good percentage of student participation, that is higher than the others one of the other schools, that does not add the economical resource. Only 1 school increases the sport activities but it gives a congruent additional economical resource. Every schools deliberates the "school sport center" through a correct process as such as the administrative and juridical parameters. Only 1 school establishes a joint plenty collaboration to sport association to develop the educational purposes of sport activity and not the sport competitive purpose. Every school confirms the institution of "Sport Student Championship Games" and so the sport activities in several forms utilizing the ministerial specific economical resources: it are just of 33% than the past years.

Every school have many problems to participate to competitive forms of "Sport Student Championship Games" (table 2).

### Discussion and Conclusions

The result, that the all 10 school confirms the past sport activities in different forms with several percentage among the schools is very good in consideration of the bad actual context of public school. But the significant decrease of number of students, that are generally distribute for every schools, must do reflecting on general situation of high sport left.

The result of 7 schools utilizes only the economical ministerial resource and only 2 schools utilize economical ministerial resources is the demonstration of low culture in physical education and sport into school. Furthermore the low additional own economical resources is relevant to demonstrate the gravity of situation.

The datum of only 1 school adds own economical resource in congruent amount means that just the 10% of school understand the spirit of change according to the new "Guidelines of Physical Education and Sport". In the same way is the datum that only 1 school increases the sport activities because of it gives a congruent additional economical resource and so the school is according to the sense and spirit of the new "Guidelines of Physical Education and Sport".

The case of only school establishes a joint plenty collaboration to sport association to develop the educational purposes of sport activity and not the sport competitive purpose is an ambiguous datum. If in one hand it is positive for the educative purpose for the school and not vice versa for the competitive purpose for the sport association, in the other hand the quantitative datum is not positive for the lowest percentage of the school occurs in this investigation.

The problems about the decrease of ministerial economical resource is nowadays metabolized by the school. So the schools have to be adapted as soon as possible in changing of the scenario of public

education without economical resources as well as in the past years.

In conclusion this research has shown a complex total negative data on this changing for the physical education and sport into school. Probably the sample is not significant because of the school are in the same territory that is same social problems.

It suggests to start an investigation on public sport education service offered by school and by sport association and to establish a specific committee to research on this phenomenon to carry out the data to know every aspect of it.

**Table 1 a Method data**

**Number of schools**

**1 2 3 4 5 6 7 8 9 10**

**Actual student participation**

**Past student participation**

**School economical resource in ranges**

**until 33 % nothing additional resources**

**until 66% a little bit additional resources**

**until 99% congruent additional resources**

**Collaboration with sport association in ranges**

**until 33 % nothing collaboration to sport association**

**until 66% a little bit collaboration to sport association but a marginal role**

**until 99% full collaboration to sport association with a significant role**

**Table 1 b: Data of ten schools**

1 <sup>^</sup> School	2 <sup>^</sup> school	3 <sup>^</sup> school	4 <sup>^</sup> school	5 <sup>^</sup> school	6 <sup>^</sup> school	7 <sup>^</sup> school	8 <sup>^</sup> school	9 <sup>^</sup> school	10 <sup>^</sup> school
30% new participation	27 % new participation	29 % new participation	33 % new participation	38 % new participation	24 % new participation	29 % new participation	32 % new participation	30 % new participation	26 % new participation
32 % old participation	33 % old participation	30 % old participation	36 % old participation	45 % old participation	28 % old participation	33 % old participation	30 % old participation	39 % old participation	28 % old participation
33% economical resource	33 % economical resource	66 % economical resource	33 % economical resource	66 % economical resource	33 % economical resource	33 % economical resource	99 % economical resource	33 % economical resource	33 % economical resource
33 % Collaboration range sport association	33 % Collaboration range sport association	33 % Collaboration range sport association	66 % Collaboration range sport association	66 % Collaboration range sport association	33 % Collaboration range sport association	33 % Collaboration range sport association	99 % Collaboration range sport association	33 % Collaboration range sport association	33 % Collaboration range sport association

**REFERENCES**

**BAXTER, P. AND JACK, S. 2008**, *Qualitative Case Study Methodology: Study design and implementation for novice researchers*, in The Qualitative Report, Ontario, Canada

**BENT, F., 2006**, Five Misunderstandings About Case Study  
 Research  
 HYPERLINK  
 "http://flyvbjerg.plan.aau.dk/Publications2006/0604FIVEMISPUBL2006.pdf".  
 HYPERLINK  
 "http://flyvbjerg.plan.aau.dk/Publications2006

- /0604FIVEMISPUBL2006.pdf"Qualitative  
HYPERLINK  
"http://flyvbjerg.plan.aau.dk/Publications2006  
/0604FIVEMISPUBL2006.pdf" InquiryHYPERLINK  
RLINK  
"http://flyvbjerg.plan.aau.dk/Publications2006  
/0604FIVEMISPUBL2006.pdf", vol.  
12HYPERLINK  
"http://flyvbjerg.plan.aau.dk/Publications2006  
/0604FIVEMISPUBL2006.pdf", USA
- DUL J., HAK T., 2008**, *Case Study Methodology in Business Research* Butterworth, Oxford, USA
- EISENHARDT, K. M. 1989**, *Building theories from case study research*, Academy of Management Review, 14 USA
- GEORGE A. L., BENNETT A., 2005**, *Case studies and theory development in the social sciences* MIT Press London, UK
- GERRING, J. 2005**, *Case Study Research*. New York Cambridge University Press USA
- HANCKÉ, B. 2009**, *Intelligent Research Design A guide for beginning researchers in the social sciences* Oxford University press USA
- MIUR, 2009**, *Linee guida per l'educazione fisica e sportiva*, Gazzetta Ufficiale, Roma, Italia
- ROBERT, K. Y. ,2009**, *Case Study Research: Design and Methods*. Sage. California, USA
- GREENE R. W. 2003**, *Sociology and You*. McGraw-Hill. Ohio USA
- SIEGFRIED, L. 2005**, *Qualitative Sozialforschung* Weihnhein, Basel, Deutschland
- STAKE, R.E.,1995**, *The Art of Case Study Research* Sage, Oaks, USA

## DEVELOPMENT MEANS AND TECHNIQUES AND MOTOR EVALUATION OF THE PRESCHOLAR AND LITTLE SCHOLAR CHILDREN

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### ABSTRACT

**Purpose.** It is unanimous recognized the fact that the motor activity at the level of the pre-scholar and little scholar education must be improved, proved being the fact that lately we noticed an acute lack of information concerning the data gathering that points out the biomotor and psycho-motor potential of the children framed in the age interval of 5-8, respectively from the preparation groups and the 1<sup>st</sup> grades. We believe that after a rigorous evaluation of the motor development of the children from this age segment we can contribute to the elaboration of certain didactic strategies adequate to the instructive-educative process and for this age category; for this purpose we will analyze how the motor activity in school is being developed at the 1<sup>st</sup> grades and during kindergarten.

**Methods.** At the base of this research were the following methods: the bibliographic study method, the observation method (transversal and experimental), the research method, the questionnaire method, the statistic method.

**Results.** The gathered data have been processed through the statistical-mathematical method and after their interpretation we consider that it is imposed an update of the data from the national test of children that were in this age category in order to know the actual level of the biomotor development and helps us to interfere with programs of optimizing the biomotor potential.

**Conclusions.** As a conclusion of the obtained results we can say that the biomotor potential is framed in the medium limits and even sub-medium of the normal reported at the reference values of the population correspondent to the age level at which our study is referring.

**KEY WORDS:** potential, didactic strategies, children

### INTRODUCTION

Motor capacity represents a particularity of movement that is translated through all the changes and transformations that take place in the organism. The motor development is an adaptation process of the human being, in its ontogenic evolution, at the internal and external factors, through movement. We consider that this complex process is a stage one, with intransitive stages happening one from the other, with a fixed order, formed of 4 steps: increase, development, maturity, ageing. The motor development is seen

also "as a progressive learning process of the motor skills during the first steps of life, in childhood and adolescence" [Nan, I. D., 2009]. The bio-psycho-motor development in the age interval of 5-8 is part of a step called by the specialists "the golden age of childhood" and is characterized by accumulations on all plans and it is considered being a true "explosion" psycho-motor in the overall development of the child. The age interval at which we are referring is part of the step of affirmation of the personality and self-awareness. The motor activity of the children of



this age is organized systematically and contains the following forms: the motor activity in the scholar regime of 2-3 hours per week, the sport activity that has as purpose the initiation in a sport branch that is being developed in the sport clubs frame, the recovery activity for children with physical deficiencies in schools and kindergartens with a special program and in medical physical culture centers with a motor activity of free time in parks, game places specially made, in the house etc.

Focalizing on the early education is of a special importance neglecting the development process in this stage will increase the risk of lately appearance of different disabilities or learning difficulties. Of the multidimensional formation quality at a pre-scholar age will depend on the quality of learning activity in the following education steps (primary cycle). The volume represents a useful instrument in realizing the educational actions specific to the pre-scholar children from the training age (5-8), being able to be used as a didactic material in the discovery process and stimulation of the aptitudes and their interests. The followed objectives are distributed on different curriculum areas and have in mind the acquirement of the competences necessary to the successful integration in the scholar learning activity. An important chapter is the psycho-motor education that is referring to the laterality, the body scheme, the perceptive-motor structures of form, color, size, space and time. To have in mind that the human motor activity, especially in the case of children must be subordinate to the age particularities, knowing them is a basic condition for engaging the children in the motor activities. At the age of 5 the specialists from the domain consider that the physical education can be started with care, its utility being obvious by acquiring certain automatisms that will allow certain correct executions, without any waste of energy

After the study of the education plan we notice that it is given the possibility to educators to add at the age interval of 5-7 an hour each day of activities from the psycho-motor domain and at the level of the 1<sup>st</sup> grade the possibility to program 2-3 hours per week of physical education.

The main objective of our study was represented by the elaboration and eventually the improvement of the didactic strategies in the motor development process also new methods of evaluation on the age segment of 5-8.

**Research hypothesis:** If we would have a didactic strategy in the motor development process doubled by the new evaluation methods we will make possible the identification and anticipation of the motor development level also a bio-motor development according to the age parameters at pre-scholar and little scholar children.

### Methods

In the made study have been used the experimental method, transversal, the documentary and comparative analysis of the developed activity and of the measured somatic parameters, the research method and the statistic-mathematical method. The research method has been used in the purpose to know the parents', educators, teachers' attitude in what concerns the motor activity of children.

The research has been developed across 2 years, aiming the pre-scholar groups and scholars from which my own child has taken part, fact that made me easier the direct access at the parents' approach, the children and the didactic staff in charge. The target groups are the ones from which I gathered information about the motor activity of the children from the Kindergarten no.1 the prep. Group from Ploiesti and the collective of the 1<sup>st</sup> grade D from the Sf. Friday School. I measured, tested from a bio-motor point of view, and observed the children in the play ground, trips, backpacking, at the physical education classes. In choosing the measured parameters an important role was played by the bibliographic study of specialty, inspiring myself from the papers that have treated these problems over time, especially from the book of Professor Focșeneanu entitled: "The bio-motor potential at pre-scholars" 1979. (A.Focșeneanu, V. Paraschiv, A. Nicu, 1981).

The somatic measurements have been made on a number of 80 children with age of 5 to 8. The tests contained 3 anthrop-motor measurements represented by the waist [height from standing]; body weight, bust and motor tasks that have aimed measuring the détente of the inferior and superior limbs through the vertical jump and throwing the ball from standing, the movement speed by running on 20 m, the general skill, through the run to and fro with a transport of a small object, the articular mobility, from stranding, bending the trunk, testing the abdominal and back musculature.

### Results

The gathered data have been processed through statistic-mathematical methods, calculating the following parameters: the arithmetic means on ages,

demixtat, standard deviation, the variability coefficient. I interpreted comparatively the results of the somatic measurements and in this way I noticed that at all measure parameters, higher medium values, at 8 years in comparison with the national tests. Similar situation we encounter at the age group 5-7. The proportionality index values are close to the national test values. We notice an increase of the mean of the body weight even hyper-ponderals at the age of 6-8 with an alarming level at the 1<sup>st</sup> grade. The somatic measurements show in the following manner:

Children with ages of 6-8 from a somatic point of view are more developed than the children from the year 1990 but with weight problems until hyper-weight. The girls between 6-8 have a higher height and a bust comparative with the girls of the year 1990. With all these there are not obvious differences of the means values, at all measured parameters, both at girls and boys at the age groups of 5-6, between the 2 generations.

Due to nutrition, sedentariness, the lack of sport bases, of parks for children, of the lack of education concerning movement in general, we consider highly necessary a new test at a national level that will show us the bio-motor state of our children.

The results of the motor measurements and their interpretation in comparison made us think seriously, I noticed that we have beautiful children, intelligent, but weaker from a motor point of view, the means results obtained by them at the motor tests especially the general skills are under the means of the generations of the 1990. After the questionnaires from parents, a percentage of 68% have answered positive at the above questions, 20% have answered – no, 12% maybe. I present a part of the questions set of the questionnaire applied to parents:

1. Do you consider that it would be benefic for your child to make each day one hour of sport, motor activity in an organized frame?
2. The lack of sport bases, the fields for different motor activities, roller-skates track, football field, basketball, volleyball is the cause for your children not doing sport?
3. Do you believe that the scholar program, the lack of free time determine the children not to make sport?

### Conclusions

The obtained information during the study and reported at the publications from 1990 concerning the bio-motor potential of pre-scholar children and little scholar have generated the following conclusions:

1. Children cannot satisfy their need of movement due to the weak conditions from parks, the lack of sport bases from Ploiesti, the lack of interest and neglecting towards the sport in general of the local authorities.
2. Parents' mentality that prefer any other activity than the physical one, from lack of time, education, space, equipment.

3. The lack of training, the fear of accidents, the lack of material equipment with which the kindergarten are facing, transform the classes of physical education in diverse activities but that do not reach their purpose for which this discipline is in the scholar program.
4. The bio-motor development of the children from the age category of 5-8 is framed in the medium limits of the normal reported to the reference values of the population from this age interval. We strongly believe necessary the update of these measurements and making didactic strategies in the sense of forming a physical culture, reaching certain objectives, acknowledging certain motor knowledge, attitudes and finally reaching certain competences.

Forming a physical culture must have in mind:

- the harmonious physical development, the strengthening and habituation of the organism in what concerns the resistance capacity formation.
- cultivating the necessity of motor activities.
- developing the motor qualities (skill, speed, resistance, strength).
- developing the interest towards the physical exercises and forming the habit to practice them systematically.

Forming certain correct habits of hygiene.

- forming a correct posture, space orientation skills.
- the profilaxion of the plate foot, of equilibrium sense and movement coordination.
- the development of the fine musculature, of the skill to realize the oculo-motor coordination in free space and on a piece of paper.

The formation of personality behaviors of the child of 5-8 years contains also the formation of the premises of the learning activities.

In the structure of the learning activity as components it is pointed out the instructive tasks, the learning actions, the control and self-control actions. According to them, we witness the following objectives of the learning activity formation:

- the child's capacity to action according to a model.
- the child's attitude towards the mature as towards mentor (person that knows and can teach him interesting things).
- the operation capacity with general representations, schemes, images etc.
- the voluntary character of the psychic activity.
- the interest towards the way to action.
- perceiving the colleagues as partners in the game and learning activity.

We propose the following reference objectives:

1. the general physic development and the increase of the resistance capacity of organism.
2. the multilateral, correct and harmonious physical development of the organism.

- the increase of the organism's capacity to resist at the physical effort.
  - the formation practice skills of the physical exercises combined with the hardening procedures.
  - the formation of the correct posture and of the orientation skills in space
  - the formation and perfecting of the basic motor skills and with an applicative character (developing the general motor capacity).
  - insuring a correct walk and the continuous development of the perception and giving back capacity of the shifting rhythms.
  - enlarging the running techniques variation.
  - building the landing techniques at different jump exercises.
  - optimizing and coordinating the throwing technique with catching procedures.
  - continuous development of the general coordination capacity and of the skill to apply the crawling, climbing exercises in different conditions.
  - perfecting the body capacity to maintain the equilibrium in different positions and movement.
- We propose to assimilate the following motor knowledge and to reach the competences from below at the end of the primary cycle:
- walking forms and varieties, running depending on the created conditions.
  - mastering the execution technique of the jump, throwing, catching the ball, climbing and scale forms.
  - dynamic games, sport relay race and applying them in different conditions, situations.
  - front exercises, formation.

- the elementary rules of personal and social hygiene, of behavior across the physical education activity.

#### Competences

##### Motor performance:

- speed run at 20m – 5,4 sec. girls; 5,2 sec. boys;
- shuttle run (2x10 m) – 7,6 sec.girls; 7,3 sec. boys;
- general coordination (skill);
- resistance run: distance: girls – 450 – 460 m; boys – 480 – 530 m; time: girls – 3,0 – 3,2 min; boys – 3,0 – 3,3 min;
- jump in length from standing: 60 cm girls; 70 cm boys;
- throwing the ball at distance: girls – 8m – 7,5 m; boys – 11 m- 10,5 m;

- Of a great interest we consider the formation of a positive attitude towards the Physical Education and Sport discipline expressed through:
- the manifestation of the interest towards the systematic practice of the physical exercises.
  - expressing the representations about the use of the physical education activities, of the hygiene rules, of the hardening forms and of the positive (benefic) influence over the growing organism.
  - the appreciation and motivation of personal behavior actions, of the colleagues during the physical education activities and, especially, of game. Expressing friendship feeling, esteem, helping each other, initiative motivation in different activity forms (especially of game).
  - expressing the esthetic feelings and motivation in practicing the physical exercises, the correct appreciation of the postural posture of the ones around us.

#### References

- ARMAȘU, T.,1998, *The method of getting familiar of the pre-scholars with the proverbs and sayings*, Lumina, Republic Moldova,, 1998.
- FOCȘENEANU, A., PARASCHIV, V., NICU, A., 1981, *The Biomotor potential at pre-scholars*. The research center for the Physical education and sport, Romania
- METHODOLOGICAL GUIDE CONCERNING THE IMPLEMENTATION OF THE PRIMARY GRADES CURRICULUM, ON, Science**, 1998.
- NAN, I. D., 2009, *Methods and techniques of diagnoses and outlook of the motor at the pre-scholar children*. PhD paper , Romania,.
- ORDIN NR. 520 DIN 06/03/2007 *Published in the Official Monitor, Part I nr. 275 din*

25/04/2007, The content of the education and solicitation nature at physical effort during the physical education and sport, Romania

**PROJECTING THE BASIC CURRICULUM**,1997, *Methodological guide.*, TBP CIM,.

**SCHOLASTIC CURRICULUM**,1998, *1-IV grades*, Republic Moldova,

**THE DEVELOPMENT AND IMPLEMENTATION OF THE CURRICULUM IN THE PRIMARY EDUCATION. Methodological guide** Republic Moldova,, 1998.

**THE DEVELOPMENT AND IMPLEMENTATION OF THE CURRICULUM IN THE GYMNASIUM EDUCATION: conceptual frame**, Republic Moldova, 2000.

## ADVANTAGES AND LIMITS OF THE ACTUAL SYSTEM FOR EVALUATION OF PROFESSIONAL COMPETENCES AMONG BEGINNING TEACHERS

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### ABSTRACT

The approach of analyzing the actual system for evaluation and certification the studies for the didactical career must start with preliminary conditions which lead toward certification, namely from the actual programs of initial training for teachers, including: goals of training, competences, the curricula and the strategies of teaching – learning – evaluating.

Our study intends to analyze the actual model of evaluating the professional competences of beginning teachers through the definitive exam in educational system. The comparative analysis of several models of certification for teachers, based on professional standards (USA, France, Great Britain, and Romania) offers us the possibility of identifying common and different elements in establishing „the reference point of competences and qualities of the teacher”.

The research was undertaken on a sample of 80 Sports teachers and aimed the following goals:

- Identifying the aspects of continuity between the program of initial training of future teachers and the probation time;
- Establishing possible correlations regarding the criteria and indicators for evaluating the professional competences of beginning teachers, licensed in Sports, during the special inspection and of those aimed within the definitive exam in educational system;
- Pointing out the advantages and limits of the actual system for initial training of teachers and of the certifying the competences, also of passing the definitive exam in the educational system;
- Suggesting the possible methodology of certifying the competences for beginning teachers and of passing the definitive exam in the educational system, including techniques and instruments validated by the educational practice and by domain researches undertaken on a global level.

**KEY WORDS:** beginning teachers, system of evaluation, studies certification, definitive exam in the educational system, professional standards.

### INTRODUCTION

The formation of the didactical staff represents a continual and cumulative process of getting and developing the competences, that is based on the concept of permanent education and learning and that comprises two fundamental components, that are co-related organically: initial formation and continual formation.

In the attempt to analyse the evaluation system in order to certificate the studies for the didactical career, we started from the preliminary conditions that lead to the certification respectively, from the programmes of initial formation, including: the objectives of the formation, the aimed competences, the nature of the curriculum, the evaluation strategies used. We remind in this context the preoccupations, the studies and the researches carried out world wide in the complex intercession of making professionalism in the didactical activity, to pass from a “job” to the “profession” and to legitimate the didactical profession in the field of activities and social professions.

In order to establish the advantages and the limits of the current system from our country of evaluating the professional competences and the beginner teachers, through the definite exam we analysed several standards systems and validation models of the studies that are presented in Romanian and foreign literature of the field:

- National Standards for the Status of Qualified Teacher (SPC) – Great Britain (SWIPBBT, 1998);
- The Standards of the National Commission of Certification from the United States of America (C. Dumitriu, 2003);
- Programms of initial formation of the didactical staff and the certification of studies in the States of New York (NYSTCE), Texas (SBEC) and Georgia (C. Dumitriu, 2003);
- The formation and the certification of studies from France (Livret du professeur stagiaire des lycées et collèges PLC<sub>2</sub> et du CPE stagiaire CPE<sub>2</sub>, 2001; Mémento des stages en établissement du second degré, 2001) ;
- Occupational standards (schoolteacher, kindergarden teacher, teacher) made by COSA, *Professional standards for the didactical profession* (coordinator L. Gliga, 2002);
- Project of methodology regarding the training of the didactical staff for the final exam by relating to the standards and Project of methodology – the definite exam in learning/certification of the didactical profession (MEC, CNFPIP, 2003).

The standards of the didactical profession were defined as an ensemble of expectations and requirements, that refer to the *knowledge, abilities,*

*attitudes and competences* that a teacher has to test in his activity with the students, to be considered that he fulfills his professional roles at a qualitative level that is accepted by the society.

Each standard contains five elements:

- What activities are expected to be done by the teacher;
- The description of those activities (characteristics);
- The motivation of the necessity to carry out these actions (the reason for their performing);
- The criteria used to evaluate the quality of the required activities (noticeable and measurable behaviours that emphasise the attaining of the required activities, at the qualitative level that is socially accepted);
- The forms/ strategies of evaluation that are used (tests, observation, portofolio).

In Romania, the students' professionalisation for the didactical career from the pre-academic and academic education is made, based on the law, by the Department for the Training of the Didactical Personnel. The initial formation ensures the gaining of competences and of the official certifications that are necessary to the access to the qualified exertion of the didactical profession in the education system. According to the current laws, this level comprises two types of formation:

- *Speciality* formation that is ensured and certified by the promotion of academic studies, or, if it is the case, the speciality studies at post-academic level;
- *Psihopedagogical and didactical formation of speciality, theoretical and practical*, that is ensured and certified by the promotion of psihopedagogical studies that are offered by the Departments for the Training of the Didactical Personnel, by the faculties that have in their structure the major Pedagogy of primary and pre-school learning from the institutions of superior education.

The curriculum of the psihopedagogical studies programme that is offered by the Teachers Training Department comprises the integrated system of objectives, subjects, teaching learning and evaluation methods that are designed to ensure the gaining by the students of the competences that are necessary for the exertion of the didactical profession. The structure of the curriculum, as well as the extension of the didactical contents and activities throughout the duration of the programme of psihopedagogical studies are established through the next co-related elements:

- Learning plan;
- The shape of the didactical activities (classes, seminars, laboratories, practise);
- The ways of evaluation/ promotion (exams, colloquy, practical verifications, portofolios, docimilogic tests, projects);

- The subjects' datacards (with the competences' definition, the structure of the contents and of the evaluation forms);
- The modality of finalization of the study programme (graduation exam, that means the elaboration and the presentation of a didactical portofolio).

The curriculum of the psihopedagogical study programme comprises three integrated components: core curriculum, extended curriculum and optional curriculum. The didactical subjects and activities that are provided by the learning plan of D.P.P.D., alongside the allocation and the obtaining the credits system, are reunited into two distinct programmes of psihopedagogical studies, for the first and second level of certification.

The continuing formation ensures the actualisation and the development of the competences of the didactical staff, including the gaining of new competences and it is made mainly through the next educational intercessions:

- Programmes and activities of improvement of the scientific, psihopedagogical and didactical training or in the fields of management, guiding and evaluation of education.
- Training lectures and the final exam, and the exams for the first and second didactical distinctions;
- Conversion and professional readjustment programmes.

The granting of the definite exam means the recognition of the minimum acceptable competences that are gained by a person that made an option for the didactical career and that assures that he has the necessary training for the exertion of the didactical profession and he can enter on a route of ascendent professionalisation.

The comparative analysis of the four systems of teacher certification, based on the professional standards from the U.S.A., France, Great Britain and Romania offered us the possibility to identify the common problems/ elements but also the different ones.

First of all we notice similitudes in establishing the "referential of teacher's competences and qualities" that are aimed by the four systems of professional standards that we analysed. These are organized, structured and ranked in several large fields, often taking the form of "core-principles":

A thorough speciality training, the knowledge of the field and of the didactics of the taught subject/subjects;

- Knowing (by the teacher) of the psychical characteristics of age and individual of the students and their assistance in development (in different learning situations);
- The planning, teaching, management and monitoring of the class of students;

- The exertion of the educative responsibility and the professional ethics;
- Reflexive attitude towards his own activity and educational practise and the preoccupation for the continuing professional development;
- Competences regarding the integration and the active involvement in the community and the promotion of social-humane, moral-civic, cultural values that are congruent with the ideal.

We observe that the designed standards correspond, in general, to the objectives of the initial training of the didactical personnel and they cover the domain of competences (cognitive, evaluative, methodological, of communication and relation, psychosocial) that are required by the multitude and the complexity of the teacher's roles. They are based on a modern educational belief, on new trends in the field of cognitive, social psychology and the the sciences of education.

We appreciate that the valuable experience of these systems of professional standards and certification for the didactical profession can be put into use more in the making of the methodology regarding the training of the teachers for the final exam in connection to the standards, especially regarding:

- The assistance in internship;
- The intern and the principles of his professional formation;
- The responsibilities of the intern;
- Formation programmes of the interns;
- The mentor and his responsibilities.

#### The design of the research

Starting from the theoretical premises of the research we wanted to know the criteria and the indicators according to which the professional competences of the beginner teachers are evaluated, speciality physical education, in the frame of the definitive exam in educational system, as well as the emphasis of the advantages and the limits of this system of evaluation.

#### Research hypotheses:

*General hypotheses:*

*The results of the beginner teachers, speciality physical education, at the tests of the definitive exam in education record different values compared with the ones obtained at the special inspection.*

*Specific hypotheses:*

- *The performances obtained by the begining teachers, speciality physical education, at the test of psychopedagogy are lower compared to the ones obtained at the special inspection.*
- *The performances obtained by the begining teachers, speciality physical education, at the written test of speciality are lower compared with the ones obtained at the special inspection.*
  - *The performances obtained by the begining teachers, speciality physical education, at the oral test of speciality are lower compared to the ones obtained at the special inspection.*

#### The participants to the research

The research was made in Bacau, on a lot of 80 teachers, with 1-3 years experience in teaching, structured as it follows: 48 (60%) were males and 32 (40%) were females; 50 participants (62,5%) were between 25 and 30 years old, 15 (18,8%) were between 31 and 36 years old, 13 (16,2) were between 37 and 42 years old and 2 (2,5%) were between 49 and 51 years old.

According to the variable experience in teaching the sample is distributed as such: 1 teacher had one year experience, 61 had 2 years experience, 18 had 3 years experience in teaching. According to residence variable 44 participants that means 55% are from urban areas, and 36 participants that means 45% are from rural areas.

#### METHOD

In order to collect the data we used the method of analysis of the avticity's products and the school documents and the discussion, and for the verification of the hypotheses, the One-Sample T Test.

We also used the statistical data processing program SPSS 15.0, statistical program designed for research in the field of social sciences.

#### RESULTS AND DISCUSSION

*Hypothesis 1. The performances obtained by the begining teachers, speciality physical education, at the test of psychopedagogy are lower compared to the ones obtained at the special inspection.*

In chart 1 there are the media and the standard deviation obtained by the beginning teachers at the special inspection and at the three tests of the definite exam in education: psychopedagogy, written speciality and oral speciality.

**Chart 1:** The mean obtained at the special inspection, psychopedagogy, written speciality and oral speciality

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Special Inspection	80	9.9625	.19118	.02137
Psychopedagogy	77	7.3778	.82724	.09427
Written speciality	80	7.3388	1.83300	.20494
Oral speciality	77	8.0844	1.30637	.14887

We want to know if at the psychopedagogy test the candidates for the definite exam in education obtained media that are significantly higher or lower compared with the media obtained at the special inspection.

The statistical processing of collected data point an average of 7.37 obtained at the

psychopedagogy test and an average of 9.96 obtained at the special inspection. Comparing the two means we notice that the teachers from the research sample obtained a lower average at the psychopedagogy. To verify if this difference is statistically significant, we apply One-Sample T Test.

**Chart 2:** The mean and the standard deviation at psychopedagogy  
One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Psychopedagogy	77	7.3778	.82724	.09427

**Chart 3:** Results at the t test of comparing the means  
One-Sample Test

	Test Value = 9.96					
	t	df	Sig. (2-tailed)		95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Psychopedagogy	-27.391	76	.000		-2.5822	-2.7700 -2.3944

Chart 3 presents the results at the t test of comparing the means. We notice that  $t(76) = 27.391$ ,  $p \leq 0,000$ . It results that the difference of 2,59 between the two means is statistically significant. The chart also presents the level of trust with a probability of 95% in which we can place the difference between the means. Therefore, the hypothesis was confirmed, the performances obtained by the beginning teachers, speciality physical education at the test of psychopedagogy being significantly lower compared to the ones obtained at the special inspection.

How can we explain this significant difference between the two means?

We notice that from the 80 candidates at the definite exam in educational system 77 (96,3%) obtained 10 (A) at the special inspection and 3 teachers (3,7%) obtained a 9.

By analysing the criteria and indicators used to evaluate the teachers at the special inspection, we can see that the accent was put on the measurement of the methodological competences regarding:

- the planning of the didactical activity (the structure and the performance of the lesson plan, the operationalization of the objectives, the correlation of the components of the learning process, creativity in the designing of the didactic situations);

- the making of the activity (the preparation of the conditions and the efficient management of the resources, the ensurance of the scientific content, the selection and the use of the methods and procedures of teaching – learning, the integration of the learning means into the structure of the lesson, the connection of different forms of activity, the activization of the students).

The following evaluation indicators aim at the behaviour of the proponent (the management of the class, emotional equilibrium, efficient communication and inter-relationship with the students, leadership style) and the evaluation competence (using the evaluation methods and techniques, the development of the motivational function of evaluation, the development in the students of the self-evaluation competences, giving feedback).

By analysing the pedagogy curriculum for the definite exam in educational system, teachers of all specialities (2007) according to which the exam subjects were made, we can notice the intention of the curriculum's authors to make "an operative testing of the relevance of the initial training for the didactical career, from the perspective of competences, attitudes and values" (2007, p. 4). But the criteria and the indicators of evaluation aim more at knowledge, the understanding and the operational use of the

psychopedagogical concepts, abilities to explain and interpret the ideas, the believes, the patterns, theories and paradigms in this field. There are also aimed the critical and evaluativ-structural thinking abilities of some projects, processes, phenomena, as well as the competences of practical-aplicative and transfer competences.

The candidates perceive and appreciate the curriculum as having a high degree of difficulty, especially the contents regarding the theories and patterns of learning, the training paradigms, the adequate use of the psychopedagogical language.

*Hypothesis 2.* The performances obtained by the *beginning teachers, speciality physical education,*

*at the written test of speciality are lower compared with the ones obtained at the special inspection.*

We want to know if at the written test of speciality the teachers obtained means that are significantly higher or lower compared with the mean obtained at the special inspection. The statistical processing of the collected data show an average of 7.33 obtained at the written test of speciality and an average 9,96 obtained at the special inspection.

Comparing the two averages we notice that the teachers from the sample that is the subject of the reaserch obtained a lower average at the written test of speciality than at the special inspection, the difference being of 2,63. In order to verify if this difference is statistically significant we apply One-Sample T Test.

**Chart 4:** Mean and the standard deviation at the written speciality test

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Written speciality test	80	7.3388	1.83300	.20494

**Chart 5:** Results at the t test of comparing the means

One-Sample Test

	Test Value = 9.96					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Written speciality test	-12.791	79	.000	-2.6213	-3.0292	-2.2133

Chart 5 presents the results of the t test of comparing the averages. We notice that  $t(79) = 12.791, p \leq 0,000$ . It results that the difference of 2,63 between the two averages is statistically significant. The chart also presents the level of trust with a 95% probability in which we can situate the difference between the averages. Therefore, the hypothesis was confirmed, the performances obtained by the beginning teachers, speciality physical education, at the written test of speciality being significantly lower compared to the ones obtained at the special inspection.

*Hypothesis 3.* The performances obtained by the *beginning teachers, speciality physical education,*

*at the oral test of speciality are lower compared with the ones obtained at the special inspection.*

We want to know if at the oral test of speciality the teachers obtained averages that are significantly higher or lower compared to the average obtained at the special inspection. The statistical processing of collected data show an average of 8,8 obtained at the written test of speciality and the average 9,96 obtained at the special inspection (chart 1).

By comparing the two averages we notice that the teachers from the research sample obtained a lower average at the oral test of speciality than at the special inspectio, the difference being of 1,88. To verify if this difference is statistically significant, we apply One-Sample T Test.

**Chart 6:** Mean at the oral speciality test

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Oral speciality test	77	8.0844	1.30637	.14887



**Chart 7: Results at the t test of comparing the means**  
One-Sample Test

	Test Value = 9.96					
	t	df	Sig. (2-tailed)		Mean Difference	95% Confidence Interval of the Difference
	Lower	Upper	Lower	Upper	Lower	Upper
Oral speciality test	-12.598	76	.000		-1.8756	-2.1721 -1.5791

Chart 7 presents the results at the t test of comparing the averages. We notice that  $t(76)=12.598$ ,  $p \leq 0.000$ . It results that the difference of 1,88 between the two averages is statistically significant. The chart also presents the level of trust with a probability of 95% in which we can situate the difference between the averages. Therefore, the hypothesis was confirmed, the average obtained by the beginning teachers, physical education speciality, at the oral test of speciality being significantly lower, compared with the one obtained at the final inspection.

#### CONCLUSIONS

The research data confirm the general hypothesis and the specific hypotheses and they allow the formulation of several conclusions and action directions:

- We can notice the presence of some aspects of continuity between the programme of initial formation of the future teachers and the first years of teaching of the beginning teachers. These aim, first, the preoccupation for the curriculum's design of the didactical activity, the adequate use and management of the teaching means, the perfecting of the didactical methodology of teaching – learning, as well as the evaluation techniques. But we can notice a lower preoccupation for the theoretical deepening of the problematics from the literature of this field and from the psychopedagogy one, giving the fact that they do not always manage to offer operative and adequate answers at the many complex problems that the educational practise raises.

- Referring to the advantages and the limits of the current system of initial formation of the teachers and that of the certification of their competences, we consider that the share of the pedagogical practise has to be higher in the programme of formation. We appreciate as being necessary the diversification of the practise forms, respectively noticeable practise, of testing, merged etc, so that the students have the possibility to apply in practise the concepts, theories, paradigms that are assimilated theoretically at the speciality subjects and psychopedagogical ones.

- We propose that the methodology of certification of the competences of the beginning teachers, as well as the definite exam in the educational system to include some methods, techniques and instruments that are validated by the educational practise and by the research made in the field world wide.

- Thus, on the period of internship, the beginning teachers have to be helped in the exertion of the professional roles, they need to benefit from assistance and guidance, through the implication of the mentor, principal, the school's staff, of the speciality's inspector, of the university and local community.

At the end of the internship period the candidate enrolls to be evaluated based on the standards for the didactic profession, in order to obtain the certificate for the definite teacher. In this evaluation process, we consider that an important role has to be given to the elaboration and the presentation by the candidate of a competence portofolio, whose valencies were validated by the research and educational practise. In its turn, the curricula for the definite exam has to be rethought and it has to be centered on the evaluation of the candidates' competences.

#### References:

**DUMITRIU, C., 2003**, *Strategii alternative de evaluare. Modele teoretico - experimentale*, E.D.P.,R.A, București.

**GLIGA, L., (coord.), 2002**, *Standarde profesionale pentru profesia didactică*, București.

**IUFM , 2001**, *Livret du professeur stagiaire des lycées et collèges PLC<sub>2</sub> et du CPE stagiaire CPE<sub>2</sub>*, Grenoble, France.

**IUFM , 2001**, *Mémento des stages en établissement du second degré*, Académie de Grenoble, France.

**MEC, 2009**, Anexa la OM nr. 5720 / 20.10.2009, *Metodologia formării continue a personalului didactic din învățământul preuniversitar*, București.

**MEC, 2008**, *Regulamentul de organizare și funcționare a Departamentului pentru Pregătirea Personalului Didactic*, București.

**MEC, CNFPIP, 2003**, *Formarea continuă*, Revista Centrului Național de Formare a Personalului din Învățământul Preuniversitar, București, Nr. 1-5.

**STANDARDS FOR THE AWARD OF QUALIFIED TEACHER STATUS**, 1998, London SWIPBBT.

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## THE PEDAGOGICAL AND PROFESSIONAL TRAINING EVALUATION OF GRADUATE STUDENTS FROM THE ECO TOURISM CLASS

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### ABSTRACT

**Purpose:** The paper in question wishes to point out the knowledge, skills and habits the master students have assimilated in the practical and methodical process within the tourist and ecological activities, on one hand, and to verify the contents of the curriculum regarding ecological tourism within the educational plans of the program mentioned above, on the other hand.

**Methods:** The main method that we used was the self-evaluation chart regarding the pedagogical and professional training, of the first year students engaged in the Tourist and Free Time Sporting Activities Master, graduates of the ecological tourism class.

**Results:** Through the self-evaluation chart, regarding the pedagogical and professional training of students, indicators of the degree of specialization for the future teachers have been obtained.

**Conclusion:** The pedagogical and professional training, realized with the help of ecological tourism, as a modern way of learning, has become an important methodological instrument that focuses on the way in which the objectives of the curriculum can be attained. Through a series of precise methods, which the theory highlights, the student is being trained to interpret and analyze the processes and the phenomena in the environment.

**KEY WORDS:** ecological tourism, evaluation, self-evaluation, students.

### INTRODUCTION

Some authors, drawing their basis from their teacher/researcher experience, claim that between tourism and the environment lays a complex relationship which is manifested in both directions (Chiriță, G., 1983., Donoia, Șt., 1989). Within the professional training of students from the faculties of physical education and sport, the assimilation of knowledge regarding the tourist activity and its influence on the ecological environment become imperative. According to the Berlin Declaration, 1997, which states, among others, "attracting local population and institutions for applying the eco tourist actions", the reorientation of the pedagogical and professional training of physical education students is imperative to what a special attention to the ecological tourism is concerned, an attainable thing through a special training from a new curriculum in the ecological tourism discipline (R Enoiu, 2007).

The New National Curriculum tries, and mostly succeeds, to orientate education according to the contemporary dynamic society, and in perspective, to orientate it on the social and economical needs, anticipating the necessities of Romania's integration to the European Union (V. Guțu & colab. 2003). The dynamism of the social, economical and cultural phenomena asks the education to develop, on a superior level, the interdisciplinary connections of the scientific domains as a stringent demand of yielding the student's personality and his active integration capacity in the contemporary society (L Hainaut, 1981). Both the content of the physical education and that of the sportive training must be reoriented so that the main direction of the instructive and educative process, as an integrant of general education, answers the demands of the contemporary society in which the future graduate will move and develop as an important

member of the big continental society (R.S Enoiu., 2000).

For many specialists, the quality of education is primarily related to results, and the latter, are usually appreciated if they are explicitly defined as being cognitive (M. Jigău & colab., 2001). Neglecting the emotional, moral and esthetical aspects of the social integration represents a lack of the evaluative system which claims to be signally objective and rigorous. All the knowledge, the capacities and the general attitudes are so tightly connected that the measure of one implicitly represents the measure of the other (P. Lisievici, 1997). From the technical point of view, the added value to the student's professional yielding, with the teacher's contribution, is being stratified to the general construct level of personality in the form of capacities, attitudes and skills incorporated inside individuals (E. Moldovan, 2008).

The evaluation theories, regardless of their orientation, mention two fundamental types of evaluation that is formative and normative (G. Meyer, 2000). While the first one deals with students, trying to develop their cognitive set as to attain certain skills, the second one deals both with students and teachers and favors the selection decisions as to predicatively admit/orientate or as to asset the presence of an assimilated capacity.

In the evaluation and self-evaluation activity the so-called unique theories have five components. In the following paragraphs, we shall present the fixed points that have become the basis of their construction (W. Shadish, 1995):

- The practical component: refers to the specifics of the eco tourism pointing out the relationship with the program beneficiaries (the pupils), the decision taken under theoretical reflections, the temporal, financial, procedural and staff constraints;

- The knowledge component: marks the set of acceptable information regarding the evaluated domain (ecological tourism), with methods that can provide credible proves and philosophical assumptions of the worthiest knowledge available;
- The component of value: refers to the values that should be represented in the pedagogical and professional training evaluation within tourism in general and eco tourism in particular;
- The **practice** component: refers to the way in which one can use the information from the ecological tourism in practice and social programming, to the different types of practice, to the relative importance of each and every one and to the measure that can be taken to increase the using of programs;
- The **social programming** component: indicates the nature of the programs and their role in solving the social matters: the internal structure and the functioning of the programs, the relations with other institutions, the processes through which the programs and their components can be improved.

#### The research's premises

The instructive and educative process of the pedagogical and professional training of the students engaged in the Tourist and Free Time Sporting Activities Master within the ecological tourism class has been realized through accomplishing programmed objectives according to the pre established rigors of the educational curriculum. As a consequence one is able to combine the common activities with the individual ones bearing in mind the unfolding of the instructive and educative process in the context of the specific contents estimated in the "ecological tourism" discipline.

First of all, the purpose of this research has been the appreciation of knowledge, skills and habits assimilated in the practical and methodical process within the tourist and ecological activities implemented.

The second objective has been traced in verifying and estimating the contents of the curriculum for the ecological tourism discipline within the educational plans of the program mentioned above.

**The structure of the curriculum** for the discipline Ecological Tourism is presented down below:

#### General objective:

Valorize and protect the natural ecosystems through ecologic tourism sports activities.

References objectives are direction to 4 principals theme:

1. Health;
2. Professional-pedagogical;
3. Ecological;
4. Recreation;

#### 1. Health objectives:

- Maintained health steady through specific ecotourism physical activities:

- Perfecting motor habit for practicing ecological tourism;

- Develop base motor capacity.

#### 2. Professional-pedagogical objectives:

- Forming a "baggage" of knowledge's, attitudes and aptitudes specific for ecological tourism;

- Forming organize and lead capacity for ecological tourism activities;

- Forming capacities for making projects about protect environments through ecological tourism activities.

#### 3. Ecological objectives:

- Forming ecological conscience;

- Comprehension fundamental notions about ecology and environment protection;

- Intellectual capability for connecting relationship between human – environment - bio systems.

#### 4 Recreations objectives:

- Identify the trip and the excursion like recreation and active rest activities; learn to relax the joy of resting manifested by curiosity about ambient medium.

- Get knowledge's and cultivate interests for existent local and national ethnicity and traditions, on behalf of their valorization.

- Identify the stress sources and the modality to avoid them; relaxing in the nature for body comfort in support of raising physical resisting individual level.

#### Discipline content

##### Theoretical courses themes

- Tourism and ecology. History, content, terms significations, specifically pedagogy.

- Specific and distinct environments character education and ethical aspects.

- Tourism activities like education method.

- Organizing modes and forms of ecologic tourism activities.

- Eco-tourism's exemplificative itineraries. Importance and their functions. Itineraries types.

- Qualities, roles and aims that programs leaderships needs in ecologic tourism activities.

- Professional prepare of physical education and sports specialists for ecologic tourism direction.

- Different characters for excursion develop after followed type and scope.

- Program designed for ecologic tourism activities prepare.

##### Practical activities themes

Lesson 1; 2 – Equipments and materials that are necessary for practicing ecologic tourism.

Lesson 3; 4 - Ecologic tourism particularities and base notions for field orienteering and arrange places and containers for waste products.

Lesson 5; 6 – Presenting natural's habitual places and their most important characteristics.

Lesson 7; 8; 9 – Maintain and develop health steady through activities happened in natural cadre.

Lesson 10; 11 – Methods for arrange tourism path.

Lesson 12; 13 – Methods for earth work consolidation (against earth slippers).

Lesson 14 – Tourism competitions for ecologies natural habitually places.

Finality, in the vein of physical education results through ecotourism means, can be done throughout:

1. Obtaining ecologic consciousness;
2. Forming attitudes and aptitudes for conserve and protect ecosystems.
3. Forming professional – pedagogical of graduate student, from physical education end sport faculties, throughout sustain the needs of promoting moral and ethical responsibilities about ecosystems.

### METHODS AND TECHNIQUES USED

We point out that the results presented here have been validated considering the following grades (table 1):

**Table 1**

<i>The</i>	<i>obtained</i>	<i>grades</i>	<i>depending</i>	<i>on</i>	<i>percentages</i>
100% - 80%			-	Very well	
79%-70%			-	Well	
69% - 60%			-	Sufficient	
Sub 60%			-	Insufficient	

### Results

Next we present the centralized results out of the twenty-five charts of evaluation and self-evaluation of the group that attended the optional class of ecological tourism.

In the course of the students' pedagogical practice the results have been centralized in table 2 depending on the components and the items used in the evaluation. To what the counselling activity is concerned, in the schools that undertook pedagogical practice, one has noticed that at both student and parent level a certain activity has been conducted which has proved to be very good, the revealed percentages, that is 96% for pupil counselling and 80% for parent counselling, confirming it. The pupil counselling has had the biggest percentage, the students undergoing their activity with terrific results, both individually and group oriented. In the case of the third component, "school and professional oriented activities", the students have met certain difficulties in motivating the pupils and setting up thematic circles. This is also proved by the average score of the items contained in the component in question. Thus, the average for the "information" component has been 2,8, the "presenting your motivation" one 2,48 and the "setting up thematic circles" one 2,2. The percentage for this component has been one of the lowest, the students registering a percentage of 75,8% (grade – "well").The forth component contained the self-evaluation of the planning and programming documents students have worked with in the eco tourism zone. To what this component is concerned, two out of three items have

Based on the components mentioned above one has conceived the self-evaluation chart regarding the pedagogical and professional training of the first year students engaged in the Tourist and Free Time Sporting Activities Master, graduates of the ecological tourism class. The chart has emphasized the level of practical and methodical skills of students within the pedagogical practice and the level of applicability of the latter.

The evaluation and self-evaluation chart has been made based on eight components, each of them containing four items. The components have regarded the multilateralism of the pedagogical and professional training as well as the applicability of the acquired knowledge within the practical hours provided by the "ecological tourism" curriculum.

To each component one has assigned a number of ten points regardless of the number of items contained. The maximum score is of eighty points.

been totally realized, the latter pointing out "planning the ecological activity" and "programming a certain group eco tourist activity". The third item created certain difficulties, especially when trying to communicate them to the school board and school inspectorate. Thus, during the pedagogical practice, fifteen students out of twenty-five have managed to organize an eco tourism contest. The students' intention was to realize a contest with the participation of all schools, but the challenge proved to be very difficult, in the end the contests being held at the level of each school. The average score for this item has been 2,32, managing to diminish the score for the forth component up to 83,2%, the grade still remaining "very well". Obtaining the thematic materials provided in the fifth component presumed getting in touch with the local library for procuring ecological maps and guides, on one hand, and establishing certain contacts with the Local Directive for Youth and Sport and other tourist and orientation sporting clubs, from which one has obtained different specific eco tourism equipments used during practice hours in schools, on the other hand. The degree of accomplishment for this component has been very high as well, the student group managing a general percentage of 82,4%.Students have reacted unexpectedly well in the sixth component – "net working". Thus, the average score for the first two items has been maximum, the collaboration with teachers, colleagues and other institutions involved in the tourist activity being extremely good. To what the third item is concerned, "registering in different local, regional and national

school activities”, the students have met major difficulties. This was due to the fact that the students did not spot associations that had tourism as an object in general and ecological tourism in particular. Once identified, these associations stipulated that the registration in the school circle be realized by a teacher,

employee of that same school. In this case, students came up with a solution, which is setting up a school association called “The Little Eco Tourist” with the participation of five school form the Brasov. The average percentage for this component has been of 80%, a very good one.

**Table 2** Centralizer of the pedagogical and professional self-evaluation charts of first year Master students ( n . 25 )

Nr. crt	Components/items	Maximum score/item	Obtained score/item/group	Average score/group	Total score/component	Component obtaining percentage/group
1.	<b>Counselling pupils on the importance of eco tourism</b>	10				
a.	-groups	5	120	4,8	240	96%
b.	- individually	5	120	4,8		
2.	<b>Counselling parents on the eco tourist activities</b>	10				
a.	- groups	5	125	5	200	80%
b.	- individually	5	75	3		
3.	<b>School oriented and professional activities</b>	10				
a.	- information	3	70	2,8	187	74,8%
b.	- presenting your motivation	3	62	2,48		
c.	- setting up thematic circles	4	55	2,2		
4.	<b>Planning and programming documents</b>	10				
a.	- ecological activity plan	3	75	3	208	83,2%
b.	-programming an eco tourist group activity	3	75	3		
c.	-organizing a contest called „young ecologists”	4	58	2,32		
5.	<b>Obtaining the thematic materials</b>	10				
a.	- maps	3	72	2,88	206	82,4%
b.	- guidance/ecological educative guides	3	71	2,84		
c.	- specific eco tourism out fit	4	63	2,52		
6.	<b>Net working</b>	10				
a.	- collaborating with other institutions	3	75	3	200	80%
b.	- collaborating with colleagues/ teachers	3	75	3		
c.	- registering in local/national associations	4	50	2		
7.	<b>Professional yielding</b>	10				
a.	- participating in scientific student sessions	3	75	3	211	84,4%
b.	- perfectioning classes	4	81	3,24		
c.	- school exchange	3	55	2,2		
8.	<b>Attracting material resources</b>	10				
a.	- sponsors	3	67	2,68	152	60,8%
b.	- donations	3	65	2,6		
c.	- participating in local projects	4	20	0,8		
	<b>Total</b>	<b>80</b>			<b>1604</b>	<b>80,2%</b>

In order to provide a real connection between the theoretical demands and the practical possibilities offered by the schools in which the pedagogical practice has been conducted, the needs of the eighth component have regarded the attraction of material resources, mostly from donations, sponsors and the participation in different projects. Surprisingly, the first two items, the ones referring to attracting sponsors and donations, have successfully been accomplished by the majority of students. The latter, as a consequence of a good parent counseling (the second component) have managed, basing their actions on a great relationship with the pupils' families, to attract certain sums of money destined to implementing different eco tourist activities and thematic materials (boards, books, two tents, ropes, etc.) Instead, the last item of the component, referring to the participation in different projects, has created the biggest problems for the future specialists.

This was due to several factors of which we point out the following: little time available, the weak collaboration at local level of the institutions capable of generating projects and the general difficulties generated by the weak information regarding the minimum and necessary conditions of participating in such projects in the first place. All of these difficulties have had certain implications in accomplishing the item that summed the lowest average score, 0, 8 with repercussions in the general percentage of accomplishment of the eighth component as well, which was the lowest 60, 8% („sufficient”).

#### Discussion and conclusion

In a nutshell, one can state that through the self-evaluation chart, regarding the pedagogical and professional training of students, indicators of the degree of specialization for the future teachers have been obtained. In this sense, one can invoke the percentages obtained to each of the eight components, as well as the general percentage totalized in the twenty-five self-evaluation charts which have summed up 1604

points out of 2000 possible, the percentage of the proposed activities being extremely high, almost 80, 2%.

#### BIBLIOGRAPHY

- CHIRIȚĂ, G., 1983**, *Pedagogia aplicată la domeniul educație fizice*. - București: Sport –Turism,- P. 318.
- DONOAICA, Șt., 1989**, *Aspecte din activitatea de turism*. – București: Litera., 101-112.
- ENOIU R.S., 2000**, *Teoria și bazele metodicii EFS*. – Brașov: Omia UNISAST, 83-105.
- ENOIU, R. 2007**, doctor thesis: *Pedagogical and professional prepare of physical education and sport students for optional course on ecological tourism*, USEFS Chisinau, , 208.
- GUȚU, V. & colab. 2003**, *Teoria și metodologia curriculum-ului universitar - Pedagogia universitară în dezvoltare*, Chișinău: Consiliul metodic-științific și editorial al USM, .1-45.
- HAINAUT, L., 1981**, *Interdisciplinaritate și integritate, programe de învățământ și educație permanentă*.- București: Didactică și Pedagogică., 85-101.
- JIGĂU M. & colab., 2001**, *Evaluarea activității de consilierea carierei*. – București :Laboratorul de orientare profesională.. 95p.
- LISIEVICI, P., 1997**, *Calitatea învățământului*.- București: E.D.P. RA.,47.
- MEYER, G. 2000**, *De ce și cum evaluăm*.- Iași: Polirom,,38
- MOLDOVAN, E., 2008**, *Outdoor Activities: a present challenge in our new experiential education*. // European Seminar Proceedings of the European Institute for Outdoor Adventure Education and experiential learning in partnership with the Centre for Outdoor Education Research, Trinity College, Carmarthen,Wales,UK,17-20 sept.
- SHADISH, W., 1995**, *Fundamentele evaluării programelor*. Londra: SAGE Publications Inc.,. 83.

## CONSTATATIV STUDY CONCERNING THE MANIFESTATION LEVEL OF THE ANAEROBE EFFORT'S CAPACITY AT PUPILS FROM HIGH SCHOOL

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### ABSTRACT

**Purpose:** Applying the national curriculum in the domain of the physical education and sport requires the enlargement of the knowledge area of the age characteristics and the level of manifestation of the physical condition of the scholar population from the high school cycle. The theme presents the importance by knowing new data concerning the level of manifestation of the anaerobe effort's capacity, in the conditions of the physical education and sport class, also of the practical implication in the scholar physical education. By approaching this theme we propose to know the level of manifestation of the anaerobe effort capacity at the pupils from the high school cycle depending on age and sex through a practical, significant and non-invasive method for the organism – the Sargent test. In practicing the physical education and sport the term of anaerobe effort's capacity is used in the sense of specifying the organism's possibilities to make an intense physical effort and of short duration, respectively to obtain a maximum energetic debit through the two anaerobe energetic systems (the phosphate system and the anaerobe glycolysis).

**Methods:** The used research methods and techniques were the observation method, the experimental method (the provoked checking experiment in order to observe and measure the produced effects, natural – realized in natural conditions, represented by the physical education class, in a transversal section, synchronic, at the same time), the statistic-mathematic method and the graphic one (the processing method, the analysis and the obtained data by applying the tests processing).

**Results:** The higher percentage and the increase of the value capacity of the anaerobe effort at girls from the 9<sup>th</sup> grade is due to the functional ageing of the neuromuscular system that happens faster at girls than at boys, followed by an equalizing stage, between the two sexes, at the level of the 10<sup>th</sup> grade and obtaining higher values for the boys from the 11<sup>th</sup> and 12<sup>th</sup> grades.

Closed values of the maximum anaerobe power (but low as functional value) both at boys and girls denote a high homogeneity of the researched group of subjects, in a negative way. Due to the social importance of the physical education and sport it is imposed the taking of a decision in concordance with realizing a training programs structured on physical exercises that require approaching the interests of self-exceeding of the motor possibilities.

**Conclusions:** The calculated values for the maximum individual anaerobe power are close, fact that denotes an evolution similar, generally valid, from individual to individual. The higher percentage of "weak" grades at the measurement of this physiologic indicator allow us to state that the researched subjects have a weak concern concerning the maintaining of a health state by making independent sport activities, movement in the fresh air and we sustain the increase of physical education classes for the superior high school cycle.

**KEY WORDS:** study, manifestation level, anaerobe effort's capacity, pupils.

### INTRODUCTION AND RESEARCH OBJECTIVES

In searching the identity, youth try to harmonize "in an own system the values and beliefs of every person that means something for them: parents, teachers and age group" (R. Atkinson, E. Smith, D. Bem, 2002). In the situation in which these values are incompatible, it is possible the appearance of role confusion and the successive testing of many roles, before finding out the own identity.

Domain specialists consider that the success of youth, in a professional plan, is conditioned by the biologic, motor resources of the individual (the motor capacity, the physical condition), that creates a healthy intern environment, balanced, a well physical and psychic state responsible for the working productivity; depending on the implication degree in the motor activities, they are classified in: sedentary teenagers, teenagers vaguely interested in movement and active

teenagers, on a motor plan (A. Dragnea, A. Bota, 1999).

In order to eliminate the noxious effects of the social activity over the health state of youth, but also in order to insure a good effort's capacity and psychic capacity, man must possess a good health state, physical and psychic strength, easy to realize at the age of pupils from high school cycle. Physical education and sport contributes at forming an aware attitude concerning the practicing of the physical exercise in the free time, in order to obtain certain benefic effects, of long term, through the independent sport activity (M. Finichiu, M., 2008).

The peoples of the ancient world had made the movement and corporal harmony virtues; across the existence, a series of civilizations, had made from this movement a national cult; the Greek palestras, the Roman thermals represented true temples for a physical development as harmonious as possible, places for shows but also for health. In the contemporary era,

movement, sport, rule more and more the humanity life, becoming true shows and financial sources, with an important role in the political influence and social existence. The diversity of acts and motor actions but also their number and variety give the level of the motor capacity level for every individual. Man's motor capacity evolves limitative, not linear, once with the increase and the individual development, life and quotidian activities contributing to the enrichment of the skills and motor abilities luggage.

The number of motor skills and abilities of which an individual is capable to use and put them into practice represent the true measurement of his motorness (A.Prescorniță, 2004) that if it is accompanied by high indices of the conditioned and coordinative capacities lead to the obtaining of a high sport performance; only the predispositions and aptitudes are not sufficient (V. Ludu, 1969) if they are not accompanied by lots of work and a very well managed training. On the same scale with the performance capacity notion, used a lot in the activity domain of the physical education and sport, we can place the notions of performance capacity, physical capacity and effort capacity, used more frequently in the performance sport and high performance sport.

The physical effort capacity defines the organism's possibilities to develop a travail, a mechanic thing of an intensity as higher as possible, with a duration as longer as possible (C. Bota, 2000) and presents two forms: the anaerobe effort's capacity and the aerobic effort's capacity.

The effort's capacity represents the maximum power of which an individual is capable to realize, it being the maximum intensity of the effort that can be realized by a subject, or representing the maximum working quantity of a mechanical thing that can be made in the time unity of an individual (M. Georgescu 1977).

The organism's effort capacity represents a resultant of the functional interaction of organs and systems having at the base the specific energetic potential, from which it results a mechanical thing expressed in acknowledged measurement units (A.Dragnea, A., S.Teodorescu, 2002).

The energetic sub layer immediately usable is the phosphate-macroergical connection from ATP of which resistance is realized in the intense efforts and really short ones on the account of CP; both substances with phosphate-macroergic connections constitute the so-called system of the phosphagenes.

*Research objectives* consist of:

- Making physical education programs and differentiating the requirements for each study year and class, that traces the useful indicators in the perception of the anaerobe effort's capacity at pupils of both sexes.
- Knowing the values of the anaerobe effort's capacity at the age of 14 – 15 can use as

reference term, tracing/selecting the elements talented for the performance sport.

- In the scholar sport branches where the evolution of the anaerobe effort's capacity represents a limitative factor of the motor performance, it is urgent to know the evolution of this capacity to determine the optimum age for selection.

### Research hypotheses

- Improving the anaerobe effort's capacity is conditioned by the individuals' age subject to the experiment.
- Sex particularities influence the values of the anaerobe effort's capacity, at this age.
- The appreciation of obtaining weak results are due to the reduced number of physical education classes and also of the minor preoccupations for the independent practice of the physical exercises, at the individual level and group level from where the subjects are.

### Research procedures and methods

The research has been developed at the Technical College "Lazar Edeleanu" from Ploiesti, during the period 15.10 – 20.11.2009, the subjects being pupils from the 9<sup>th</sup> – 12<sup>th</sup> grades, with ages between 14-19, clinically healthy (100 boys and 106 girls).

The used research methods and techniques have been the observation method, the experimental method (the provoked checking experiment in order to observe and measure the produced effects, natural – realized in natural conditions, represented by the physical education class, in a transversal section, synchronic, at the same time), the statistic-mathematic method and the graphic one (the processing method, the analysis and the obtained data by applying the tests processing). The used test for the evaluation of the maximum anaerobe alactacid power (expressed in kg/s by measuring the detent at vertical) was the Sargent test (C.Bota, 2000).

The development manner of the testing:

- The effort consisted of the making of three maximum jumps on vertical from standing (the detent on vertical through which we measure and the value of the motor capacity/quality combined with strength-speed, named the explosive force at the level of the inferior limbs), after a previous warming period of the making musculature, recording the best value from the jump (expressed in centimeters).
- The measurement of individual body weight (expressed in kg).



- Introducing the obtained results in the calculus formula:  $P = \sqrt{4.95 \times G} \times \sqrt{D}$ ; where **P** = the power expressed in kg/s; **G** =
- weak grade < 113; satisfactory between 113-149; medium between 150-187; good between 188-224; very good >224. *Women:* weak grade <92; satisfactory between 92-120; medium between 121-151; good between 152-182; very good >182.

**Research results and their interpretation**

The analysis and processing of the obtained data has been realized on the basis of the calculus of the arithmetic mean (X), of the standard deviation (S), of the variability coefficient (Cv), of the estimation of the medium error (EEm) and of the significance of the difference between the two means – the “z” test (M. Niculescu, 2002).

The obtained results after making the testing and their introduction in the calculus formula, shows us the following situation, on age and sex groups:

- ❖ *The arithmetic mean* calculated for the researched pattern (table 2 and figure 3) presents values, both for boys and girls, that is framed, after the appreciation scale, at the level of “weak” grade.

For the boys’ pattern, the calculated arithmetic mean is framed in a 58% percentage at the level of “weak” grade, 29% satisfactory grade and 13% “medium” grade.

On age and class groups, the maximum anaerobe power values (table 1, figure 1) are appreciated as followed:

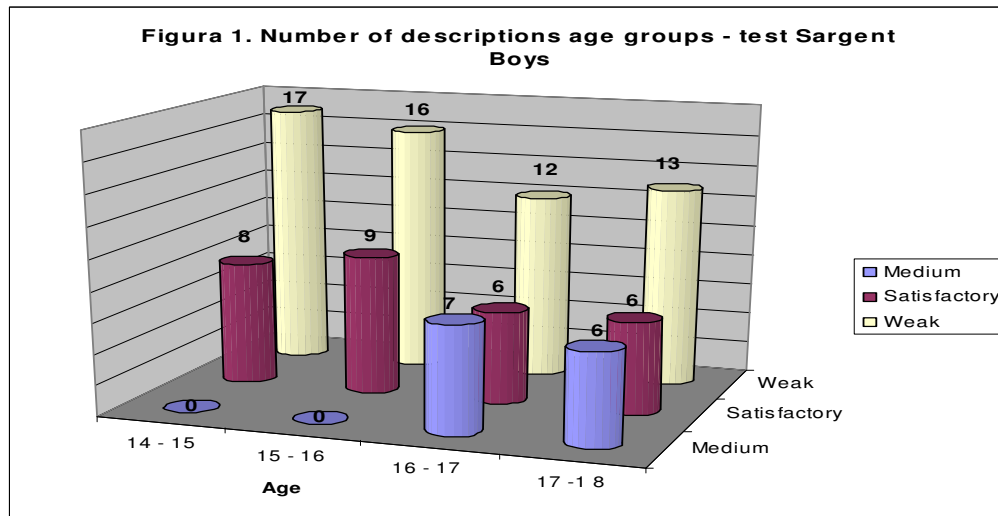
body weight; **D** = detent on vertical; **4,95** represents a constant.

- The appreciation scale after Dal Monte 1998 for the individuals with age between 15 – 20. *Men:*
- 14 – 15 years (9<sup>th</sup> grade) 68% “weak” grade and 32% “satisfactory” grade;
- 15 – 16 years (10<sup>th</sup> grade) 64% “weak” grade and 36% “satisfactory” grade;
- 16 – 17 years (11<sup>th</sup> grade) 48% “weak” grade, 24% “satisfactory” grade and 28% “medium” grade;
- 17 – 18 years (12<sup>th</sup> grade) 52% “weak” grade, 24% “satisfactory” grade and 24% “medium” grade.

For the girls pattern, the calculated arithmetic mean is framed in a 52,83% at the level of “weak” grade, 33,01% “satisfactory” grade and 14,15% “medium” grade.

On age and class groups, the maximum anaerobe power values (table 1, figure 1) are appreciated as followed:

- 14 – 15 years (9<sup>th</sup> grade) 42,85% “weak” grade, 28,57% “satisfactory” grade and 28,57% “medium” grade;
- 15 – 16 years (10<sup>th</sup> grade) 55,55% “weak” grade, 25,92 “satisfactory” grade and 18,51 “medium” grade;
- 16 – 17 years (11<sup>th</sup> grade) 52% “weak” grade, 40% “satisfactory” grade and 8% “medium” grade;
- 18 – 19 years (12<sup>th</sup> grade) 61,53 % “weak” grade and 38,46% “satisfactory” grade.



**Table 1.** Number of subjects – appreciation scale

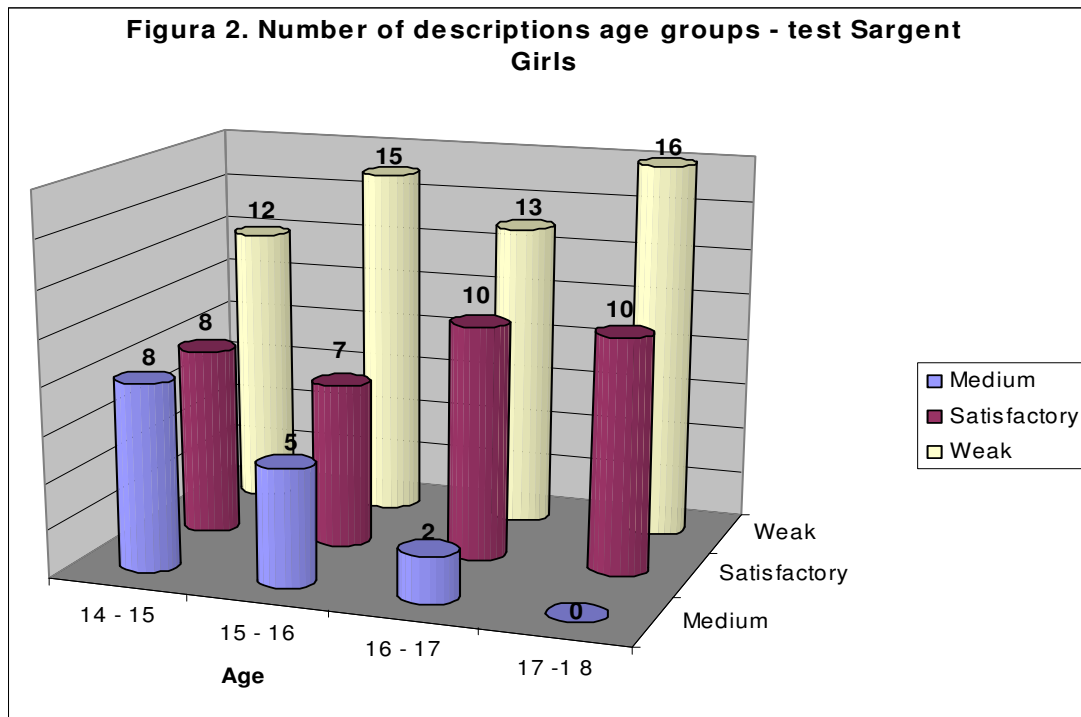
Grade	Boys (number of pupils and %)					Girls (number of pupils and %)				
	Age group					Age group				
	14/15	15/16	16/17	17/18	14/18	14/15	15/16	16/17	17/18	14/18
Weak	17	16	12	13	58%	12	15	13	16	52,83%
Satisfactory	8	9	6	6	29%	8	7	10	10	33,01%
Medium	-	-	7	6	13%	8	5	2	-	14,15%

- ❖ *The variability coefficient Cv%* (table 2) calculated, presents us the perceptual approximation of the report between the standard deviation and the arithmetic mean, as followed: at the classes and boys groups level a group with moderate homogeneity (18,52%) and at the level of classes and girls groups a group with high homogeneity (12,95%).
- ❖ *The calculus of the estimation of the medium error EEm* (table 2) presents us a framing in the value interval 100,71 – 102,69 (101,70±0,99) of the arithmetic mean, for the boys pattern, representing the trust interval of the mean at the significance level p<0,01. The trust limits of the pattern
- ❖ .

mean are 100,71 and 102,69 and the real mean is between this value interval.

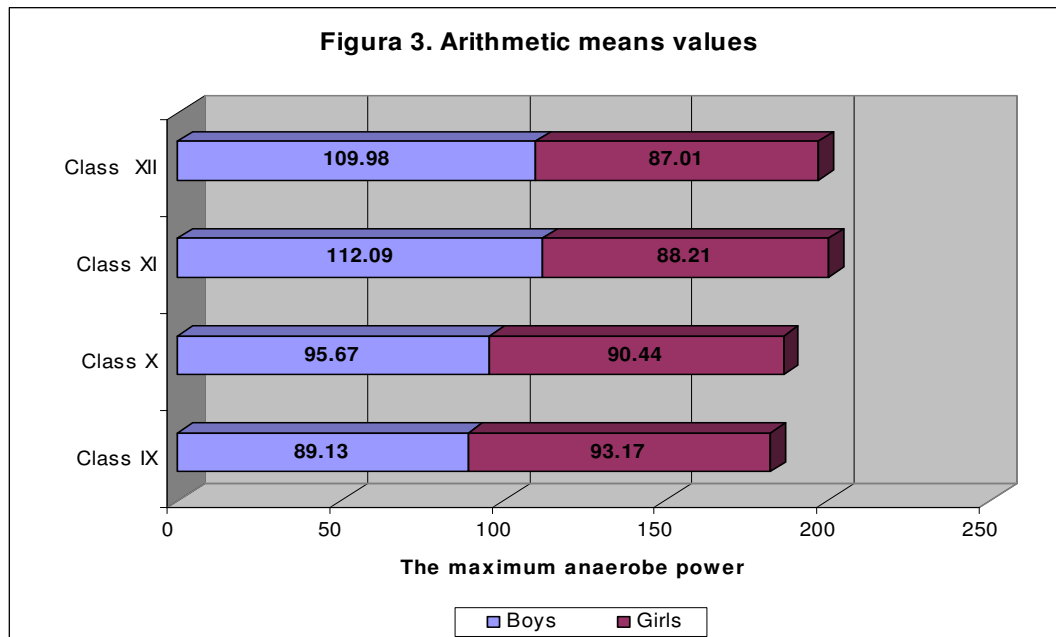
For the girl pattern the arithmetic mean si between the value interval 88,05 – 90,09 (89,07±1,02), representing the trust interval of the mean at the significance level p<0,01. The trust limits of the pattern mean are 88,05 and 90,09 and the real mean is between this value interval.

- ❖ *Calculating the significance between the two means* (table 2) – the “z” test = 8,95, we can notice that it is higher than the “t” value from the Fischer table, so, the difference between the two means is significant at the significance level p<0,01, the research hypothesis is valid



**Table 2.** Calculated statistic indicators

Statistic indicators	Boys/grade					Girls/grade				
	IX	X	XI	XII	Pattern	IX	X	XI	XII	Pattern
<b>X</b>	89,13	95,67	112,09	109,98	<b>101,70</b>	93.17	90.44	88.21	87.01	<b>89,07</b>
<b>S</b>	10.66	9,97	9,65	9,09	<b>9,90</b>	10,45	9,97	10,88	10,25	<b>10,49</b>
<b>Cv%</b>	17,98	18,66	18,01	19,45	<b>18,52</b>	13,67	14,05	11,78	12,32	<b>12,95</b>
<b>EEm</b>					<b>0,99</b>					<b>1,02</b>
<b>The „z” Test</b>	<b>8,95</b>									



**Conclusions**

1. The anaerobe effort's capacity represents an indicator that is dependent of the pupils' age, until the age of 17, boys 11<sup>th</sup> grade; at girls this aspect is obvious only until the age of 14-15, 9<sup>th</sup> grade.
2. The anaerobe effort's capacity progresses in a different manner at boys in comparison with girls; girls have a better anaerobe effort's capacity, reported to the appreciation scale presented by the domain specialists.

3. Calculated values for the maximum individual anaerobe power are close, fact that denotes an evolution of it similar, generally valid, from individual to individual.
4. The higher percentage of "weak" grades at measuring this physiologic indicator allows us to state that the researched subjects have a weak concern in what concerns the maintaining of the health state by making independent sport activities, movement in the fresh air.
5. To limit the practice of physical exercise just as a scholar obligation (as it is looked for today through all the

education programs, that limit the number of physical education classes, motivating the specific of the specialties and exceeding the weekly number of study hours) would mean a serious error for the young generation, that is why we sustain the necessity of the increase of physical education and sport classes, especially at the 11<sup>th</sup> and 12<sup>th</sup> grades, from the superior high school cycle and not only.

6. Practicing the favored sport, in a rhythmic manner, independent or organized, is made in a permanent necessity, representing a call to reflection to apply in the daily life at the specific means of the favored sports, as factors of fortification and relaxation.
7. Measuring the maximum anaerobe power, through the Sargent test, has pointed out the fact that, the development of the anaerobe effort's capacity can have at its base the use during the physical education and sport of the self-organizing capacities, self-leading and self-evaluation of pupils.
8. The assimilation process of the motor skills and abilities has aimed the increase of the independence degree of the pupils in the instructive-educational process, through a thoroughly observation and the reception of

information and through an aware and creative attitude.

## REFERENCES

- ATKINSON, R., ATKINSON, R., SMITH, E., BEM, D., 2002,** *Introduction in Psychology*, The Technical Publishing House, Romania, 123 - 125.
- BOTA, C., 2000,** *Ergo-physiology*, Globus Publishing House, Bucharest, 133.
- DRAGNEA, A., TEODORESCU - MATE, S., 2002,** *Sport's Theory*, FEST Publishing House, Bucharest, 245 - 246.
- DRAGNEA, A., BOTA, A., 1999,** *Motor activities theory*, Didactic and Pedagogic Publishing House, Bucharest, 98 - 99.
- FINICHIU, M., 2008,** *Physical education and sport – scholar and university*. The Petroleum and Gas University Publishing House, Ploiesti, 45 - 55.
- GEORGESCU, M., 1977,** *Medical control and first aid*, IEFS Publishing House, Bucharest, 67 - 69.
- LUDU, V., 1969,** *Skill and the method of its development*, CNEFS Publishing House, Bucharest, 12 - 13.
- NICULESCU, M., 2002,** *Scientific research methodology in the physical education and sport*, ANEFS Publishing House, Bucharest, 475 - 498.
- PRESCORNIȚĂ, A., 2004,** *Motor capacity and coordinative capacities*, The Publishing House of the Transilvania University, Brasov, 109 - 111.

## EYE-HAND COORDINATION IN THIRD FORM PUPILS

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### ABSTRACT

**Purpose.** The present study propose that eye-hand coordination in third form pupils can be enhanced by physical activities.

**Methods.** For recording the level of eye-hand coordination we used three motric tests – rounder-ball throw on a static mark; darts and, multiple dribble (20 m.).

**Results.** There was significant differences between experimental and control group ( $p < 0.01$ ) on all the three testes.

**Conclusions.** Exercises and operational structures used during the experiment were well selected and properly dosed for these subjects.

**KEY WORDS:** motor coordination, eye-hand coordination, school-children.

### INTRODUCTION

Motor coordination is regarded as a highly complex psychomotoric skill that relies on other psychomotoric skills and has interrelationships with motor skills. Coordinative skills include the full range of possibilities for event coordination, but also flexibility in the process of implementation of physical movements (R.S. Johansson et al., 2001; B. Greenspan, 2005). They are conditioning by the capabilities to lead, to take and develop motor skills and, they are based on the nervous system and muscle efficiency (G. Rață, B.C. Rață, 2006).

Coordination can be trained in different ways, depending on age, gender and the level of retention and development of other skills, taking into account the fact that it's a part of genetically determined ability, with a low training possibility (L. A. Mrotek, J.F. Soechting, 2007; J.D. Crawford, W.P. Medendorp, J.J. Marotta, 2004).

It is assumed that the development of eye-hand coordination can be done in third form pupils by conducting games and relay race. To accomplish this aim, by using different methods and modern means to develop eye-hand

coordination, we have established the following objectives:

1. Determining the overall skill level of students participating in the experiment.
2. Using standardized tests and modern means to develop eye-hand coordination.
3. Establishing a comparison between the results of the experimental group and control group.

### METHODS

The experiment took place between 24 November 2008 and 27 March 2009 and it have two stages: first - initial testing of students and the second - final testing of students participating in the experiment. The experiment was conducted in Mihail Kogalniceanu Highschool (school gym), in Constanta county.

In the experiment were participated 28 students of third class, 14 girls and 14 boys. After initial testing they were divided into two groups: experimental and control. Each of the two groups have many components 14 (7 girls and 7 boys in each group).

Identification data of subjects are presented in Table 1.

**Table 1.** Identification data of subjects participating in the experiment.

Groups	Age (years)	Height (cm)	Weight (kg)
Experiment (n = 14)	10.48 ± 0.34	145.21 ± 0.25	39.07 ± 0.42
Control (n = 14)	10.74 ± 0.26	145.78 ± 0.67	40.60 ± 0.45

n, number of subjects.

For testing eye-hand coordination we used the following tests:

1. Rounders throwing balls at a fixed target;
2. Darts;
3. Multiple dribbling (with running in straight line), on a distance of 20m..

## RESULTS

**Table 2.** Results of control group at initial and final testing.

Tests	Initial testing	Final testing
<b>Rounders throwing balls at a fixed target (points)</b>	53,21± 8,22	59,28 ± 5,49
<b>Darts (points)</b>	51,07± 5,94	65,35 ± 3,65
<b>Dribbling in a straight line (s)</b>	10,29± 0,45	10,12 ± 0,35

Statistical analysis of data from Table 2 revealed that the results in initial testing of the control sample were not significantly different from final testing.

However, in absolute terms the final test results has improved compared to the initial test results, on all 3 testes. This increase in absolute value show a natural development - physical and motric - of the students.

**Table 3.** Results of experimental group at initial and final testing.

Tests	Initial testing	Final testing
<b>Rounders throwing balls at a fixed target (points)</b>	55,42 ± 8,29	65,35 ± 4,98 <sup>a</sup>
<b>Darts (points)</b>	52,14 ± 3,23	74,28 ± 8,05 <sup>a</sup>
<b>Dribbling in a straight line (s)</b>	10,3 ± 0,39	9,85 ± 0,28 <sup>a</sup>

a - significantly different from the initial test, p<0.01.

At the level of this group, statistical analysis of data revealed that, in each sample, the final testing results are significantly better than the initial test results, p<0.01.

Thus, throwing the rounders ball in fixed target, we obtained  $t = 6.222$ ,  $p < 0.01$ ; in darts,  $t = 8.637$ ,  $p < 0.01$ ; to dribble in a straight line 20m.,  $t = 11.250$ ,  $p < 0.01$ . Therefore, we conclude that the proposed new operational structures have lead to increased eye-hand coordination indices at that age.

Our results are consistent with those of other researchers (R. S. Johansson et al., 2001; J. D. Crawford et al., 2004), who found that the specific work coordinative capacity leads to improved

performance. The only difference between our study and theirs is the subjects age (10 years old for our subjects versus 19 years old for their subjects).

In the following we will compare results obtained in two batches to final testing.

### 1. Rounders throwing balls at a fixed target

Experimental group received an average of  $65.35 \pm 4.98$  points and the control group  $55.71 \pm 7.55$  points (Figure 1). Statistical analysis showed that the experimental group showed significantly higher values than the control group ( $t = 4.016$ ,  $p < 0.01$ ).

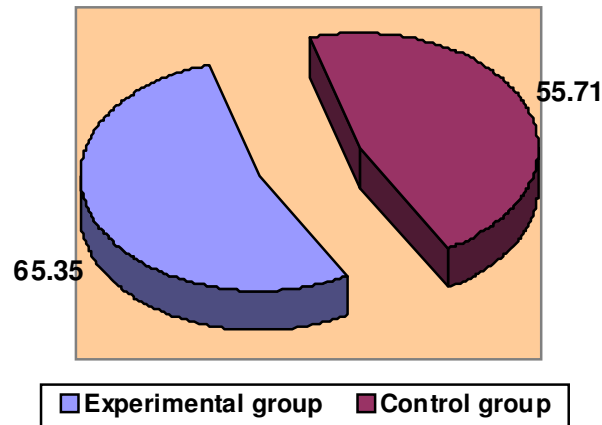


Figure 1. Scoring test throwing the rounders ball in fixed target

### 2. Darts

Experimental group obtained  $74.28 \pm 8.05$  points, while the control group  $54.64 \pm 7.71$  points (Figure 2). Statistical analysis showed that the experimental group achieved better results than the control group ( $t = 6.612$ ,  $p < 0.01$ ).

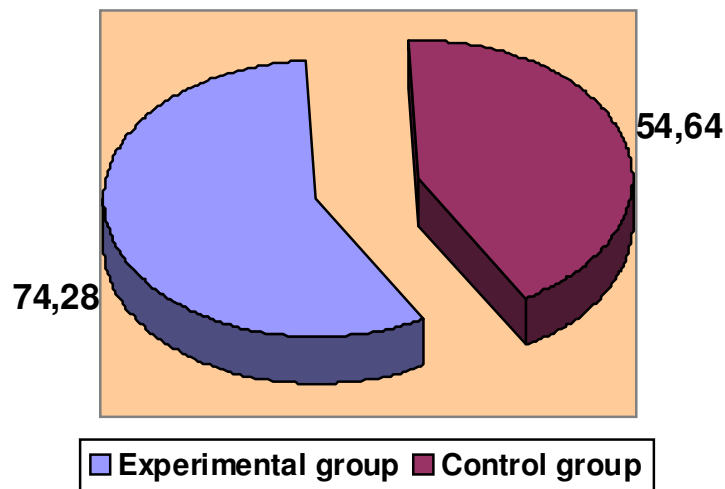


Figure 2. The scores obtained from test "darts" of the two groups.

### 3. Multiple dribbling in a straight line (20 m)

In this test the experimental group obtained  $9.85 \pm 0.28$  points, while the control group  $10.23 \pm 0.37$  points

(Figure 3). Statistical analysis showed that the experimental group achieved significantly better results than the control group ( $t = 3.800$ ,  $p < 0.01$ ).

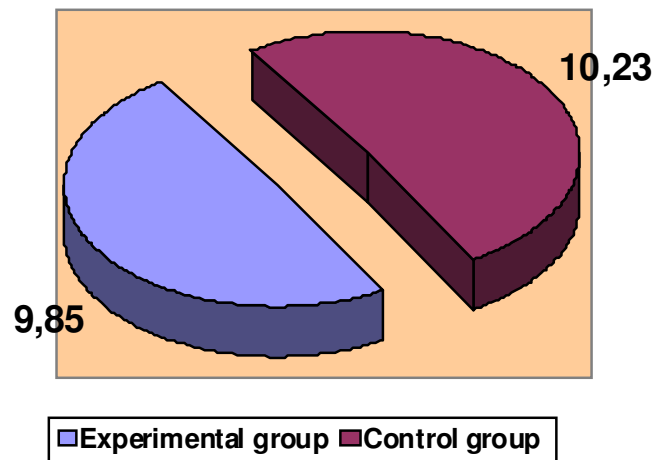


Figure 3. The scores obtained from test " dribbling in a straight line " of the two groups

### CONCLUSIONS

1. Experimental group showed significantly better results in final testing, compared to initial testing ( $p < 0.01$ ).
2. The control group showed no significant differences between the two tests - initial and final - ( $p > 0.05$ ).
3. Experimental group showed significantly better results than control group on the final testing in all tests that have been administered.
4. Exercises and operational structures used during the experiment were well selected and properly dosed for these subjects.

Working hypothesis has been verified; the proposed operational structures have accomplished the purpose for which they were designed - to improve eye-hand coordination, in third form pupils.

### REFERENCES

- CRAWFORD J.D., MEDENDORP W.P., MAROTTA J.J., 2004, *Spatial transformations for eye-hand coordination*, J. Neurophysiol., Jul; 92(1): 10-19.
- GREENSPAN, B., (2005) *Eye-Hand Coordination*, [http:// www. ebeanstalk. com /articles /eye-hand-coordination.php](http://www.ebeanstalk.com/articles/eye-hand-coordination.php)
- JOHANSSON, R. S., WESTLING, G., BÄCKSTRÖM, A., FLANAGAN, J. R. 2001, *Eye-Hand Coordination in Object Manipulation*, The Journal of Neuroscience, September 1, 21(17): 6917-6932.
- MROTEK, L. A., SOECHTING, J. F., 2007, *Target Interception: Hand-Eye Coordination and Strategies*, The Journal of Neuroscience, July 4, 27 (27): 7297-7309;
- RAȚĂ, G., RAȚĂ, B.C., 2006, *Aptitudinile în activitatea motrică*, Edit. Edu Soft, Bacău: 9-30; 243-277.



## THE EDUCATIONAL DIFFICULTIES OF THE PHYSICAL EDUCATION INSTRUCTORS WHO WORK IN SCHOOLS FOR DISABLED IN ANKARA

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### ABSTRACT

**Objective:** The purpose of this study of phenomenology is to examine the educational difficulties and challenges faced by physical education instructors providing education to the disabled students in comparison to the other physical education instructors.

**Method:** The study is of qualitative nature in terms of the techniques employed in resolving the data obtained in relation to the field that the problem is associated with. The sample group of the study consists of five physical education instructors working at schools catering to the disabled children within the city borders of Ankara. The study data has been obtained by means of the semi-structured interview form that was developed by the researcher and also by conducting face to face interviews (interview techniques) with the physical education instructors concerned.

### Results and Conclusion:

According to the study findings, the physical education instructors are of the opinion that the physical education courses at schools for disabled children are essential and an integral part of the curriculum however, the course content implemented at the subject matter schools is deemed not to be sufficiently suitable for the students concerned.

Consequently it can be deduced that the physical education courses provided at schools for disabled are an important part of the curriculum playing an important role in their socializing as well as their educational process with special needs, however, the subject matter schools do not place the necessary emphasis on physical education, and that there are problems related with sports halls, materials, etc., and moreover, the physical education instructors working at schools for disabled lack the education and training necessary to operate in this capacity.

**KEY WORDS:** Disabled, student, instructor

### INTRODUCTION

Physical Education, means being "effective". In physical education the body is a means to achieve the objective while the objective is to train the entire personality. In a definition that is in keeping with objectives of this kind of education, physical education is; to be healthy, strong and happy while gaining personality, character and moral values in the process of being educated on culture, socialization and citizenship (E.T.C.Günışık, 1973).

The health benefits of physical education and sports activities both in terms of physical health as well as mental cannot be denied, and moreover these are essential especially for the disabled. It can be said that the need of the disabled persons for physical education and sports activities is more as the disabled students taking physical education courses learn how to handle their handicaps. Moreover their social relations and confidence will also improve and develop. Physical education and sports related activities are also effective as a treatment tool supporting the nervous and muscle system, nervous reactions and physiological and metabolic changes of the body. (D.S.Özer, 1998).

A disabled student gains the strength to tackle the challenges in his/ her daily life by means of physical education courses while at the same time deriving more pleasure and fun from life, learn that he/ she can be self sufficient and becomes aware of the fact that he/ she can sustain his/ her life without becoming a burden on others. Physical Education course activities are quite effective in doing something with idle time available. The activities that are initiated during treatment and continued with at sports clubs and

similar venues, play an important role in making something useful out of idle time for the disabled while being an effective means in aiding the establishment of humane relations. (S.Suveren, 1986).

The psychological balance of the disabled kids that participate in physical activity and educational games under the observation of the physical education instructors employed at schools for disabled improve and in spite of all the challenges he or she faces, he/ she learns to accept and come to like his/ her life and circumstances as they are. (Y.Özsoy, M. Özyürek, S.Eripek, 2002).

For the disabled to be oriented towards physical education activities, important sports federations and clubs have been established and it has even been ensured that the disabled people participate in Olympics. Here, the importance of BES activities becomes evident and when the disabled people are considered and analyzed from three aspects, namely society, education and health, the subject gains significance as it provides a vision of what they can gain from this process. (A.Gür, 2001).

In Turkey, Physical Education and Sports instructors that are specially trained to work with disabled people, are not brought up and consequently, any physical education instructor could be attending the physical education courses of the disabled pupils. (F. Gürsel, 2006).

Other than the deficiency in specialized instructors, the physical education lessons are not sufficiently emphasized in many education institutions that provide education to the disabled students. And also it is a known fact that the instructors employed at

these institutions are faced with many challenges in terms of the curriculum, facilities, etc.

On the basis of the foundation laid down above, the objective of this study is to analyze the educational difficulties and challenges faced by physical education instructors providing education to the disabled pupils in comparison to the other physical education instructors.

### MATERIAL AND METHOD

The study is of a qualitative nature in terms of the techniques employed in resolving the data obtained in relation to the field that the problem is associated with.

The sample group of the study consists of five physical education instructors working at schools catering to the disabled children within the city borders of Ankara. The study data has been obtained by means of semi-structured interview form that was developed by the researcher. In the preparation process of the subject matter semi structured interview form;

- Literature scanning and analysis in relation to the field of the study was conducted
- Within the scope of the study the participants have been asked questions under 7 main headings,
- The interview form that has been prepared was examined by three specialists who also provided their opinions with regard to the form,
- It is believed that a comprehensive interview process can be conducted with the form that has been prepared and given its final format. The opinions of the five physical education instructors on the physical education lessons given at private education institutions have been obtained in face to face interviews. (Interview Technique)

The data collected has been analyzed by using descriptive analysis technique.

In the study, to be able to eliminate the reliability issues with regard to the internal and external validity issues of the qualitative findings; different opinions of field specialists in the structuring of the interview forms and determination of the participants have been taken advantage of. The findings have been defined by direct quotations and the results have been explained based on these quotations. The data

obtained from participants was recorded in recording device to prevent any loss of data.

### FINDINGS

In the first question that was posed to the instructors it was asked “how they rate the importance of physical education lessons at schools for the disabled”. The physical education instructors that participated in the study emphasized the fact that the physical education classes have a very important place among all the lessons taught at schools. Some of the things stated by these instructors to underline the importance of physical education lessons are as follows;

*“I believe that the physical education classes are very important in terms of leading the children to socialize, helping their physical development, making them known and aiding the development of teacher-student relations in special needs schools (needless to say it is important in regular schools too).” (Ö1)*

*“Especially from the point of view of my school physiotherapy and exercising are very important activities where the disabled is concerned. Many of these students need a wheelchair to move around and just for this reason physical education carries great importance for them. We try to satisfy the physical and bodily requirements of the children by means of sports related activities and exercising oriented towards physiotherapy.” (Ö5)*

When the physical education instructors asked whether “physical education lessons are emphasized in schools for the disabled”, they indicated that on paper the physical education lessons are considered as important while in application such is not the case. Some instructors expressed their opinions as follows;

*“Within the framework of the curriculum, each instructor by using his or her materials, tries to provide physical education classes in compliance with the physical limitations and conditions of the school concerned. However, there is always more room for improvement.” (Ö1)*

*“It is important on paper, but in application I don't think that is the case. The curriculum is not appropriate for the level of the children.” (Ö2)*

One of the questions asked to the instructors participating in the study, in relation to the elements that play a role in education, was whether “the actors playing a role in education place sufficient importance on the physical education lessons” and they were asked to;

- Evaluate their colleagues in other branches,
- Evaluate the school managements.

Accordingly the instructors replied as follows;

*“The other instructors watch the physical education classes together with the children and they enjoy the activity and lend us a helping hand.” (Ö1)*

*“They think of the physical education classes as important and they provide their support. They provide support both in terms of student activities and materials. There is no general problem.” (Ö2)*

*“We receive the major support from school management which we are thankful for.” (Ö5)*

Another question was related to the opinions in regard to the “level of interest, participation in sports activities and general attitude towards the lesson of the disabled students” and some of the replies were as follows;

*“The students show great interest in the physical education classes and they say that they would be even happier if the number of hours is increased.”(Ö2)*

*“... students race with each other to participate in the physical education classes and activities. And this pleases the instructor too.” (Ö1)*

When they were asked to “Evaluate the school for the disabled in terms of the facilities for the physical education classes” some of the replies were as follows;

The physical education instructors participating in the study emphasized the fact that there are deficiencies where the sports hall and materials of the school they work for are concerned.

*“... Our school has a very small sports hall. Actually we need a bigger space and more tools to properly conduct the physical education classes. The classes will become more interesting and active if better means are provided. (Ö2)*

*“... It would be much better if we had larger sports halls. We do not have the necessary tools. We try to cope with what we have but of course the circumstances can be better.” (Ö3)*

When we asked to the physical education instructors participating in the study whether “the physical education classes are at the sufficient level to meet the objectives of the curriculum” the instructors were divided into two groups in terms of their opinions. The following are some of the quotes made in favor of or against the subject.

*“If you ask me it is a good cleverly prepared curriculum. If it is adhered to, I believe that it can help put the students into shape” (Ö3)*

*“I am not of the opinion that the curriculum is in keeping with the objectives. If you ask me the curriculum can be made more suitable. It is not suitable for the level of the students.” (Ö2)*

When the study group is asked whether “the training they received with regard to the education of the disabled was sufficient to carry out their jobs as physical education instructors”, majority of the replies indicated that the training they received was rather insufficient.

*“The training and education provided to the physical education instructors must be different for each disabled student. The training for hearing impaired must be different then the training for intellectually challenged students. The instructors must be trained based on the disabled group to be addressed. Otherwise the education provided would not be effective.” (Ö3)*

*“If you ask me, we must be trained better to teach at the schools for the disabled. More emphasis must be placed on the institutions teaching physical education instructors along with the branches taught. To be able to provide the necessary care, the number of courses, seminars and similar training tools with regard to the disabled students must be increased.” (Ö2)*

## DISCUSSION AND CONCLUSION

According to the study findings; physical education instructors who participated in the study indicated that the physical education classes at schools for the disabled are very important and that these classes constitute an integral part of the education provided. In the post graduate study conducted by Keskin (2008) on the reaction times of the visually impaired it has been stated that besides the physiological benefits that sports provides human beings regardless of the times concerned, it also contributes to the individuals by enabling them to express themselves, instilling a desire to win, leading them to establish a team acting to achieve a common goal, making possible for them to experience the excitement of a victory and sadness of a loss, teaching them to respect authority, guiding them to accept defeat in other words helping them to incorporate social elements of life in their individuality. It can be said that these properties of sports are more important for the visually impaired that lack the capability or the drive to display many actions independently (S. A. Keskin, 2008). The importance of physical

education lessons for the student at the schools for the disabled has been emphasized.

Another finding of the actual research performed is the fact that sports provided physiotherapy characteristics to the disabled student. These findings are also supported in a research of C.Özyiğit, (1992).

C.Özyiğit, (1992), the superiority of sportive activities to that of classic therapy is due to its entertaining the person, and committing him/her to life. Both psychosocial pressures will diminish and healing and recovery will be achieved in a section of disability types with physical activities and educational games. As games and movement activity turn into a habit, strength, endurance and coordination in the child will also increase, and it may even prepare the medium for the creation of a new philosophy of life in the disabled person (C.Özyiğit, 1992).

Opinion has been expressed according to the conclusions of the study that physical fitness course curriculum implemented in schools for disabled is not sufficiently suitable for students. When research performed in this subject is considered:

In the study S. Akdoğan, (2009) undertook with regards to the opinion of primary school physical fitness instructors in the subject of new physical fitness program of primary school physical fitness course, it becomes evident that it is extremely difficult to have a program prepared with the aim of complying with the modern world implemented, while there is still an infrastructure issue in our country, which does not even allow the implementation of previous programs. A program prepared as an annex to this one will lose its validity, no matter how perfect it may be. While a very important program such as educational program is being prepared, it should be enquired as to whether it complies with the conditions of the country in order to avoid such experiences. This conclusion also attests to the fact that curriculum program of disabled students is not suitable, and shows similarity to our findings (S.Akdoğan, 2009).

As a result it can be concluded that physical fitness courses are extremely important in schools for disabled, that physical fitness course has a great importance and place in socializing of disabled children as well as special

education processes, that in spite of this, physical fitness course is not attached sufficient importance in our country's schools for disabled, that there are issues related to sports halls, materials, etc. and that there is a lack of training with regard to the physical fitness instructors assigned to schools for disabled.

## REFERENCES

- AKDOĞAN, S., 2009,** *Beden Eğitimi Öğretmenlerinin İlköğretim Beden Eğitimi Dersi Yeni Öğretim Programı Hakkında Görüşleri.* Yüksek lisans. Ankara: Gazi University
- GÜNIŞIK, E., T.C., 1973,** *İlkokullarda Beden Eğitimi,* Ankara: Ministry of Sports and Youth, General Directorate of Education Publications: 4 ; .p.7.
- GÜR, A., 2001,** *Özürlülerin Sosyal Yaşama Uyum Süreçlerinde Sportif Etkinliklerin Rolü,* Ankara: R.O.T. Disabled Administration Directorate Publications: 16; .pp.8-18.
- GÜRSEL, F., 2006,** *Engelliler İçin Beden Eğitimi ve Spor Dersinin Öğrencilerin Engellilere Yönelik Tutumlarına Etkisi,* Hacettepe University Faculty of Education Journal ; 31 :67-73
- KESKİN, S.A., 2008,** *18-30 Yaş Arası Spor Yapan Görme Engelli Bireyler ile 18-30 Yaş Arası Spor Yapan Gençlik ve Spor Genel Müdürlüğü Personellerinin İşitsel Basit Reaksiyon Zamanlarının Karşılaştırılması.* Yüksek Lisans. Ankara; Gazi University.
- ÖZER, D.S., Müniroğlu M., 1998,** *Türkiye'deki Beden Eğitimi ve Spor Meslek Yüksekokullarının Engellilere Yönelik Çalışmalarının İncelenmesi.* Çağdaş Eğitim Dergisi (Contemporary Education Journal) ; 242: 21-4.
- ÖZSOY, Y., ÖZYÜREK, M., ERİPEK, S. 2002,** *Özel Eğitime Giriş.* 12th print. Ankara: Karatepe Publications; .pp.53-152
- ÖZYİĞİT, C., 1992,** *Eğitim Beden Eğitimi Spor.* Ankara: State Education Publications,.s.348
- SUVEREN, S., 1986,** *Ortopedik Özürlüler ve Spor.* Yüksek Lisans. Ankara: Gazi University.

## VIEWS OF PHYSICAL EDUCATION TEACHERS IN PRIMARY AND SECONDARY SCHOOLS ON IN-SERVICE ACTIVITIES AND THEIR FREQUENCIES OF PARTICIPATION IN THESE ACTIVITIES

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### ABSTRACT

**Objective:** The purpose of this study is to determine the views of physical education teachers in primary and secondary schools in Ankara on in-service activities as well as their frequency of participation in these activities.

The voluntary participation of total 117 physical education teachers who work in 67 primary schools and 50 secondary schools in Ankara. The data were obtained via questionnaire method in the study. The views which are in the questionnaire were obtained from various sources with regards to the point and then they were made to be referred to specialists. The questionnaire is made up of five chapters and total 34 questions. Likert scale method was used for the questionnaire. Cronbach Alpha confidence coefficient was found  $\alpha$ : .864 in the second chapter of the questionnaire while it was found  $\alpha$ : .788 in the third part of the questionnaire.

**Method:** Averages, standard deviations, frequencies and percentage distributions were notated in tables for the evaluation of the data obtained from the questionnaires. t test and one-Way Anova was made and found in  $p < 0.05$  significance level in order to determine whether there were differences among the answers of these teachers to the questions about their age, gender and period of service. Tukey HSD test was used in order to determine from which the differences stem.

**Discussions and Conclusion:** As a result of the study, teachers stated that they agreed with the questionnaires about in-service activities ( $\bar{X}=3,61$ ). The general conditions and the percentage of physical education teachers participating in in-service trainings such as courses and seminars were 3,83% whereas the peak participation was realized in "Computer and Internet Use" in the rate of 60,7%. On the other hand, the rate of not participating in this kind of trainings was 95,93%. The seminar which rendered most participation according to gender, age, educational background and period of service was "Computer and Internet Use".

In their suggestions about in-service training the physical education teachers have stated that they would like to get their in-service training in the form of "seminar" (48,7%), and the most appropriate time period for getting in-service training is "June – September" period (33,3%).

**KEY WORDS:** in service training, physical education teacher, primary and secondary school. educational innovations and to enable brilliant and competent personnel make an advance and their progress in their careers(B.Mehmet,2004).

### INTRODUCTION

Teachers have necessities for in-service training so as to renew themselves, to acquire the knowledge about their fields, to benefit from new technological instruments throughout the education process, to have a modern education understanding, to be capable of using modern methods and techniques and to carry on a teaching process in which they could protect mental health of the students and pave the way for them to use their potentials at top levels (Yıldırım, 2001).

Teachers, first of all should not settle for their knowledge and skills but renew themselves continuously in order to reflect the innovations on educational institutions. The necessity that the innovations in teaching method and techniques, arising as a result of the studies made on teaching and learning process so as to provide more efficient learning and to ensure the stability of knowledge should be employed is one of the major factors making in in-service training compulsory (R.R. Parker,1997).

The aims of in-service training are to accommodate the teachers coming from pre-service training into the system, to understand the goals of national education, school and lessons and to have a common opinion in practice, to provide what is inadequate in pre-service training, to furnish them with the information, skills and attitudes required by the

### RESEARCH METHODS AND PROCEDURE. SUBJECTS

The voluntary participation of total 117 physical education teachers who work in 67 primary and 50 secondary schools in Ankara in 2006-2007 academic year makes up the study group. The data were obtained via questionnaire method in the study. The views which are in the questionnaire were obtained from various sources with regards to the point and then they were made to be referred to specialist. The questionnaire is made up of five chapters and total 34 questions. Likert Scale method was used for the questionnaire. Levels of the scale are 1:Strongly disagree, 2:Disagree, 3:Neither disagree nor agree, 4:Agree, 5: Strongly agree. Cronbach Alpha confidence coefficient was found  $\alpha$ :.864 in the second part of the questionnaire, while it was found  $\alpha$ :.788 in the third part of the questionnaire.

**STATISTICAL ANALYSIS**

Averages, standard deviations, frequencies and percentage distributions were notated in tables for the evaluation of the data obtained from the questionnaires. "t test" was used in order to determine whether there were differences among answers of teachers to the questions about their age and gender whilst Single way Variance Analysis was made and found in  $p < 0.05$  significance level in order to determine whether there were differences among the answers of these teachers to the questions about their age and period of in-service training. Tukey HSD test was used in order to determine from which the differences.

**RESULTS**

It has been determined in the study that 47% of the teachers are women while 53% are men, and 65% of them have Bachelor's Degree while 35% of them have Master's Degree (Table 1).

The general conditions and the percentage of physical education teachers participating in in-service trainings such as courses and seminars were 3,83% whereas the peak participation was realized in "Computer and Internet Use" in the rate of 60,7%. On the other hand, the rate of not participating in this kind of trainings was 95,93%. The seminar which

rendered most participation according to gender, age, educational background and period of service was "Computer and Internet Use".

AGE	N	F	%
	Ages of 20-29	19	16,2
	Ages of 30-39	68	58,1
	Ages of 40-49	18	15,4
	Ages of 50 and more	12	10,3
<b>TOTAL</b>	<b>117</b>	<b>100</b>	
SERVICE PERIOD	N	F	%
	0-5 years	17	14,5
	6-10 years	29	24,8
	11-15 years	28	23,9
	16 years or more	43	36,8
<b>TOTAL</b>	<b>117</b>	<b>100</b>	
GENDER	FEMALE	55	47
	MALE	62	53
	<b>TOTAL</b>	<b>117</b>	<b>100</b>
ACADEMIC BACKGROUND	Bachelor's Degree (BA)	76	65
	Master's Degree (MA)	41	35
	<b>TOTAL</b>	<b>117</b>	<b>100</b>

**Table 1. Personal Features of the Respondent Physical Education Teachers**

**Table 2. Suggestions of Physical Education Teachers about In-Service Training**

NO	3. SURVEY QUESTIONS	N	X	SS	(PERCENTAGE) AND (N) DISTRIBUTIONS			
					1*	2*	3*	4*
1	Through which way would you like to get the in-service training you are in need of?	117	2,40	0,83	% 11,1 13	%48,7 57	% 29,1 34	% 11,1 13

**1- Course      2- Seminar      3- Professional Conference      4- Internet**

2	Can you write the	N	X	SS	(PERCENTAGE) AND (N) DISTRIBUTIONS				
					1*	2*	3*	4*	5*

most appropriate time periods for physical education teachers for the in-service training activities to be held in?	117	2,95	1,08	% 10,3 12	% 23,9 28	% 33,3 39	%25,6 30	% 6,8 8
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1\*Weekend in Education Period 2\*Weekday in Education Period 3\*Seminars Period in June-September  
4\*Summer holiday 5\*Half term holiday

In their suggestions about in-service training the physical education teachers have stated that they would like to get their in-service training in the form of “seminar” (48.7%), and the most appropriate time period for getting in-service training is “June – September” period (33.3%). (Table 2)

A statistically meaningful difference has been found as the result of the t-test, made in order to compare the answers that physical education teachers gave about the in-service training activities,

according to their genders. According to these results, the average of the answers given by the female physical education teachers about the in-service activities is higher than the average of the answers of the male physical education teachers. Female physical education teachers have stated that they agree with the views abovementioned more than male teachers.

**Table 3. T-Test Results Of the Physical Education Teachers About In-Service Training According to Their Academic Backgrounds**

Questions	Academic Background	N	X	Ss	T	Sd	P
5- Some kind of knowledge and skills can only be achieved through the in-service training to be received.	BA	76	3,36	0,97	-1,22	115	0,011*
	MA	41	3,58	0,77			
6- In-service training activities increase the efficiency of physical education teachers in teaching-learning process.	BA	76	3,81	0,84	-0,09	115	0,009*
	MA	41	3,82	0,54			
7- In-service training activities contribute to the personal development of physical education teachers.	BA	76	3,61	0,90	-3,13	115	0,000**
	MA	41	4,09	0,49			
16- In-service training activities prevent physical education teachers from being engaged with unnecessary details.	BA	76	3,52	0,70	0,25	115	0,005**
	MA	41	3,48	0,92			
19- In-service training activities assist physical education teachers in solving the problems they come across.	BA	76	3,57	0,69	0,04	115	0,020*
	MA	41	3,58	0,92			
20- Training and practices included in the in-service training program are employed in schools.	BA	76	3,65	0,66	1,33	115	0,006*
	MA	41	3,46	0,89			

\* (p<0.05), \*\* (p<0.01)

A statistically meaningful difference (p<0.05) has been found as the result of the t-test, made in order to compare the answers given by the physical education teachers to the questions about in-service training activities, according to their academic backgrounds. According to these results, the physical education teachers who have M.A. degree agree with

the opinions about in-service training activities more than the physical education teachers having B.A. degree. (Table 3)

## DISCUSSION

In our country, educational process contains in service and pre service training. In public establishment in service training includes two groups. The first group is the new staff and the second group is the staff still working. The aim is to teach the changes in the work and to learn changes. But, the studies on in service training is not successful and are thought to remain on a theoretical level (G.Hüseyin, 2000).

**YILDIRIM, İ., 2001**, "Training Qualified Teacher and The Place Of In-Service Training" Panel on Training Teacher and Quality in Education, Ministry of National Education, P:104

**HÜSEYİN, G., 2000**, *In-Service Training in Public Administration in Turkey*, Social Sciences Institute Journal, Vol:2, No:3,P:47

**MEHMET, B., 2004**, *In-Service Training of Elementary Teachers, Modern Education Journal*,P:27-33.

Although in service training is thought to be necessary in our country, activity level is not enough. There are two reasons why in service training activities are not popular. First reason is that labor cost is not reflected in and the second reason is that additional training is not reflected in employee rights (A.Tufan, 2002).

## REFERENCES

**TUFAN, A.**, *Hizmet içi Eğitim Kavramı ve Karşılaşılan Sorunlar*,

**PARKER, R. R., 1997**, *Journal of Technology and Teacher Educations, Increasing Faculty Use In Technology In Teaching*., Vol:5,2/3,

## THE NECESSITY FOR PHYSICAL ACTIVITY FOR HIGHER EDUCATION YOUTH

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### ABSTRACT

**Purpose.** I started the research from the hypothesis that the lack of information regarding physical motion leads towards educational gaps and causes unhealthy habits manifested in the form of the omission of the order in the approach of motion needs.

**Methods.** I first applied a questionnaire designed on the basis of questions related to the students' motion needs to see their view on physical activities. After this I conceived a permanent information campaign.

**Results.** As resulting from the definition of the psyche, given by (M. Golu, 2002) „... *the psyche is the ideal-subjective reflection of the objective world*”, making us believe that any mental event can be expressed through behaviour, as a responsive reaction of the human body in a living situation, according to the environmental stimulation and internal tensions which could lead to a orientation towards a purpose. In this case, we can refer to purpose as *needs of motion*. Internal attitudinal factors, motivational, may be the explanation basis of these needs, which can be met during the activity of physical education, because this is where students have the opportunity for self improvement through motion tests, sports games, to assert their physical or intellectual qualities, and to gain a status within the group, due to the place occupied according to the marks recorded after the physical tests or due to the position they occupy in each team.

**Conclusions.** The necessities of students may vary during the training process, should therefore be known from the beginning, and designed in a positive direction. Furthermore, they need to be reinforced by rewards (praise, marks, etc.).

**KEY WORDS:** need for physical activity, Physical Education, students, education, higher education.

### INTRODUCTION

Through the survey methods I have managed to explain the mechanisms of formation of public opinion trends, which helped in foreseeing students' behaviour. The study of opinion, mentalities, interests, spiritual states, attitudes, habits, allowed the knowledge of students' needs. I focused on to the composition of the questionnaire and, generally to all methodological conditions of their construction and implementation.

The questionnaire was composed, oriented and interpreted during the research process according to the model presented in *Psycho-diagnosis Methods* (V.Horghidan,1997, p.47-57) and applied with the purpose of sustaining the above stated. The data were interpreted in parallel in the table, on the same sample represented by a Group Experiment and a Control Group. (M Epuran, 2001, 2005)



## Hypothesis

The research started from the hypothesis that the lack of information regarding physical motion leads towards educational gaps and causes unhealthy habits manifested in the form of the omission of the order in

## Subjects

We will refer to the sample on which the questionnaire *Need of motion* was applied, through which I checked the view on Physical Education and Sport. To prove the claim that students' needs may be different during

## Research data collection methods

The methods laying at the basis of the research were: Bibliographic research method; Method of observation; Survey method – the method used survey questionnaires, interviews (discussion). The main stages of the undertaken investigation were:

## Purpose of the research

The purpose of this research was to know the scientific aspects of the organization of Physical Education lessons with students taking account of their needs and

## Research objectives :

-Filling the information on the importance of motion needs; -Designing a training program that will underpin the training during the Physical Education lesson.;

## Research Content

*“It is known that all human expressions has as a permanent and fundamentally structural component physical activity in all its forms, more or less advanced, analytical or synthetic, innate or acquired”* (M. Epuran, 2005), adding the needs of motion as a used the arithmetic average, rank, percentage of sub-paragraphs (a, b, c, d, e) from questions, towards which students' preferences were focused, and the motivational factor assessment. In the questionnaires with multiple choice, after each question there is a space reserved for the answer noted with the letters A, B, C, D, E, having the following meanings: A = never true for me; B = sometimes (rarely) true for me; C = half true for me; D = most often true for me; E = true for me (forever). Operating on the completed questionnaire transforms the marked letters, for each response to questions, in points, as following: A = 0 points ;B = 1 point; C = 2 points ;D = 3 points E = 4 points .The interpretation was done according to the overall score produced by adding the points obtained from all relevant answers we need. We will start the questionnaire presentation with comments on the responses for each question, while showing the two groups in parallel. We first applied a questionnaire designed on the basis of questions related to students'

the approach of motion needs. For this reason, in order to efficiently interfere in students' training, we should know these needs from the start, to positively form them, which will lead to a change of attitude, in the student group, towards Physical Education and training improvement.

the training process, we chose an Experiment Group and a Control Group composed of: 88 students present / Year I, 84 students present / Year II, i.e. a percentage of 95.45 % for Experiment Group, and a Control Group composed of 94 students present / Year I, 86 students present / Year II, i.e. a rate of 91.48%.

1. Specifying the investigation object (theme); 2. Sample selection (choice of subjects); 3. Developing the survey instruments; 4. Applying the questionnaires on the sample (initial and final test); 5. Revealing the questionnaires and organizing the data for processing them, the interpretation of results and draw of conclusions;- Statistical Method . how their approach will lead to a behaviour change towards the taught material, as compared with another sample which was not acted upon with the experimental variables.

Eliminating the negative attitudes towards Physical ; - Education, through taking advantage of the motion needs for training; -Evaluating the results of the performed experiment.

manner of behavioural manifestation and response of the psyche at the body needs.

During the research undertaken, in order to demonstrate the above statement we used the answers given by the subjects at the same questions, answers that have been interpreted systematically. In the interpretation of the answers we

motion needs to see their view. Then we chose an Experiment Group and we conceived a permanent information campaign for it through: media, themed movies, stories with themes about the human body from birth to old age, with reports about obesity, breast cancer, cardio vascular diseases etc., interactive discussions about physical activities and their importance for the human body, we even established a wall newspaper named *For Students*, where we displayed the new data, or *Did you know that ...* pieces of information. At the end of the year, to raise students' interest towards knowledge in the field, motion and effective participation in lessons, in a festive environment, we awarded the best works. We have organised sports competitions both for the girls and for the boys, with the purpose of socialisation and, in order to increase the degree of attractivity of the lessons, we have made mixed teams of girls and boys. To highlight the effects of knowledge on student opinion, we randomly chose through comparison another Control

Group, but which did not receive the same information campaign as the Experiment Group; the advantage consisted in the fact that it represented the same population and the activity was conducted under similar conditions. The obtained results will be presented below, starting with question No. 1, as following:

**Question No. 1.** When I am mentally tired, the best means of relaxation for me is motion.

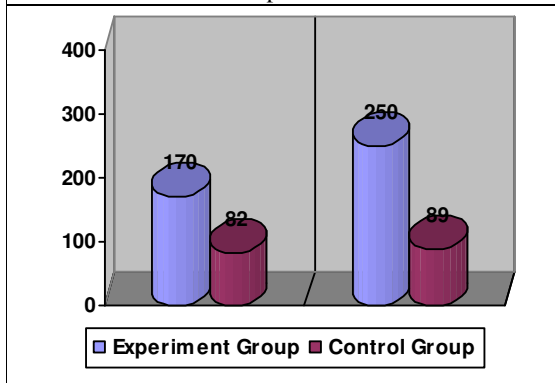
**Motivational factor** – motion needs

**The Experiment Group** students responded at the beginning, in number of 28 B (36.85%) - **true, sometimes**; 17 students (22.36%) responded **true** at the end of year II; 34 students (43.59%) answered D - **mostly true**, and 4 5.12% students responded, **sometimes true**; the score obtained from responses

**Table No. 1** Statistical indicators recorded for question No. 1

Experiment Group					Total	Control Group					Total
Points for every answer						Points for every answer					
0	1	2	3	4	76	0	1	2	3	4	65
A	B	C	D	E		A	B	C	D	E	
Number of students to answer Q No. 1- Year 1					76	Number of students to answer Q No. 1- Year 1					65
1	28	16	14	17		18	27	9	7	4	
1,31%	36,85%	21,06%	18,42%	22,36%	27,70%	41,54%	13,85%	10,76%	6,15%		
Points obtained					170	Points obtained					82
0	28	32	42	68		0	27	18	21	16	
Evaluation on the scale					2,23	Evaluation on the scale					1,20
Number of students to answer Q No. 1- Year 2					78	Number of students to answer Q No. 1- Year 2					56
-	4	10	30	34		11	23	10	2	10	
-	5,12%	12,83%	38,46%	43,59%	19,65%	41,08%	17,85%	3,57%	17,86%		
Points obtained					2,50	Points obtained					89
0	4	20	90	136		0	23	20	6	40	
Evaluation on the scale					3,20	Evaluation on the scale					1,50

**Statistical indicators recorded for question No. 1**  
-Graph No.1.



**Question No. 2.** In my childhood I liked to run and play outdoors.

**Motivational factor** – motion needs

For this question (according to the data in Table and Graph No. 2). the score and assessment for the

was 170 points and 250 points at the end of the experiment. On the scale, the value - 2.23 – the motivational factor was average; the value of 3.20 at the end of year II showed that the motivational factor was applied in these circumstances was higher. The program applied in these conditions had the expected echo: the students **understood the importance of physical motion**, as a means of relaxation when they are mentally tired. The evolution was not valid and the **Control Group**, whose attitude **did not changed** (according to the data in Table and Graph No. 1).The need for motion in terms of mental tiredness caused no significant change in attitude (from 1.20 in the I year to 1.50 in the II year), the recorded value indicates that the motivational factor was very low in its intensity; students' attention was channelled towards other directions (computer, Internet,literature,television,etc).

**Experiment Group** on the scale of motivational factor has not changed, naturally; it was a memory and a taste of the past which was kept unchanged and showed behavioural consistency of the group at certain events (important to research). The experience was identical at **the Control Group**.

The result showed us that the two groups, when they started the university life are alike in attitude, way of expression, and the differentiation occurring at the

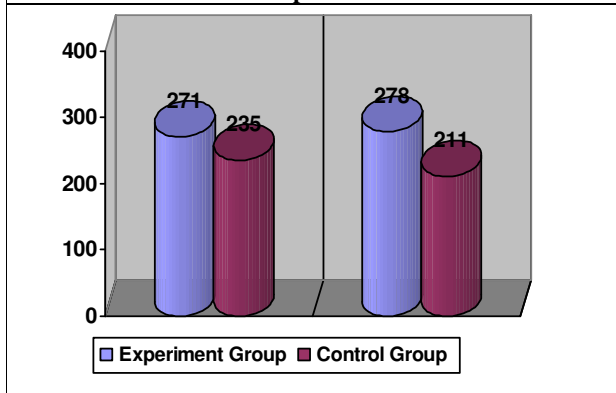
level of the awareness influenced by training, through following the cognitive and affective objectives .

**Table No. 2** Statistical indicators recorded for question No. 2

Experiment Group						Control Group					
Points for every answer					Total	Points for every answer					Total
0	1	2	3	4		0	1	2	3	4	
A	B	C	D	E		A	B	C	D	E	
Students to answer Q No. 2- year 1						Students to answer Q No. 2- year 1					
-	5	3	12	56	76	-	1	2	18	44	65
-	6,57%	3,95%	7,9%	86,85%		-	1,54%	5,08%	27,69%	67,69%	
Points obtained						Points obtained					
-	5	6	36	224	271	0	1	4	54	176	235
Evaluation on the scale						Evaluation on the scale					
3,56						3,61					
Students to answer Q No. 2- year 2						Students to answer Q No. 2- year 2					
1	3	3	15	56	78	-	-	1	11	44	56
1,29	3,84	3,84	19,23	74,80		-	-	1,79	19,64	78,57	
Points obtained						Points obtained					
0	3	6	45	224	278	-	-	2	33	176	211
Evaluation on the scale						Evaluation on the scale					
3,57						3,76					

Statistical indicators recorded for question No. 2

**Graph No. 2**



**Question No. 3. Every week I go several times on a football field (or gym) for pleasure.**

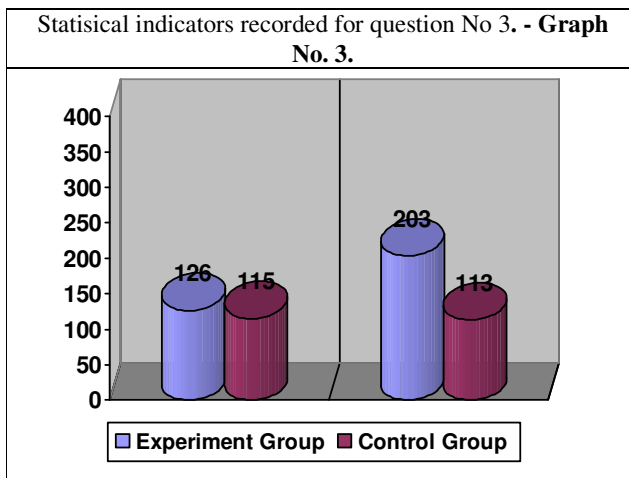
**Motivational factor** – motion needs

At the beginning of the experiment, as it can be seen from the graphical representation and from the one in Table No. 3, an average of 35.53% answered at the beginning of the experiment, **sometimes true**, (27 students), and only 11.84% (9 students) responded **true**; the motivational factor was **1.65**, i.e. very low intensity. At the end of the experiment there was an opening to physical motion: 47.43% (37 students) answer – **true**; the motivational factor reached 2.60 with an average close to powerful on the scale. This result showed that, slowly but surely, that information about the beneficial effect of motion on the psyche and mind, experiencing phases of the game, knowing the

rules, the possibility to make contact with new people of the same sex or of the opposite sex change attitudes, which explained the phenomenon of increasing the value of motivational factor. Comparing the results with those obtained from the **Control Group**, there are no changes from year to year, but slight ones 18.46% (12 students) respond - "**True**" - at beginning, reaching to the 23.22% (13 students) at the end. Starting from a rate of 1.76 (1.65) in the **Experiment Group** the motivational factor was small, and finally stopped at 2.01, a value that showed a medium motivational factor. Separation of the cognitive and affective objectives from the physical aims in the instructive-educational process will lead to lowering the interest in motion; students' attention is directed to other areas depending on the profile or social orientation.

**Table No. 3** Statistical indicators recorded for question No. 3.

Experiment Group					Total	Control Group					Total
Points for every answer						Points for every answer					
0	1	2	3	4	76	0	1	2	3	4	65
A	B	C	D	E		A	B	C	D	E	
Students to answer Q No. 3 – Year 1					76	Students to answer Q No. 3 – Year 1					65
12	27	11	17	9		10	27	8	8	12	
15,79%	35,53%	14,48%	22,37%	11,84%		15,39%	41,53%	12,30%	12,30%	18,46%	
Points obtained					126	Points obtained					115
0	27	22	41	36		0	27	16	24	48	
Evaluation on the scale					1,65	Evaluation on the scale					1,76
Students to answer Q No. 3 – Year 2					78	Students to answer Q No. 3 – Year 2					56
16	5	10	10	37		7	19	9	8	13	
20,52%	6,41%	12,82%	12,82%	47,43%		12,5%	33,93%	16,07%	14,28%	23,22%	
Points obtained					203	Points obtained					113
0	5	20	30	148		0	19	18	24	52	
Evaluation on the scale					2,60	Evaluation on the scale					2,01



**Question No. 4. It would be a punishment for me not to be left to do physical exercises.**

**Motivational factor** – motion needs

We conducted a parallel between the two experimental groups and control, according to the data in Table and Graph No. 4, and we have seen that the motivational

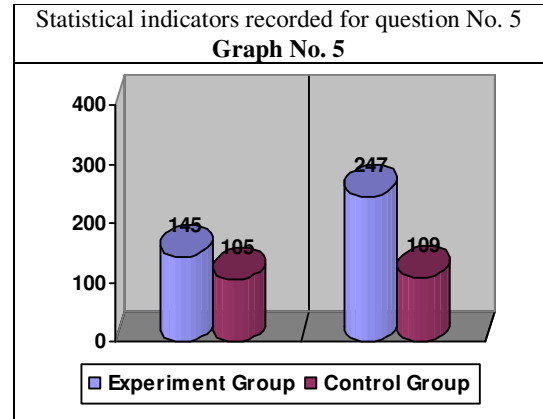
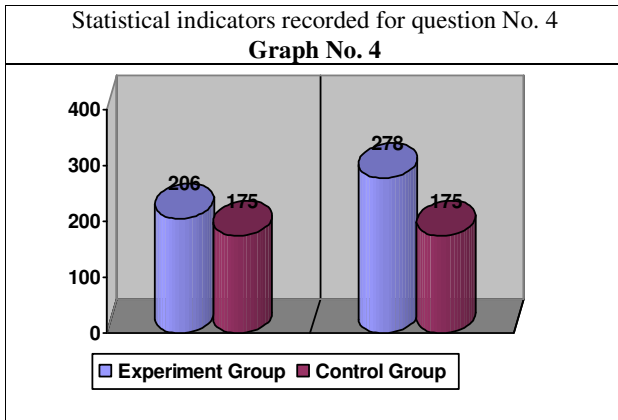
factors in interpreting the results were similar, 2.71 - **Experiment Group**, 2.62 - **Control Group** questionnaire application in the first year of study and 3.56 - experimental group , 3.12 - Control Group in the II year.

The increased number of students at the final point E, has proved a mature state of students and demonstrated understanding of the possibility they offer physical education known to man, to consider and confess their needs

**Tabel No. 4** Statistical indicators recorded for question No. 4

Experiment Group					Total	Control Group					Total
Points for each answer						Points for each answer					
0	1	2	3	4	76	0	1	2	3	4	65
A	B	C	D	E		A	B	C	D	E	
Student to answer Q No. 4-year 1					76	Student to answer Q No. 4-year 1					65
11	6	7	22	30		12	6	3	13	31	
14,48%	7,90%	9,21%	28,94%	39,47%		18,46%	9,24%	4,60%	20%	47,70%	
Points obtained					206	Points obtained					175
0	6	14	66	120		0	6	6	39	124	
Evaluation on the scale					2,71	Evaluation on the scale					2,69

Student to answer Q No. 4-year 2					78	Student to answer Q No. 4-year 2					56
-	4	5	19	50		6	2	5	9	34	
-	5,12%	6,42%	24,35%	64,11%		10,71	3,57%	8,92%	16,08%	60,72%	
Points obtained					278	Points obtained					175
0	2	10	27	136		0	2	10	27	136	
Evaluation on the scale					3,56	Evaluation on the scale					3,12



**Question 5. In my leisure time, instead of moving outdoors, I prefer to go watch TV, video or read a book.**

**Motivational factor** – motion needs

At this question, (see Table and Graph No. 5), **the Experiment Group** 25% (19 students) responded, **mostly true**, the total for this question was 145 points, the average value obtained motivational factor of 1.90 indicated small to medium. **Control Group** They recorded a rate of 41.53% (27 students) to point C

**partially true** and 105 points in this question, the intensity was 1.6 – small.

The two groups had the same "home" at the beginning of the university life, the same group in the second year experiment will have undergone a change of attitude on interest in moving; the experimental group motivational factor will increase to 3.16 – 0 interpreting the value, it is a strong motivational factor. Control group remained at the same value 1.94 which showed a low to medium intensity; no visible changes occurred in attitudes.

**Tabel No. 5** Statistical indicators recorded for question No. 5

Experiment Group					Total	Control Group					Total
Points for each answer						Points for each answer					
0	1	2	3	4	0	1	2	3	4		
A	B	C	D	E	A	B	C	D	E		
Students to answer to Q No. 5 – year 1					76	Students to answer to Q No. 5 – year 1					65
6	18	16	19	?		12	15	27	8	3	
21%	23,69%	14,47%	25%	15,78%		4,62%	23,08%	41,53%	12,30%	18,46%	
Points obtained					145	Points obtained					105
0	18	32	57	?		0	15	54	24	12	
Evaluation on the scale					1,90	Evaluation on the scale					1,61
Students to answer to Q No. 5 – year 2					78	Students to answer to Q No. 5 – year 2					56
1	8	10	17	42		13	3	18	18	4	
1,28%	10,25%	12,82%	21,79%	53,84%		7,15%	5,36%	32,14%	32,14%	23,21%	
Points obtained					247	Points obtained					109
0	8	20	51	168		0	3	36	54	16	
Evaluation on the scale					3,16	Evaluation on the scale					1,94

**Question No. 6 Sport is for me a kind of game.**

**Motivational factor – motion needs**

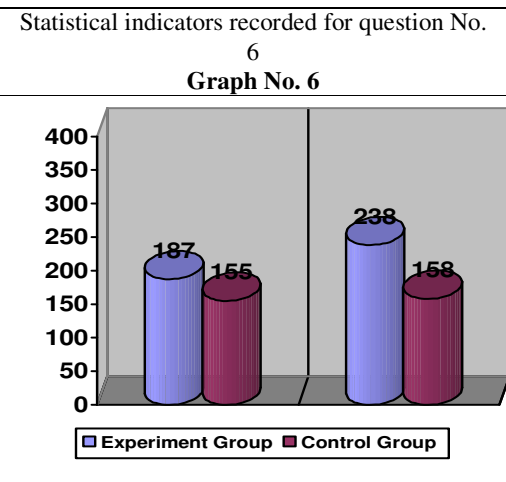
With this question we ended the series on the motion needs. **The experimental group** registered at the 5 choices of questions 187 points and 2.46, the motivational factor in this case was average.

**Control Group** at the 5 variants in question No. 6, 155 points and 2.38 scores 155 points and 2.88, the motivational factor is at an average value. Change of attitude in the second year will occur only in the Experiment Group, who scored 238 points in the 5 options and an average of 3.05 motivational factor under this interpretation was intense.

The Control Group record 158 points and 2.82 in value motivational factor which was average and did not change at the end of two years training (accprding to the statistical indicators in Table No. 6 and the graphical representation). Conclusions:

**Tabel No. 6** Statistical indicators recorded for question No. 6

Experiment Group					Total	Control Group					Total
Points for each answer						Points for each answer					
0	1	2	3	4	76	0	1	2	3	4	65
A	B	C	D	E		A	B	C	D	E	
Students to answer Q No. 6-year 1					76	Students to answer Q No. 6-year 1					65
6	9	22	22	17		3	11	18	24	9	
7,89	11,85	28,95	28,95	22,36		4,62	16,93	27,69	36,92	13,84	
Points obtained					187	Points obtained					155
0	9	44	66	68		0	11	36	72	36	
Evaluation on the scale					2,46	Evaluation on the scale					2,38
Students to answer Q No. 6-year 2					78	Students to answer Q No. 6-year 2					56
-	13	8	20	37		1	6	10	24	15	
-	16,67	10,25	25,64	47,44		1,79	10,73	17,85	42,85	26,78	
Points obtained					238	Points obtained					158
0	14	16	60	148		0	6	20	72	60	
Evaluation on the scale					3,05	Evaluation on the scale					2,82



The study of the opinions, attitudes, interests, mentalities, attitudes, habits, allowed the knowledge of students' needs, important in the future didactic design.

- The survey methods have enabled the explanation of the mechanisms of formation of public opinion trends that have helped in foreseeing subjects' behaviour.

- Attitudes, beliefs, convictions, are characteristics of the world in which we operate, that is why the educational shortcomings and unhealthy habits can change on the dimension of needs regarding physical activity (see tables and graphs No. 1, 2, 3, 4, 5, 6).
- he students' needs can differ along the training process, and that is the reason for which these should be known from the beginning and positively modified, as well as rewarded. (praise, mark, etc.)
- Lack of awareness regarding motion leads to educational gaps and unhealthy habits, manifested through omitting order in the approach of motion, thus confirming the hypothesis.
- For our subject, the issues of the change in attitudes under a direct or indirect social influence are particularly important in developing the individual, which is why we believe it may be an open subject for a future research.

**REFERENCES**

**DRAGNEA, A., (Coord.), 2002, Theory of Physical Education and Sport** (Edition II), Ed Fest, Bucharest 65-72 ..

**EPURAN, M., 2001, Two questions for the authors of the evaluation system of students in physical education and sport.** In: R. Sport Science 26,23-29.

**EPURAN, M., 2005 Research Methodology physical activities. Exercise. Sports. Fitness.** Second Edition, Bucharest, FEST, 28-29.

**GOLU,M., 2002, Bases of Psychology,** Romania of Tomorrow Foundation, Bucharest, Vol. I, 74-75

**HORGHIDAN,V., Phycho-diagnosdis Methods.** Bucharest, Didactic and Pedagogical Publishing, 1997, 47-57.

## EXERCISES WITH HAND APPARATUS IN ADAPTED PHYSICAL ACTIVITIES

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### ABSTRACT

During the latest years, social policies have promoted new strategies for the activity optimization in the special education field. The more and more extended use of the different types of motor activities and their approach under a more complex perspective require the use of some acting systems where the motor and psychomotor development aspects interpenetrate with the social, artistic and cultural education ones. From this angle, we thought it would be opportune to synthesize the advantages brought by the education of motor control capacities, by using some hand apparatus. We took into consideration the fact that the aspects related to the forming of some skills and abilities engage and develop the activity of the sensorial-perceptive factors and, implicitly, coordination, by stimulating the creative-imaginative and socialization sides, so important to special education.

Exercises with hand apparatus may turn into a “play”, during which the child makes friends with his partners, knows and controls himself. The ludic concern becomes thus an activity with many formative, educative and corrective valences.

**KEY-WORDS:** motricity, coordination, sensorial plans

#### The approached topics

From the socio-psycho-pedagogic standpoint, children with disabilities represent a social category that draws more and more the attention of the specialists in physical education.

During the latest years, social policies have promoted the development of some strategies for the activity optimization in the special education field, the didactic and practical approaches being equally oriented towards finalities meant both to correct and develop the motor capacities adapted to each disability.

Their interest has been guided towards the whole range of theoretical, practical-methodical and competition activities (Marcu, V., 2007, Teodorescu, S., Bota, A., Stanescu, M., 2007) .

From this perspective, we think that exercises with hand apparatus represent an activity with many formative, educative and corrective valences, which is part of the inclusive education interest area. And this because, through the means specificity and accessibility, the acting systems are applicable to all the different forms of disabilities or incapacities, being adaptable both to the dysfunctional needs and to those related to age and motor experience.

#### Advantages of using the exercises with hand apparatus

When we want to have control over an object, to play with it, we carry on an activity both useful and attractive. This activity may become therapeutic, being able to induce positivity, due to the fact that the performer develops a self-confidence feeling (Guillon, M., Barbin, J.-M., 1991).

Exercises with hand apparatus represent, for any child, a “play” in which the apparatus becomes his friend. Through this play, he learns to have a relationship with the apparatus and to use it to his benefit.

That is why we can assert that the “play” with different apparatus represent an activity with recreational and creative-imaginative valences, which also influences the subject’s psycho-affective side.

Another advantage provided by the exercises and the movement plays with hand apparatus is that they are assigned to a wide range of abilities, with many possibilities of being transferred to the current activity, abilities easy to adapt both to the development/ education/ forming requirements and to the correction ones.

Thus, in the context of some attractive-ludic activities, these exercises provide the child with skills and capacities which engage and develop the activity of the sensorial-perceptive factors, the essentially aimed aspects being the plural sensorial information: visual, tactile, kinesthetic, vestibular, spatial and temporal ones.

The presented aspect is even more relevant as most of the different forms of disabilities are known to determine the perturbation of some physiological, anatomic or psychical structures or functions. From the motricity perspective, one of the first capacities affected by these dysfunctions is coordination. But, from the socio-professional integration point of view, the coordination development represents an imperative desideratum (Guillon, M., Barbin, J.-M., 1991).

In this sense, we want to remind the fact that within the constellation of motor and psychomotor capacities, the coordinative components are the unique aspects which don’t have developmental limits or barriers and don’t oppose to other capacities. No matter how much they are developed, they are beneficial to the individual’s life (Weineck 1992).

If these influences are “prescribed” in the normal life, their presence is even more important in

the activities destined to the persons with special educative needs.

### Utilitarian applications

The sports discipline providing an extremely wide range of systems for the hand apparatus manipulation is rhythmic gymnastics. Its characteristic is the use of some apparatus with various forms and constructions, allowing lots of manipulation modalities.

They provide the performers an infinity of opportunities and lead to the development of a multitude of motor capacities, particularly related to coordination.

Officially, rhythmic gymnastics uses two categories of hand apparatus:

- the official ones - represented by the 5 competition hand apparatus acknowledged by the Gymnastics International Federation: rope, hoop, ball, clubs and ribbon;
- the demonstrative ones - different adaptations of the official hand apparatus: flags, scarves, batons, umbrellas, fans, garlands etc.

*Fig. no. 1. Presentation of the official hand apparatus in rhythmic gymnastics*

**Rope** – an ambidextrous apparatus providing a multitude of possibilities for the development of coordination, mainly of the plural segmental one (coordination arms - legs). Its history can be found in children's usual ludic activity.



**Hoop** – it became popular in the first half of the 20<sup>th</sup> century, when it was officially used in a demonstration occasioned by the 1936 Olympic Games. This apparatus is characterized by a large surface, fact that renders more difficult the control over it.

**Ball** – the apparatus, used in physical education since the 9<sup>th</sup> century, is an important presence in children's play.



**Clubs** – a double apparatus that strongly engages the coordination components under ambidexterity conditions. From a historical perspective, they have been used in rehabilitation gymnastics since the end of the 20<sup>th</sup> century.

**Ribbon** – a spectacular apparatus, due to the described spatial shapes. In the bamboo baton variant, it represented a traditional apparatus in the Chinese dances.





The 5 official hand apparatus represent a quintessence of all the acting possibilities and it can also be found in the demonstrative ones. Thus, the flag or the baton manipulation is almost similar to that of the clubs. Scarves manipulated by seizing one of their ends or their short side can describe shapes similar to those described by the ribbons (spirals, windings etc.).

The possibility of transferring the manipulation techniques from one apparatus to another develops coordination, but also imagination and creativity.

The teaching methods have, as a main objective, to form the capacity of manipulating the hand apparatus in various ways. To this purpose, the pedagogic approach focuses on the following types of capacities:

- the correct grip of each hand apparatus, by taking into account its form and dimension;
- the capacity of easily manipulating it, on various plans and directions, under permanent contact conditions;
- the capacity of easily manipulating it, on various plans and directions, under conditions of momentary loss of the physical contact with it (Macovei, S., 2007).

The learning of different manipulation modalities relies on three acting schemes (Macovei, S., 1999):

**G** = grip; **A.C.A.** = actions performed in contact with the apparatus; **A.L.C.A.** = actions performed by losing contact with the apparatus.

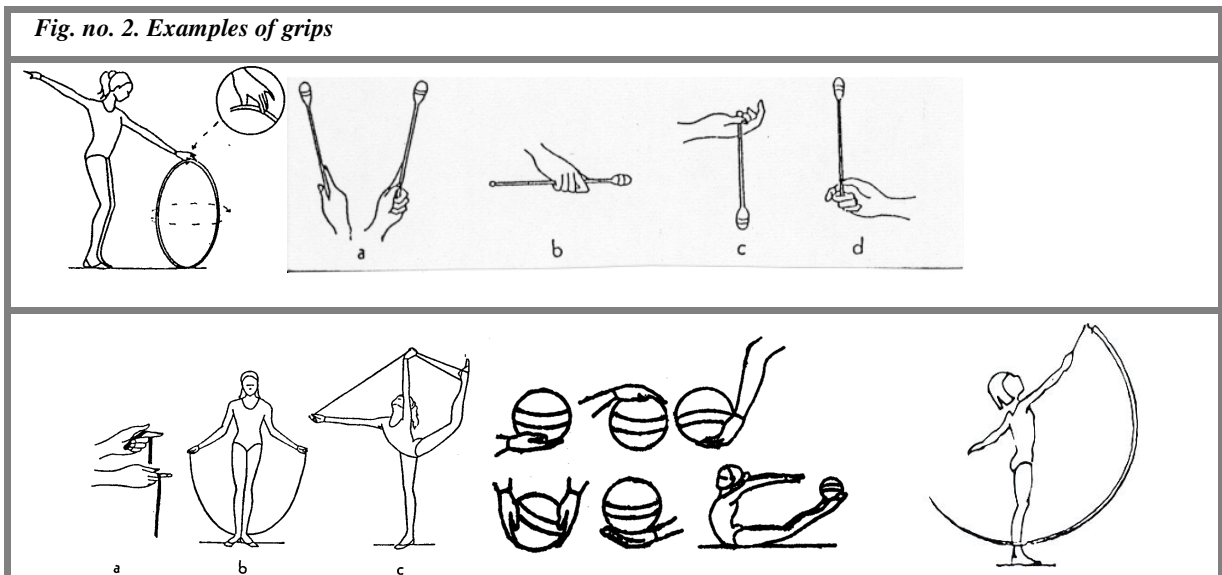
The assimilation of the three acting schemes is determinant when we aim at forming the capacity of controlling the apparatus path and at fulfilling movement projects as various and diversified as possible. The relationship settled between the performer and the apparatus might be seen as a dialogue that develops from one movement to the other.

For each apparatus, it is essential to pass through the three acting schemes. Their correct learning and the assimilation of the main actions specific to each apparatus contribute to the coordination development and to the training of the sensorial-perceptive plans.

As for the sensorial information capturing, each acting scheme has both common and differentiated aspects, as follows:

**The grip** (fig. no. 2) represents the modality of seizing the respective apparatus, the action by which the apparatus is fixed in a certain position or/ and travels on different movement plans, directions and senses.

During the grips, the sensorial information capturing is predominantly tactile, by aiming thus at identifying the forms in their relation to the contact surfaces.



**The actions performed in contact with the apparatus** involve the apparatus autonomous travels, it becoming the spatial prolongation of the segment manipulating it.

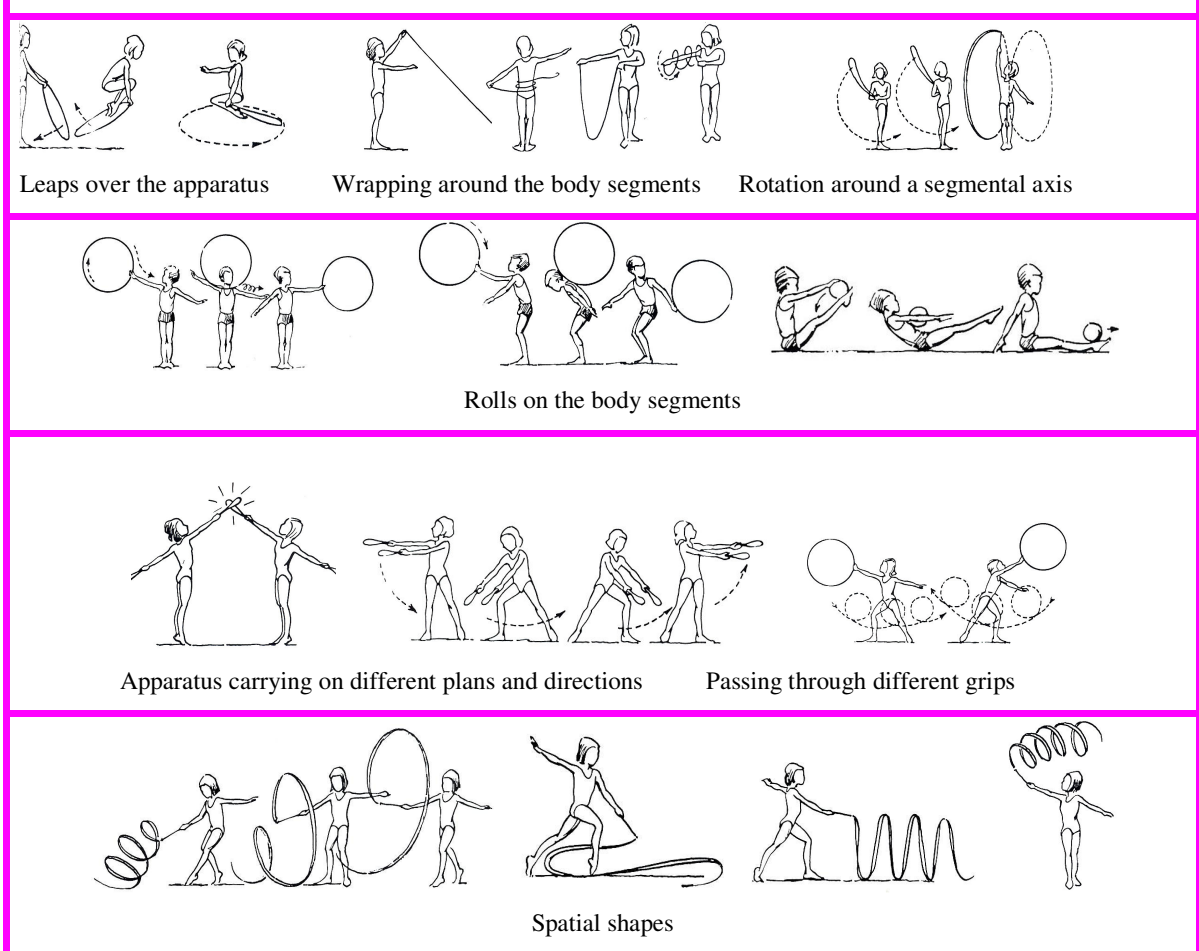
The sensorial information capturing is mainly tactile-kinesthetic and has major implications upon the spatial perceptions.

The various action learning leads to the differentiation of the rotation senses, to the perception of the corporal plans in relation to the apparatus, to the execution, repetition and acceleration speed evaluation etc.

**Action types** (fig. no. 3):

- balance movements (arched, circled, eight-shaped) – possible with all the apparatus;
- apparatus turn around a segmental axis (hoop, rope, baton);
- apparatus rolls on different body parts (hoop, ball, clubs, baton);
- apparatus carrying on different plans and directions, passing through different grips etc. (possible with all the apparatus);
- shapes described with the apparatus (ribbon, rope, scarves etc.).

**Fig. no. 3. Examples of actions under the conditions of contact with the apparatus**



**The actions performed by losing contact with the apparatus** suppose the apparatus spatial projection on a certain path, followed by its regaining, either individually or by a partner. The relation body-apparatus becomes a following-up one, in which the performer must appreciate distances, depths, duration

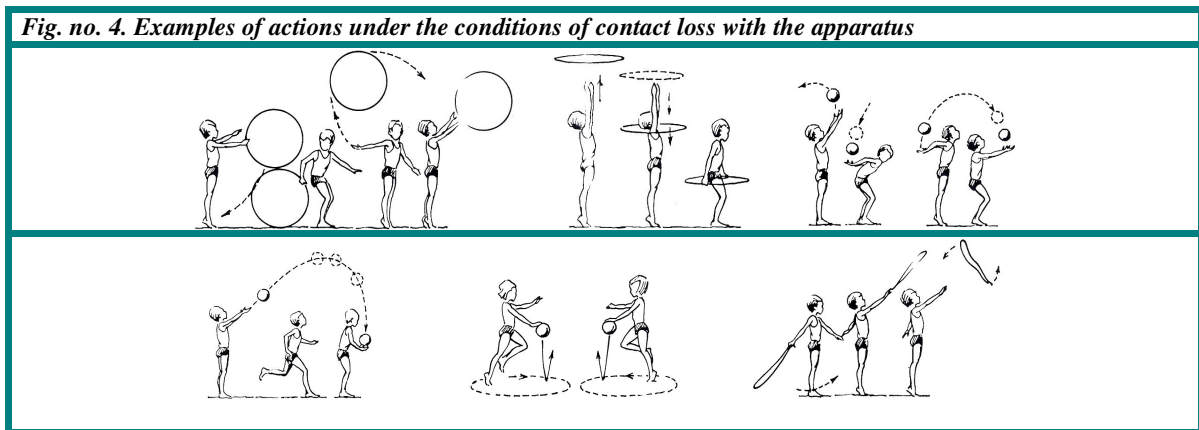
of the contact loss and anticipate the apparatus regaining moment.

The information capturing is complex: tactile - at the impetus moment and when regaining the apparatus; visual - when following-up the apparatus

path; kinesthetic - all the movement long, the spatial-temporal perceptions being deeply involved in. Simultaneously with the physical contact loss, it is also possible to lose the visual contact or, at the flight moment or/ and when regaining the apparatus. In this case, the apparatus path remains in the mental representation, being followed-up on the basis of the spatial-temporal perceptions and of the specialized kinesthetic information.

- throws (possible to be performed with all the apparatus);
- small releases with re-grasps (possible to be performed with all the apparatus);
- apparatus bounces on the floor or on the body segments (ball, hoop, clubs);
- rolls on the floor and retro-rolls (ball, hoop and clubs).

Action types (fig. no. 4):



## CONCLUSIONS

We think that the use of exercises with hand apparatus is an activity with real educative-formative-corrective valences and that they should become a common practice in special and inclusive education.

Exercises with hand apparatus create a connection between the physical and the mental, between I want and I can, between I perform and I achieve, they providing the child with skills and

abilities that engage and develop both the activity of the sensorial-perceptive factors and coordination, in parallel with the stimulation of imagination and creativity.

Hand apparatus present a multitude of manipulation possibilities, some of them common, other specific, the exercises representing a “play”, during which the child makes friends with them and with his partners, learns to know and to control himself.

**MARCU, V. (COORDONATOR), (2007),** *Vademecum de psihopedagogie specială*, Editura Universității din Oradea, Oradea

**TEODORESCU, S., BOTA, A., STĂNESCU, M., (2007),** *Activități fizice adaptate, pentru persoanele cu deficiențe senzoriale, mintale și defavorizate social*, Editura Printech, București

**WEINECK, J., (1992),** *Biologie du sport*, Editura Vigot, Paris

## BIBLIOGRAPHY

**GUILLOIN, M., BARBIN, J.-M., (1991),** *GRS et paraplégie - vers une GRS adaptée*, Revue EPS, no. 232, novembre-décembre, p. 42-45

**MACOVEI, S., (1999),** *Gimnastica Ritmică de performanță*, Editura ANEFS, București

**MACOVEI, S., (2007),** *Exerciții cu obiecte pentru educația fizică adaptată și inclusivă*, Editura Bren, București

## QUANTITATIVE AND STRUCTURAL MATHEMATICAL MODELS FOR PEDAGOGICAL RULES IN PHYSICAL EDUCATION AND SPORTS

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### ABSTRACT:

The paper presents methods of measuring and modeling pedagogical rules in physical education and sports, using mathematical concepts to reveal the objective links between different properties of pedagogical phenomena.

The quantitative and structural models are built starting from symbols. The operation procedures of these symbols form the syntactical rules for building and transforming such models.

The paper shows a quantitative and structural model built to assess the way of acquiring the long jump technique by students with motrical memory at different levels of development.

**KEY WORDS:** quantitative model, structural model, pedagogical rule, motrical memory, long jump

### INTRODUCTION

The issue of representing the pedagogical rules is based on finding the most appropriate building process for quantitative and qualitative mathematical models (M.Malița, C.Zidăroiu, , 1972).

In order to achieve this goal, the following steps are to be followed:

- establishing the correlation between the proposed models and the realities in training and education (Ionescu, M., 1998, 2000);
- settling on the mathematical rules that can be applied in describing the pedagogical rules;
- determining the corresponding degree between the proposed models and the objective rules of pedagogical phenomena (L.G.Talaghir, C.Ciorbă, 2006, G.Manolache, 2003);
- deciding upon the way of putting into practice and research the proposed models.

In order to build a qualitative model of the pedagogical rule (G.G.Armstrong., T.K. Henson, V.T. Savage, 1993), it is necessary to determine the variables of the model, which are established quantitatively using measurements.

### Mathematical models for pedagogical rules

The aim of the paper is to develop a mathematical model that expresses the correspondence between the assimilation of teaching concepts of students having motrical memory at different levels of development (J. Dewey, 1992, S.Panțuru, 2003) and the number of repetitive exercises and application techniques.

The long jump technique is the exercise that is taking into account. There are four different phases in this exercise (C. Mereuta, 2009):

- The approach – considered to be the most important phase, consists of a gradual acceleration that will give the greatest opportunity to reach those maximum distances;
- the takeoff – is important, mainly on its last two strides. These strides are important because when are correctly done, they will allow the transition

into the takeoff with maximum velocity. That is the phase in which the muscles release their energy and transfer it, so that the athlete can launch into the air.

- motions in the air (flight) - is used to control the body in the air and set up a proper landing;
- the landing - is used to prepare the body for the shock of hitting the ground and it also allows to get as much distance out of the jump as possible.

In order to achieve that goal, the following steps are to be followed:

- Establishing the shape, the conditions and the action limits of the link between the results and two influence factors:
  - a subjective factor- quality of motrical memory;
  - an objective factor – number of repetitive exercises;
- Organizing the factorial scheme, using observation method;
- Organizing the experiment – using three experimental groups of 50 subjects each, according the quality of their motrical memory, denoted x:
  - first group – the worst motrical memory ( $x_1 = 0.1$ );
  - second group – middle level of development for motrical memory ( $x_2 = 0.5$ );
  - third group – best motrical memory ( $x_3 = 0.7$ ).
- Teaching the long jump technique in all the groups, grading the students after the first execution and then, performing another grading after each repetition. The long jump technique is explained four times in each group;
- Performing the statistical calculus;
- Building the model.

### Experimental results

The students' grades are centralized in table 1:

Table 1 – Experimental results

No.	First group ( $x_1 = 0.1$ )					First group ( $x_2 = 0.5$ )					First group ( $x_3 = 0.7$ )				
	Number of repetitive exercises ( $y_{j1}$ )					Number of repetitive exercises ( $y_{j2}$ )					Number of repetitive exercises ( $y_{j3}$ )				
	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
1	2	3	3	3	3	4	5	5	5	5	4	4	5	5	5
2	1	1	1	2	1	3	3	4	4	5	4	4	5	5	5
3	2	3	3	4	5	1	2	2	3	4	5	5	5	5	5
4	2	2	1	2	2	2	3	4	4	5	4	5	5	5	5
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
47	2	1	1	2	2	4	4	4	5	5	3	4	4	5	5
48	1	1	2	3	3	2	3	3	4	5	4	5	5	5	5
49	1	2	2	2	3	2	3	3	4	5	3	4	5	5	5
50	1	2	2	3	3	3	4	4	5	4	4	4	5	5	5

We can determine the frequency of each grade, for each group. The results are shown in table 2. We can determine another statistical parameter: the average,

taking into account the frequency, using the equation:

$$z = \frac{\sum z \cdot m}{\sum m}$$

Table 2 – Frequency of grades

$x_i$	$y_{ij}$	$z_{ijk}$					$\sum m_{ijk}$
		1	2	3	4	5	
$(x_1 = 0.1)$	0	33	15	2	0	0	50
	1	19	20	10	1	0	50
	2	17	19	13	1	0	50
	3	5	18	19	7	1	50
	4	3	12	20	12	3	50
$(x_2 = 0.5)$	0	3	13	19	12	3	50
	1	1	8	18	17	6	50
	2	2	4	13	20	11	50
	3	0	2	8	20	20	50
	4	0	0	3	16	31	50
$(x_3 = 0.7)$	0	2	4	13	20	11	50
	1	0	3	7	20	20	50
	2	0	0	3	16	31	50
	3	0	0	0	3	47	50
	4	0	0	0	1	49	50

The results of all the averages for all groups and for all the grading phases are shown in table 3.

average – dispersion, for all groups and grade phases. The results are shown in table 4.

The last statistics to be calculate, characterize the random oscillations of individual results around the

Table 3 – Averages of grades for all factors

$x_i$	$y_{ij}$					$y_i$
	0	1	2	3	4	
$z_{ijk}$						
$\bar{z}_{ij}$						
$(x_1 = 0.1)$	1.38	1.86	1.96	2.62	3.00	2.16
$(x_2 = 0.5)$	2.98	3.38	3.68	4.16	4.56	3.75

$(x_3 = 0.7)$	3.68	4.14	4.56	4.94	4.98	4.46
$\overline{z_{ij}}$	2.68	3.12	3.40	3.90	4.18	$\overline{z_i} = 3.46$

Table 4 – Dispersions for all experimental results

$x_i$	$\sigma^2_{z_{jik}}$					$\sigma^2_{z_{ji}}$
	0	1	2	3	4	
$(x_1 = 0.1)$	0.3156	0.4065	0.6784	0.8356	0.9600	0.3312
$(x_2 = 0.5)$	1.0984	0.9156	1.0576	0.6944	0.3664	0.3118
$(x_3 = 0.7)$	1.0576	0.7604	0.3664	0.0564	0.0196	0.2443
$\sigma^2_{z_{ji}}$	0.9266	0.8985	1.1657	0.9292	0.7256	

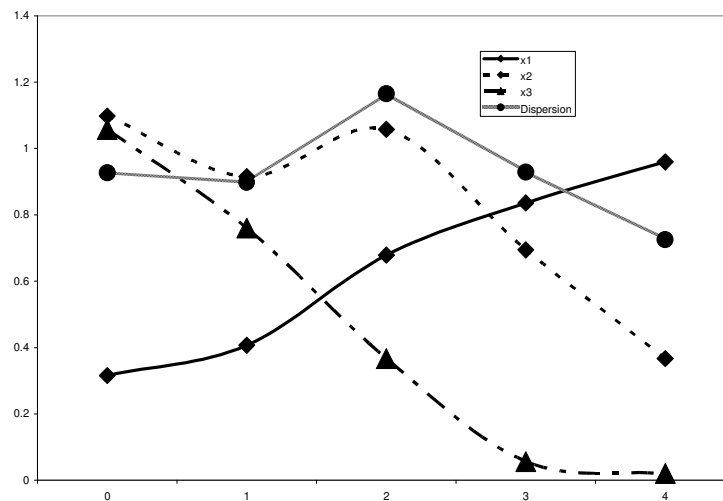
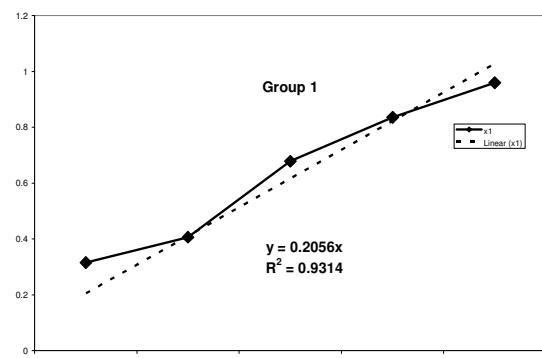


Fig.1 - Dispersions for all groups of students

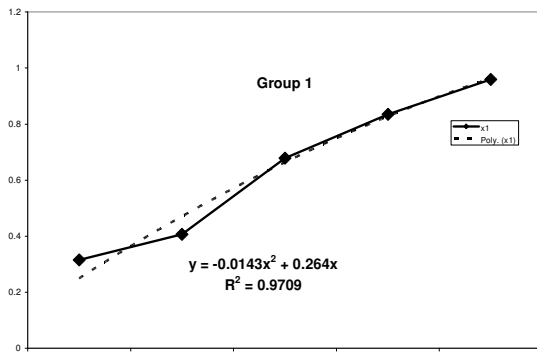
Considering these results, we have to conclude that we have a group of parameters that characterize the development of the pedagogical phenomena, when these parameters  $(x, y)$  are variable. Establishing the rules that are governing phenomena, means to find some invariant relations between the variations of parameters and the variation of the studied phenomena.

The mathematical model is considered to be a functional dependence, such a linear or polynomial function. Taking into account the efficiency of the motrical memory, we can find different mathematical models for each group, as follows:

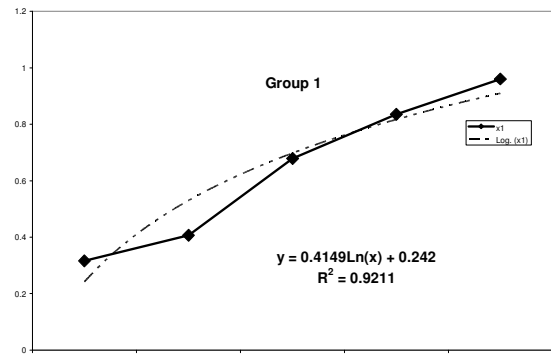
- linear and parabolic equations (fig.2a and 2b);
- polynomial functions (third and fourth order equations – fig 2c and d);
- exponential and logarithmic functions (fig.2e and f).



a) linear

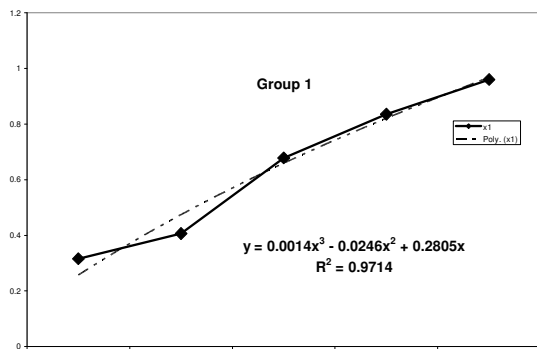


b) parabolic

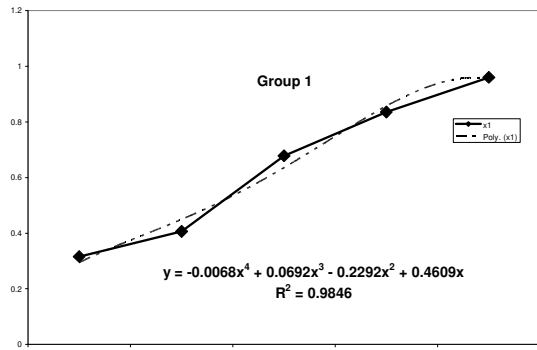


f) logarithmic

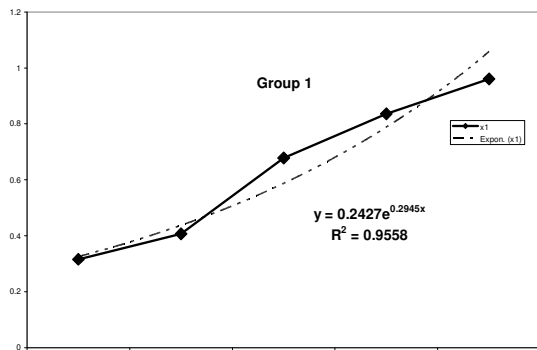
Fig.2 – Models for first group of students



c) polynomial of third degree



d) polynomial of fourth degree



e) Exponential

### Conclusions

The qualitative and structural model proposed reveals the distribution rules for each value of the investigated factors, the link between the values of the factors and the statistical features of the studied phenomena and the intensity of that link.

All these assumptions describe the conditions, the form and the limits of action of the studied link, i.e. they completely define the scientific law.

### References:

- ARMSTRONG., G.G., HENSON, T.K., SAVAGE, V.T., 1993,** *Education An Introduction*, Macmillan Publishing Company, New-York
- DEWEY, J., 1992,** *Fundamente pentru o știință a educației*, Edit. Didactică și Pedagogică, București
- IONESCU, M., S.A., 1998,** *Educația și dinamica ei*, Editura Tribuna învățământului, București,
- IONESCU, M., 2000,** *Demersuri creative în predare și învățare*, Edit. Presa Universitară Clujeană, Cluj-Napoca
- MALIȚA, M., ZIDĂROIU, C., 1972,** *Modele matematice ale sistemului educațional*, Edit. Didactică și Pedagogică
- MANOLACHE, G., 2003,** *The Educative Aspect of Scholarship Training in Sport Using Stretching Means*, Analele Universității “Dunărea de Jos”, Galați fascicula XV Educație fizică și management în sport, 57-61.
- MEREUTA, C., 2009,** *Atletism*, Editura Valinex, Chisinau
- PANȚURU, S., 2003,** *Elemente de teoria și metodologia instruirii*, Edit. Universității “Transilvania”, Brașov
- TALAGHIR, L.G., CIORBĂ C., 2006,** *Planificarea de specialitate, oglindă a activității fizice a elevilor din ciclul gimnazial*, Cultură fizică și sport în mileniul 3 – Sesiune Internațională de Comunicări Științifice F.E.F.S. Brașov, 80-84

## THE COMPARISON BETWEEN PHYSICAL EDUCATION AND SPORT STUDENTS' AND ELEMENTARY EDUCATION STUDENTS' LEARNING SKILLS AND THEIR OPINIONS ABOUT FOREIGN LANGUAGE LEARNING

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### ABSTRACT

The research has been done with the aim of determining Physical Education & Sports students' and Elementary Education students' learning skills and their opinions about foreign language (English) learning.

The research population is Mehmet Akif Ersoy University Physical Education and Sports Department and Elementary Education Department. The sample group, on the other hand, includes those students studying at these departments.

Research data has been obtained through literature scanning and survey method. The survey has been applied to the students through random sampling method after providing the intelligibility, scope validity and reliability of the survey which has been developed to support the result of the research.

The obtained data has been coded for statistical operation in computer environment via suitable statistic program. As statistic operation, frequency (f), percentage (%), cross table (Crosstab), to test the differences X-Square ( $X^2$ ) have been applied. After the operation, % distribution for each question has been shown and to determine differences of opinion, comments have been made taken 0.05 as confidence interval.

As a result of the data, we can say that students have usually difficulty in learning English; when they are learning, they do it better by reading, writing, listening and speaking, and they learn it because foreign language enables them to find a job easier and they mainly learn it to pass the course. From the changeable, we have found statistically significant difference of opinion.

**KEY WORDS:** Student, Foreign language, Learning skill.

### INTRODUCTION

Education is important in all fields and foreign language education is the most important factor for every kind of communication and interaction. The importance of language education increases day by day. "The need for foreign language learning increases parallel to the intensification of relations between communities and development of mass communication devices." (Öner, 2007) Despite the fact that it is has so much importance and necessary time is allocated for it, foreign language education remains to be inadequate and it can not even be taught in some fields. Actually all the facilities are provided for foreign language learning. Also foreign language education is added to national education curriculum as of 4th grade in primary education. "The predominant use of communicative method in foreign language education was adopted as a principle also in Turkish national Education system" (Yılmaz, 2005).

This study investigates why language can not be effectively learned with questionnaires applied in physical education, sports and class teaching departments. Prepared with a questionnaire formed by the students, this study considers very important reasons. "The solution of the problems experienced are as important as the effectiveness of foreign language learning." (Ünal,2009) Some of these problems are that the ones responsible for the course providing language education are not department instructors, courses are organized with very long intervals and continuously the same subjects are repeated, course responsables can not make the courses enjoyable and the course is always

tried to be taught with the same method. This course provided from 4th grade to 2nd grade in the university can not make a great contribution for students since it was performed in a vicious cycle continuously repeating itself. As stated by Cronbach "limited experiences prevents development"(Cronbach, 1954). This saying is also valid for language education. Improvement in language education is not possible with limited experience and knowledge. It would doubtlessly be a miracle to expect a student learning the same subjects continuously to learn a language. After necessary conditions are prepared in order to be efficient in language education, following a plan and learning the subjects with practice will enable language education.

In addition to all reasons, inefficient learning of the language formed a cliché in the target audience and caused them to be prejudiced against language education. The students can perceive this situation "as a threat to their own identities. Thus, language education is no more an entertaining activity but something to be afraid of." (Öner and Tokay, 2007) After all, this prejudice must be removed. No matter which philosophical movement affects the education, be it collectivist or individualist reaching its aim is only possible with the realization of secret powers of people( Kılıçcı,2006). People's realization of their own secret powers means that their existent potentials are emerged. In an era where reaching information is so easy, language education should be made more entertaining using various resources, methods, encouraging visuals.



Then why language education is so important for physical education and sports department? Different answers can be possible for his question. And the answer to this question can not be restricted with universities only in Turkey. If the subject is physical education and sports, it becomes a general subject rather than a local one in this case. Sport is the "joint language" of the world, the state of affairs show that "English" is candidate for being the joint language of the world. For that reason two subjects are important for each other.

Eventually deficiencies has been observed in English education and it has been decided that a better education can be provided. For that reason, research was conducted about why English is not efficiently taught in Physical Education and Sports Departments and Class Teaching Departments and the need to determine the reasons of this is felt.

#### MATERIAL AND METHOD

Research was conducted in order to determine the views and learning abilities of the students of Physical Education, Sports Education and Class Education departments.

Data of the study were obtained with literature scanning and questionnaire method. The questionnaire was applied to students with random sampling method in the study population after understandability of the questionnaire developed for the aim of the study, validity and reliability of the scope were provided.

#### FINDINGS

The population of the study is the departments of Physical Education and Sports and Classroom Management of Mehmet Akif Ersoy University. The sampling group is students who are the students of these departments.

Obtained data is coded for statistical operation in the appropriate statistical programme in computer environment. As a statistical operation, cross table (Cross tab) are performed for frequency (f) and percentage (%); Chi-square ( $X^2$ ) operations are conducted for testing distinctions. As a result of the operation, interpretations are made accepting 0,05 as confidence interval in order to determine (%) determinations and distinctions among views for every question.

**Table 1. Distribution of the Socio-Demographic Properties of the Participants**

Variables	N ( Distribution)	%( Distribution)	
<b>Gender Distribution of Participants</b>	Male	94	47,2
	Female	105	52,8
	<b>Total</b>	<b>199</b>	<b>100,0</b>
<b>Age Distribution of Participants</b>	17-20	44	22,1
	21-24	141	70,9
	25 and over	12	6,0
	Not answered	2	1,0
	<b>Total</b>	<b>199</b>	<b>100,0</b>
<b>Distribution of Graduated Secondary School Type of Participants</b>	Vocational high school	10	5,0
	Normal high school	113	56,8
	Anatolian high school	46	23,1
	Other	29	14,6
	Not answered	1	,5
	<b>Total</b>	<b>199</b>	<b>100,0</b>
<b>Distribution of Residence of Participants</b>	Province	115	57,8
	District	48	24,1
	Village	35	17,6
	Not answered	1	,5
	<b>Total</b>	<b>199</b>	<b>100,0</b>

As shown in Table 1, participants' gender, age, graduated secondary school types and residences of their families are investigated. From these investigations;

47,2% of them is male, 52,68% is female, 70,9 % of them is aged 21-24, 22,1% of them is aged 17-20, 6% of them is aged 25 and over; 56,8% of them graduated from normal high school, 23,11% of them from Anatolian high school, 14,6% of them from other

school types, 5% from vocational high schools; 57,8% of them reside in provinces, 24,1% of them in districts and 17,6% of them in villages.

**Table 2. Participators' Preparatory School Acquisition Status**

Variables			Total
	Yes	No	
Physical Education and Sport	28	63	91
	30,8%	69,2%	100,0%
Classroom management	52	50	102
	51,0%	49,0%	100,0%
Total	80	113	193
	41,5%	58,5%	100,0%

In Table 2, . participators' preparatory school acquisition status is inquired. When we look at the answers of participators in total, %58,5 of them say "no", and %41,5 say "yes", when we examine answers according to departments, %30 of the students of

physical education say "yes" and %69,2 of them say "no", while %51,5 of the students at classroom management deparatmens say "yes" and %49 say "no".

**Table 3. Wiefs Distrubution of Participators About "Why They can not Learn Foreign Language (English) Effectively"**

Variables		I agree	I am not sure	I disagree	Total	X <sup>2</sup> / P
<b>I wasn't informed about the language stucture before elearning English</b>	Physical Education and Sports	53 58,2%	19 20,9%	19 20,9%	91 100,0%	,187  ,911
	Classroom Management	59 57,3%	20 19,4%	24 23,3%	103 100,0%	
	Total	112 57,7%	39 20,1%	43 22,2%	194 100,0%	
<b>I can't learn since I have repeatedly seen the same subjects</b>	Physical Education and Sports	41 44,6%	16 17,4%	35 38,0%	92 100,0%	1,116  ,572
	Classroom Management	47 44,8%	13 12,4%	45 42,9%	105 100,0%	
	Total	88 44,7%	29 14,7%	80 40,6%	197 100,0%	
<b>I can't learn because I have had English lessons with long intervals</b>	Physical Education and Sports	62 66,7%	9 9,7%	22 23,7%	93 100,0%	1,486  ,476
	Classroom Management	63 60,0%	9 8,6%	33 31,4%	105 100,0%	
	Total	125 63,1%	18 9,1%	55 27,8%	198 100,0%	
<b>I can't learn because it isn't interesting</b>	Physical Education and Sports	24 26,1%	27 29,3%	41 44,6%	92 100,0%	3,535  ,171
	Classroom Management	30 28,6%	19 18,1%	56 53,3%	105 100,0%	
	Total	54 27,4%	46 23,4%	97 49,2%	197 100,0%	
<b>I can't learn because it is difficult</b>	Physical Education and Sports	22 23,9%	27 29,3%	43 46,7%	92 100,0%	2,317

	Classroom Management	26 25,0%	21 20,2%	57 54,8%	104 100,0%	,314
	Total	48 24,5%	48 24,5%	100 51,0%	196 100,0%	
<b>I can't learn because the instructor is not competent (We have not English field teacher)</b>	Physical Education and Sports	41 44,1%	20 21,5%	32 34,4%	93 100,0%	,083
	Classroom Management	48 45,7%	21 20,0%	36 34,3%	105 100,0%	
	Total	89 44,9%	41 20,7%	68 34,3%	198 100,0%	,959

P<0,05

The answer to the question **“Why They can not Learn Foreign Language (English) Effectively”** is inquired in Table 3. From these inquiries,

When answers are examined about the proposition, **“I wasn't informed about the language structure before learning English”**, we see that, %57,7 of them say **“I agree”** and %22,2 say **“I don't agree”** and %20,1 say **“I have no idea”**. In comparative analysis of the answers given to each part X<sup>2</sup> value is 0,187. This value is not meaningful in 0,05 significance level. ( P>0,05). That is, there is no meaningful difference of opinion for the answers given for each part.

When answers are examined about the proposition, **“I can't learn since I have repeatedly seen the same subjects”**, we see that, %44,7 of them say **“I agree”** and %40,6 say **“I don't agree”** and %14,7 say **“I have no idea”**. In comparative analysis of the answers given to each part, there is no meaningful difference of opinion. This value is not meaningful in 0,05 significance level. ( P>0,05).

About the proposition, **“I can't learn because I have had English lessons with long intervals”**, we see that, %63,1 of them say **“I agree”** and %23,7 say **“I don't agree”** and %9,1 say **“I have no idea”**. In

comparative analysis of the answers given to each part, there is no meaningful difference of opinion. ( P>0,05).

About the proposition, **“I can't learn because it isn't interesting”**, we see that, %49,2 of them say **“I agree”**, %27,4 say **“I don't agree”** and %23,4 say **“I have no idea”**. In comparative analysis of the answers given to each part, there is no meaningful difference of opinion. ( P>0,05).

When answers are examined about the proposition, **“I can't learn because it is difficult”**, we see that, %51 of them say **“I don't agree”** and %24,5 say **“I have no idea”**, %24,5 say **“I don't agree”**. In comparative analysis of the answers given to each part, there is no meaningful difference of opinion. This value is not meaningful in 0,05 significance level. ( P>0,05).

When answers are examined about the proposition, **“I can't learn because the instructor is not competent (We have not English field teacher)”**, we see that, %44,9 of them say **“I don't agree”**, %34,3 say **“I don't agree”**, %20,7 say **“I have no idea”**. In comparative analysis of the answers given to each part, there is no meaningful difference of opinion. This value is not meaningful in 0,05 significance level. ( P>0,05).

Table 3. Continued

Variables		I agree	I have no idea	I disagree	Total	X <sup>2</sup> / P
<b>I can't learn, because I have no ability to learn a foreign language</b>	Physical Education and Sports	17 18,3%	20 21,5%	56 60,2%	93 100,0%	,083
	Classroom Management	18 17,3%	24 23,1%	62 59,6%	104 100,0%	
	Total	35 17,8%	44 22,3%	118 59,9%	197 100,0%	,959
<b>I can't learn because its language structure is different (from Turkish)</b>	Physical Education and Sports	31 33,3%	26 28,0%	36 38,7%	93 100,0%	,716
	Classroom Management	40 38,1%	30 28,6%	35 33,3%	105 100,0%	

	Total	71 35,9%	56 28,3%	71 35,9%	198 100,0%	
<b>I can't learn, because there is no one around speaking English.</b>	Physical Education and Sports	41 44,1%	26 28,0%	26 28,0%	93 100,0%	2,791 ,248
	Classroom Management	55 53,4%	19 18,4%	29 28,2%	103 100,0%	
	Total	96 49,0%	45 23,0%	55 28,1%	196 100,0%	
<b>I cant learn, because there is no one around speaking English.</b>	Physical Education and Sports	55 59,1%	20 21,5%	18 19,4%	93 100,0%	9,300 ,010
	Classroom Management	82 78,1%	9 8,6%	14 13,3%	105 100,0%	
	Total	137 69,2%	29 14,6%	32 16,2%	198 100,0%	
<b>We have always studied grammar and our practical knowledge have not improved.</b>	Physical Education and Sports	49 52,7%	26 28,0%	18 19,4%	93 100,0%	6,173 ,046
	Classroom Management	73 69,5%	17 16,2%	15 14,3%	105 100,0%	
	Total	122 61,6%	43 21,7%	33 16,7%	198 100,0%	
<b>I have difficulty since I did not learn well at the beginning.</b>	Physical Education and Sports	56 60,2%	16 17,2%	21 22,6%	93 100,0%	,491 ,782
	Classroom Management	68 64,8%	15 14,3%	22 21,0%	105 100,0%	
	Total	124 62,6%	31 15,7%	43 21,7%	198 100,0%	
<b>I can't learn because lesson hours are insufficient. Lessons are conducted fast, so this slows down learning</b>	Physical Education and Sports	61 66,3%	17 18,5%	14 15,2%	92 100,0%	3,599 ,165
	Classroom Management	58 55,2%	20 19,0%	27 25,7%	105 100,0%	
	Total	119 60,4%	37 18,8%	41 20,8%	197 100,0%	

When answers are examined about the proposition, **"I can't learn, because I have no ability to learn a foreign language"**, in total, we see that, %59,9 of them say **"I agree"**, %22,3 say **"I have no idea"** and %17,8 say **"I don't agree"**. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. That is, there is no meaningful difference of opinion in the answers between parts. ( $P > 0,05$ ).

When answers are examined about the proposition, **"I can't learn because its language structure is different (from Turkish)"**, in total; we see that, %35,9 of them say **"I agree"**, %35,9 say **"I don't agree"** and %28,3 say **"I have no idea"**. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful ( $P > 0,05$ ). That is, there is no meaningful difference of opinion in the answers between parts.

When we examine the answers to the proposition, **"Course teacher can't make the lesson attractive, so I can't learn."** in total; we see that, %49

of them say **"I agree"**, %28,1 say **"I don't agree"** and %23 say **"I have no idea"**. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful ( $P > 0,05$ ). That is, there is no meaningful difference of opinion in the answers between parts.

If we look at the answers to the proposition, **"I can't learn, because there is no one around me speaking English."**, we see that, %69,2 of them say **"I agree"**, %16,2 say **"I don't agree"** and %14,6 say **"I have no idea"**. In comparative  $X^2$  analysis of the answers given to each part,  $X^2$  value is found 9,300. This value is meaningful in 0,05 significance level. ( $P > 0,05$ ). That is, there is meaningful difference of opinion in the answers between parts.

When we examine the answers to the proposition, **"We have always studied grammar and our practical knowledge have not improved."**, we see that, %61,6 of them say **"I agree"**, %21,7 say **"I have no idea"** and %16,7 say **"I don't agree"**. In comparative  $X^2$  analysis of the answers given to each part,  $X^2$  value is found 6,173. This value is meaningful

in significance level. ( $P > 0,05$ ). That is, there is meaningful difference of opinion in the answers between parts.

When we look at the answers about the proposition, “**I have difficulty since I did not learn well at the beginning.**”, we see that, %62,6 of them say “**I agree**”, %21,7 say “**I have no idea**” and %15,7 say “**I don’t agree**”. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. That is, there is no meaningful difference of opinion in the answers between parts.. ( $P > 0,05$ ).

When we look at the answers about the proposition, “**I can’t learn because lesson hours are insufficient. Lessons are conducted fast, so this slows down learning.**”, we see that, %60,4 of them say “**I agree**”, %20,8 say “**I don’t agree**” and %18,8 say “**I don’t agree**”. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. That is, there is no meaningful difference of opinion in the answers between parts.. ( $P > 0,05$ ).

**Table 4. Distribution of Participators’ Aim in Foreign Language Learning**

Variables		I agree	I have no idea	I disagree	Total	$X^2 / P$
<b>I learn to have enough knowledge to pass the course</b>	Physical Education and Sports	39 43,3%	11 12,2%	40 44,4%	90 100,0%	,673 ,714
	Classroom Management	45 42,9%	17 16,2%	43 41,0%	105 100,0%	
	Total	84 43,1%	28 14,4%	83 42,6%	195 100,0%	
<b>I learn to have the competence to go abroad</b>	Physical Education and Sports	43 47,8%	26 28,9%	21 23,3%	90 100,0%	8,436 ,015
	Classroom Management	53 50,5%	14 13,3%	38 36,2%	105 100,0%	
	Total	96 49,2%	40 20,5%	59 30,3%	195 100,0%	
<b>I learn because foreign language help me find a job</b>	Physical Education and Sports	66 72,5%	13 14,3%	12 13,2%	91 100,0%	3,819 ,148
	Classroom Management	78 74,3%	7 6,7%	20 19,0%	105 100,0%	
	Total	144 73,5%	20 10,2%	32 16,3%	196 100,0%	
<b>I want to learn a new language</b>	Physical Education and Sports	74 80,4%	6 6,5%	12 13,0%	92 100,0%	,288 ,866
	Classroom Management	86 81,9%	5 4,8%	14 13,3%	105 100,0%	
	Total	160 81,2%	11 5,6%	26 13,2%	197 100,0%	

$P < 0,05$

In table 4, propositions about participators aim in language learning is inquired. From this inquiry;

When we examine the answers about the proposition, “**I learn to have enough knowledge to pass the course**”, we see that, %43,1 of them say “**I agree**”, %42,6 say “**I don’t agree**” and %14,4 say “**I have no idea**”. In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. ( $P > 0,05$ ). That is, there is no meaningful difference of opinion in the answers between parts.

If we look at the answers about the proposition, “**I learn to have the competence to go**

**abroad**”, we see that, %49,2 of them say “**I agree**”, %30,3 say “**I don’t agree**” and %20,5 say “**I have no idea**”. In comparative  $X^2$  analysis of the answers given to each part,  $X^2$  value is found 8,436. This value is meaningful in significance level. ( $P > 0,05$ ). That is, there is meaningful difference of opinion in the answers between parts.

When the answers are assessed which are given to the proposition “**I learn because foreign language help me find a job.**”, it is seen that they have chosen the options ,in total, as following: %73,5 of them say “**I agree**”, %16,3 say “**I don’t agree**”,

%10,2 say “**I have no idea.**” In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. ( $P>0,05$ ). That is, there is no meaningful difference of opinion in the answers between parts.

When it is looked into the answers to the alternative of “**to learn a new language**”, in total,

%81,2 of them say “**I agree**”, %13,2 say “**I don’t agree**”, %5,6 say “**I have no idea.**” In comparative  $X^2$  analysis of the answers given to each part, it is not statistically meaningful. ( $P>0,05$ ). That is, there is no meaningful difference of opinion in the answers between parts.

**Table 5. The Distributions Of The Participants’ Opinions On How They Can Learn Better A Foreign Language**

VARIABLES		I Agree	I Have No Idea	I Don’t Agree	Total	$X^2 / P$
<b>I learn better by listening.</b>	Physical Education and Sports	33 36,3%	25 27,5%	33 36,3%	91 100,0%	1,777 ,411
	Classroom Management	47 45,6%	25 24,3%	31 30,1%	103 100,0%	
	Total	80 41,2%	50 25,8%	64 33,0%	194 100,0%	
<b>I learn better by reading</b>	Physical Education and Sports	38 41,8%	29 31,9%	24 26,4%	91 100,0%	,246 ,884
	Classroom Management	45 43,7%	34 33,0%	24 23,3%	103 100,0%	
	Total	83 42,8%	63 32,5%	48 24,7%	194 100,0%	
<b>I learn better by speaking</b>	Physical Education and Sports	61 67,0%	13 14,3%	17 18,7%	91 100,0%	8,967 ,011
	Classroom Management	92 88,5%	7 6,7%	5 4,8%	104 100,0%	
	Total	153 78,5%	20 10,3%	22 11,3%	195 100,0%	
<b>I learn better by reading, writing, listening and speaking.</b>	Physical Education and Sports	66 71,7%	19 20,7%	7 7,6%	92 100,0%	11,184 ,004
	Classroom Management	94 89,5%	6 5,7%	5 4,8%	105 100,0%	
	Total	160 81,2%	25 12,7%	12 6,1%	197 100,0%	
<b>I learn better by the help of visual elements</b>	Physical Education and Sports	73 78,5%	14 15,1%	6 6,5%	93 100,0%	,637,9 01
	Classroom Management	87 82,9%	14 13,3%	4 3,8%	105 100,0%	
	Total	160 80,8%	28 14,1%	10 5,1%	198 100,0%	
<b>I learn better by doing plenty of practice.</b>	Physical Education and Sports	71 77,2%	13 14,1%	8 8,7%	92 100,0%	,1583, 694
	Classroom Management	90 87,4%	9 8,7%	4 3,9%	103 100,0%	
	Total	161 82,6%	22 11,3%	12 6,2%	195 100,0%	

$P<0,05$

In Table 5, it is questioned how participant can learn better a foreign language. According to this table:

The option **“I learn better by listening”** is given. When participants’ responses are totally analyzed we see that %41,2 of them say **“I agree”**, %33 say **“I don’t agree”**, %25,8 say **“I have no idea”**. In comparative X<sup>2</sup> analysis of the answers given to each part, it is not statistically meaningful. ( P>0,05). That is, there is no meaningful difference of opinion in the answers between parts.

When the responses are examined to the proposition **“I learn better by reading”**, it is seen that , %42,8 of them say **“I agree”**, %32,5 say **“I have no idea”**, %24,7 say **“I don’t agree”**. In comparative X<sup>2</sup> analysis of the answers given to each part, it is not statistically meaningful. That is, there is no meaningful difference of opinion in the answers between parts.. ( P>0,05).

The participants’ responses to the proposition **“I can learn better by reading, writing, listening and speaking”**, %81,2 of them say **“I agree”**, %12,7 say **“I have no idea”**, % 6,1 say **“I don’t agree”**. In

comparative X<sup>2</sup> analysis of the answers given to each part, X<sup>2</sup> value is found 11,184. This value is meaningful in significance level. ( P>0,05). That is, there is meaningful difference of opinion in the answers between parts..

When participants’ responses are analyzed in total about the proposition **“I learn better by the help of visual elements”**, it is understood that %80,8 of them say **“I agree”**, %14,1 say **“I have no idea”**, %5,1 of them say **“I don’t agree”**. In comparative X<sup>2</sup> analysis of the answers given to each part, it is not statistically meaningful. That is, there is no meaningful difference of opinion in the answers between parts.. ( P>0,05).

To the proposition, **“I learn better by a lot of practices”**, in total; the participants give such responses as follows; %82,6 of them say **“I agree”**, %6,2 say **“I don’t agree”**, %11,3 say **“I have no idea”**. In comparative X<sup>2</sup> analysis of the answers given to each part, X<sup>2</sup> value is is not meaningful statistically. ( P>0,05). That is, there is no meaningful difference of opinion in the answers between parts

**Table.6 The Distribution Of Participants’ Opinions On Learning Foreign Language (English)**

VARIABLES		Yes	No	To Some Extend	Total	X <sup>2</sup> / P
<b>English is taught through the way we wish.</b>	Physical Education and Sports	7 7,6%	53 57,6%	32 34,8%	92 100,0%	,960  ,619
	Classroom Management	5 4,8%	66 62,9%	34 32,4%	105 100,0%	
	Total	12 6,1%	119 60,4%	66 33,5%	197 100,0%	
<b>When I learn the foreign language, I repeat the information that I acquired.</b>	Physical Education and Sports	22 23,7%	27 29,0%	44 47,3%	93 100,0%	4,112  ,128
	Classroom Management	21 20,0%	45 42,9%	39 37,1%	105 100,0%	
	Total	43 21,7%	72 36,4%	83 41,9%	198 100,0%	
<b>The information that I learn is permanent.</b>	Physical Education and Sports	12 12,9%	39 41,9%	42 45,2%	93 100,0%	1,330  ,514
	Classroom Management	12 11,4%	37 35,2%	56 53,3%	105 100,0%	
	Total	24 12,1%	76 38,4%	98 49,5%	198 100,0%	

P<0,05

In Table 6, participants were inquired about the questions on foreign language teaching. From this inquiry;

When we examine total answers of the participants to the proposition **“English is taught through the way we wish”**, we see that %60,4 of them say **“no”**, %33,5 of them say **“partly”** and % 6.1 of them say **“yes”**.

The result obtained in comparative X<sup>2</sup> analysis is not statically significant.(p 0,05) That is, there is no meaningful difference of opinions in the answers given for different parts.

When we examine total responses of participants to the proposition **“When I learn the foreign language, I repeat the information that I acquired.”**, we see that

%41.9 of them say “partly”, %36,4 of them say “no” and %21.7 of them say “yes”. The result in comparative X<sup>2</sup> analysis is not statistically significant.(P>0,05)

If we look at the total answers to the proposition; **“The information that I learn is permanent.”**, we see that %49.5 of them say “partly”, %38.4 of them say “no” and, % 12.1 of them say “yes”. The result in comparative X<sup>2</sup> analysis is not statistically significant.(p0,05) That is, there is no difference in the answers given for cross section.

#### DISCUSSION AND RESULT

This research has been conducted to the students of physical education and sport studies and classroom teaching department to determine learning skills and the views of them on learning foreign language.

%47.2 of the participants are male and %52.8 of them are female, the age of 70.9% s are 21-24, %22.1 of them are 17-20, %6 are 25 and over. We can say that %56,8 of them graduated from high schools, %23,1 from Anatolian High Schools, %14,6 from other schools and %5 of them graduated from vocational schools; about their place of residence, %57,8 live in cities, %24,1 live in city provinces, %17,6 live in town. According to this data, we can say that number of males is more than females in the research and participators' ages are mostly between 17 and 24, they mostly live in cities or their provinces. (Table 1)

When we look at participators' preparatory class education throughout their education and training periods, %41,5 of them had preparatory class (for English learning) and when we examine this for the departments, %30,8 of physical education and sport students and %51 of classroom management students has preparatory classes during their education. According to this data, we can say that the number of student having preparatory class in classroom management is more than those of physical education and sport.

From the inquiry on why the participants couldn't learn a foreign language more effective, they usually agree with these views on the below:

-I wasn't pre-informed about the language structure before learning English

-I can't learn effectively since I repeatedly see the same subject

-I can't learn effectively because I have English lessons with long intervals

-I can't learn effectively because it isn't interesting

-I can't learn effectively because it is difficult

-I can't learn effectively because the instructor is not competent (We have not English field teacher)

-I can't learn effectively because I have no ability to learn a foreign language

-I can't learn effectively because its language structure is different (from Turkish)

-Course teacher can't make the lesson attractive, so I can't learn effectively.

-I can't learn effectively, because there is no one around speaking English.

-We have always studied grammar and our practical knowledge has not improved.

-I have difficulty since I did not learn well at the beginning.

answers given to this part, X<sup>2</sup> value is not meaningful in significance level. That is, there is no meaningful difference of opinion between parts.

**As a result of the findings we can say that;**

-I can't learn effectively because lesson hours are insufficient. Lessons are conducted fast, so this slows down learning

We see that participators mostly agree with these propositions. (Table 3) In detailed analysis of answers given to this part, X<sup>2</sup> value is not meaningful in significance level. That is, there is no meaningful difference of opinion between parts.

In the following propositions;

- I can't learn because it isn't attractive.

- I can't learn it because it is difficult.

- I can't learn because I don't have the skill of learning we can say that they mostly do not agree. (Table 3) In detailed analysis of answers given to this part, X<sup>2</sup> value is not meaningful in significance level (P>0,05). That is, there is no meaningful difference of opinion between parts.

-There is nobody around me speaking English.

- We have always learned in terms of grammar so we couldn't improve our vocabulary knowledge. In these propositions, it is seen that they mostly disagree. (Table3)

Of the propositions of participator about foreign language;

-To have enough knowledge to pass the course

-I think it will help find a job

-I want to learn a new language

They usually agree with these propositions. In detailed analysis of answers given to this part, X<sup>2</sup> value is not meaningful in significance level. That is, there is no meaningful difference of opinion between parts. Therefore, we can say that participators learn the language to have enough knowledge, to find a job and learn a new language. We see those classroom management students are more on “**I agree**” option, while physical education and sports students mostly say “**I have no idea**”.

It is seen that they usually agree with “**I learn better by reading, writing, listening and speaking**” proposition. (Table5) In detailed analysis of answers given to this part and X<sup>2</sup> analysis, the obtained X<sup>2</sup> value has been found meaningful in 0,05 significance level.(P<0,05) That is, there is meaningful difference of opinion between parts. When we look at answer holes, we see that classroom management students are more in their “**yes**” answers when they are compared to those of physical education and sport.

Of participators propositions on language learning;

We see that they mostly say “**no**” to the proposition “**English is taught through the way we wish.**” In detailed analysis of answers given to this part, X<sup>2</sup> value is not meaningful in significance level. That is, there is no meaningful difference of opinion between parts. As a result, we can say that foreign language is not taught according to wishes of students.

To the proposition “**When I learn the foreign language, I repeat the information that I acquired**”, they usually disagree. (Table6) In detailed analysis of

Participator were not given any knowledge on target language structure, language structure is different(from Turkish), every time the same subjects are taught repeatedly, course teacher is not competent (not an English field instructor), learning English is not



attractive, course instructor cannot make lesson attractive and present it as if it was a difficult language, students do not get proper acquisition in the beginning, number of lesson hours is limited and lessons are carried out fast therefore they have difficulty in learning English;

They learn foreign language to pass the course, need its help in finding a job and they think it will help them be competent to go abroad;

They learn it better by reading, writing, listening and speaking,

With the existing method, language is not taught in the way they wish.

#### SUGGESTIONS

First of all, any person who intends to learn a foreign language should completely know his own language

Some information should be given before passing to foreign language teaching,

Foreign language should be taught by a language expert

Language teaching should be attractive and more enjoyable

In foreign language teachings, reading, writing, speaking should be used altogether

Necessary grounds should be set up in order that student can practice.

#### REFERENCES

- BURR, J. B., HARDING, L.W., JACOBS, L.B., 1950, *Students Teaching in Elementary School*, Appleton-Century-Crofts inc, 201**
- BANKS, J. A., BANKS, C. A. MCGEE., 2007, *Multicultural Education: Issues and Perspectives* Sixth Edition, Univ. of Washington, Seattle, 297**

**BAĞCECİ, B., 2004, "Ortaöğretim Kurumlarında İngilizce Öğretimine İlişkin Öğrenci Tutumları" (Gaziantep İli Örneği) ,XIII. Ulusal Eğitim Bilimleri Kurultayı, 6-9 Temmuz 2004, İnönü Üniversitesi, Eğitim Fakültesi, Malatya**

**CRONBACH, J. L., 1954, *Educational Psychology*, 2nd edition, Harcourt, Brace and World inc, 242**

**First International Congress of Educational Research. Online Basılmış Kongre Kitapçığı (Sözlü Bildiri). 1-3 Mayıs, Çanakkale**

**KILIÇCI, Y., 2006, *Okulda Ruh Sağlığı*, 5. Baskı Anı Yayıncılık, Ankara, 32**

**KÖNIG, W., 1989, "Türkiye'deki Yabancı Dil Öğretimi Sorunları, Dışardan Bir Bakış" Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, Sayı 4, 167-172**

**ÖNER, G., 2007, Gediklioğlu, Tokay, "Foreign Language Anxiety Affecting Learning English of Secondary School Students in Gaziantep" Gaziantep Üniversitesi Sosyal Bilimler Dergisi, 6(2): 67-78**

**ÜNAL, M., 2009, *Yükseköğretimde Ortak Ders Olarak Okutulan Yabancı Dil Programının İlköğretim Yabancı Dil Hedeflerini Gerçekleştirme Düzeyine ve Öğrenci Görüşlerine Göre Değerlendirilmesi. The le***

**YILMAZ, C., 2005, "The Students' Competence In Using Foreign As A Means Of Communication In The English Department" Erzincan Eğitim Fakültesi Dergisi Cilt: 7, Sayı: (1).**

## NON-FORMAL EDUCATION - THE CORE DIMENSION OF THE INSTRUCTIVE AND EDUCATIVE PROCESS

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#### ABSTRACT

We live now the important result of the educational activities' growth. Our study configures that in our time the new educational borders, extended to a new European vision, reach the non-formal education, by the values and principles regarding the building of all three features - body, spirit and nature. The formal education touches also the new quality indicators concerning continuous learning and other European criteria which relate the complementary education. Acknowledging non-formal education as an essential part of education and stimulating children and young people to get involved in promoting different values and ethical principles: justice, tolerance, peace, active citizenship, respecting the human rights, all of these represent key elements which have determined the importance of elaborating a developing strategy.

**KEY WORDS:** new European vision, non-formal education, body, spirit, nature.

#### Introduction

1. The twentieth century has marked a turning point in the evolution of the formal and non-formal education concepts, the latter being even more commonly used in the international educational

speech. Speaking from an European point of view, the initiative for promoting curricular and extracurricular educative activity belongs to the European Council, more precisely to the Council of Ministers, which has embodied its steps into the recommendations addressed for this particular

field to the member states. The most relevant document is the Recommendation from 30<sup>th</sup> of April 2003 which mentions the effective direction towards the acknowledgement of the equivalent status of the non-formal education with that of the formal education from the point of view of the equal contribution to the young person's personality development and his/her social integration (2001, Joint Employment Report. European Commission).

The continuous education – informal and non-formal, as well as the yielding – is part of the political priorities package within a society of knowledge. The acquisition, the continuous updating and the increasing level of knowledge, skills and habits represent a preliminary condition for the development of all citizens as well as for their participation in all society's domains, from the active citizenship to the integration in the labor market.

The 2000 March European Council from Lisbon draws up the strategic purposes for Europe until 2010. The strategic objectives defined in these documents are meant to influence the development of the educational and yield systems around Europe during this decade. (2000, Lifelong Learning: the contribution of education systems in the Member States of the European Union. European Commission, Education and Culture, Socrates – Eurydice)

The quality and efficiency progress of these educational and yield systems within the European Union refer to: making the access to all educational and yield systems more easy for all the people to follow; broaden the educational and yield systems horizon to the world.

According to the conclusions mentioned above, The Minister of Education, Research and Innovation has defined the major purpose of the strategy: increasing the qualitative standard of formal and non-formal education by complementing them in order to value the pupils' potential and yielding as proactive European citizens (2000, Analyzing national politics in the field of education: Romania, OECD; 2002, Compass – A Manual on Human Rights Education with young people. Ed. Consiliului Europei.)

The developing strategy of the formal and non-formal activity designed by the Minister of Education, Research and Innovation starts from the assumption that formal/non-formal educational complementary approach assures a plus to the value of the educational system. Thus, one makes the best out of the defining role the education has in preparing all the children for becoming active citizens within a dynamic and always changing society, nevertheless contributing to the permanent process of improving the quality of life (2002, European Report on Quality Indicators of Lifelong Learning Fifteen Quality Indicators, European Commission.)

The wording of some clear and coherent objectives in the light of the European Constitutional

Treaty regarding the importance of respecting the person's fundamental rights, such as the right to his freedoms, to democracy and equality, as well as the compression to the European educational standards, all of these represent the strategic base of the document in question.

Acknowledging non-formal education as an essential part of education and stimulating children and young people to get involved in promoting different values and ethical principles: justice, tolerance, peace, active citizenship, respecting the human rights, all of these represent key elements which have determined the importance of elaborating a developing strategy.

Through its specific forms, the non-formal educative activity develops critical thinking, moulds skills and stimulates the involvement of the young generation in the decisional act in the context of respecting the human rights and of taking social responsibility, thus constructing a certain symbiosis between the cognitive and the behaviorist components. Elaborating the Strategy is determined by the necessity of propelling the actual non-formal educative system which is situated at a an early stage of development, because up to this very moment there isn't a clear concept of non-formal education, there aren't any pre established efficient methods of recognizing non-formal education and a stable financial mechanism.

Acknowledging non-formal education as an essential part of education and stimulating children and young people to get involved in promoting different values and ethical principles: justice, tolerance, peace, active citizenship, respecting the human rights, all of these represent key elements which have determined the importance of elaborating a developing strategy (2003, Implementation of the "Education and Training 2010" programme. Commission of European Communities, Bruxelles).

Through its specific forms, the non-formal educative activity develops critical thinking, moulds skills and stimulates the involvement of the young generation in the decisional act in the context of respecting the human rights and of taking social responsibility, thus constructing a certain symbiosis between the cognitive and the behaviorist components. Nevertheless, the approval and the implementing of a national strategy regarding non-formal education:

- will establish the complementary connection between all three types of education (formal, non-formal and informal)
- will integrate the non-formal educative activities in the action plans of education and young generation
- will coordinate the process of efficient using and professional yielding of the human resources within the non-formal education domain
- will establish a clear financial mechanism of the non-formal educative activities for the nongovernmental organizations specialized in

the field in question, depending on the configuration of the beneficiaries' needs

- will ensure non-formal educative activities according to the qualitative standards and unique mechanisms so as to provide quality and efficiency in the social and educational services

Non-formal education offers a set of necessary social practices useful for every child, youngster or grown-up, complementing the other forms of education by making the best out of free time form the educational point of view and by promoting life experiences through the voluntary, individual or group involvement. Non-formal education will offer children and young people opportunities of choosing different activities depending on interests and preferences with an emphasis on developing skills for becoming active citizens. (2002, Education and training in Europe: diverse systems, shared goals for 2010. The work programme on the future objectives of education and training systems, European Commission. Directorate-General for Education and Culture, Bruxelles). Furthermore, non-formal education will create better opportunities of developing organizational capacities, self suggestion, time management, critical thinking in taking a decision or solving a problem, assuring the respect for the fundamental human rights and the equality of genres.

The strategy follows the qualitative improvement of the absolutely necessary educational level in the context of complex changes within family life, work force, community, multicultural society and globalization. Good quality education presumes applying the diversity model through the differentiate approach, initiating different projects which involve pupils, faculty, educational partners, as well as parents, civil society, media and community.

In the Romanian educational system, the non-formal educative activity frame represents the space capable of answering the contemporaneous challenges of society, in the sense in which its flexible conceiving allows a continuous updating of the educational content and the didactical methods centered on the pupil, as well as a quality monitoring and evaluation of the educational results. Nevertheless, the specific characteristics simplify the implementing of the new didactical approach through which the pupil becomes a resource, a producer, an opinion leader, therefore an active participant.

To stimulate the cognitive, spiritual, interpersonal and social development, the curricular and extracurricular educative activity always bears in mind the need to adapt to the diverse and individual necessities of the children, to the their potential and interest in knowledge. The contexts created by the diverse ways of materialization to what this type of education is concerned, that is projects, punctual manifestations, thematic applications, all of these offer the possibility for interdisciplinary, cross-curricular and

trans disciplinary approaches, exercising life capacities and skills in an integrated manner, for example the holistic development of the personality.

The strategy emphasizes the importance of multiplying the positive experiences registered in the curricular and extracurricular educative activity and imposes the extension of the intervention space in the educational curricular process, in order to make the best out of all the educational content valences, all in the best interest of the child.

#### **Principles and values**

The curricular and extracurricular educative activity strategy is designed according to the following set of principles:

- the principle of priority education, as an assumed responsibility by the Romanian government
- the principle of equal access to education – according to the Constitution and the UN Convention on the Rights of Child, every child has the right to education
- the principle of intercultural
- the principle of activity continuance which has a permanent character and is based on the previous experience
- the formal/non-formal complementary principle
- the principle of organizational and informational flexibility
- the principle of decentralizing educational authority and of assuring the unity of the local educational steps through coordination
- the principle of global, unitary, multidisciplinary and integrate approach
- the principle of transparency while implementing the strategy with the participation of the civil society along with the governmental institutions as to accomplish the objectives
- the principle of cooperation – implementing the strategy is based on the institutional cooperation both at the national and the international level

Along with respecting and promoting these principles, the strategy is also based on the principle of education centered on values: respect, non-discrimination, equality, solidarity, tolerance, truth, freedom, integrity, dignity, honor, sincerity, originality, trust, love.

In this context, the values ensure the frame in which the social norms are established and explained. They stand at the core of forming attitudes, of taking decisions and have a great impact on behavior patterns. It is important to identify the values of pupils, teachers and grown-ups in order to find a common denominator of the representative values of the community which can produce positive changes in the educational system at the efficiency level. Children, teachers and parents together can make the school a better place for all those involved in the educational process, can create an environment based on trust, communication, respect and flexibility (2002, Education and training in Europe: diverse systems, shared goals for 2010. The work

programme on the future objectives of education and training systems, European Commission. Directorate-

General for Education and Culture, Bruxelles.)

contribution of education systems in the Member States of the European Union. European Commission, Education and Culture, Socrates – Eurydice)

Table 1

A. **Quality indicators for continuous education in Europe** (2000, Lifelong Learning: the

<b>A Zone</b>	- Functional literacy
	- Economical literacy
	- New habits in the educational society (adaptive habits).
	- Habits of learning how to learn (Instrumental thinking).
	- Habits of active/cultural citizenship; social habits
<b>B Zone</b>	- Access to continuous education
	-Participation to continuous education
<b>C Zone</b>	-Intervention in continuous education
	-Educators and Yielding
	- ICT in education
<b>D Zone</b>	- Strategies of continuous education
	- The coherence of supporting continuous education
	- Consultancy and orientation
	- Accreditation and Certification
	- Assurance of quality

Table 2

**Types of complementary education**

Domain	Cultural and artistic	Civic	Technical and scientific	Sporting
Types of education	Education for personal development The cultural and artistic domain Communication Media	Education for human rights Education for the rights of the child Health education Preventing school abandon Preventing human trafficking Preventing child labor exploitation Preventing child violence and abuse Promoting equality of chances (non-discrimination disadvantaged groups )	Education for personal development The technical and scientific domain Communication Media	Education through sport
	Multi and intercultural education Folklore, popular art Romanian and foreign culture and civilization	Multi and intercultural education Romanian and foreign culture and civilization European studies	Ecological education Protecting the environment Ecotourism Tourist orientation Agro tourism	
	Education for peace	Education for communitarian development Communitarian development Voluntary		
		Global education (projects )		

**B. The European validation process for non-formal and informal education**  
European criteria of validation

The Copenhagen Declaration, November 2002, points out the necessity of a common set of principles through the validation of non-formal and informal education with the purpose of ensuring a greater comparability between the habits from different countries and at different levels. From the continuous education Communication (November 2001), one sees that the main priority is the valorization of education emphasizing the need for mutual education in Europe. In the other European consecutive documents one signals the pertinent idea that the development of the official validation methods of non-formal learning experiences has been identified as the key result which makes the education more attractive and more relevant for the individual. This new hint of educational politics is taken into account by the Norwegian and Irish initiative at the informal Conference, June 2004. The initiatives of these European countries reflect a powerful European moment which exists in the particular zone of validating education within a society. The most important elements, which can be shared by all the European countries, are those related to the continuous education (2003, Quality Education for All (EFA) and Action Plan (document UNESCO). UNESCO Regional Seminar "Quality Education in Multiethnic Society", Resort facility "Carpathy", Mukachevo, Ukraine).

### **Contextualizing and operating non-formal education on medium and long term**

Relating the participation in the European space to what the non-formal and informal education is concerned, the combined procedure of soft and hard – validation related to the evaluative assurance of quality to the respective voluntary and the validation of the non-formal and informal education in relation with secondary superior education and yielding – would lead to the elimination of the territorial and social disparities, would reaffirm the tradition regarding non-formal and informal education in the Romanian society starting with the modern period.

The infrastructure is possible by setting up a new national agency and developing a new reference national frame for non-formal and informal education, program which is based on lifetime learning and quality indicators; by specifying the domain of the non-formal and informal education from the European validation point of view: in relation with the formal education and yielding the yielder, in relation with the work force, in relation with the voluntary activity; by creating, multiplying and diversifying the opportunities for non-formal education, both in schools and society, depending on the beneficiaries, young people and grown-ups, such as: work stages, distance learning, house learning, summer schools, etc.; by identifying and increasing the voluntary potential and the financial sources for the non-formal education on a local, national, regional, European and international level; by

the local financial sustaining of the actual non-formal education infrastructure (clubs and children workshops, community centers, popular universities); by enlarging the TIC scholar infrastructure and by opening the TIC service offer to the local community; by identifying and enlarging the active networks and partnerships, by involving the informal educational factors of social connection: family, mass media; by educating and cultivating voluntary work, by taking opportunities and consecutive risks derived from school and society projects; by correlating the school activity with the actions of the nongovernmental organizations, social, philanthropic and religious services, in the sense of the contemporary European practice; by recording and transferring the good practices and the assumed participation exercises in the societal experience and the positive attitude.

In a nutshell, a vision of context and infrastructure includes:

- the reassessment and coherence of the relation between the educational politics vision, the allocation of funds and the long term strategies;
- the quantitative allocation and the optimization of quality regarding human and material resources destined for non-formal education
- the adequacy, the efficiency, the distribution on temporal units of the allocated resources (segmental developing plan)

### **REFERENCES**

- Analyzing national politics in the field of education: Romania, OECD. 2000
- Lifelong Learning: the contribution of education systems in the Member States of the European Union. European Commission, Education and Culture, Socrates – Eurydice. 2000,
- Joint Employment Report. European Commission, 2001
- Compass – A Manual on Human Rights Education with young people. Ed. Consiliului Europei. 2002
- Education and training in Europe: diverse systems, shared goals for 2010. 2002, The work programme on the future objectives of education and training systems, European Commission. Directorate-General for Education and Culture, Bruxelles,.
- European Report on Quality Indicators of Lifelong Learning (Fifteen Quality Indicators). European Commission, 2002
- Implementation of the "Education and Training 2010" programme. 2003, Commission of European Communities, Bruxelles.
- Quality Education for All (EFA) and Action Plan (document UNESCO). UNESCO Regional Seminar "Quality Education in Multiethnic Society", Resort facility "Carpathy", Mukachevo, Ukraine. 2003

## INFLUENCE OF PHYSICAL TRAINING PLIOMETRICS EXERCISES THE FIFTH GRADERS

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**ABSTRACT:** In this research we wanted to see if the application an pliometrics exercises program the fifth grade students can improve their physical preparation. The experiment was conducted in physical education classes for a period of 4 weeks in middle school no. 37 of Constanta with the fifth class boys.

**Methods:** The research was based on the experiment, achieving a initially test and a final test from which data were collected the necessary research.

**Results:** To carry out research there were two groups: an experimental group (which were applied pliometrics exercises) and a control group (who worked after school programs established in early). The results obtained allow us to say that the program we implemented resulted in improved physical preparation of secondary school students.

**Conclusions:** Pliometrics exercises planned over four weeks develops quality force-speed as required in increasing physical preparation of secondary school students.

**KEY WORDS:** physical education, pliometrics exercises, force-speed, jumping.

### The introduction and the objectives of the research

Expert opinion, a very important role in preparing athletes to assign the power-speed, because high levels of these qualities contribute compelling motive to increase sports performance. (C. Vittori, 1996) Conditional human ability to perform movements in a shortest possible time to define what we mean by speed driving action.

In the last period of time, it promotes rapid period of driving ability and take the field whose nature is expressed as: maximum acceleration and speed of execution of individual movements (acyclic) or the sequence of movements of the same type (cycle) and frequency these movements (the maximum individual rate of response to a signal).

The concept of speed include concrete conditions in which movements have achieved maximum speed or maximum speed possible action. (M. Stoica, 1999)

The speed link the concept of rapid force, which has components such rapidity and force, in relation to one another and that makes the sequence. (A. Macri, 2005) One benefit of early strength, rapid growth rate is expressed as force, while the maximum force will yield reached the peak force during movement execution.

Speed or power under detention is a combination of basic driving skills encountered in many branches of sports. Force-velocity is characterized by the ability to overcome resistance sportsman with a very high rate of contraction. (R. Manno, 1996) Main desire is the methods used to increase performance as much speed through engagement of large number of muscle fibers in simultaneous action.

Flash, this form of manifestation of the force is defined as the ability of muscle groups to develop maximum strength in as short a time. Force training will help develop not only the legs but the trunk region, lower back and abdominal muscles, which serve as

lower extremity stabilizer and allow more independent movement and explosive leg and thigh.

Pliometrics exercises emphasize lateral movement, change of direction and vertical jumping. Regarding speed drills, which focuses on the ability to start, acceleration, frequency and stride length. These exercises will make an athlete's movements more efficient and agile.

Pliometrics regime, known as the "cycle stretch - shortening" or "stretch reflex miotatic" refers to exercise that muscle contraction is loaded into an eccentric - long, immediately followed by a concentric contraction - shortening. Demonstrated that a muscle stretched before a contraction will contract more vigorous and faster. Pliometrics action is based on reflex muscle tension. (T.O. Bompa, 2002). Pliometrics contraction is a special type of muscle work and addressed to several body segments. The main problem of training is the possibility of converting the muscle fibers and slow speed. In scientific literature, data on this problem are poor, but begin to leave to catch a glimpse of hope for a transformation of slow fibers in fast fibers. Thus, those involved in pliometrics regime change fibers is noticeable.

The pliometrics contraction of a series of phenomena occurs nerve. Classic muscle recruitment is explained by Henneman's law or "size principle", which shows that slow fibers are recruited before fast fibers, irrespective of movement. There is therefore in this case, a default initial mobilization of slow fibers, which is not desirable for explosive movements.

Pliometrics considering a structure that integrates three elements - an eccentric phase, a brief moment of isometrics and concentric phase - training issues will follow two routes operated: a synthetic approach to address simultaneously the three parameters and an analytical method that takes into account only part of the elements.

Pliometrics is represented by those exercises that make muscles in a rapid contraction before an

explosive contractions. These exercises include jumping in all forms.

Choosing the optimal intensity requires a great deal of attention. Pliometrics exercises require extremely body and therefore must follow an appropriate program with exercises gradually moving from the mild to the most difficult.

#### Purpose of paper

Applying a workout pliometrics over the four weeks to fifth graders lead to an improvement in physical preparation.

#### Method

The experiment was conducted in physical education classes for a period of 4 weeks in primary school no. 37 of Constanta with the fifth grade boys. To achieve research formed two groups: an experimental group (fifth grade A), which were applied pliometrics exercises and a control group (fifth grade B), who worked after school programs established early.

To see if pliometrics exercises led to an improvement in the physical preparation of students to conduct two tests: an initial test and final test.

#### Results

Data obtained from the two tests were statistically achieving the following:

Sample		Standing long jump (cm)					
Group		Group experiment		Group control		G.E.	G.C.
Testing		T.I.	T.F.	T.I.	T.F.	T.F.	T.F.
n = 1 5	X	165	170,667	161,667	162,333	170,667	162,333
	DS	15,119	11,159	11,598	9,612	11,159	9,612
	Cv	9,16	6,54	7,17	5,92	6,54	5,92
	t	4,141		0,807		2,191	
	p	< 0,01		> 0,05		< 0,05	

To test the standing long jump, the experimental group subjects showed an average of 170.667 cm to 165 cm in final testing at initial testing, the real difference being 5.667 cm, thus having a significant difference in threshold of  $p < 0,01$ . In control group the value of "t" calculated as the average difference between initial and final test, was 0.807 - statistically insignificant difference ( $p > 0,05$ ).

If the final test of the two groups in this sample to obtain a value of "t" of 2.191, statistically significant difference ( $p < 0,05$ ).

Variability coefficient values, below 10% indicates a high homogeneity of the results obtained by subjects of both groups in this sample.

Sample		Standing high jump (cm)					
Group		Group experiment		Group control		G.E.	G.C.
Testing		T.I.	T.F.	T.I.	T.F.	T.F.	T.F.
n = 1 5	X	30,467	33,067	29,067	29,667	33,067	29,667
	DS	5,78	4,92	3,39	3,086	4,92	3,086
	Cv	18,97	14,88	11,66	10,40	14,88	10,40
	t	6,5		1,655		2,267	
	p	< 0,001		> 0,05		< 0,05	

In the sample height of the jump in place, considering the above table, we see significant progress between mean initial and final tests to test the experimental group ( $t = 6.5$ ,  $p < 0,001$ ). In the control group value of "t" is 1.655 representing an insignificant difference ( $p > 0,05$ ).

Following final testing and comparing the results of the two groups to obtain a value of "t" of 2.267, significant difference ( $p < 0,05$ ), which means that the program we developed and applied made a great contribution in preparing experimental group subjects.

Regarding the coefficient of variability, it shows an average uniformity of the performance of subjects in this sample.

### CONCLUSION

Pliometrics exercises planned over a period of four weeks of force-velocity develops quality, as required in increasing physical preparation of secondary school students.

Pliometrics exercises and the difficulty to match driving skills acquired. Variety of these exercises will help prevent boredom and fatigue that can occur during, exercise.

Choosing the optimal intensity requires a great deal of attention. Pliometrics exercises require extremely body and therefore must follow an appropriate program with exercises gradually moving from the mild to the most difficult. Beginners should establish a base running drills on a flat surface with both legs and a low-impact exercises. Once established a power base, may be included in the program more demanding exercises, such as jumping on one leg, high hurdles and higher impact exercises.

Pliometrics exercises are scheduled immediately after heating, before other exercises that make up the training program. Since the focus of training that includes pliometrics exercises is neuromuscle fatigue may have a negative effect, especially for less-trained athletes. Therefore must be running high intensity pliometrics exercises only rest

when athletes are what will significantly reduce the chances of injury.

Making pliometrics exercises will end when fatigue adversely affect equipment performance. Break between sets and between meetings should be sufficient to enable the body to recover and eventually to adapt to physical stress imposed. Repetition and series to be made dependent on exercise intensity. In general, exercise intensity and number of repetitions is inversely proportional to the effect that, as the intensity is even greater number of repetitions is smaller, and vice versa, as the intensity is even smaller number of repetitions is greater.

### REFERENCES

- BOMPA, T.O., 2002,** *Antrenamentul sportiv. Periodizarea.* C.C.P.S. București.
- MACRI, A., 2005,** *Metodologia dezvoltării calităților de forță-viteză la sprinterii juniori (15-16 ani),* Teză de Doctorat, Chișinău, p.13
- MANNO, R., 1996,** *Bazele teoretice ale antrenamentului sportiv,* CCPS, București, p.92.
- STOICA, M., 1999,** *Optimizarea pregătirii la sprint a juniorilor de nivel I, în raport cu modelul ritmic al alergării, în proba de 100m plat,* Teza de doctorat, București, p.35.
- VITTORI, C., 1996,** *Antrenamentul de sprint în Europa – experiența italiană,* Congresul Asociației Europene de Antrenori de Atletism, M.T.S. -C.C.P.S., București, p.42.



## SPORTS AND ENERGY DRINK CONSUMPTION OF PHYSICAL EDUCATION & SPORTS STUDENTS' AND THEIR KNOWLEDGE ABOUT THEM

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**OBJECTIVE:** Over the last years, sports and energy drink consumption has continued to gain popularity among young people. The ingredients and product purposes of sports and energy drinks are different. Sports drinks are recommended for fluid replacement, however energy drinks are not, but it is not exactly known by consumers, especially athletes and coaches. The purpose of this study is to determine the consumption of sports and energy drinks and the sports student's knowledge about them.

**METHODS:** A total of 153 students (65 females, 88 males) from three university's physical education and sport departments in Ankara were participated to this study. Subjects expected to complete a questionnaire about their personal characteristics, knowledge about sports and energy drinks and their consumption frequency.

**RESULTS:** Mean ages of participants were 22.6 y for females and 21.2 y for males. In regard to the first question, difference of energy and sports drink, 43.1% of participants had known the difference between those drinks. But only 15% of participants reported to have known the ingredients of sports drink, 9.2% of participants known the ingredients of energy drink. Most of students who knows the difference of sports and energy drinks, are consuming this drinks (respectively 69.4% and 71.3%). Sports and energy drinks were drunk by male students more than females (respectively; 81.8 and 78.3%,  $p<0.05$ ). Participants reported that consumption was recommended by coaches and friends'. Consumption frequencies of sports drinks were seldom (34%), twice a week (20%), per week (18%), every day (12%), every other day (12%) and twice a month (4%), energy drinks were seldom (37.1%), per week (24.2%), twice a week (14.5%), twice a month (11.3%), every other day (8.1%) and every day (4.8%). Participants reported that the usage reason of sports drink were because of fluid needs (40.8%), the usage of energy drinks were because of insufficient sleep (10.3%). The majority of energy drink users drinks energy drinks with alcohol (64.5%). The reason behind this was taste (67.5%), consuming more alcohol (15%), to get more pleasure (10%) and its way of serving (7.5%). Male students drinks with alcohol more than female ( $p<0.05$ ).

**CONCLUSIONS:** Results of this study showed that most of the participants do not know the difference between sports and energy drinks and also do not know the ingredients of them. Fluid consumption is important for sports performance. Athletes and students of physical education and sport should know sports and energy drinks better.

**KEY WORDS:** Energy drinks, sports drinks, sports student, consumption.

### INTRODUCTION

Sports and energy drink consumption has continued to gain popularity among young people (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). Those drinks have been promoted to boost performance and endurance (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). The ingredients and product purposes of sports and energy drinks are different; sports drinks are recommended for fluid replacement, energy drinks are not (OM. Meadows, KP. Ryan, 2007). Although sports and energy drinks are target to the 18 to 35 year old consumer and athletes, there has been little researches regarding the consumption patterns of those drinks. The purpose of this study was to determine the sports and energy drinks consumption, prevalence and frequency of energy drink usage and prevalence of adverse side effects and energy drink use dose effects and the sports students' knowledge about them.

### METHODS

A total of 153 students (65 females, 88 males) from three university's physical education and sport departments in Ankara were included to this study. Questionnaire was designed that assessed consumption patterns of sports and energy drinks among these students. Subjects expected to complete a questionnaire

about their personal characteristics, knowledge about sports and energy drinks and their consumption frequency. The questions were asked to these students open-ended regarding situations in which physical education and sport students use sports and energy drinks, the most common energy drinks students were using, frequency patterns, using with alcohol and side effects from using energy drinks.

Analyses were performed using SPSS.15 software. Descriptive statistics included means, standard deviations, 95% confidence intervals, and frequency distributions. Pearson  $X^2$  was used to evaluate differences in frequency distribution of responses. An alpha level of 0.05 was used for all statistical.

### RESULTS

Mean ages of participants were 22.6 y for females and 21.2 y for males. In regard to the first question, difference of energy and sports drink, 66 participants (43.1%) had known the difference between those drinks. But only 23 participants (15%) reported to have known the ingredients of sports drink, 14 participants (9.2%) known the ingredients of energy drink. Most of students who knows the difference between sports and energy drinks, are consuming this drinks (respectively 69.4% and 71.3%). Sports and energy drinks were drunk by male students more than females (respectively; 81.8 and 78.3%,  $p<0.05$ ).

Table 1: How and where the students got the recommendation of sports and energy drink consumption

	Sports drink		Energy drink	
	N	%	N	%
Coach	16	32.0	15	24.2
Friend	25	50.0	35	56.5
Advertisement	0	0.0	1	1.6
None	8	16.0	10	16.1
Club working	1	2.0	1	1.6
Parent	0	0.0	0	0.0
Total	50	100.0	62	100

Participants reported that consumption was recommended by coaches and friends (Table 1).

Table 2: Consumption frequencies of sports and energy drink among sports and energy drink users

	Sports drink		Energy drink	
	N	%	N	%
Every day	6	12	3	4.8
Every other day	6	12	5	8.1
Twice a week	10	20	9	14.5
Per week	9	18	15	24.2
Twice a month	2	4	7	11.3
Seldom	17	34	48	37.1
Total	50	100	62	100

Consumption frequencies of sports drinks were seldom (34%), twice a week (20%), per week (18%), every day (12%), every other day (12%) and twice a month (4%), energy drinks were seldom (37.1%), per week (24.2%), twice a week (14.5%), twice a month (11.3%), every other day (8.1%) and every day (4.8%).

Table 3: Situations of sports and energy drink usage among sports and energy drink users

	Sports drink		Energy drink	
	N	%	N	%
Psychological	5	18.5	3	3.4
Performance	6	22.2	3	3.4
Fluid deprivation	11	40.8	2	2.3
Recovery	4	14.8	0	0.0
Healthy nutrition	0	0.0	0	0.0
Taste	0	0.0	2	2.3
Insufficient sleep	0	0.0	9	10.3
Decrease fatigue	0	0.0	4	4.6
Mix with alcohol	0	0.0	1	1.1
Others	1	3.7	0	0.0
Total	50	100.0	62	100.0

Participants reported that the usage reason of sports drink were because of fluid needs (40.8%), the usage of energy drinks were because of insufficient sleep (10.3%).

Table 4: Situations of energy drink usage among energy drink users

	N	%
Taste	27	67.5
Consuming more alcohol	6	15.0
Its way of serving	3	7.5
To get more pleasure	4	10.0
Total	40	100.0

Table 5: Frequencies of mixing energy drink with alcohol among energy drink users

	N	%
Always	8	20.0
Generally	12	30.0
Sometimes	9	22.5
Seldom	11	27.5
Total	40	100.0

The majority of energy drink users drank energy drinks with alcohol (64.5%). The reason behind this was taste (67.5%), consuming more alcohol (15%), to get more pleasure (10%) and its way of serving (7.5%). Male students drink with alcohol more than female ( $p < 0.05$ ). The participants who consumed energy drinks did not report and side effect or risky behavior consumption with alcohol.

### Discussion and Conclusion

The consumption of sports and energy drinks has increased markedly in recent years. Although production purpose of those drinks are to enhance performance and endurance, they are not replaceable with each other. Sports drinks were developed a formulation of carbohydrates and electrolytes to enhance athletes performance and prevent dehydration. Commonly available sports drinks contains about 6% to 8% carbohydrates, including glucose, fructose, and sucrose. Some of the newer beverages also includes complex carbohydrates such as maltodextrin. Sports drinks contains important ingredients such as sodium, potassium, and magnesium to maintain fluid/electrolyte balance (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). Energy drinks also tend to have higher carbohydrate content (e.g., 9% to 10%) than that of sports drinks. Energy drinks have sugar-containing and sugar free versions (OM. Meadows, KP. Ryan, 2007). Energy drinks tend to have 140 calories per eight ounces compared with approximately 50 calories per eight ounces for sports drinks. Although sports drinks may contain fewer calories per serving than soda and some fruit juices, they may add unnecessary and excessive calories to a child's daily intake unless there is a great expenditure of energy through physical activity. Energy drinks typically

contains more calories per serving than do both cola and fruit juices. In addition, energy drinks usually contains high-fructose corn syrup and other unhealthy additives (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). The result of this study shows that physical education and sports department students do not exactly know differences between these drinks. Energy drinks are promoted for their stimulant effects and claims to offer a variety of benefits including increased attention, endurance and performance, weight loss (KE. Miller, 2008). Smit and colleagues found that energy drinks, improves and/or maintains mood or performance during fatiguing and cognitively demanding task, as compared to placebo (K.E Miller,2008). Caffeine was found to be the primary constituent responsible for these effects. Although there is no human requirement for caffeine, even low doses of caffeine (12.5 to 100 mg) improves cognitive performance and mood (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). But some studies have found no correlations on either physical or cognitive outcomes (M.C. O'Brien, T.McCoy, S.D Rhodes, A Wagoner, M.Wolfson, 2008). The main active ingredient in energy drinks is caffeine, although other substances such as taurine, riboflavin, pyridoxine, nicotinamide, other B vitamins, and various herbal derivatives are also present (KE. Miller, 2008). Results from the present study indicated that primary purpose of energy drinks consumption is because of alertness. Energy drinks typically contain 80 to 141 mg of caffeine per 8 ounces, the equivalent of five ounces of coffee or two 12 ounce cans of caffeinated soft drink (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. Wish, 2008). For comparison, the caffeine content of a 6 oz cup of brewed coffee varies

from 77 to 150 mg. However, the FDA approved caffeine and limited the maximum caffeine content of cola-type soft drinks to 0.02% caffeine, or 71 mg/12 fluid oz (A. Oteri, HYPERLINK "http://www.ncbi.nlm.nih.gov/pubmed?term=%22Oteri%20A%22%5BAuthor%5D" , F Salvo , AP Caputi, HYPERLINK "http://www.ncbi.nlm.nih.gov/pubmed?term=%22Caputi%20A%22%5BAuthor%5D" , G. Calapai, HYPERLINK "http://www.ncbi.nlm.nih.gov/pubmed?term=%22Calapai%20G%22%5BAuthor%5D" 2007). The acute and long-term effects resulting from excessive and chronic consumption of these additives alone and in combination with caffeine are not fully known (KE. Miller, 2008). Caffeine has been found to have detrimental health consequences (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008) Caffeine is also a diuretic that promotes fluid loss. Children and adolescents should be cautioned against drinking caffeinated beverages such as energy drinks while exercising. It is important to note the difference between energy drinks and sports or rehydrating beverages. Sports drinks are designed to restore fluid balance and provide energy during exercise. Caffeine- containing energy drinks have not been formulated to deliver rehydration (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). High caffeine consumption is associated with chronic daily headaches, particularly among young women (age < 40 years) and among those with chronic episodic headaches and of recent onset (<2 years). Central nervous system, cardiovascular, gastrointestinal, and renal dysfunction have been associated with chronic caffeine ingestion. However, caffeine can have harmful physical consequences (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). In a survey of 795 undergraduate students, self-reported measures of masculinity and risk taking behaviours were positively associated with frequency of energy drink consumption (CJ., Reissing, EC., Strain, RR Griffiths., 2009). Energy drinks are prompted by the potential adverse consequences of caffeine use as caffeine intoxication include nervousness, anxiety, restless, insomnia, gastrointestinal upset, tremors, tachycardia, psychomotor agitation and rare cases, death (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). In a survey of 496 college students, 51% reported consuming at least one energy drink during the last month (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). There are increasing reports of caffeine intoxication from energy drinks, and it seems likely that problems with caffeine dependence and withdrawal will also increase. The results from this study provide information regarding energy and sports drink consumption habits among physical education and sport departments. Students

who use energy drinks did not report any side effects. The combined use of caffeine and alcohol is increasing sharply, which studies suggest may increase the rate of alcohol-related injury (Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). In a survey of 1253 college students, energy drink users were disproportionately male and consumed alcohol more frequently than non- energy drink users (Hj Smit, Jr, Cotton, Sc Hughes, Pj Rogers, 2004). Energy drinks and alcohol are very popular and 16% of students reported energy drinks consumption at least once per week (10). In a survey of 496 college students, 27% reported mixing alcohol and energy drinks in the past month (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). A recent survey found that 48.4% of energy drink consumers had mixed these substances with alcohol within more than 3 times in the last month (<http://www.redbull.com.tr>). Another study showed that ingestion of a caffeinated energy drink with vodka reduced participants perception of impairment of motor coordination in comparison to vodka alone, but did not significantly reduce objective measures of alcohol-induced impairment of motor coordination, reaction time, or breath alcohol concentration. Thus, when mixing energy drinks and alcohol, users may not feel the symptoms of alcohol intoxication. This may increase the potential for alcohol-related injury. Indeed, a recent survey of college students found that in comparison to those who consumed alcohol alone, students who consumed alcohol mixed with energy drinks had a significantly higher prevalence of alcohol-related consequences including: being taken advantage of, or taking advantage of another student sexually, riding in an automobile with a driver under the influence of alcohol, or being hurt or injured (KE. Miller, 2008). Findings from our study supports the premise that young people uses energy drinks with alcohol for taste, to consume more alcohol, to get more pleasure and because of its way of serving. On the other hand, there did not any side effect or risky behavior related to consumption energy drinks with alcohol in this study. Results of this study showed that most of the participants do not know the difference between sports and energy drinks and also do not know the ingredients of them. Fluid consumption is important for sports performance. Athletes and students of physical education and sport should know sports and energy drinks better.

#### References

**ARRIA, A.M., CALDEIRA, K.M., O'GRADY, K.E., VINCENT, K.B., GRIFFITHS, R.R., WISH, E.D., 2008**, Energy drink use is associated with subsequent non-medical prescription stimulant use among college students. *In: Proceedings of the American Public Health Association Annual Meeting*. San Diego, California.

- MALINAUSKAS BM., AEBY VG., OVERTON RF., AEBY TC., HEIDAL KB., 2007,** *A survey of energy drink consumption patterns among college students.* Nutritional journal, 6:35, 1-7.
- MEADOWS OM, RYAN KP., 2007,** *Powering up with sports and energy drinks.* Journal Pediatric Health Care, 21, 413-416.
- MILLER KE., 2008,** *Energy drinks, race, and problem behaviours among college students.* Journal of adolescent health, 43, 490-497.
- MILLER, K.E., (2008).** *Wired: energy drinks, jock identity, masculine norms and risk taking.* The Journal of American College Health 56, 481-489.
- O'BRIEN, M.C., MCCOY, T., RHODES, S.D., WAGONER, A., WOLFSON, M., 2008,** *Caffeinated cocktails: get wired, get drunk, get injured.* Academic Emergency Medicine, 15, 453-460.
- OteriHYPERLINK  
"http://www.ncbi.nlm.nih.gov/pubmed?term=%22Oteri%20A%22%5BAuthor%5D" A, Salvo F, CaputiHYPERLINK
- "http://www.ncbi.nlm.nih.gov/pubmed?term=%22Caputi%20AP%22%5BAuthor%5D" AP, CalapaiHYPERLINK  
"http://www.ncbi.nlm.nih.gov/pubmed?term=%22Calapai%20G%22%5BAuthor%5D" G., 2007, Intake of energy drinks in association with alcoholic beverages in a cohort of students of the School of Medicine of the University of Messina. Alcoholism: Clinical and Experimental Research, 31(10):1677-80.
- REISSING CJ., STRAIN EC., GRIFFITHS RR., 2009,** Caffeinated energy drinks-A growing problem. Drug and alcohol dependence, 99, 1-10.
- SMIT HJ., COTTON JR, HUGHES SC., ROGERS PJ., 2004,** Mood and cognitive performance effects of "energy" drink constituents: caffeine, glucose and carbonation. Nutritional Neuroscience, 7:127-139.
- http://www.access 2003, FOOD AND DRUG ADMINISTRATION, Substances generally recognized as safe. Code of federal Regulations. Title 21 volume 3, Sec. 182.1180., 07.04.2010.  
http://www.redbull.com.tr/,18.11.2009

## STUDY ON SOME ASPECTS OF AGEING PROCESS LATE IN LIFE

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### ABSTRACT

People's ageing becomes a gradual and differential degrading process, varying from one person to the other, but never being stopped. Individuals get old differently as the origins of degrading process are both endogenous and exogenous. Ageing is observable and measurable too.

Therefore, the target of this study has been to determinate the degree of the senior citizens' normal functionality free of evident or serious diseases. The basic hypothesis tried to find differences or similarities between the ageing process of both genders.

As subjects of this study there were 130 persons (men and women), 65-70 years old, corresponding to the first stage of involution, it means the adaptation period or the passing stage to the old age.

As research methods have been used: specialized literature, ascertaining study, statistical-mathematical analysis, signification of the difference between non-correlating groups, at a probability threshold  $p=0.05\%$  and graphic representation.

The researching approach incorporated six (6) tests, as follows: skin elasticity, test of rule, static equilibrium, Storm test, test of apnea and thoracic elasticity. Have been carried out comparisons between the results of both groups (men and women), pointing out the manner in which there are similarities or differences between the two genders as concerns the ageing degree.

**KEY WORDS:** senior citizens, ageing, test, physiological degradation.

### INTRODUCTION

As bio-psycho-social human being, a person passes through three main stages during its evolution:

1<sup>st</sup> age (up to 20-24 years old), 2<sup>nd</sup> age (up to 65 year old) and old age (from 65 years until death).

Old Age represents the involution stage of the human being, during which the fundamental activity becomes "the adaptation to a new schedule of social and family activities" (T. Avramescu, and collaborators, 2007). Following the retirement from the job, seniors face with other types of relationships and activities.

The main social issues highlighted at old age cover: social protection, the trend of increase of the longevity and prophylaxis of old age, the fight against degeneration, but also the improvement of professional and social experience.

The old age, of the involution, develops on stages:

-The first stage - the adaptation period or the transition stage towards the old age (65-75 years old), the delicate biological period, with current diseases. The end of the professional activity causes some changes in lifestyle and area of concerns of old people. The body's ageing and fatigue significantly affect the activity of old people, that identify at this stage, mainly with the socio-civic activities than with professional ones.

Age and degeneration diseases induce a feeling of social inexperience and abandonment, particularly in the situation in which their children, that became adults, are concerned with their family responsibilities and obligations, and do not have enough time for their elderly parents.

-The second stage. The average stage - between 75-85 years old - is the period of retrogressive diseases.

-The third stage. Represents the stage of the old age or of longevity, of the persons over 85 years old.

-The terminal stage, that differentiates in biological death (related to physiological and medical processes), psychological death (related to the dissolution of the behaviour and relationships with others) and social death. In the case of physiological ageing, the body uses the compensation reserve and resorts to finding its equilibrium.

Old people that do not suffer from obvious diseases, the normal functionality (senescence) is variable, in the following order: normal senescence (the ageing process accompanied by non-pathological decreases of the physiological functions) and successful senescence (the physiological decline is minimal).

Gradually, the body's ability to adapt to new environmental variations decreases, the instincts' energy and efficiency of adaptation decreases because of the trophic, biochemical, consistency and functional changes, of the body's biological structures.

Involution processes, that manifest differently at the level of the organs and tissues, are characteristic to ageing, affecting the entire body (E. Cristea, 1990). Significant biological changes observed during ageing refer to:

- Change of the corporal structure and osteoarticular system. The active mass (muscles) is reduced, in parallel with the increase of the adipose tissue, determined by the inhibition process, as well as other determinant factors, such as the sedentary lifestyle, improper diet.

The muscles are affected by retrogressive processes, which reduce trophicity and muscle elasticity. There also occurs osteoarticular ageing by

the diminution of bones. Inflammatory or retrogressive lesions in the joints are causing rheumatic affections, that appear, at old people, under the form of rheumatoid arthritis, spondylitis or arthrosis. Knees joints, coxofemoral and spine are affected.

In the case of ageing affections, spine mobility is partially or totally reduced, and dysfunctions of the muscular-ligament apparatus can cause damage to the inter-vertebral disks.

- Changes of the cardiovascular and respiratory system. Age and prolonged hemodynamic stress induces characteristic changes of the heart and circulatory system. The normal values of blood pressure at old people is 160mmHg (systolic blood pressure) and 90 mmHg (diastolic blood pressure). Sclerosis, that is a characteristic disease for old age, installs at the level of arteries, but affects the function of all organs. Sclerosis at the heart and brain level induces serious consequences, often irreversible. Respiratory function decreases with age and lung elasticity is reduced resulting in the increase of residual volume. Light physical activities are recommended to old people, with the purpose of activation of the cardiovascular system.

- The affection of the renal function. Kidneys change, by the reduction of the renal mass, of the total number of glomeruli and increase of the glomerulosclerosis. Also, low thirst determines the increase of the dehydration risk.

- Changes in the endocrine-metabolic system. Glucose tolerance diminishes, mainly due to the insulin resistance of the peripheral tissue.

- Reduction of the immune system activity. Reduction of immune function can lead to installation of infectious diseases and cancer.

During old age depressive moods often appear, which are caused by pathological, psychological, sentimental, social factors etc..

Feelings of loneliness, combined with organic suffering, make old people anxious, irritable or, on the contrary, sad and quiet.

According to studies, ageing may vary according to personal attitudes and skills that must be exploited.

Lifestyle can affect or favour the health of old people, by creating optimal conditions for functionality or speed of the already existing dysfunctions.

Diet, sedentary lifestyle, alcohol, all these increase the installation speed of the ageing phenomena. The diet excelling in refined foods and physical inactivity, strengthens the ageing process.

Old age is often confused with a poor health. Generally, people aged between 65 and 79 years old, are double affected by diseases. Romanians aged over 65 have at least one health problem.

In a percentage of 95%, Romanian old people are living with their families, in their households, as, even if needing support, in Romania, the care and protection system is precarious.

In civilized countries a relatively small percentage

of people belonging to the age group between 64-75 years old are living in hostels or asylums.

According to Mavritsakis, N., and Ghidrai, O., in the study made in 2009, on the institutionalized subjects, there is a correlation, in inverse proportion, between physical activity and depression: at higher values of the score in the geriatric depression scale, there correspond low values of the index of physical activity, and at low values of the score in the geriatric depression scale, there correspond high values of the physical activity index.

Controlled motion, with the proper interaction of the legs and hands, constitute a means of adaptation to effort and prevention of falls, at healthy old people or at those suffering of locomotor problems (G. Chiriti, D.M. Dimulescu, 2009).

Physical activity at old people, generates on the neuronal way, an increased cortical tone, a positive mood with anti depressive effects.

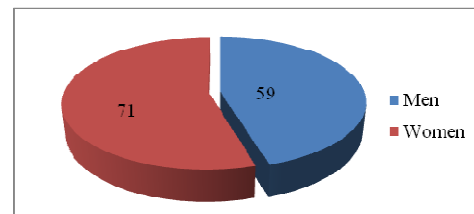
#### Aims and hypothesis

The target of this study - to determinate the degree of the senior citizens' normal functionality (free of evident or serious diseases).

The basic hypothesis tried to find differences or similarities between the ageing process of both genders.

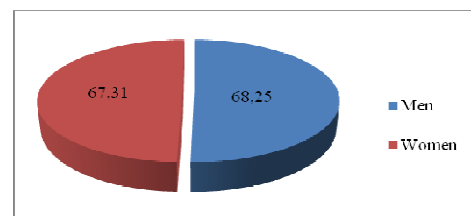
#### Subjects

The subjects were volunteers, healthy people for their age, without any serious healthy problems. 130 in number persons, 65 - 70 years old (Graph A).



Graph A The number of the subjects

Men 59 with a mean age of  $68.25 \pm 1.45$  years and women 71 with a mean of  $67.31 \pm 1.37$  years old, (Graph B) corresponding to the first stage of involution, it means the adaptation period (or the passing stage to the old age).



Graph B The age of the subjects (means)

## METHODS

As research methods have been used: specialized literature, ascertaining study, statistical-mathematical analysis, signification of the difference between non-correlating groups, at a probability threshold  $p=0.05\%$  and graphic representation.

The researching approach incorporated six (6) tests, as follows: skin elasticity, test of rule, static equilibrium, Storm test, test of apnea and thoracic elasticity. Have been carried out comparisons between the results of both groups (men and women), pointing out the manner in which there are similarities or differences between the two genders as concerns the ageing degree.

## RESULTS

### 1. Elasticity of skin

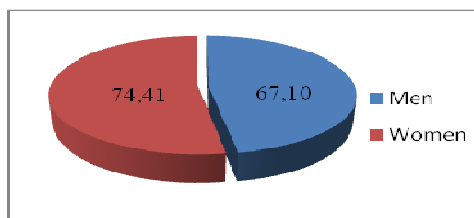
Skin changes are the most visible signs of ageing. With age, skin becomes thinner and loses its firm texture and elasticity. The external layer of skin, the epidermis becomes thinner, the number of cells containing pigment decreases and the remaining ones are increasing in size. The skin appears thus thinner and pale. Large pigmented spots appear in areas exposed to sunlight.

Changes in the connective tissue reduce skin elasticity (A. Popescu, 2009).

Test: The skin on the back of the hand, was seized for 5 seconds, between the thumb and the forefinger, then kept the necessary time until the complete disappearance of the fold.

At the first stage of the old age, the skin fold vanished on an average of 67.10 seconds for men, and 74.41 seconds for women (Graph 1).

We found no meaningful difference between men and women  $t < t_{crit}$  ( $1.56 < 1.98$ ).



Graph 1 Elasticity of skin (seconds)

### 2. Ruler test

Although genetically conditioned, the ageing process has a rhythm that depends on the lifestyle and mostly of the old people's activism.

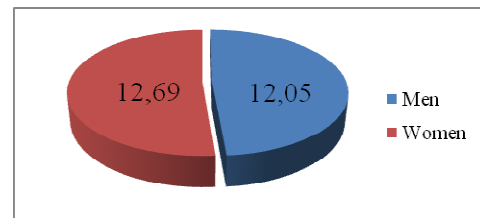
Studies sustain that fact that physical effort measured properly may be a means of prevention and treatment of structural and functional deterioration of the locomotory apparatus, with positive effects in the functionality of other apparatuses and systems. Premature ageing intervenes when movement lacks and because of the interruption of any physical and mental activities, at the retirement stage.

According to I. Dragan, (2002), the reduction of the physical potential is of 10% per decade, beginning

with the age of 30 years old: 5% reduction is caused by the biological evolution, 5% due to being sedentary. The muscle mass decreases progressively, from 30% of the body weight at young people, 15% at 75 years old, because of the decrease of the number and size of muscle fibres, a process accompanied by muscle weakness and reduction of passive, active or mixed movements (N. Maveitsakis and collaborators, 2008).

Physical effort gradually doses as intensity and duration, depending on the maximal cardiac frequency (L. Pop and collaborators, 2001).

Test: A 50-centimetre ruler is held from the upper side, by another person, at the level of the scale mark 0. Index finger and thumb of your right hand (skilled hand) is placed at a distance of 8-10 centimetres, from one side and the other of the ruler, at the level of the scale mark 50. When the person lets the ruler drop, without warning the subject, he/she must catch it as soon as possible. The score is given by the scale mark at the level of which is succeed in withholding it. Perform the test three times and calculate the average performance in centimetres.



Graph 2 The ruler test (cm)

At the first stage of the old age men and women had the same performances in ruler test. The men got the ruler on an average of 12.05 cm and the women on an average of 12.69 cm. (Graph 2).

We found no meaningful difference, between gender  $t < t_{crit}$  ( $1.12 < 1.98$ ).

### 3. Thorax elasticity

According to T. Bocu and S. Tache, (2005), the change from the active social status to the retirement involves: progressive decrease of effort capacity, the interruption of the occupational physical effort and the tendency towards becoming sedentary, with the apparition of the de-conditioning syndrome of old people.

After 60 years old, at the level of the respiratory system, some non-pathological changes occur, such as:

- Increase of the respiratory frequency when resting (from 14-15/minute to 18-19/minute) with the prolongation of expiration.

- Lung emphysema with increase of the anterior-posterior diameter and decrease the difference in the thorax diameter inspiration-expiration.

- Changes in the thorax - scoliosis, enlargement of the epigastric angle, etc., with modifications of the obstructive respiratory dysfunction type (decrease of the maximum respiratory volume per second) to the functional respiratory tests.



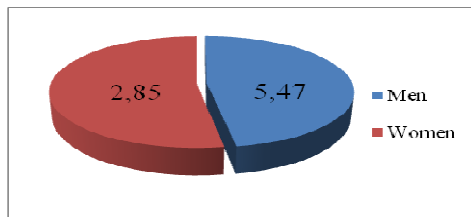
- The vital capacity decreases with age, along with the decrease of the volume of air current and of the alternate one, once with the increase of the residual volume. At 60 years old, the vital capacity decreases by 25% as compared to 20 to 30 years old.

Once with the ageing, the thorax dynamics, the respiratory function and gas exchange decrease, mainly due to: the calcification of the thoracic wall, the sclerosis of inter-vertebral discs, the reduction of the mass and thoracic muscle strength and decrease of the lung elasticity (elastin decreases, the fibrous tissue increases).

Ventilation possibilities are reduced by 50%, but in combination with the reduction of the maximum cardiac output, the aerobic possibilities diminish. Old people are able to maintain an adequate gas exchange in the position of rest, but also during daily activities, but a sustained effort must be performed during the intense physical exercises (Beers, 2005 quoted by E.G. Butnariu, and collaborators, 2009).

Test: Thorax elasticity is measured: the thorax perimeter in maximum inspiration, then the thorax perimeter in complete expiration. After that is calculate the difference.

At the first stage of the old age the men had an average for thorax elasticity of 5.47cm and the women about 2.85 cm.



Graph 3 Thorax elasticity (cm)

We found meaningful difference between gender, men advantage  $t > t_{crt}$  ( $3.22 > 1.98$ ).

#### 4. Test of balance

Balance control is a complex phenomenon associated with several human functions. Functions of neuromuscular system are known to decrease with ageing, particularly after the sixth decade. Degeneration of the neuromuscular system is one of the main reasons for impaired balance control during ageing and therefore it increase the number of falls in elderly people (P. Piirainen, 2010).

Balance is usually measured using static balance tests or different kinds of dynamic tests. It has been demonstrated that static balance tests do not reveal balance disorders age-related differences as dynamic balance measurements.

A study made at the University of Illinois suggests the improvement of the health state of old people who practice martial arts, in which simple physical and graceful exercises combine with meditation.

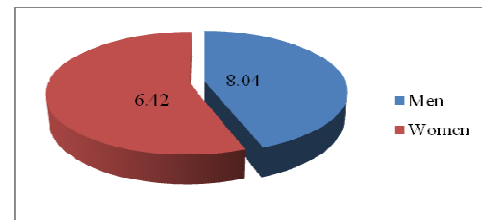
People having resorted to this kind of physical activity, three times a week for six months, felt the

positive effects after only two months. In addition to the improvement of the equilibrium and strength, participants stated having improved also their mental and emotional state. Subjects had significant improvement of the balance capacity with the eyes open, after two months and little progress with the eyes closed after six months

Test: Standing barefoot, the heels close. Lift one leg to about 15 centimetres from the ground, the knee bent at 45 degrees. Try to keep the balance. The test is performed with the eyes closed (using the preferred leg). Performance is represented by the period in which you succeed in maintaining the balance. Perform the test three times and measure the performance by the average time obtained. We've proposed the test also with the eyes open.

At the first stage of the old age for the eyes open test the men succeeded to remain still in balance about 8.04 seconds (mean) and the women about 6.42 seconds (Graph 4.1.).

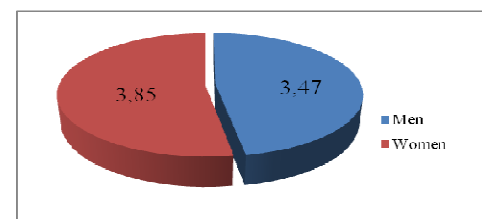
We found meaningful difference between gender, men advantage for the eyes open:  $t > t_{crt}$  ( $3.54 > 1.98$ ).



Graph 4.1. Test of balance - open eyes (s)

At the first stage of the old age for the eyes closed test the men succeeded to stay still in balance about 3.47 seconds (mean) and the women about 3.85 seconds (Graph 4.2.).

We found no meaningful difference between gender, men advantage for the eyes closed:  $t > t_{crt}$  ( $1.15 > 1.98$ ).



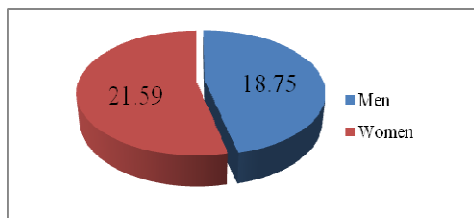
Graph 4.2. Test of balance – eyes closed (s)

5. The apnoea test

Test: The subject is asked, that after a maximum inspiration, respectively a maximum expiration to perform a voluntary apnoea as long as possible. The time of withholding the apnoea is being calculated.

The men performed about 18.75 seconds a maximum inspiration and the women about 21.59 second (Graph 5.1.).

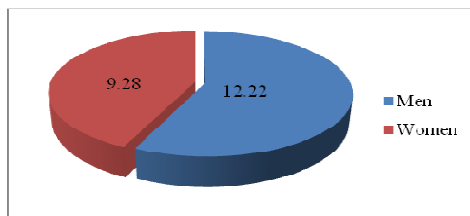
At the first stage of the old age we find meaningful difference between men and women for the test in maximum inspiration, in avantage for women  $t > t_{crt}$  (2.47 > 1.98).



Graph 5.1. The apnoea test – maximum inspiration (s)

The men performed about 12.22 seconds in average for apnoea in maximum expiration and the women about 9.28 seconds (Graph 5.2.)

At the first stage of the old age we found meaningful difference between men and women for apnoea test in maximum expiration, in avantage for men  $t > t_{crt}$  (3.45 > 1.98).



Graph 5.2. The apnoea test – maximum expiration (s)

6. The Storm test (persons over 60 years old):

The involution process of ageing induces morphological changes that are normal for the heart. Dimensions remain almost normal, the geometry of the left ventricle changes, the pericardium becomes rigid, the diameter of mitochondria increases at people over 80 years old.

The maximum cardiac frequency is reduced with the age, especially at sedentary people (I. Dragan, 2002). Blood vessels suffer changes, induced by the qualitative and quantitative altering of the elastic tissue, muscle degeneration and calcification. Number of capillaries in tissues is reduced.

At old people, adaptation to effort and recovery are more difficult and take place slower. Acute physical effort causes, at old people, biological and

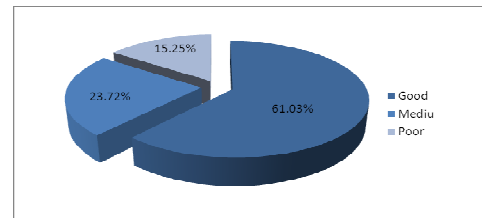
hemodynamic changes, with repercussions on the cardiovascular adaptation (S. Tache, and C. Sirbu, 2001).

Test: The subject raises and sits on the chair 15 times.

The pulse is determined before the exercise (the pulse at rest - Pr) and immediately after the effort for 3 minutes.

- P1 - If the increase is less than 15 and if the return to the frequency of relaxation is made in 1-2 minutes, then the adaptation to effort is good.
- P2 - If the increase is between 16 and 20, and if the return to the frequency of relaxation is made in 1-2 minutes, then the adaptation to effort is average.
- P3 - If the increase is higher than 20 and if the return to the normal frequency takes more than 2 minutes, then the adaptation to effort is bad.

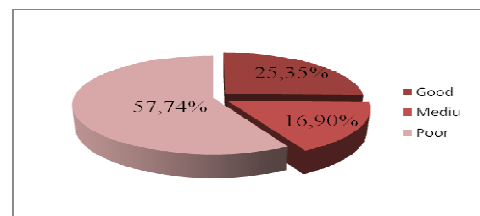
Speaking about cardiac adaptation for men, we can say that about 25.35 % of them had a good answer to the test, 16.90% a medium answer, and the majority had an poor answer (Graph 6.1.). That means unassuming adaptation of cardiac function, for men in the stage of old age.



Graph 6.1. The Storm test – for men (%)

The women had the about the same answer to the simple cardiac effort. The Storme test relived that the majority of women had a poor answer to the test, about 57.74% of them. A percentage of 25.35% was for the women with medium answer and 16.90% of them had a poor answer.

For our grup of subjects, at the age of 65-70 years old, the cardiac adaptation had no meaningful difference between men and women.



Graph 6.2. The Storm test – for women (%)

Conclusions

1. The presented investigation indicates that at the first stage of age of old age, about 65-70 years old, get old in the same time.

2. At 65-70 years old there are some similitudes and differences of biological and motor nature of men and women.
3. For some aspects the men answered better, that means that maybe the women get older faster than men.
4. At this age as women and men get old rough in the same terms of skin elasticity, motric reaction, balance (with eyes closed) and adaptation to effort (adapting dominantly low).
5. There is a differences in favor of women during the apnoea in inspiration (phase) of breathing.
6. There are some difference shown in favor of men, at thorax elasticity, during apnoea in expiration, at balance with open eyes.

#### BIBLIOGRAPHY

- AVRAMESCU, E., T., și colaboratorii**, 2007, *Kinetoterapia în patologia geriatrică*. Craiova: Editura Universitaria, 5-11
- BOCU, T., TACHE, S.**, 2005, Îmbătrânirea și efortul fizic. *Palestrica Mileniului III Civilizație și Sport*, Volumul III, 1 (19), 45-57
- BUTNARIU, G. E. și COLABORATORII**, 2009, *Exercise methodology in elderly*. *Palestrica Mileniului III*, Volumul X, 2 (36), 158-164
- CHIRIȚI, G., DIMULESCU, D., M.**, *Gait Disturbances in Old People or Compensatory Mechanism for Falls Prevention*. *Palestrica Mileniului III*, Volumul X, 4 (38), 405-409
- CRISTEA, E.**, 1990, *Terapia prin mișcare la vârsta a treia*. București: Editura Medicală, 13-18
- DRĂGAN, I.**, 2002, *Medicina sportivă*. București: Editura Medicală, 504-519
- LEACH, R., E.**, 2000, *Aeging and physical activity: Ortopede*, 29, (11), 215
- MAVRITSAKIS, N., FREUNDICH, G., BOCU, T.**, 2008, *Răspunsul respirator la efortul fizic la vârstnici*. *Palestrica Mileniului III Civilizație și Sport*, Volumul IX, Nr. 2 (32), 104-107
- MAVRITSAKIS, N., FREUNDICH, G., BOCU, T.**, 2008, *Efortul fizic la vârstnici*. *Palestrica Mileniului III Civilizație și Sport*, Volumul IX, Nr. 3 (33), 215-221
- MAVRITSAKIS, N., GHIDRAI, O.**, 2009, *Activitatea fizică și iatrogeniile psihice la vârstnici*. *Palestrica Mileniului III Civilizație și Sport*, Volumul X, Nr. 3 (37), 298-302
- POP, L., UNGUR, R., ONAC, I., TACHE, S.**, 2001, *Efortul fizic în cadrul programelor de recuperarea a pacienților de vârsta a III-a cu boală artrozică*. *Palestrica Mileniului III*, Anul II, nr. 4 (6), 69-74
- PIIRINEN, M., J., AVELA, J., SIPPOLA, N., LINNAMO, V.**, 2010, *Age Dependency of Neuromuscular Function and Dynamic Balance Control*. *European Journal of Sport science*, Volume 10 (1), 69-79
- POPESCU, A.**, 2009, *Vârsta a treia – plusuri și minusuri*. În: *Articole de specialitate*, 2009, 32-35
- RUDMAN, D.**, 1990, *Effects of Human Growth Hormone in Men Over 60 Years Old*. *New England Journal of Medicine*, Volume 323 July 5, 1990 Nr. 1
- TACHE, S., SÎRBU, C.**, 2001, *Răspunsul cardiovascular la efort fizic la vârstnici*. *Palestrica Mileniului III*, Anul II, nr. 4 (6), 57-68

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## STUDY REGARDING THE ROLE OF INTUITIVE MEANS IN THE QUALITATIVE GROWTH OF THE MASTERING OF THE CONTENT OF THE PHYSICAL EDUCATION LESSON

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**Resume:** In the performed study we wanted to present the manner in which the application during the lessons of physical education in the scholastic program (apart from the classic means of teaching) of the means with an intuitive character, contributes to the acquirement of higher results on behalf of the pupils, in the evaluation tasks in the nation system.

In the scholastic instructive-educative process, the use of learning methods and means represents the essential condition of obtaining the different degrees of the skills and efficiency of the lesson on the whole value scale, from sufficient to exceptional.

The used categories of means by the teachers are oriented on more direction of which some are directly included in the process of practical exercise and others are unspecific means, that regard intuitive and informational aspects.

In order to demonstrate the possibilities of qualitative growth of the lesson in accordance with the efficiency of the use of the intuitive means during the lessons of physical education, we made up two groups of boys each consisting of 30 subjects, on which was acted differently. The used criterion for the sampling of the two groups was their homogeneity.

**Methods of research:** The used methods of research were the method of tests, the method of statistical-mathematical analysis, the method of graphic representation.

**Conclusions:** From the researches made, we observed that the work hypothesis was confirmed and it was validated in practice the fact that, the use of the means with intuitive character in the lesson of physical education in the secondary cycle, especially with the pupils in the fifth grade, leads to the increase of the efficiency of the lesson, a fact proved by the results of the experimental group in the final test.

**KEY WORDS:** quality, physical education, intuitive means

### INTRODUCTION

The continuing challenge of teaching physical education and sport was the improvement of various methods of teaching specific content (G. Cârstea, 1997; T. Badiu, ș.a. 1999; T. Badiu, C. Mereuță, L. Talaghir, 2000;). This was emphasized along with the threshold age at which students are required different actions of a more complex and narrow specialization (V. Jurat, 1999; C. Hânsa, L. Călin, 2004).

That's why many research scholars have tried experimenting with new methods, (F. Konukman, E. Petrakis 2001) some of unconventional nature, conducive to student achievement goals of discipline studied according to the specialized curriculum. Our research sought to register the same trend in teaching methods enhanced.

Seeking to demonstrate that using an intuitive means has a positive effect on motor learning we have made a difference between the mode of action of the two groups involved in the study.

Thus, as for the control group there were not significant interventions in their physical education

lessons. Lesson content and technologies used in practice were those in the planning of school early.

Regarding the experimental group they have complied with the approved curriculum but in terms of teaching methods the intuitive nature of the activities was monitored at different times of the lesson. Using intuitive techniques had a varied nature.

Students from both groups were subject to testing under the national curriculum specialist "Physical Training" for the fifth grade at the beginning and end of time held research (M.E.C. 1998, 1999).

The results of these tests are presented briefly in table 1 and table 2 and they are the basis for the mathematical-statistics interpretations that we subsequently conducted to see if differences were recorded between the test outcomes were significant.

Based on these graphics the expression of the progress of each group was done (R. Gallagher, S. Fountain, L. Gee, 1998,) and comparative observations were made on progress in the two cases, but the performance achieved compared with scales for grade 10, something that created the image of school success in this discipline.

Tabel 1

TEST RESULTS - CONTROL GROUP										
Statistical parameters	Running in a uniform tempo		Throwing and catching the ball at the wall		Jump with knees up		3x10m Shuttle		Throwing oina ball	
	TI	TF	TI	TF	TI	TF	TI	TF	TI	TF
Average	2.49	2.13	8.07	9.47	11.17	13.03	12.66	12.23	18.22	19.36
Standard deviation	0.53	0.23	1.26	1.28	1.90	1.38	0.78	0.51	1.79	1.25
Coefficient of variation	21.13	10.91	15.59	13.51	16.97	10.56	6.18	4.15	9.80	6.45

Tabel 2

TEST RESULTS - EXPERIMENTAL GROUP										
Statistical parameters	Running in a uniform tempo		Throwing and catching the ball at the wall		Jump with knees up		3x10m Shuttle		Throwing oina ball	
	TI	TF	TI	TF	TI	TF	TI	TF	TI	TF
Average	2.50	2.10	8.03	10.07	11.10	13.93	12.69	12.04	18.23	19.85
Standard deviation	0.47	0.25	1.25	1.28	2.01	1.46	0.91	0.55	1.91	1.08
Coefficient of variation	18.99	12.07	15.50	12.76	18.07	10.48	7.18	4.53	10.50	5.46

As it can be seen from the data of the event driving graders is close. (Did that performance). This, perhaps because, of browsing the content of physical education lessons in the previous cycle.

Results that distinguish the two groups under study arise at the final test, where the experimental group has significantly increased from the initial tests but also in relation to the control group.

Thus, in "Running in a uniform tempo" stage the control group got a14,45% better performance in the final testing in contrast with the initial testing while at the experimental group received an advance of 16,06% in the final test 1. Graphical representation of the results of this test is shown in figure 1.

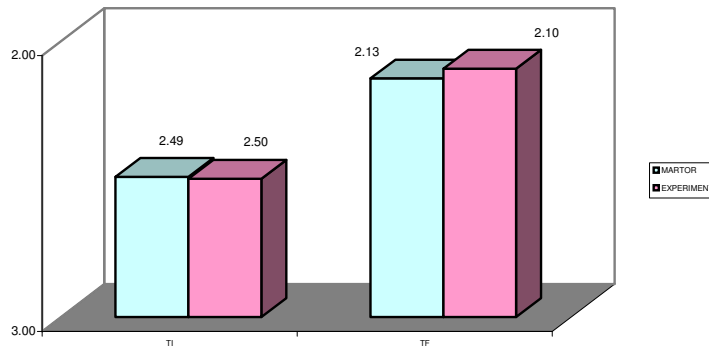


Figure 1 - Development of test results from running in uniform tempo

Regarding the progress of the student on the scale of grading, the control group for this performance test score lower than 10 by 6,5% while the experimental group showed a lower average performance by 4,5% compared to the maximum extent possible.

For the second sample included in the tests „Throwing and Catching the ball at the wall”, the control group showed an improvement in final testing

performance with 17,36% of the initial testing. In relation to the scale for grade 10, the results show an average 5,4% lower than it, which can be considered a good result. These results can be seen in figure 2.

In terms of the experimental group, its performance has improved significantly compared with 25,23% initial testing. It is thus apparent that the intuitive nature of media used had a positive influence in understanding the actions that have increased the

efficiency of the practiced lesson. Compared with the grading scale to grade 10, the average performance of

experimental group is higher by 0,6%, meaning that result is very good.

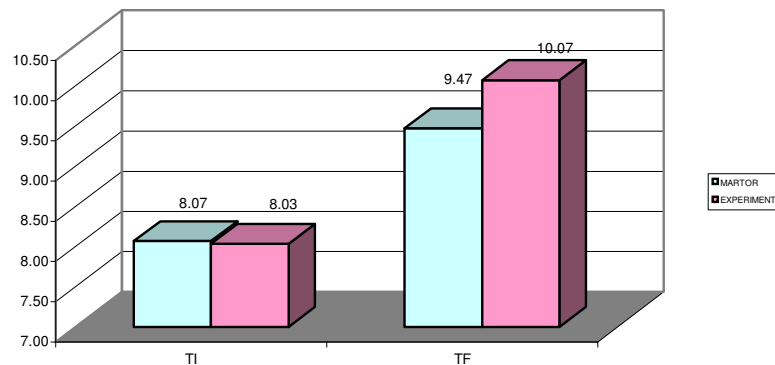


Figure 2 - Development of test results at the wall throwing and catching ball

In the sample of "Jumping knees up", both groups involved in the research progressed to the final tests. Group control improved an average of 16,69% in final testing, while the experimental group progressed by 25,52% over the same test.

For this sample it was found that compared with the scale prescribed for grade 10, the average performance in its final testing is lower for the experimental group 0,5% and 6,9% for the control group, which once again confirms the advantage of intuitive use of nature resources.

Figure 3 shows that although both groups showed increases in performance, the experimental group's are higher than reported for other groups.

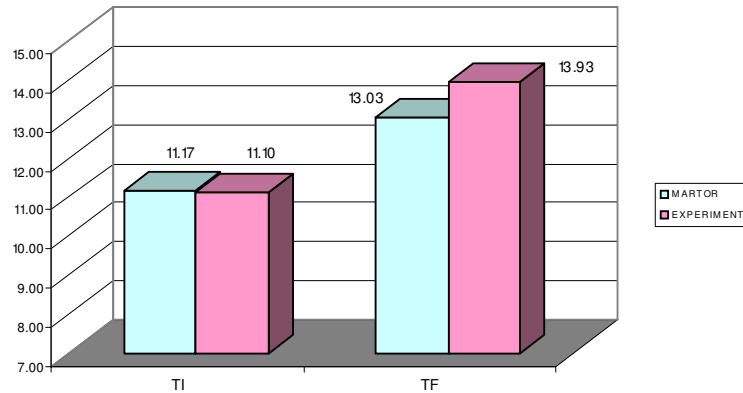


Figure 3 - Development of test results from above knee jumping

Sample "3x10m Shuttle" was another test of our study. For this test, the final results of the control group showed an increase in performance by 3,47% compared to the initial testing while the experimental group improved their results to a rate of 5.12% in the same test ( figure 4).

The scale provided for grade 10 is reached by the control group, with its performances is lower than 1,83%. Similarly any experimental group fails to obtain maximum results, which is lower by 0,33%.

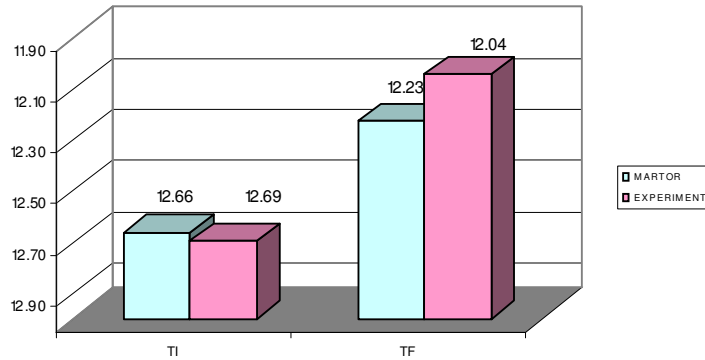


Figure 4 - Evolution 3x10m shuttle test results Last sample of the tests performed by us was the "throwing the rounders ball (figure 5).

Within this same general trend we have seen evidence that both groups have increased from initial tests. Thus, the final performance of the control group improved by 6,2% compared to the original while progress reported for the experimental group was 8,88%. Comparative analysis of the two results show that the percentage obtained by experimental group is higher.

Compared with the grading scale, the average is lower than its control group by 3,25% and the experimental group is less than 0,75%.

Figures 6 and 7 have achieved the graphic form of polar diagrams for both the control and experimental groups, the success recorded in the two tests in physical education discipline.

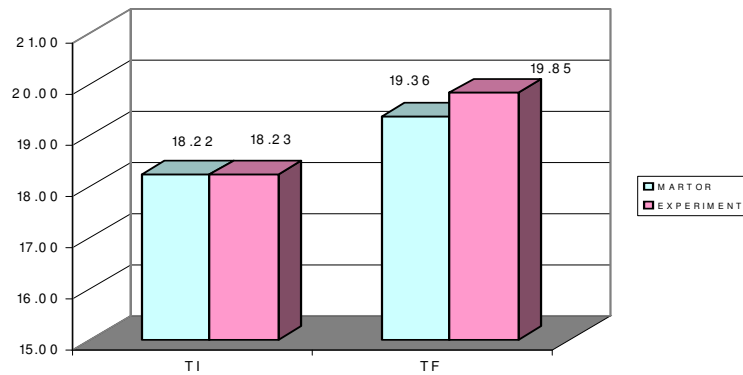


Figure 5 - Evolution of the oina ball throwing test results

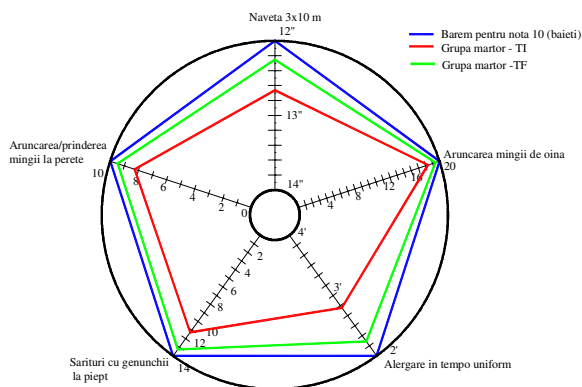


Figure 6

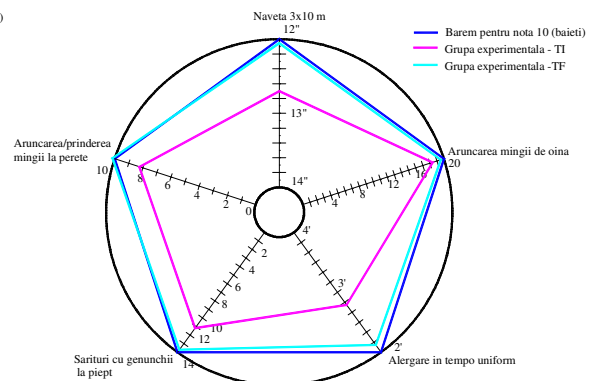


Figure 7

The area where the axes intersect the circle represents the maximum grading scale, grade 10 respectively.

Beyond the superior performance recorded in the final testing by the experimental group there is the question whether this leads to higher success of students in this discipline, as a confirmation of improving the quality of the work in the lesson.

That, the line in Figure 7 in the final testing overlaps almost entirely over the blue line, which represents the scale for grade 10, compared to Figure 6, where it does not touch the line representing the scale, leads us to conclude on improving the quality of the training process using intuitive techniques.

#### CONCLUSIONS AND DISCUSSION

By means of using the intuitive techniques of training in practical work with students in secondary schools, namely the fifth grade, one can say that efficiency has increased. Thus, the basis for the study was confirmed by the results achieved during the research as they have led students of the experimental group to record a higher success in scores obtained than the control group.

Therefore, we think that, especially in small classes, the work with secondary schools is recommended for professionals involved in greater use of such means, clearly accompanied by explanation, contributing to a better understanding of exercise.

#### BIBLIOGRAPHY

- BADIU, T. et al., 1999**, *Physical education and school children (ways and means)*, Editura "Geruda Art, Chişinău.
- BADIU, T., MEREUŢĂ, C., TALAGHIR, L., 2000**, *Methods of physical education of the young generation*, Editura "Mongabit", Galaţi.
- CÂRSTEA, G., 1997**, *Physical education "theory and methodology bases"*, A.N.E.F.S. Bucureşti.
- FERMAN KONUKMAN, ELIZABETH PETRAKIS 2001**, *Verbal and Visual Teaching Cues for Tennis*, The International Electronic Journal of Health Education.
- HÂNSA, C., CĂLIN, L., 2004**, *Basketball Technical and Tactical*. Editura Fundaţiei „Dunărea de jos”, Galaţi, 87-192
- JURAT, V., 1999**, *Driving skills training to middle class students in the phased implementation of training programs in physical education lessons (gimnastică)*. Chişinău, INEFS, 5-24 .
- M.E.C. 1998**, *National Curriculum for compulsory education. Reference framework*, Bucureşti,.
- M.E.C. 1999**, *Curriculum for classes V-VIII*, Bucureşti,.
- ROSEMARIE GALLAGHER, SALLY FOUNTAIN, LINDA GEE, 1998**, *Physical Education through diagrams*, Oxford, Anglia



❖ **KINETOTHERAPY****THE EFFECTS OF GINSENG AND EXERCISE APPLICATIONS IN SEDENTARY INDIVIDUALS AND WOMEN ATHLETES ON ANTIOXIDANTS**ADEM CİVAN<sup>1</sup>, EVRİM ÇAKMAKÇI<sup>1</sup><sup>1</sup>Selçuk University, Higher School of Physical Education and Sports, Konya/TURKEY

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**ABSTRACT**

**Objective:** In this study, the effects of ginseng and exercise applications in women athletes on plasma Glutathion (GSH), Catalase (CAT) and Super oxide Dismutase (SOD) levels are aimed to be determined.

**Material and method:** As in total 21 volunteered subjects; 14 healthy women athletes whose weight are 55-65 and age 20-23 years old and 7 healthy women sedentary participated in the study. Subjects separated in 3 groups equally; Control group (C), Exercise (E), Ginseng supported exercise (GE). 20 m. shuttle run test was applied to the subjects in E and GE groups 5 days in week for 6 weeks. The subjects in GE group were provided ginseng tablets in 500mg dosage as oral at 10.00 am and 07.00 pm for every 45 days. Blood samples had been taken from all the subjects before starting the exercise period and ginseng supplement. Second blood samples were taken from all the subjects after the exercise period and ginseng supplement for 45 days. Blood samples that were taken from elbow vena in accordance with procedures were then transformed into tubes including ethylenediaminetetraacetic acid (EDTA) and centrifuged immediately at 3500 rpm and 15min + 4°C degree, thus plasma samples were obtained. Plasma GSH, CAT and SOD levels were determined with calorimetric method from the samples.

**Result:** No significant difference was seen statistically both among and intra-groups in the findings gained.

**Discussion and conclusion:** Consequently in this study, it can be said that performed exercise protocol and ginseng supply showed no significant effect for stated antioxidant levels

**Key Words:** Exercise, Ginseng, Antioxidants

**Introduction**

It is recorded that there is a positive relation between ginseng intake and the increase in activity of antioxidants which keeps the body's oxidative status in activities such exercises (Y.V. Yuan, D.D. Kitts, 1996).

Superoxide dismutases are metalloproteinase structured enzymes and converts superoxide radical into peroxide (L. Frederic, 1990). SOD catalyzes 2 molecule superoxide into hydrogen peroxide and molecular oxygen and accepted as a cellular hydrogen peroxide source (R. Perez-Campo, M. Lepez-Torres, and C. Rojas, 1993).

Catalase catalyzes hydrogen peroxide into molecular oxygen and water. It also has a function such detoxifying of different substances such alcohol and phenol by the reduction of hydrogen peroxide (I. Fridovich, 1999, B. Halliwell 1999). Antioxidative role of catalase minimizes the formation of hydroxyl radical from peroxide by fenton reactions which catalysed by Cu and Fe ions. Contactation of catalase to NADPH protects enzyme from inactivation and increases the effectiveness (H.N. Kirkman, M. Roifo, A.M. Ferraris, 1999, S.E. Terblanche 2000).

Glutathione is an antioxidant which contains thiol, has less molecular weight, tripeptid structure (R.

Dringen 2000, N.H.P. Cnubben, I.M.C.M. Rietjens, H. Wortelboer, 2001) and exists in all aerobic cells with milimolar concentrations (R. Dringen 2000).

It is specified that role of ginseng components in supporting of defense mechanisms originated from direct activation of cellular defense mechanisms. It is showed that ginseng has an protective effect against hepatoksisite and so it is also against to the peroxidation reactions which are toxin induced (B.H. Han, M.H. Park, Y.N. Han, 1985).

Some researchers recommended to the athletes that to take more antioxidant for reducing the negative effects of lipid peroxidation and stressed that especially those who have irregular heavy training need to be sure from adequate levels of antioxidants (S.M. Somani, S. Frank, L.P. Rybak, 1995, H.M. Alesso and A.H. Goldfarb 1988).

In an experiment that made by sastra and colleagues the GSH level not changed after an treadmill exercise applied to the a group of trained men, but GSSG level increased by 72% and become normal after one hour

In this research it is aimed that to detect how ginseng changes the levels of GSH, CAT, and SOD on sedentary or athletes.