



## ❖ SPORT AND PERFORMANCE

### SPORTSMAN'S EMOTIONAL STATES WITHIN COMPETITION, ROLE OF EMOTIONS IN SPORT

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#### Abstract

In this paper, there is aimed at proving the importance of preventing and annihilating the psychic tension. This psychic stress exists and it is very serious, when somebody considers it of no significance and grants it no adequate importance.

There is made a study of the evolution of psychic tension, of the main stressing agents, of their sources, of their effects upon the human organism and psychic, of their place in athletics.

Emotions appear spontaneously, with no control of the will, and they produce disorders which directly influence the sportive result. The negative effects of these emotions cannot be always averted. There also are emotions with positive effects, which come to the support of performance by mobilizing the sportsman's energy.

Researching the sportsmen's emotive manifestations, with the help of the electro – dermal reflex, we could note the affective signification of the experimenter's words.

**Key words:** sportive result, state of start, psychological moment, stress, anxiety, psychic equilibrium.

#### Adaptive nature of the emotions

The regulating role of emotions consists in stimulating or in impeding the activity, on their effects there also depending its results.

Emotions support voluntary effort, they influence the sportsman's thoughts and the decisions he/she makes, they stimulate the effort towards accomplishment, they increase the energy, the

resistance and the working capacity. On the other hand, under the negative aspect, emotions influence the capacity of thought and attention, they dwindle the energy and the working capacity.

Emotions influence positively and negatively, giving this way the possibility of guiding the behavior in awareness. The most important factors are: the sportsman's training, the obstacle and the desire to win.

Factors which determine the level of the emotion intensities

Sportsman's training	Obstacle	Desire of winning	Emotion intensity
medium	medium	weak strong	weak strong
medium	small great huge	medium	reduced strong very strong
very good good weak	medium	medium	reduced strong very strong

*How are emotions produced as far as sportsmen are concerned?* In two ways: *through thinking*, through mental analysis of the situations, and through their *direct perception*.

#### Start disposition

This affective state has character of conditioned reflex. Suffice it to think at the next competition, and we immediately experience disquietude, fear, physiological changes (transpiration, trembling, accelerated pulse)

The physiologic mechanism of the disposition before the competition is the **state of start**, a physiological state. This state will be divided in:



- **State before the start**, which manifests itself hours and even days before the competition
- **State of start itself**, which manifests itself little before the beginning of the competition.

The state of start is more accentuated for the trained sportsmen and for the sportsmen aiming at winning.

Therefore, the state of start is the result of the reflex – conditioned learning in the process of the sportsman's activity.

#### **Modification of the sportsman's affective state during the competition**

The affective disposition before the competition is determined by numerous factors. Among the psychic factors which influence the results, there is for instance affectivity which suffers the greatest variations. In the sportsman's start disposition, there reflects his/her satisfaction or failure. The affective state reflects the effect produced upon the sportsman by the results he/she has achieved. The sportsman's behavior differs from sport to sport.

In the framework of the athletics competitions, there may be more accurately tracked the variability of the sportsmen's affective states and behavior, as the events last longer and they are interrupted by frequent pauses during which other participants perform evolutions.

The interruptions not only have psychic effects, they also reflect themselves in the sportsmen's results and behavior. During sportive competitions, certain events occur, which, through the influence they have upon human psychic, modify the situation of the moment and even the final result.

This is the so-called "psychological moment" explained through the modification of the general disposition, of the lucidity of the reasoning etc. due to the changes produced in the excitability of some cortical nervous centers.

With reference to the different manners in which anxiety manifests itself, (S. B. Cratty, 1973) classifies this way the sportsmen's anxieties:

- One's own fear of success or failure (the fear of success "nikefobia" was described by Antonelli 1964 as a particular case)
- The fear of the social consequences of one's own performance
- The fear of traumatism and other such fears connected to the physiological state of the organism
- The fear of the consequences of one's own aggressiveness or of the others'.

Every one of these anxieties has "contents" and "qualities". The fear of failure is connected to the fear of not losing the appraisal from the trainer, the respect from one's fellows etc.

Not any solicitation is "stressing", only the one which, through duration or intensity, exceeds the individual's habitual capacity of adaptation.

The anxious state which appears before the competitive situation is known under the name of pre-competitive anxious state. The relation between activation and sportive performance is best represented through the curve shaped as reversed „U". Despite all these, a determinant role in this relation is played not only by the activation level, but rather by the interpretation that the sportsman confers to this activation. From this perspective, there can also be explained the fact that the effects of the activation upon performance are not necessarily negative. [M. Craciun, 2008]

The proximity of the competition is accompanied by the phenomenon of activation. If to this one there is added an anxiety brought about by the fear of success or by the threat of the social status, then we will note an exacerbation of the activity, the rise of the adrenaline secretion, which will lead to the loss of the precision and of the lucidity.

Stress is not only an individual phenomenon, but also a wider social one, as it may have serious consequences upon several categories of people.

The main difficulty that appears in comprehending and fighting against stress is that human organism reacts very unequally against the stressing agent, according to the specific of every individual. Consequently, stress has also to be approached through the prism of the inward nature of the person undergoing it. [M. Epuran, 1989]

During competition, the requirements for the sportsmen, of a physical and psychic nature, are very high.

The capacities of coordination are very sensitive to the tensioned states emerging under competition conditions, and they create the danger of failure and may have as consequence the impossibility of maintaining safe the trust in oneself, in one's own forces.

For instance, in the case of the athletes with the possibility of mutual observance, the interpretation of several data with respect to the performance within the competition may lead to disquietude or even depression. [in the case of the jumpers or of the throwers]

The fact that the behavior in the competition may be almost integrally watched, the competitors' evolution may constitute enough inhibiting reasons, or, on the contrary, stimulating. The occupied position influences the behavior during the subsequent competitions.

The fear of accidents may appear under certain situations, although the athletes often refuse to consider this anxiety situation of any importance.

Therefore, the temperament, the physical qualities, the degree of education and culture, the experience, the instinct of conservation, the level of the



skills and of the training, the awareness upon the personal value, the motivation impress on the nature of the athlete's emotional states and condition his/her capacity of mobilization.

The emotional content of the athletics events (long jump) require an efficacious control of the competition techniques, the rapid and accurate decision, which may counteract the negative effects of the state of start.

Under the conditions of an intense and efficient control, the exaggerated emotional activity evinces the low level of the self-control capacity. Nevertheless, there are not rare the situations when valuable sportsmen are no longer able to master themselves. In these moments, the trainer plays a huge role.

There is absolutely necessary for the trainer to be acquainted with these situations and emotional

There was carried out a finding research, by filling in the following model of **survey**:

Sportsmen's name: T.B.

Experiment		Compet. 1 Place Res. II 8.08	Compet. 2 Place Res. I 8.13	Compet.3 Place Res. II 8.13	Compet.4 Place Res. I 8.20	Compet. 5 Place. Res. I 7.88	Compet. 6 Place Res. I 8.00
State before competition	1. fatigue 2. normal sleep 3. insomnia	*	*	*	*	*	*
Physiologic	1. normal 2. sub-maximal muscular concentration 3. supra-maximal muscular concentration	*	*	*	*	*	*
Psychic state	1. anxiety 2. melancolic 3. aggressiveness 4. excitement 5. psychic equilibrium 6. relaxation 7. attention concentration 8. self-composure 9. soothed by the trainer 10. mobilized by the trainer 11. mobilized by the competitor's presence worthy worthless	*	*	*	*	*	*

In view of obtaining the state of attention concentration, during the training and within competition, there have to be resorted to the following methods:

1. psychosomatic training

2. psycho-tonic training  
3. ideometric training

On the basis of the surveys used in our research, we may state the following:

There were filled in the surveys, by 2 long jumpers, national champions, recordmen, medaled at C.M., C.E. and G.P., who use new training methods and techniques, both physical and psychological, methods reflected in emotional states previous to the competition and during the competitions, means also reflected in the obtained performance.

**The first sportsman** (long jumper) **T. B.** A obtained the best performance during the competitions **II and IV** presenting the following physiological and psychological states, favoring great performance.

**Competition II:** I encountered a normal state before the competition from the psychological point of view: supra-maximal muscular concentration and from the psychological standpoint: aggressiveness, psychic equilibrium, concentration of the attention.

**Competition IV:** From the point of view of performance, weaker than in competition II, however before the competition he experienced, according to the surveys, a normal state.

From the physiological standpoint, he likewise presented a normal state of start, and from the psychological standpoint: aggressiveness, he had been mobilized by the training.

However, I was also confronted to a weaker performance towards the end of the competition period, precisely in competition number V, the sportive presenting a state of insomnia before the competition.

From the physiological standpoint, there was a sub-maximal muscular concentration, and from the psychological standpoint I was confronted to melancholia and indeed relaxation.

As regards the long jumper sportsman, number 2 **B. T.** The best performances were those obtained in competitions number **II and III**.

The best performance was the one obtained in competition number III. Before this competition, his state was normal.

From the physiologic standpoint: a sub-maximal muscular concentration, and from psychological standpoint I was confronted to: aggressiveness, concentration of the attention, and he was further mobilized by the trainer.

The weakest performance was obtained in competition number **IV**: as far as he is concerned, the psychological states before and after the competition, which were determinant in obtaining an unsatisfactory performance were the following:

- Anxiety
- Excitement.

The average of the two athletes' positive performance in the VI competitions is of 80 – 85% .

#### **In conclusion, there is proposed:**

- The rise in importance of the psychological training, especially in the pre-competitive period
- However, there plays more importance the follow up of this training during the competitive period.
- The use, during the pre-competitive period, of some methods of psychological training, such as: ante-experiencing, anticipation.
- Taking into consideration this boom of mass-media during the last years, which may have more or less good influence upon the sportsman's evolution, there is recommended the insistent use of the informational psycho-hygiene.
- In fact, there is likewise proposed the widest possible elaboration of a program of ideometric representations.
- There is proposed the analysis of the behavior in the contest and during the training with video records, recording that does not influence the sportsman's attitude, as it is being made discreetly.
- There is proposed to carefully plan the activity; the lack of organization brings about stress; let's aim at feasible purposes

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## TAKING IN HANDBALL USING DYNAMICS AND PREPARATORY GAMES TO THE SECOND GRADE

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### Abstract

Physical education in school has special tasks compared to other objects in the sense that education is addressed in equal measure, physical and intellect. As is known, physical activity has a significant share in the development of the child. Physical exercise not only stimulates breathing and blood circulation, strengthens not only the circular and bone, but he is also the opinion of M. Montessori - bridge between thought and action.

**Key words:** dynamics games, students, handball game.

### Introduction

Handball is today one of the most widespread sport games in our country. Children were especially fond of this game is very dynamic and spectacular, because using tactical and technical elements of basic, simple, easy to learn. Pleased to play handball with almost all the rules since the first lessons and especially the possibility to include goals with relative ease, he pointed in particular. Among the important steps to reform the education structure is distinguished Romanian education system cycles on curricular. Classes I and II are contained in cycles of the fundamental acquisition. From the above it is found that small school age is ideal for initiating the sports games, so in handball, the paper's offering and this dynamic games using and preparation.

### The research hypotheses

Application of certain dynamic games and preparatory class II, lead to a thorough assimilation of the basic (catching, throwing the gate) of the technical game of handball.

#### Research tasks

- a) choice of study samples,
- b) applying the battery of tests somatic
- c) application of the test material driven general
- d) developing the research literature, the models operational
- e) application of specific batteries of tests designed to assess learning bout technical elements and throw in a gate
- f) statistics-methodology assessment, efficiency of procedures experienced;

### Research methods and procedures

The experiment was conducted at School no. 12 of the town of Constanta, in the year 2007-2008. The school has a handball court and one basketball (bituminize), 2-color track for running speed, to lift the sector length.

For physical education lessons in the cold, the school has a room size of 28 m length and 16 m wide, fitted with gym-banks, fixed-stairs; balls of different sizes medicinal; handball, basketball, volleyball and soccer balls, gym-equipment (dust, goat elastic spring

board); sticks; circles; Gant with different weights; 2 panels basketball;

We decided that the experiment to be conducted in Class II, because it is included in the procurement cycle curricular fundamental. As to us to learn the correct fundamental strengthening of specific handball game as catching or throwing the gate, with games and dynamic preparation, are designed to create the fund drive for optimal learning other more complex processes, on the one hand, and practice the game of handball with maximum efficiency(scheduled in the next stage), on the other.

The experiment began on 3 November 2007 and ended on April 22 2008. Class II-A has been chosen as the experiment group comprising 15 boys and 11 girls, and class II B of witness group, the same division.

During November 3-12 were conducted 3 training accommodation for subjects in the experiment group (class A II), using the dynamic game-specific game of handball, and 3 hours of physical education with witness group (grade a B-II) according to the curriculum.

Initial testing was conducted in the morning (10-12 hours) during the 3 days, 17.19 and 24 November 2007, while final testing took place on days 13.15 and 20 April 2008.

In the experiment were three batteries of somatic tests, two batteries of motricity tests and two batteries of specific handball game tests.

Anthropometric examination helped us to determine the subjects level of somatic development. Morphological variables were tested:

- Height
- Weight

Span somatic battery of tests was applied before testing specific.

The subjects motricity was determined by two tests:

#### 1. Run 5X5 m

Run on a smooth surface and non-slippery. It sets two lines parallel distance of 5 m. Student ordering of the return lines, and the signal starts to run up to the line



opposite exceeds both feet and returned to the line of departure, and through 5 times the distance of 5 m . The record time in seconds and fractions of seconds.

## 2. Long jump

Position of being behind a line, feet at shoulder far, soaring through the extension and bending legs while balancing arms. Impulse vigorous, long jump and landing on both feet. Jump length is measured from the beginning line until the hopper heels.

Tests, by which was verification of ownership of the basic elements (catching, throwing the gate) of the handball game tehnic , were as follows:

a) throwing the ball for handball in the wall and catching it: From standing position with feet far, kept the ball in the right chest, the subject executes 10 shy of two hands at the chest and 10 catching. Distance between wall and student is 3-4 m. The record prises correct.

b) throwing the ball at the target was achieved on the spot, the distance of 4m, with deft hand and opposite leg in front with a oina ball within a framework of bears. Were executed throw 3.

The training took place between 26 November 2007-2008 April 2008 at School No.12 in Constanta Basically, the preparation of the experimental lot different from the group after heating. Dynamic games used by the heating, which sought acquire specific technical processes handball game was 5.

Mode of execution of operational models applied in the preparation of the experiment group:

### 1. Hit the handball bar gate

The class is divided into 4 teams - 2 from each gate. The contest consists of striking with a ball the handball bar gate. The first player from each team has a ball for handball which hit the vertical bar in front of his team. After throwing, catching the ball, following a surrender and the end result string. Win team quickly made 10 points (an impact-1 point). The distance between the line and throw the bars gates is 3 m.

### 2. Castle defender

Students are prepared in a circle with a radius of 5 meters in the middle which is a case of setting (castle) and student (defender castle). Circle of students have a ball that passes between them in order to confuse the defender castle. The player who reaches the favorable position, hit the castle. If touch it he conquered and becomes it defender. Win player defends the fortress several times.

### 3. The captain

Students are divided into two or more teams, arranged in column formation. Before each team at a distance of 3-4 meters, is a player with the ball, the captain. On signal, the master passes the first player from his team, it passes back and run the tail string. The game ends when receiving the ball from the last player of his team.

### 4. The colors

Players are divided into several groups consisting of 4, 5, 6, players sit in a circle. Each player of the group shall elect a color. A child of the group has a ball that

you throw up, shouting in a color group. The child who hears the cries color must catch the ball before taking to reach the ground. If succeeded, it restart the game, if not successful, the game resumes with the same student. Those who manage to resume the game several times are winners. Because of its content, this game favors catching the ball in different positions in the game.

### 5.The pase

Students are willing to put the strings in front, representing a second string team. The first player who is first player throws the ball of thread across after running at its tail end. Player received the ball first discard one of the other series. The game ends when the child who started the game receiving the ball again. Win team finishes first.

## Results and discussions

Analysis of the results from the battery of anthropometric tests.

### Height

Experiment group boys: In initial testing  $X = 132$  cm,  $S = 4.65$ , standard deviation shows low, which shows good grouping of individual variables. The coefficient of variance is 3.52% which shows very good homogeneity of the group.

At final testing,  $X = 134.2$  cm. Is an average improvement of 2.2 cm. Standard deviation ( $S = 4.69$ ) indicates a low dispersion of individual variables against average. Resume present value of 3.49%, which indicates a high homogeneity.

Experiment group girls: Average results from initial testing of 130 cm and the final testing is 132.3 cm. Is found to improve average 2.3 cm. Standard deviation shows that the low individual test ( $S = 7007$ ) and final testing ( $S = 6.34$ ) which shows good grouping variables compared with the average individual. The coefficient of variance at  $T_i = 5.39\%$  and  $4.79\%$   $T_f =$  confirm a very good homogeneity of the group in both tests.

Witness group boys: the group shows  $T_i$  an average of 131.5 cm and the  $T_f$  of  $X = 133.6$  cm. Is an average increase of 2.1 cm.  $T_i$  standard deviation = 5.39 and  $T_f = 5.64$  cm. Both values indicate low dispersion. The low CV of both  $T_i$  (4.09%) and  $T_f$  (4.22%) attests to the homogeneity of large group of individual variables.

Witness group girls: The girls in group shows at initial testing  $X = 131.5$  cm,  $S = 7.39$ . Standard deviation is relatively small.  $CV = 5.61\%$ -large group homogeneity. The final test,  $X = 132.7 \pm 7.56$  cm is an average improvement of 1.2 cm.  $CV = 5.69\%$  homogeneity confirms large group of variables compared to the individual.

### Weight

Experiment group boys

The initial test :  $X=33,1$  kg

$S=6,33$  kg

$CV=19,12\%$

This weight parameter is more obvious in boys, and is certified values of  $S$  and  $CV$  indicating lack of homogeneity in the group.



The final test :  $X=35\text{kg}$ ,  
 $S=6,6\text{ kg}$   
 $CV=18,8\%$

Shows an average increase of 1.9 kg. And this test is found large deviations of individual variables against average.

Experiment group girls: Media results in  $T_i$  is 32.7 kg and the  $T_f$  is 34.6 kilograms. Is an improvement in the average body weight of 1.9 kilograms.  $S$  to  $T_i = \pm 6.69$  and the  $T_f$ ,  $S = \pm 6.71$  both tests indicate the spreading of the average individual.  $CV$  to  $T_i = 20.45\%$  indicated lack of homogeneity, and the  $T_f = 19.39\%$  which attests to the homogeneity of the media group.

Witness group boys: When  $T_i$  average is 32.8 kg and  $S$  is 4.72 kilograms.  $CV = 14.39\%$  homogeneity shows average group. The  $T_f$  is an increase in average body weight of 1.8 kilograms, whereas the  $X = 34.6\text{ kg}$ .  $S = 4.8$  kilograms shows a good group of variables compared to the individual.  $CV = 13.87\%$  kept the same group homogeneity average recorded at  $T_i$ .

Witness group girls: At  $T_i$ ,  $X = 34.7\text{ kg}$ , and the  $T_f$ ,  $X = 36.2\text{ kg}$ . Is an average increase of 1.5 kg.  $S$  to  $T_i = C4, 31\text{ kg}$  and increased slightly at  $T_f$  reaching value  $\pm 4.49\%$ .

$CV$  to  $T_i = 12.42\%$  and decreases slightly at  $T_f = 12.40\%$  in both tests is an average group homogeneity.

Scale arms

Experiment group boys: At  $T_i$ ,  $X = 132.2\text{ cm}$   $S = \pm 4.54$  which shows little dispersion of individual variables from the average. The coefficient of variance = 3.43% confirms the high homogeneity of the group. In  $T_f$ ,  $X = 133, 3\text{ cm}$ ,  $S = \pm 4.45\text{ cm}$ . Is an average improvement of 1.1 cm.  $CV = 3.33\%$  indicates the high homogeneity of the group variable compared to the individual.

Experiment group girls: Average results from  $T_i = 130.5\text{ cm}$ , and the  $T_f = 131.5\text{ cm}$ . It finds the average improvement of 1.1 cm.  $S$  to  $T_i = 6.48\text{ cm}$ , and at  $T_f = 6.59\text{ cm}$ . Shows both low dispersion testing individual variables.  $CV$  values close (at  $T_i = 4.96\%$  and  $T_f = 5.01\%$ ) indicating high homogeneity of the group.

Witness group boys: In initial testing,  $X \pm S = 131,9 \pm 5,21\text{ cm}$ . The value of standard deviation indicates a low dispersion of individual variables from the average. The coefficient of variance was 3.94% indicating the high homogeneity of the group. At final testing,  $X \pm S = 132,4 \pm 5,13\text{ cm}$  average increase by 0.4 cm, standard deviation indicating the spreading of the relatively small compared to the individual.

Witness group girls: At  $T_i$ ,  $X = 132\text{ cm}$ . And  $T_f$ ,  $X = 133.1\text{ cm}$ . Is an average improvement of 1.1 cm. Standard deviation values are relatively close (at  $T_i = 6.6$  and  $T_f = 7.15$ ), evidencing smaller dispersion.  $CV$  to  $T_i = 5.00\%$  and  $T_f = 5.37\%$  in both tests confirmed homogeneity large group.

Analysis and interpretation of data on motricity tests

Run 5X5 m

Experiment group boys: In initial testing,  $X \pm S = 10,8 \pm 0,99\text{ sec}$ ,  $CV = 9.16\%$ . Standard deviation shows relatively low values, and coefficient of variance indicates high homogeneity of the group. The final test,  $X \pm S = 10,2 \pm 0,84\text{ sec}$ ,  $CV = 8.23\%$ . Is an average improvement of 0.6 sec in the value of standard deviation decrease. Low  $CV$  confirms a good homogeneity.

Experiment group girls: At  $T_i$ ,  $X = 11.00\text{ sec}$  and the  $T_f$ ,  $X = 10.6\text{ sec}$ . Between the two tests shows a substantial improvement in performance, the average difference between the two dispersion in both tests  $\pm 1.16$ , and  $T_f = 1.14 \pm$  tests was 0.4 sec. At  $T_i$ ,  $S =$  is low compared media.  $CV$  to  $T_i = 10.54\%$  and at  $T_f = 10.57\%$  which indicates the homogeneity of the group average.

Witness group boys: this group obtained an average of 11.2 sec,  $S = 1.05\text{ sec}$ . It shows low values which shows good grouping variables compared with the average individual.  $CV = 10\%$  homogeneity attests to the exact limit between medium and large group. In  $T_f$ , the average is 10.4 sec and standard deviation of a sec. Is an average improvement of 0.8 sec.  $CV = 9.61\%$  homogeneity attests large group of individual variables.

Witness group girls:  $T_i$ :  $X \pm S = 11,3 \pm 0,9\text{ sec}$

$T_f$ :  $X \pm S = 11,1 \pm 0,9\text{ sec}$

Shows an average increase of 0.9 sec,  $S$  having virtually the same in both tests so that highlights dispersion than individual variables.  $CV$  to  $T_i = 7.96\%$  and at  $T_f = 8.10\%$  indicates a group homogeneous in both tests.

Long jump

Experiment group boys: Average results from initial testing is 117,2  $\pm$  9,85 cm, and final testing of 120,9  $\pm$  10,6 cm. It notes jump improvements average length of 3.7 cm instead of. In both tests are of low standard deviations, so little dispersion. The coefficient of variance at  $T_i = 8.4\%$  and 8.03%  $T_f =$  confirm good homogeneity of the group.

Experiment group girls: In initial testing,  $X = 114\text{ cm}$ .  $S = 9.96\text{ cm}$  attest the application of small amounts compared to the individual.  $CV = 8.73\%$  indicates a good homogeneity of the group. The final test,  $X = 116.9\text{ cm}$ . Is an average performance improvement of 2.9 cm.  $S$  has a value of 9.39 cm, which shows a good group of variables compared to the individual.  $CV = 8.03\%$  fall in the same group of good homogeneity.

Witness group boys: Boys Class witness present at  $T_i$   $X = 118.4\text{ cm}$ ,  $S = 8.43\text{ cm}$ , the dispersion is small compared to the average.  $CV = 7.11\%$  is large group homogeneity. In  $T_f$ ,  $X = 119,2 \pm 8,63\text{ cm}$  is an average improvement of 0.8 cm.  $CV = 7.23\%$  which indicates high uniformity of the group.

Witness group girls: At Ti:  $X \pm S = 118, 7 \pm 7,21$  cm dispersion values are relatively small evidencing a good grouping of individual variables against average. The coefficient of variability (CV = 6.07%) indicates a homogeneous group. In Tf:  $X \pm S = 120 \pm 6,64$  cm. Shows the average improvement of 1.3 cm. And the test is found in low standard deviations, and individual variables are well grouped around the average.

Analysis and interpretation of data on specific tests

Throwing the ball to the target

Experiment group boys: In initial testing,  $X = 20$  and  $S = \pm 5,66$ . In this sample dispersion is the average individual and group homogeneity are not in view of the high CV (28.3) The final test,  $X = 24$ ,  $S = \pm 5, 41$  points. CV = 22.54% collectively scratchy.

	Ti	Tf
X	20	24
t	7,48	

\*significant for  $p < 0,0005$

Experiment group girls: In initial testing,  $X \pm S = 20 \pm 5,24$  presents the standard deviation values compared with the average. The coefficient of variance attest lack of homogeneity (CV = 26.2%) in final testing,  $X \pm S = 25,4 \pm 3,5$  points. The value of S indicates small dispersion of the variables compared with the average individual, and the coefficient of variability (CV = 13.7) confirmed the homogeneity of the group average.

	Ti	Tf
X	20	25,4
t	4,29	

\*significant for  $p < 0,0005$

Witness group boys:

Ti:  $X \pm S = 18 \pm 4,14$  points; CV=23%

Tf:  $X \pm S = 20 \pm 3,77$  points; CV=18,85%

Both the Ti and the Tf is a dispersion medium of individual variables. Is an average improvement of 2 points. CV to Ti total lack of consistency and the Tf shows average group homogeneity.

	Ti martor	Tf experiment
X	20	24
t	6,82	

\*significant for  $p < 0,0005$

Witness group girls: At Ti,  $X = 17,2$  points while in Tf,  $X = 19,5$  points. There is an average

improvement of 2.3 points. S at Ti  $= \pm 2,61$  points and at Tf = 2.69 points average dispersion confirms the individual. CV to Ti = 15.1% and at Tf = 13.7%, which attests homogeneous average group.

	Ti martor	Tf experiment
X	19,5	25,4
t	4,43	

\*significant for  $p < 0,0005$

Fair catch

Experiment group boys: At Ti,  $X \pm S = 5 \pm 1,43$  catching. S indicates high dispersion of the individual. CV = 28.6% Total evidencing lack of consistency. In Tf,  $X \pm S = 6,6 \pm 1,18$  catching. CV = 17.8 indicates the homogeneity of the group average.

	Ti	Tf
X	5	6,6
t	7,14	

\*significant for  $p < 0,0005$

Witness group boys: At Ti,  $X = 4$  catching, and the Tf,  $X = 4,9$  catching. Is an average improvement of 0.9 catching. S to Ti = 1.48 and Tf = 1.22 in both dispersion values indicate higher values of the individual versus the average. In Ti, CV = 37% and the TF, CV = 24.89% collectively indicate scratchy.

	Ti martor	Tf experiment
X	4,9	6,6
t	3,95	

\*significant for  $p < 0,0005$

Experiment group girls:

Ti:  $X \pm S = 3,8 \pm 1,32$  prinderi; CV=34,73%

Tf:  $X \pm S = 5,6 \pm 0,92$  prinderi; CV=16,42%

Is an average improvement of 1.8 catching. S Ti dispersion in the Tf high and average dispersion individual variables. At Ti, CV indicates total homogeneity, and the Tf is an improvement (16.42), mean uniformity.

	Ti	Tf
X	3,8	5,6
t	8,06	

\*significant for  $p < 0,0005$

Witness group girls: At Ti,  $X = 4,3$  and the Tf,  $X = 4$  catching. There is an increase of 0.5 average



catching. It has the same value (0.9) both I and the Tf dispersion certifying average individual variables. CV to Ti = 20.9% collectively scratchy, and the Tf, CV = 18.75% confirms improvement, average group homogeneity.

### Conclusions

-experiment conducted to validate the work hypothesis that the use in the training of dynamic games, and preparation for handball helped acquire faster, in a contest for a meeting of the basic (holding in a pitch) of technical handball game;  
- the two samples shows a good level of motricity given the results of two motricity tests.

### Recommendations

-using dynamic games and preparation as the main means of training this age;  
- taking into account the age peculiarities of children, initiation into sports games can be achieved more effectively through dynamic games, in the form of competition.

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**Table 1.** Physical characteristics of the boys subjects

Variables	FIRST TEST				SECOND TEST			
	Witness Class boys (n=15)		Experimental Class boys (n=15)		Witness Class boys (n=15)		Experimental Class boys (n=15)	
	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)
Bodyheight (cm)	131,5±5,39	4,09	132±4,65	3,52	133,6±5,64	4,22	134,2±4,69	3,49
Body weight (kg)	32,8±4,72	14,39	33,1±6,33	19,12	34,6±4,8	13,87	35±6,6	18,8
Scale (cm)	131,9±5,21	3,94	132,2 ±4,54	3,43	132,4±5,13	3,87	133,3 ±4,45	3,33

Established significance level at p<0,0005.  
M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

**Table 2.** Physical characteristics of the girls subjects

Variables	FIRST TEST				SECOND TEST			
	Witness Class girls (n=11)		Experimental Class girls (n=11)		Witness Class girls (n=11)		Experimental Class girls (n=11)	
	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)
Bodyheight (cm)	131,5±7,39	5,61	130±7	5,39	132,7±7,56	5,69	132,3±6,34	4,79
Body weight (kg)	34,7±4,31	12,42	32,7±6,69	20,45	36,2±4,49	12,4	34,6±6,71	19,39
Scale (cm)	132±6,6	5	130,5 ±6,48	4,96	133,1±7,15	5,37	131,5 ±6,39	5,01

Established significance level at p<0,0005.  
M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

**Table 3.** Specific tests handball for boys

Variables (%)	FIRST TEST				SECOND TEST			
	Witness Class boys (n=15)		Experimental Class boys (n=15)		Witness Class boys (n=15)		Experimental Class boys (n=15)	
	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)
Run 5X5 (s)	10,5±1,05	10	10,8±0,99	9,16	10,4±1	9,61	10,2±0,84	8,23
Long jump(cm)	118,4±8,43	7,11	117,2±9,85	8,4	119,2±8,63	7,23	120,9±10,06	8,32
Throwing ball(points)	18±4,14	23	20±5,66	28,3	20±3,77	18,85	24±5,41	22,54



Fair catch 4±1,48 37 5±1,43 28,6 4,9±1,22 24,89 6,6±1,18 17,8  
 Established significance level at p<0,0005.  
 M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

**Table 4.** Specific tests handball for girls

girls	FIRST TEST				SECOND TEST			
	Witness Class girls (n=11)		Experimental Class girls (n=11)		Witness Class girls (n=11)		Experimental Class (n=11)	
Variables (%)	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV (%)	M±DS	CV
Run 5X5 (s) 10,75	11,3±0,9	7,96	11±1,16	10,54	11,1±0,9	8,10	10,6±1,14	
Long jump(cm) 8,03	118,7±7,21	6,07	114±9,96	8,73	120±6,64	5,53	116,9±9,39	
Throwing ball(points) 13,7	17,2±2,61	15,1	20±5,24	26,2	19,5±2,69	13,7	25,4±3,5	
Fair catch 16,42	4,3±0,9	20,9	3,8±1,32	34,73	4,8±0,9	18,75	5,6±0,92	

Established significance level at p<0,0005.  
 M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

## STUDY ABOUT SPECIFY DIGGER SKILLS OF LIBERO PLAYER IN NATIONAL CHAMPIONSHIPS FIRST DIVISION FEMALE

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### Abstract

Through this paper-work we would like to present the efficiency of the actions effected by the liberal player, within the official games from the National Volleyball Championship, Division A, Women.

Objectifying the efficiency within the actions and game structures, as it is pointed out in recordings of the official games, allows the formulation of a conclusion with implications in the efficiency anticipation in the following competitions.

By studying and processing the personal record cards we can determine the most efficient and the less efficient take-over actions.

The determination of the efficiency of the actions and the structures means to form an adequate idea concerning the game value of the teams from the championship and of the championship itself (M. Ionitã, 2007).

**Key words:** skills, digger, volleyball, liberal player

### Introduction

In a game of modern such volleyball of practice today to the word scale the defense becomes more and more aggressive I better organized getting elder weight in frame of the game. The shares defensive represents about 43% from skills of the game, and as part as these defense in second line he they represented about 14%, tending to balance the specific shares of block, of approximate 16%.

The defenses organize differential, depending on each the tactics of game, depending on opponent and coordinates of player liberal (A, Cojocaru, 2007).

### The research hypotheses

The present paper-work starts from the following hypotheses:

- considering the preliminary observations we expect the liberal player of the Rapid Bucharest team to obtain very good

efficiencies, both at the take-over from attack, and at the take-over from serve, given her value, acknowledged in previous competitions.

- We foresee that we will discover an average value of the efficiency indexes at the serve and attack take-over, regarding the liberal player of Dinamo team, because the player from Stefan cel Mare is lower rated

- regarding the level of the other players we expect to obtain quite oscillating results and to discover a pretty good or good enough level and there is a possibility to discover very valuable players for this position.

### The stages of the research

In order to verify the hypotheses of this paper-work we have established the following tasks:

- bibliographical information regarding the libero player

- elaboration of the record cards
- recording every game where the coaches of the Division A, Women, have chosen to use a liberal player
- the centralization and processing the record cards
- to determine the efficiency of the liberal player within the National Championship at the take-over from serve
- to determine the importance of the liberal player at the take over from serve
- to determine the efficiency of the liberal player within the National Championship at the take-over from attack
- to determine the importance of the liberal player at the take over from attack
- to determine the efficiency of the liberal player of the national team, at the take over from attack and from serve
- to determine the importance of the liberal player of the national team, at the take over from attack and from serve
- to register the data in charts and to elaborate the diagrams

- editing the paper-work
- **Methods and means of research**
- As registration method we have used the observation, which is a process of recording and written recording of what has been seen, heard or felt.

➤ The observation method, together with other complex methods, cannot be missing from a scientific research. For recording the actions we have used personal record cards.

➤ **We have used the following evaluation grid:**

“+” granting criteria – given when the ball sent by the player who executed the action is decisive and the team earns a point

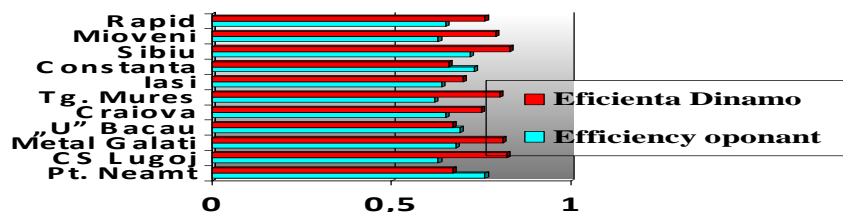
“M” granting criteria – given when the ball sent by the player who executed the action can be continued, but the opponent finds it difficult to do that

“-” granting criteria - given when the ball sent by the player who executed the action cannot be continued and the point is lost

**Interpretation of the date and presentation of the conclusions**

In table am presented efficiency of the players on the job libero player with one from Dinamo comparative

Team opponent	Pt. Neamt	CS Lugoj	Metal Galati	„U” Bacau	Craiova	Tg. Mures	Iasi	Constan ta	Sibiu	Mioveni	Rapid
Efficiency opponent	0.76	0.63	0.68	0.69	0.65	0.62	0.64	0.73	0.72	0.63	0.65
Efficiency Dinamo	0.67	0.82	0.81	0.67	0.75	0.80	0.70	0.66	0.83	0.79	0.76





Is noticed as am presented the efficiencies of the players which were of the opponent the team Dinamo Bucharest.

In one what as follows shall do the analysis of the results obtained saw resulted the championship from this viewpoint and at all they managed players follow-up for this study. With graphic help shall can draw conclusions in as concerns the value of the players on this post.

### Conclusion

At the end of this paper-work we can draw the following conclusions:

1. Regarding the liberal player of the R.A.T.B. Bucharest team we can say that she had by far the best efficiencies both at taking-over from attack and at taking-over from serve.

Her evolution in the championship was pretty oscillating, but she also succeeded really amazing efficiencies especially in stages 2, 3 and 9 when she had crossed the limit of 0,80.

As to the take-over from attack, her evolution has been quite constant compared to the one of the player from Rapid. The liberal player proved to be one of the best defense players from the championship, or maybe the best.

2. About the liberal player of Dinamo Bucharest we can say that her evolution has been pretty oscillating in what concerns the take-over from serve, especially in the first part of the championship, when her evolutions were between 0,73 and 0,61 in the first five stages. After this period a constant evolution followed and a pretty important fall, from 0,73 she fell to 0,61 in four stages.

The final was the one of a great champion, the last match highlighting a crossing over the limit of 0,80, respective 0,82.

As to the take-over from attack, we can say that she had some very oscillating periods during the championship. This player had some really

embarrassing moments, like the efficiency from the second stage (0,20), but also some great results, like the efficiency from the ninth stage (0,75).

3. As to the opponents of these two teams we can say that some of them were really amazing, such as:

- the liberal player from Piatra Neamț, in the match against Dinamo, when executing the take-over from serve, realized a very good index of 0,73, being better than her direct opponent

- the same player pointed herself out also in the match against the Rapid. team, realizing an index of the efficiency at serve of 0,76, clearly overtaking the player from Bucharest

- together with this player we can also point out the component of the team from Constanta, who made a special performance in the match against the Rapid. team, an index of 0,73 at the take-over of the opponent's serve.

- The player from Piatra – Neamț was by far the most powerful opponent for the players from Bucharest, she also succeeded some very good efficiencies at taking -over from attack: 0,69 in the match against the Rapid.team, and 0,71 in the game against Dinamo.

- We can also point out the player from the C.S.U. Galati team, who succeeded an index of 0,61 in the match against Dinamo

- the same efficiency was obtained by the team from Craiova in the match against Dinamo Bucharest

A final idea would be that the taking-over on the libero player position is critical, but there are player who can successfully handle our championship.

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## THE ERGOSIM SYSTEM IN SWIMMING

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### Abstract

**Object:** The description of Ergosim simulator, a computerized informational technology that is use for increasing performance in swimming.

**Content:** The permanent and continuous perfecting of elite swimmer training system aims to reach the top level of sportive performance in the competition period. In the past few years modern computerized monitorizing and registration systems of training have been introduced. One of these systems is the conditions simulator assisted by computer – Ergosim. By working on Ergosim it can be observed an improvement in traction drag forces in swimming, what also brings the amelioration of time in water.

**Conclusion:** Work on Ergosim enhances the performance in swimming, of course together with the training in water.

**Key words:** computerized informational technology, Ergosim simulator, strength-rhythm parameters, swimming.

The permanent and continuous perfecting of elite swimmer training system aims to reach the top level of sportive performance in the competition period.

For this reason the precompetitive period is mentioned in specialized literature as the period of great accumulations. In order to obtain outstanding performances, in the planning of training, together with the traditional methods, in the past few years modern computerized monitorizing and registration systems of training have been introduced. By these systems the applications of informatics in the practical-methodical activity of sportive training become essential in what concerns the proper evaluation of the results and regarding the realization and correction of movements` representation.

One of these systems is the conditions simulator assisted by computer – Ergosim, specific for swimming.

Facilities given by the Ergosim system:

1. Individualization of the studied movements by attaching the specific accessories (frames).
2. Adjusting in large limits the resistance at movements.
3. Displaying a standard diagram during the exercise sequence what the subject will compare with the old one at every movement.
4. Stocking the information in individual files.
5. The possibility of processing the information and interpreting the evolution in time.

This way during the activity the sportive can follow each value of these parameters on the screen, optionally in digital or analogical way. For variation of strength depending on the position the mediation is presented in digital or analogical form (B.V. Rîşneac, T. Botnarenco., G. Solonenco, 1996).

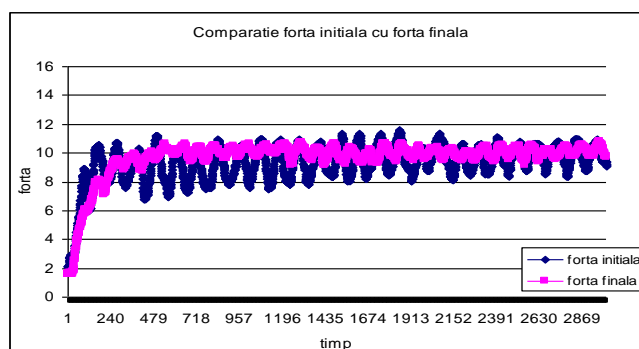
It has been supposed that the elaboration and application of a proper methodology in developing specific strength by using international computerized technology in the case of swimmer coaching will result in the expanding of the main performatonal parameters` coordination simultaneously with the efficient capitalization of the swimmers potential.

When the coach chooses the informational system respectively the application of certain computerized systems in the swimmer training process with the purpose of raising the general and specific motric quality indexes he takes in consideration their methodological development aims. The specific methods in the education of motric strength quality determined by the computerized planning contribute to the optimization of per formatonal potential (V.N. Platonov., S.M. Vaicehovschi.,1985).

There have been stated parameters of dependence between the indexes of strength, frequency and the length of the “steps” on land and in water. For instance in the development of strength of 14 years old swimmers (50 m crawl test) it can be applied differentiated, depending on the psychomotric profile of each sportive, manifested in the rapidity of the formation-consolidation-improvement of the motric activities representation. The swimmer training process is highly limited by the presence of untraditional ways of preparation (appliances, equipments and methodical proceedings), which allow the detection of the functional supplies and also the over fulfillment of the motric qualities` manifesting level. The application of these equipments that guarantee the developing of general and specific motric qualities is indispensable in the improvement of technical training when we consider swimming. As such series of measurable processes: dynamometrics, spirographics, etc. will allow the exact appreciation of rate speed by studying the structure of strokes in the case of every cycle. Researches have demonstrated that swimmer performances depend on the ability of controlling power. The “sense of strength” can be improved by specific training. The general training program was completed on the level of experimental sample with special algorithmic systems in order to develop subtle differentiations in swimming strength, expressed in the length and frequency of the “steps”. For this purpose is used the ergometric system endowed with instant computerized information as ERGOSIM. The results of

the experimental research demonstrated that the number of fundamental mistakes can be reduced (those which distort the technical mechanism of the movement). Therefore, by using the technical methods

endowed with instant information allows the swimmer to increase the capacity of controlling with ability the swimming strength.



Working on an experiment with 14 years old children I realized that those who had used the Ergosim conditions simulator developed a superior strength in comparison to those who were trained on land using traditional methods. In the following table it can be seen how even in the case of the experimental group drag forces have been overcome and the coordination of movements has improved between the initial and final testing (C. Ignat, 2005)

In the following graph it can be seen the overlapping of strength from the two testing. We can remark amelioration in traction forces as test movements are more constant. By working on Ergosim it can be observed an improvement in traction drag forces in swimming, what also brings the amelioration of time in water.

### Conclusion

It is very important for the sportive to realize the importance of this simulator's usage because with it's help and of course together with the training in water the performance swimming results will be much better.

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## STRESS FACTORS IN SOCCER OFFICIATING

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### Abstract

**Objectives:** The purpose of this study was to provide a detailed analysis of sources of stress, using a sample of national and international level Romanian referees.

**Design and methods:** A quantitative correlational research design was utilized. The modified Ontario Soccer Officials Survey (OSOS) was completed by a sample of 63 referees from different level of expertise (from international level to third league).

**Results:** Quantitative data demonstrated that the most frequently sources of stress suffered by referees were: fear of failure, interpersonal conflicts, peer conflicts, time pressures, role culture conflict and fear of physical harm (in order of importance). Referees from the League three obtain the biggest scores at factor „fear of failure”, then those from League two and from League one.

**Discussion:** This paper was conducted with the intention of a better understanding of the causes of stress in soccer officiating. Our desire is to use the findings of this study in an attempt to eventually devise appropriate stress management techniques for soccer referees.

**Keywords:** soccer officiating, fear of failure, fear of physical harm, sources of stress, Ontario Soccer Officials' Survey (OSOS).

### Introduction

Referees in all sports perform under immense scrutiny from players, coaches, fans and the media. At the elite levels, such scrutiny and the weight of expectation can have an enormous impact upon performance. It is hypothesized that those with better psychological skills handle the pressure of elite performance better than non elite match officials. The referee is responsible for ensuring that competitions unfold in accordance with the rules and regulations of the relevant sport. The referee is required to observe, interpret and consider the actions of players in the context of the laws in order to sanction infringements accordingly. The tasks of observing, interpreting and reaching a decision is extremely complex because often it must be carried out in a fraction of a second in ambiguous circumstances and under mental pressure.

Psychological stress typically occurs when the environment is appraised by an individual as taxing or exceeding personal resources (R. S. Lazarus & S. Folkman, 1984). Whereas chronic stress consists of experiences that are perceived as threatening, harmful, or challenging over an extended time period, acute stress refers to the sudden exposure to stimuli that elicit similar perceptions. Acute stressors can negatively affect numerous cognitive and psycho-physiological processes such as concentration, attention focus, effort and arousal, and lead to impaired motor performance (M. H. Ante, 1990).

However, physical and technical characteristics may not be sufficient to guarantee adequate performances if they are not accompanied by psychological attributes that can make a decisive contribution to achieving a high level of refereeing. Referees can be prone to chronic and acute stress which, besides damaging their health, can also interfere with the quality of their

performances. Experienced referees emphasise that there is a series of psychological skills that distinguishes the most talented referees from their colleagues and that these skills are between 50 and 70 per cent responsible for successful performances by referees (R. Weinberg and P. Richardson, 1990). These psychological skills require specific preparation to which few referees pay sufficient attention. In recent years, researchers have also begun to study stress among sport officials. Taylor and Daniel (A.H. Taylor & J.V. Daniel, 1987) analyzed the responses of 215 officials to the Soccer Officials Stress Survey and concluded that six factors (Interpersonal Conflict, Fear of Physical Harm, Time Pressures, Peer Conflicts, Role-Culture Conflict, and Fear of Failure) were main sources of stress. Goldsmith and Williams (L. A. Goldsmith & J.M. Williams, 1992) examined the sources of stress among a sample of volleyball and football officials. These officials reported three of the original six factors reported by Taylor and Daniel (Fear of Failure, Fear of Physical Harm, and Time Pressure). However, because the sample was too small, and because the results were based upon the mixed data of officials from two very different sports, the reliability of the factors reported these researchers was questionable. Rainey (D. Rainey., 1995) examined the sources of stress among baseball and softball umpires using a modified Ontario Soccer Officials Survey (OSOS). Four correlated sources of stress factors (Fear of Failure, Fear of Physical Harm, Time Pressure, and Interpersonal Conflict) emerged from the responses of the umpires. Results were similar to those reported for soccer officials by Taylor and Daniel (A.H. Taylor & J.V. Daniel, 1987). Taylor, Daniel, Leith, and Burke (R.J. Burke, 1990) have extended the research on stress among officials by examining the consequences of that

stress. They used path analytic techniques to examine the role of burnout as a mediator between the stress factors and intentions to quit officiating.

Most of studies in this topic used Ontario Soccer Officials Survey (OSOS). This instrument was adapted recently to Romanian norms (C. Marius, 2009, in press). The purpose of the present study was to examine the major causes of stress in soccer officiating and the relationships among the levels of expertise referee and sources of stress, using the modified Ontario Soccer Officials Survey- (OSOS).

## Methods

### Participants

The sample of participants was composed of 63 referees from different level of expertise (from international level to third league). Referees were in a physical and theoretical preparation camp in Antalya, Turkey. Participants ranging in age from 17 to 44 years ( $M=35,3$ ) from three league (I.League, 30 participants, League II, 14 participants and League III, 19 participants).

### Measures

**The Ontario Soccer Officials' Survey - (OSOS),** (A.H. Taylor, J.V. Daniel, Leith, & R.J.

### Data analysis and results

The main purpose of the study was to establish a hierarchy of the stressful situations in soccer officiating. Therefore, after the statistical analysis, we made a

Burke, 1990) is a revision of the 1987 Soccer Officials' Stress Survey (SOSS). The OSOS is composed of 29 items. Each question involves a brief description of a situation that may occur before, during, or after a soccer game, and which may cause stress in a soccer official. The subject is asked to indicate how much stress each situation would contribute to their stress level by circling a number from 0 to 3. A score of zero indicates that the situation would not contribute to the amount of stress the subject felt, a score of one indicates that the situation would mildly contribute to the amount of stress felt, a score of two indicates that the situation would moderately contribute to the amount of stress felt by the official, and a score of three indicates that the situation would strongly contribute to the amount of stress felt by the subject. The Survey has six subscales representing six main factors which can create stress in soccer officials: Interpersonal Conflicts, Fear of Physical Harm, Time Pressures, Peer Conflicts, Fear of Failure, and Role - Culture Conflicts (lack of recognition of good refereeing). The questionnaire was completed individually by each participant during winter preparation camp in Antalya. In order to obtain the results was used SPSS 15 for Windows.

hierarchy of the stressful situations. We calculate the mean for the each six subscales and we obtain a hierarchy, that explain which it is the most important sources of stress for the referees (table 1).

**Table 1.** The six factors hierarchy

No.	Factor	Mean (SD)
1	Fear of Failure	10.42 (5.00)
2	Interpersonal Conflicts	5.61 (2.91)
3	Peer Conflicts	5.11 (2.60)
4	Time Pressures	3.76 (2.91)
5	Role Culture Conflict	2.88 (1.41)
6	Fear of Physical Harm	2.58 (2.80)

From this hierarchy we can see that the most stressful factor for the referees is the fear of failure ( $M=10.42$ ,  $SD= 5.00$ ). There is a big difference between the mean of the first factor and second factor, interpersonal conflicts ( $M=5.61$ ,  $SC=2.91$ ). The last factor which represents a sources of stress is the fear of physical harm ( $M=2.58$ ,  $SD=2.80$ ).

The results of ANOVA as regards the variables which assess the six factors from the three leagues are presented in table 2. We can see that the referees from League two and three have the biggest means comparing with the referees from League One. Only the means of the „role culture conflict” are different, the referees from League I and III are having big means comparing with those from League II.

**Table 2.** Means scores for the six factors at the level of the three Leagues

Variable	Group	Mean	Std. Dev.
Interpersonal Conflicts	League I	4.83	2.60
	League II	6.14	3.10
	League III	6.47	3.06
Fear of Physical Harm	League I	1.70	1.95
	League II	2.71	3.31
	League III	3.89	3.14





Time Pressures	League I	3.13	2.41
	League II	4.21	3.66
	League III	4.42	2.98
Peer Conflicts	League I	4.83	2.60
	League II	4.92	3.24
	League III	5.68	2.10
Role Culture Conflict	League I	2.93	1.14
	League II	2.64	2.02
	League III	3.00	1.33
Fear of Failure	League I	10.13	5.11
	League II	10.57	6.22
	League III	10.78	4.00

To establish if there are significantly differences between the three leagues of referees at the level of the stress factors, we used ANOVA technique. We apply Simple ANOVA because we propose to compare simultaneous the three league, and the tab

variable (the league of the referees) was assessed on the nominal scale with 3 category (league I, II and III).

The results of ANOVA are represented on table 3. Exactly it is represented the final result of the score F, which represents a general score, without state the specific evolution of the 3 league.

**Table 3.** Results of simple ANOVA

Dependent Variable	Category Comparison	ANOVA
Interpersonal Conflicts	League I League II League III	F (2 ;60)= 2.16
Fear of Physical Harm	League I League II League III	F (2 ;60)= 3.92*
Time Pressures	League I League II League III	F (2 ;60)= 1.36
Peer Conflicts	League I League II League III	F (2 ;60)= .65
Role Culture Conflict	League I League II League III	F (2 ;60)= .27
Fear of Failure	League I League II League III	F (2 ;60)= .10

\* F statistical significant at  $p < .05$

The values of F indicate that there are differences between the three league as regards the factor “ fear of physical harm”  $F(2,60)= 3.92, p < .05$ . There are no differences between the three league at the level of the rest of the five factor: Interpersonal Conflicts  $F(2 ;60)= 2.16, p > .05$ ; Time Pressures  $F(2 ;60)= 1.36, p > .05$ ; Peer Conflicts  $F(2 ;60)= .65, p > .05$ ; Role Culture Conflict  $F(2 ;60)= .27, p > .05$ ; Fear of Failure  $F(2 ;60)= .10, p > .05$ .

Because the F test it is a general indicator it was necessary to use some techniques to emphasize exactly

in which of the three leagues are differences. We choose to use the post hoc techniques taking into account the number of the participants which are not the same for the three groups (league I 30 participants, league II 14 and league III, 19) and to the homogeneous of the scores dispersion. The dispersion homogeneous was made obvious through the Levene test. After the analysis of the Levene’s test we can say, that we can find two tips of dispersion, in our three leagues, as regards the stress factors (table 4)



**Table 4.** Results from the Levene`s test for equality of variances

Dependent Variable	Comparete Category	F Levene`s test
Fear of Physicall Harm	League I – League II	.004*
	League I – League III	.06
	League II – League III	.51

\* F – statistical significant at  $p < .05$

In this way, we consider that the number of participants is not the same for each group we use Hochberg test for the equal dispersion, and for dispersions who are not the same we use the Games-Howell test (table 5).

**Table 5.** Result from the Hochberg and games-Howell post-hoc comparisions

Dependent Variable	Category comparasions		Post-hoc comprasions	
			Hochberg / Games-Howell	Mean Difference
Fear of Physicall Harm	Ligue I	Ligue II	Games-Howell = .54	-1.01
		Ligue III	Hochberg = .02	-2.19*
	Ligue II	Ligue I	Games-Howell = .54	1.01
		Lioque III	Hochberg = .51	-1.18
	Ligue III	Ligue I	Hochberg = .02	2.19*
		Ligue II	Hochberg = .51	1.18

\* statistical significant at  $p < .05$

The results show that are differences between league I and III, in regards of the factor “fear of physical harm” Hochberg = .02,  $d(i,j) = -2.19$ ,  $p < .05$ . There are no significantly differences between league I and II Games-Howell = .54,  $d(i,j) = -1,01$ ,  $p < .05$  and no differences between league II and III Hochberg = .51,  $d(i,j) = -1,18$ ,  $p < .05$ , at the level of this factor. The referees from the league III obtain the biggest scores at this factor, then those from league II and then referees from league I.

### Discussions

In this study we try to present the most stressful events or situations as regards the 63 referees who participate to this study. At the same time we try to see if there are significantly differences between the three League at the level of the six factors of stress. It results that there are significantly differences between leagues only at the level of the factor fear of physical harm.

Making the analysis of the most stressful events, we can say that all the participants on this study tend to think more to perform well during the game. The participants think that the fear of failure, the fact that they can dissaponint with there evolution, represents a situation more stressful than the fear of physical assaults from players, coaches or spectators. Interpersonal conflicts represents the second source of stress. This factor include abusive or hostile behaviour between referees and also personality clashes. The third factor in the hierarchy it is the „peer conflicts” which is reflecting strained relations, due to competition for assignments or advancement of one`s

referee career. Time pressures is the next factor which represents a source of stress. The referees see this factor beeing a source of stres because the officiating career may be conflicting with other time demanding interests. One of the last factor it is the „role-culture conflict” is explained by lack of appreciation and support for a good referee. The last source of stress is the „fear of physical harm” that reflects the degree of stress associated with threat of actual assault. There are significantly differences between leagues only at the level of the factor fear of physical harm. and the League three has the biggest scores between the League three we have investigate. One explanation for this differences is that in inferior leagues there are yet problems with personal security of officials.

### Conclusion

This paper was conducted with the intention of better understanding the causes of stress in soccer referees. Our desire is to use the findings of this study in an attempt to eventually devise appropriate stress management techniques for soccer referees.

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## NEURO-LINGUISTIC PROGRAMMING MIDDLE PREPAREDNESS CONTEMPORARY SPORTS

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### Abstract

Author, Radu Dutu proposes neurolinguistic theme programming as a means of training in sport performance. I like to think of NLP is the art of science and personal excellence. Art because everyone brings their unique personality and style to what they do, and this can never be adequately explained in words or techniques. Science because there is a method and process behind achieving change and new outcomes. Personal excellence because it is possible to do things so elegantly and effortlessly that in sport. The aim of this essay is to study people's achievements and implementing these strategies in your own life to get success in the practice of sport performance NLP is a model for achieving excellence. Using NLP techniques coach can obtain significant indices optimize training and competition.

**Key words:** neuro linguistic programming, sport, NLP techniques, high performance sports, coaching

### Introduction

Neuro-Linguistics Programming was initiated by Richard Bandler (specialized in mathematics and Gestalt therapy) and John Grinder (specialized in linguistics). Initial goal was to develop a model of editorial excellence umane. First appearances were "The Structure of Magic" (volumes I and II) (1975 and 1976). This book in two volumes has identified "patternurile" verbal and non-verbal therapeutic behavior of Fritz Perls (creator of Gestalt therapy) and Virginia Satire (family therapist recognized internationally). They followed "Patterns of the hypnotic Techniques of Milton H. Erickson , MD "(volumes I and II) (1975 and 1977) patternur that have examined verbal and non-verbal's Milton H. Erickson, founder of the American Society of Clinical hypnosis (American Society of Clinical Hypnosis ") and one of the most famous psychiatrists and hipnoterapeuti of two times noastre.Genius of - Bandler and Grinder - was given the idea to formulate a practical model of therapy and counseling based on structured and patternurile, the strategies of these excellent experts.

Metodology NLP was then applied with great success in the communication(Dilts, Robert 1983) and

solve problems in fields such as management and business environment in general, artificial intelligence, education, sports or organizational development and, of course, personal development and leadership. The name "Neuro-Linguistic Programming" (Neuro-Linguistics Programming) comes from disciplines that influenced the beginnings of this domain. It started as a study of the relationship between neurology, linguistics and patternuri (models) of behavior (called "programs"). "Neuro" refers to the human nervous system and especially how unique that everyone will make the experience of the world ( "map" on the "territory") through the five senses - visual (V), auditory (A) kinestezic (K), olfactory (O), gustatory (G). "Linguistic" refers to systems of verbal communication (language) and non-verbal communication (body language) that "mapping" the reality around us.

Thus, using the language of our brain is "programmed", "I mean we can change" "programs" (strategies, ways, methods and techniques that fulfill various tasks, more or less complex) that already have with other, more "efficient" we will move in one direction. "Programming" refers to the unique way in which we manage neurological systems. The term is



borrowed from the IT and has been chosen especially to highlight the fact that our own brain is "programmed", yes we can change programs (strategies, ways, methods and techniques tasks, more or less complex) that already have with other, more "efficient", we will move in one direction (Dilts, R., Bandler, R., & DeLozier, J. 1980). This is practically the essence of which was left in the development of NLP.

**Neuro-linguistic programming (NLP)** is defined in the *Oxford English Dictionary* as "a model of interpersonal communication chiefly concerned with the relationship between successful patterns of behaviour and the subjective experiences (esp. patterns of thought) underlying them" and "a system of alternative therapy based on this which seeks to educate people in self-awareness and effective communication, and to change their patterns of mental and emotional behaviour".

**The goal of this essay** .Modeling excellence is the examine achievements of successful people in various fields, the definition and retrieval strategies and their successful implementation of these strategies in your own life to get success in the practice of sport performance.

**The content of the research** .NLP is a model for achieving excellence. This process of achieving excellence course involves processes of change at different levels in the person (Bandler & Grinder, 1979). This process of change in the most simple, can be summarized as follows: • learning condition (mental) person present, • retrieving and implementing appropriate resources to achieve ... • state (mental) desired.

Mental state	+	resources	=	mental status
Present		appropriate		desired

**Figure 1 NLP Technology**

Thus, all NLP techniques are organized so as to define and identify the current and desired states of different levels, "variables", and then to access and implement those resources to produce the desired effect: the change in meaning of individual state desired , change what needs to be efficient and ecological. And along the approximately 30 years of sustained development, NLP has created and developed tools and very strong skills in areas such as counseling, psychotherapy, education, health, creativity, legal, sales, management and leadership. The following presents a list of some of the most famous and commonly used techniques and skills of the NLP: decode communication - Identify and report the grant ("matching") the most used words and representations of a person in order to create what is called in NLP "rapport." Temporary ("pacing"), by providing and reflection ("mirroring") of facial expressions, the gestures and body movements, tone and tempo of Voice of the people, for the same reason to establish a relation with that person. "translation" between the sensory experience representationale (V, A, K, O, G),

redefining it in a representational to another in order increase understanding between individuals or groups of people, especially in cases where there are bottlenecks at the level of communication. in-depth analysis of language and extracting elements of the language to make it easier to transmit their own experiences, conditions and objectives of the around. sensory acuity and calibration observation and use what is called in NLP "index access" and "behavioral microindici" to better understand the strategies of another person by which it is organized and efficient experience. Sensory acuity is also absolutely necessary to understand the communication. NLP methodology was then applied with great success in the communication and solve problems in areas such as management and business environment in general, artificial education, sport or organizational development and, of course, personal development and leadership. The possibility of creating new strategies and representations on the VAKOG through sensory specific language and by using index access. representationale increase awareness systems and the impact that they have in building "map" our, so that we can better and faster to evaluate their effects on behavior and our identity as persons. Identify conditions and double messages, called "states incongruente, both at the level of communication, and at the beliefs, behavior and identity, in order to reduce the maximum states of confusion, frustration and wrong understanding of the states own or others.

Anchoring "anchoring" positive experiences and states (generically called "resources" in NLP) that have happened in a certain context and then "launch" of the anchor to quickly access these states and positive experiences that could be used as resources in a new context. All the resources we need are already in us. Often it is not to create new behaviors and skills in November. In NLP vision, the challenge is accessing resources (state, experiences) that already have efficient and their use in new contexts and in their implementation of new strategies for success. Identify and "breaking" strategies and relationships between individuals and inefficient groups for increase flexibility. Cadrare and recadrare Cadrarea and recadrarea behaviors and states the problem. This is done under the assumptions NLP which there is a positive intention behind every behavior and every behavior is useful in a certain context. The objective here is to create a change in people's perceptions, so that the problem be solved more efficiently. This change of context, "recadrare" go look at the problem from another point of view and, finally, people can more easily to separate the identity of the person person's behavior. People are all a sum of their behavior. Positions perceptual, modeling and team building Creating flexibility and adaptability among members of a (group, team) through the processes of impersonation role - called in NLP "perceptual positions". Thus arrive at a thorough understanding of



the role played by each member of a team and efficient flow of information between team members. "Elicitarea" group strategies and conditions to achieve desired with greater ease by the group. Creating and maintaining the spirit of unity and support each other in the team by "alignment" neurological levels and objectives among team members. Flexibility and understanding in a system that has the highest flexibility has the greatest impact on target. Flexibility comes from the ability to select a variant of a source of options. And by get NLP to discover what options we have. Setting and achieving NLP provides resources not only for developing flexibility, but also a great technology for achieving the objectives. In fact, NLP is gone from the premise that it is useful only when used by people to achieve objectives. NLP is practical and pragmatic. NLP is a "tool" to achieve excellence. NLP is a multidimensional process that involves the development of behavioral competence and flexibility. It includes a strategic thinking and an understanding of mental and cognitive mechanisms behind the behavior. NLP has tools in its skills and competencies to achieve individual excellence. Also includes a set of principles and assumptions about what people are about communication and processes of change of personality. From this point of view, NLP is a way of self-discovery of identity, the mission of building personal or organizational identity (corporate identity) and a mission organization (corporate mission "). NLP is also the connection to the human spiritual experience. NLP is not only about the excellence and efficiency, but also about the wisdom and vision. Neurological level models allow us to look at how people use the generalization (one of the filters communication) how to talk about a whole range of things like this model grupate. Folosind as a framework for understanding it helps us get in the way that people wear. **Applications in sport** Understanding the way an athlete discuss a problem or situation can make an introspection on the level at which it operates (Holdevici, Irina, 1991). By choosing another level that athletes used, can be a problem on this challenge level to enable them to think differently in a situation or problem you would like to change and therefore to seek their own solutions, resources and answers to questions that allow confrunta. For coach optimize

relationships with athletes and himself, to see, feel, see what others leading to the improvement of results sportive. Aplicand NLP techniques in combination with the sports training (I. Holdevici, L. Constantinescu, 1999), coach can improve the results that its athletes and has been proposed to achieve in competitions.

**Conclusions** Using NLP techniques (which are considered to be a central activity of NLP modeling) training in sport and especially in combination with the training, everything sincronizand participation in competitions and using appropriate periodizarea in preparation, the coach can get significant optimization indices of training and competition, this being in line with the objectives set by the sport and coach.

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## **STEPS OF TRAINING IN OBSTACLE RACE OF NAVAL PENTATHLON**

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#### **Abstract**

Under consideration accomplished subdued research a series of the specify training parameters (obstacle race and relay obstacle race), who conditions the physical special effort. Hold the specify training area (N. Alexe, 1993; I. Drăgan, 1973; A. Dragnea, 1996; M. Ifrim, 1989, etc.) propose in the process of selection grids with standard values have the parameters determinant in the system criterions of selection.

In specify training investigation realized demonstrated that the results obtained of subjects the group of the experiment they framed to anticipate performance results. From the series five specify training parameters apply in research, from statistical viewpoint to the ultimate testing mark crease average values to the level experiment group.

**Key-words:** obstacle race, relay obstacle race.

### Introduction

In speciality literature more majority of sports area sustain that sports training will be realize on base by criterions, who can be taken like a model for the efficiency in sport performance (N. Alexe, 1993; N.J. Bulgacova, 1996; A. Dragnea, 1996). In this study we have selected the aspects which we can establish the contain and the structure on the level at military students to the event obstacle race to naval pentathlon

### Hypotheses

We propose that will be applied same operative systems specify to the training process on monocycle

### Subjects and methods

The experiment group of our study was consisting to the military students (age 18 – 25). Methodology research, the research methods was applied on introductive monocycle period to eight weeks, adequate period to the selective process after National Naval Pentathlon Championship till the new training year.

### The analysis and interpretation of the results

The testing specifies training appearance for obstacle race it achieved as part as the experimental stage 1 by

used main parameters presented in speciality literature for military pentathlon (P.T.C. Military Pentathlon, 1995). In the same time we considered excellent used same testing who exist for naval pentathlon, with purpose verify objective to the subjects experiment. Through adapted existent testing from speciality literature, as through applied a new testing created by us we establish semnificative results in experimental stage 1.

period to eight weeks will contribute to obtain equivalent values of specify physical parameters with the normal level at the training military students.

characteristic skulls of naval pentathlon, which skulls were applicant concomitantly for subjects the group of the witness and the experimentally group as much to the initial moment of the experimental stage 1, its last this.

The dates obtain in experiment period was elaborated statistic. After allocate the statistic parameters, the results permitted to comparative analyses a average of group who appearance specify training to obstacle race by the military students so much to initial testing (table 1) how much to final testing (table 2).

**The table 1.** Analyses comparative to average of groups what characterized specify physical training investigation to the military students testing initially in the experimental stage 1

Nr. Crt	The parameters compares		$\bar{X} \pm m$		Criteria	
			Group witness	Group experimentally	"t"	"p"
1	Obstacle race	Relay 1 (sec.)	26,00 ± 0,15	25,80 ± 0,23	0,74	>0.05
2		Relay 2 (sec.)	28,02 ± 0,23	27,87 ± 0,23	0,48	>0.05
3		Relay 3 (sec.)	29,01 ± 0,30	29,40 ± 0,26	1,44	>0.05
4		Relay 4 (sec.)	37,17 ± 0,07	37,13 ± 0,11	0,30	>0.05

This event realised hatred chronometry and contained four moments (relay 1, 2, 3, 4) and 10 of specific obstacles. From the comparative average analysis of groups what represented this event, notice to the initial testing (the table 1) as much subjects the lot of witness how much the experimental lot registered performance approached as value in all the submissive moments

research. The difference among the averages performance realised to the initial testing between twice groups am insignificant to the degree of freedom n-1, p= 0, 05. To the ultimate testing (the table 2), analyse comparative an average of groups, confirm the fact that the averages performance obtained by subjects have bred progressively in special experimental lot.

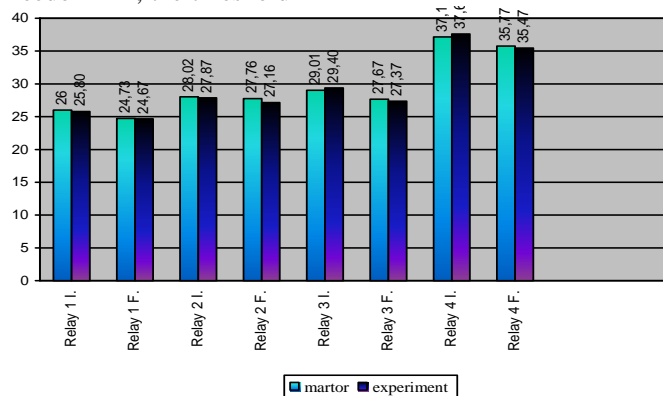
**The table 2.** Analyses comparative to average of groups what characterized specify physical training investigation to the military students testing finally in the experimental stage 1

Nr. Crt.	The parameters compares		$\bar{X} \pm m$		Criteria	
			Group witness	Group experimentally	"t"	"p"
1	Obstacle race	Relay 1 (sec.)	24,73 ± 0,07	24,67 ± 0,07	0,66	>0.05
2		Relay 2 (sec.)	27,76 ± 0,23	27,16 ± 0,15	<b>2,22</b>	< 0,05
3		Relay 3 (sec.)	27,67 ± 0,23	27,37 ± 0,23	0,93	>0.05

4		Relay 4 (sec.)	$35,77 \pm 0,38$	$35,47 \pm 0,23$	0,68	>0.05
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From the calculus significant take difference they among the averages obtained of twice lots to the ultimate testing, notice that difference was significant statistically to the degree of freedom n-1, the threshold

of significant 0, 05(  $t$  is expressed through the value 2, 22 > 2, 13). Crease is can noticed in the chart 1. – Relay 2.



**The chart 1.** The dynamics results skulls specific training appearances to the obstacle race – naval pentathlon in the experimental stage I

### Conclusions

The performance obtained by the subjects experimental study to the obstacle race characteristically events on naval pentathlon, was demonstrated final of research.

On the comparative analyses average of specify performance obtained by the subjects experiment group to the final testing to event: obstacle race, represented the significantly values (n-1, p=0, 05).

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## ROLE OF CONTOURGRAMS IN SPOTTING TECHNICAL MISTAKES IN FRONT CRAWL SWIMMING

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### Abstract:

The aim of this research is the study of methodology of the front crawl swimming technique evaluation; the discovery of defining elements appeared in the swimming technique evaluation methodology, for increased quality standards and effectiveness of the performance activity, by using the underwater video recordings method and processing the footage. As a result of processing the video captures, the contourgrams can have a considerable importance in spotting the technical mistakes of arm stroking in front crawl swimming, thus having a basis for a new research methodology and perfecting the swimming technique by implementing the teaching units in the training plans.

**Keywords:** swimming, training, technique, contour gram.

The video recording used in sportive training (Galeru, O., 2008, p 36) has the following advantages: the possibility of frame-by-frame analysis, slow-motion or fast-forward analysis and enlarged image for making contourgrams of the movement.

Direct recording. For an underwater recording (fig. 1) we need a (3) mobile unit (camera and recorder/camcorder), the operator that handles (1) the underwater camera, (2) batteries for the camera and a monitor (4).

The modern technique comes in the aid of video-training through the digital format, a method that shortens the time of the technical actions.

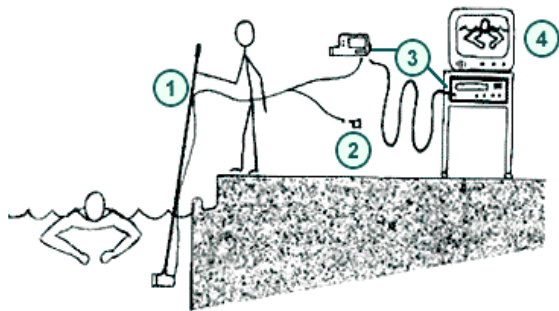


Fig.1. Underwater video recording system

Minimal equipment includes, with the camera, a laptop and specialized movement analysis software.

Presentation (rendering). In all three situations there are demands regarding the content and proper didactic presentation of the recordings.

Spotting the technical mistakes. In spotting the technical mistakes in competitive swimming styles, a decisive role has the methodology of video recording, the recording angles, and the focusing distance. After a detailed analysis of the recordings, contourgrams for the arm movements (Colwin, C.M., 2002, p.143) during swimming were elaborated, representing the trajectory of the respective movement.

The MaxTRAQ software represents a less expensive and easy to use solution. This program is emphasized much more with the MaxMATE software that analyses the processed data and can give accurate contourgrams.

### Subject 1.

#### Technical mistakes:

- Arm movement: when arms enter the water there is no grabbing the arm enters deep into the water, splashing it, forming turbulences. When entering the water, the left arm crosses the body's median line, generating an undulating movement. It does not finish

Together with the video recordings, specific indexes were measured, in order to evaluate the effectiveness of this particular swimming style, distance on arm cycle (DPC), propulsion index (Ip). (Marinescu Gh, 2002, p, 32)

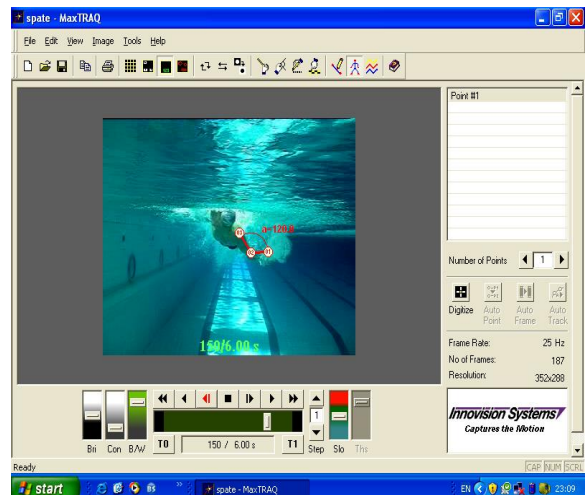


Fig. 2. MaxTRAQ

The study was conducted on a group of 5 junior athletes II, of Bacău, during 12.01.2009-12.02.2009 at the Bacău swimming court. The video recording was made frontally and laterally. The contourgrams are presented as follows, together with the each subject's technical mistakes.

the pushing phase, lifting the elbow prematurely over the water.

- Breathing: one breaths every 2 strokes, in a proportion of 88% only on the left arm, shortening the right arm traction.
- leg movement: one executes five leg beats at one stroke cycle

S.1. (front crawl)	
Testing with a start from the water 50m (time)	28,15
Number of stroke cycles / 50m	32
Average speed (V m/s)	1,77
Distance over a stroke cycle (DPC m)	1,56
Propulsion index (Ip = V x DPC)	2,761

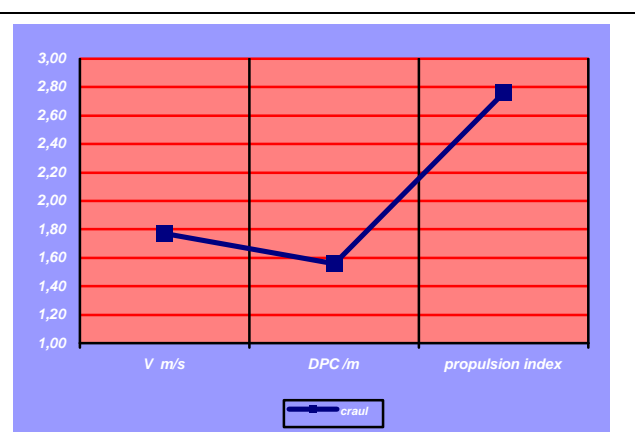
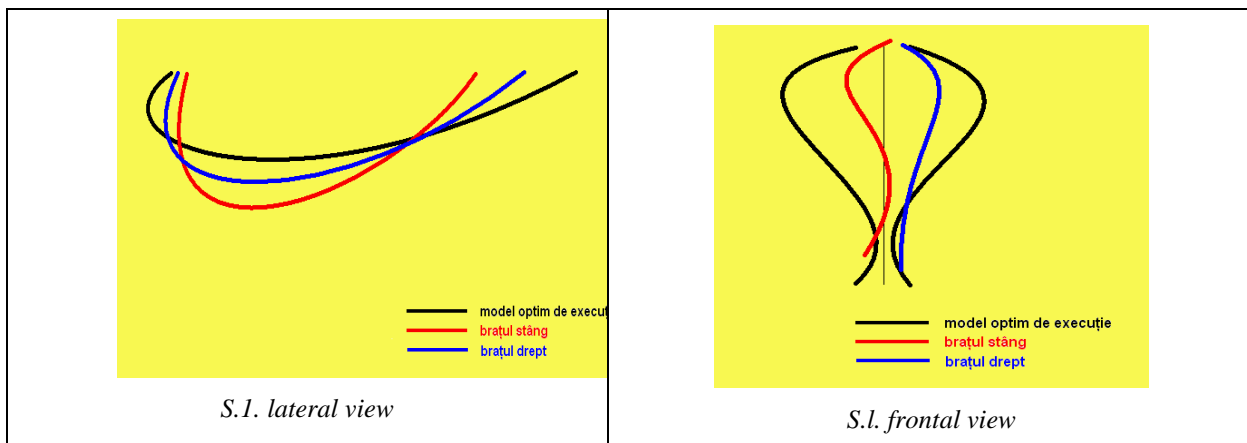


Chart 1. Swimming technique indicators (S1.)





**Subject 2.**

**Technical mistakes:**

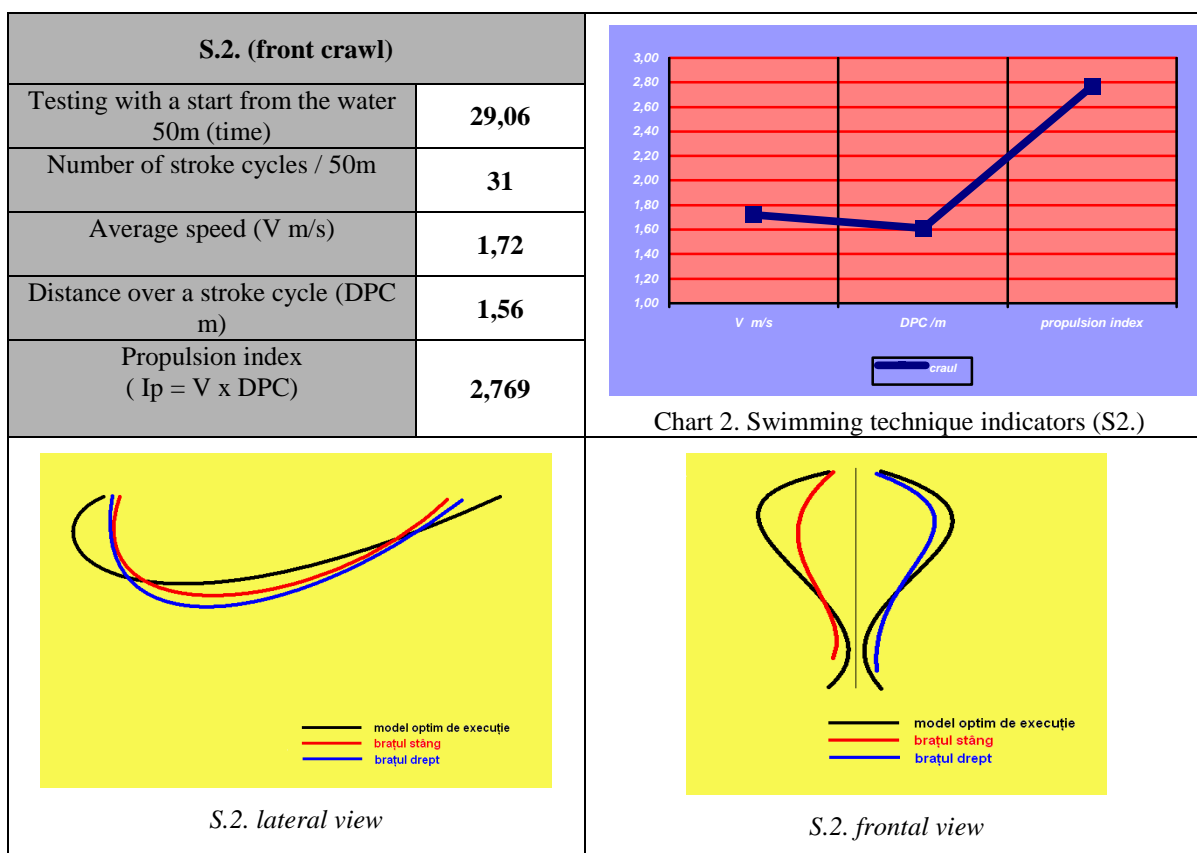
- Arm movement: arms enter the water with a very bended elbow that leads to the left arm entering deep into water, eliminating the sliding phase. Grabbing the water is downwards, the arm being at an angle of 116°, not respecting the sinusoidal trajectory

of the aquatic work. The arms do not finish the pushing phase of the aquatic course.

- Coordination: two leg beats every stroke, that leads us to believe that the athlete will not be very fast.

**Breathing:**

- Breathing is done in a proportion of 90% only on the left arm (every two strokes). This makes the hips to move laterally, on the left side.



**Subject 3**

**Technical mistakes:**

- Arm movement: the left arm enters too deeply in the water, generating an undulating movement of

the body. The right arm traction is done with a lowered elbow, thus there is no efficient water grabbing.

- Breathing: the breathing is hectic, which leads to an ineffective movement coordination.

- Leg movement: movement is done with a small step, which leads to reduced propulsion and effectiveness.

S.3. (front crawl)	
Testing with a start from the water 50m (time)	<b>29,98</b>
Number of stroke cycles / 50m	<b>30</b>
Average speed (V m/s)	<b>1,66</b>
Distance over a stroke cycle (DPC m)	<b>1,66</b>
Propulsion index (Ip = V x DPC)	<b>2,755</b>

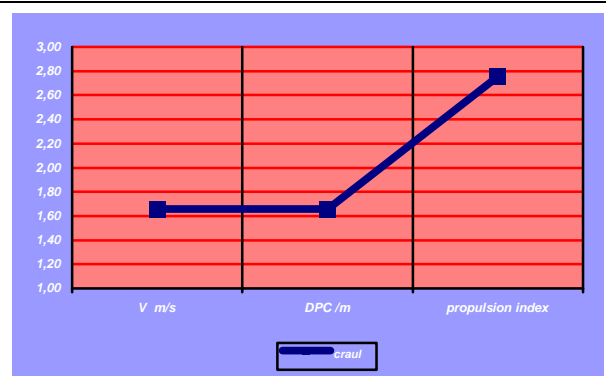
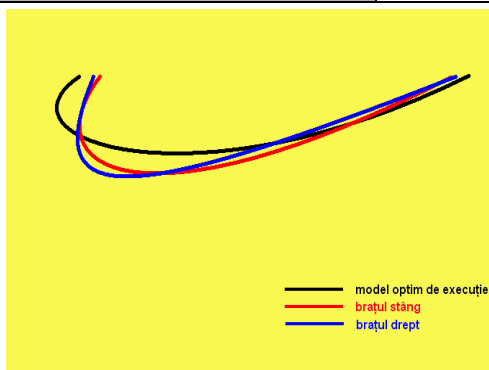
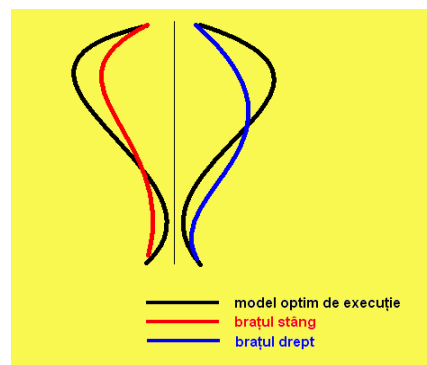


Chart 3. Swimming technique indicators (S.3.)



S.3. lateral view



S.3. frontal view

#### Subject 4

##### Technical mistakes:

- Arm movement: the arms enter the water too much laterally; the left arm does not grab the water, entering directly in traction, this resulting in an

asymmetrical movement. The left arm is more bended than the right arm, the difference being of 20°.

- Breathing is every four strokes.
- Coordination: two leg beats every stroke.

Leg movement:

- Right leg beat is deeper than the left one.

S.4. (front crawl)	
Testing with a start from the water 50m (time)	<b>29,81</b>
Number of stroke cycles / 50m	<b>32</b>
Average speed (V m/s)	<b>1,67</b>
Distance over a stroke cycle (DPC m)	<b>1,56</b>
Propulsion index (Ip = V x DPC)	<b>2,605</b>

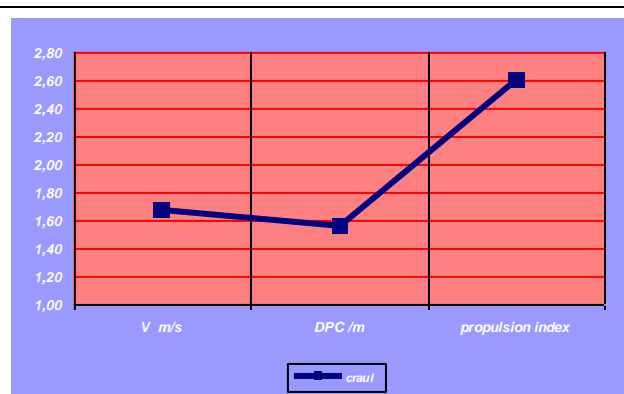
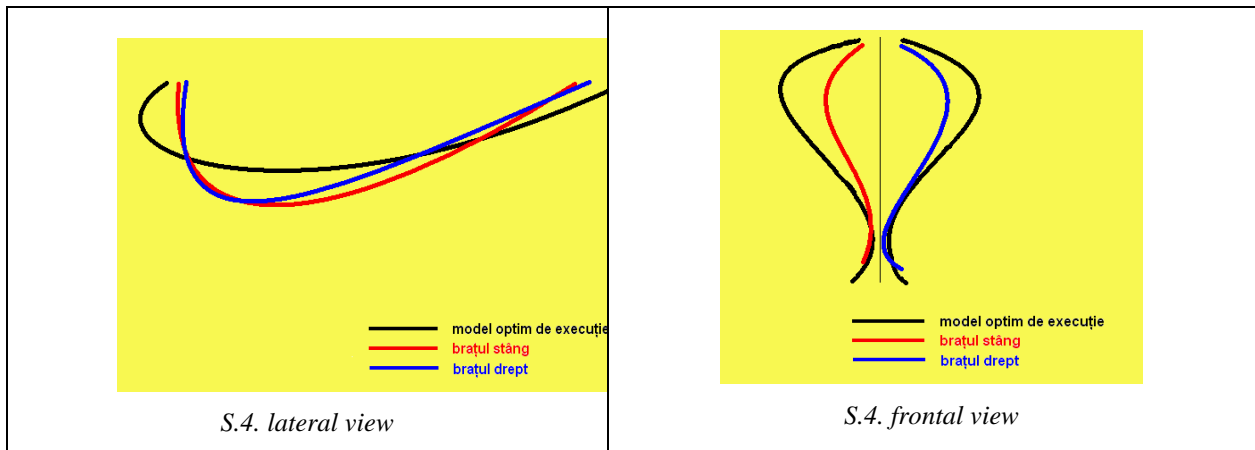


Chart 4. Swimming technique indicators (S.4.)



**Subject 5.**

**Technical mistakes:**

- Arm movement: the arms splash the water without grabbing the water, the arm enters in a traction movement directly, on a lower trajectory, without lateral movement. The elbows are a little bended at an angle of 113° at the right arm and 126° at the left arm.

Pushing, on the last part of the aquatic course, is superficial

- Coordination: a lot of lateral hip movement, which leads to an undulating swim.
- Leg movement: no classical six leg beats every stroke.

S.5. (front crawl)	
Testing with a start from the water 50m (time)	<b>30,72</b>
Number of stroke cycles / 50m	<b>31</b>
Average speed (V m/s)	<b>1,62</b>
Distance over a stroke cycle (DPC m)	<b>1,61</b>
Propulsion index (Ip = V x DPC)	<b>2,608</b>

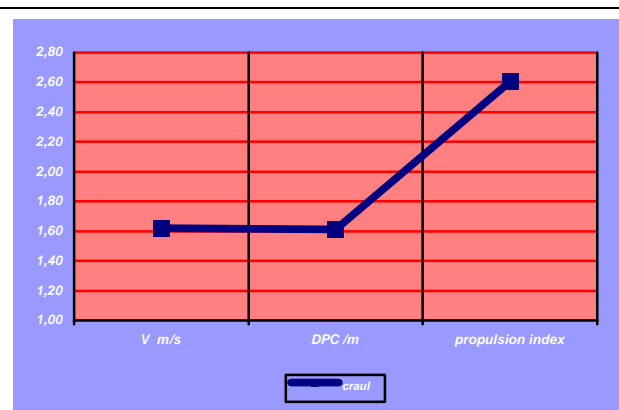
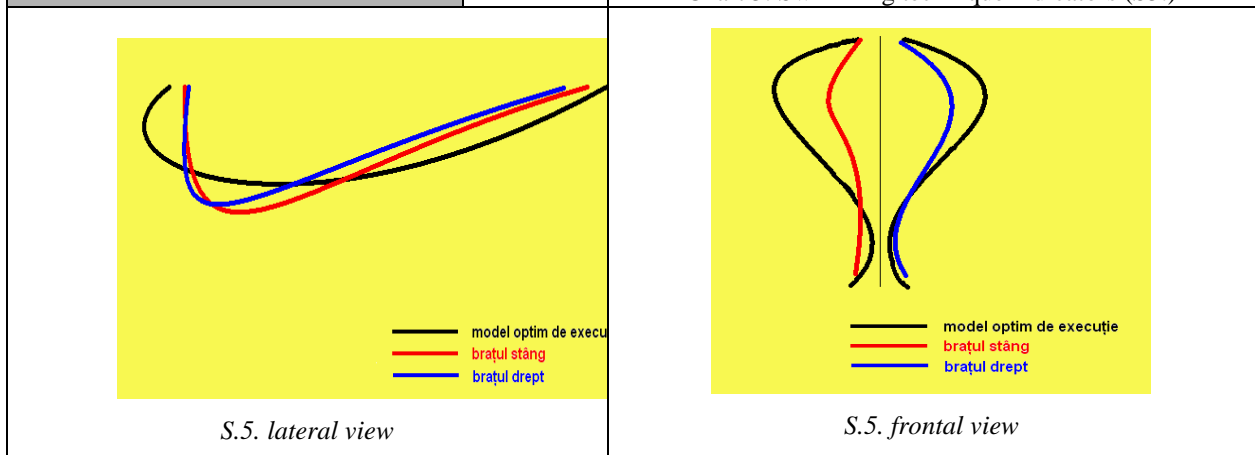


Chart 5. Swimming technique indicators (S5.)



Following the contourgram and specific swimming evaluation indexes analysis, we will be able

to intervene in the training process using specific methods and means for correcting the technical

mistakes. The means I have suggested in order to solve the aim of this study were: implementing in the annual training plan certain teaching units (Colibaba-Evuleț, D., 2007, p. 176) that contain specific sets of exercises, which will correct the technical mistakes in front crawl swimming.

Regarding the teaching units, they are similar with classical training programs, only that every allocated group of lessons can be realized with other exercises and contents.

Teaching unit number 1				
Theme	Objectives / Competences	Contents	Dosage	Evaluation methods
T1	Front crawl: correcting the movement with the arms	► Crawl sliding, supporting the legs on the swimming board, taking a breath at each stroke	3x200m p. 30sec.	DPC Video feedback
T2	Front crawl: correcting the movement with the arms	► Crawl sliding, one-arm swimming, with a breath at every two strokes – changing the arm every 50m	2x300m p. 30sec.	
T3	Front crawl: correcting the movement with the arms	► Crawl sliding taking a breath at each stroke and palms passing beneath the armpit	2x300m p.30sec.	DPC Video feedback
T4	Front crawl: correcting the movement with the arms	► Crawl sliding performing the aquatic tour without air, arms returning into sliding position	8x50m p. 25sec.	
T5	Front crawl: correcting the movement with the arms	► Crawl sliding with a breath every stroke, with tight fingers	3x200m p.30sec.	DPC Video feedback Contourgrams
T6	Front crawl: correcting the movement with the arms	► Front crawl swimming 25m with a tight fist, 25m with an open palm.	8x50m p.25sec.	DPC Video feedback Contourgrams
T7	Front crawl: correcting the legs' movement	► Crawl style, using legs, with hands behind the back	8x50m p.25sec.	
T8	Front crawl: correcting the legs' movement	► side sliding, with one arm extended forwards, the other one on the body, moving the legs while being on a side	8x50m p.25sec.	
T9	Front crawl: correcting the legs' movement	► moving the legs vertically, arm at the chest	8x40sec. p.30sec.	
T10	Front crawl: correcting the legs' movement	► moving the legs equipped with flippers	5x100m	
T11	Front crawl: breathing coordination	► breath alternation during swimming: two cycles every three strokes, alternated with two cycles every two strokes	2x200m	DPC Video feedback Contourgrams
T12	Front crawl: breathing coordination	► front crawl swimming with a breath every three strokes, expiration underwater, while moving the second arm	3x200m	DPC Video feedback Contourgrams
T13	Front crawl: breathing coordination	► front crawl swimming with a breath every three strokes (50m), a breath every five strokes (50m)	3x200m	DPC Video feedback Contourgrams
T14	Front crawl: body position	► front crawl swimming using a snorkel	3X200m	Contourgrams



### Conclusions

We think that the traditional swimming technique teaching-learning-evaluation activities can be structured and re-thought; in this sense, a first attempt of modernizing the process is focused on the

teaching-learning-evaluation activities, according to the praxiological circuit model, in which the instructional objectives are the ones that condition the other didactic design operations.

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## APECTS OF PSYCHOLOGICAL PROFILE ON YOUTH SOCCER PLAYERS

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### Abstract

The purpose of this study was to line out the important aspects of psychological profile on youth soccer players and to compare it's with those from literature. For this 5 soccer players with age between 15 and 17 years old were participated in a psychological testing which consists in administration of a personality test – FPI-G (Freiburg Personality Inventory – General).

Analysis of psychological profile of players who are tested give us the conclusion that all the 5 subjects join on the psychological inquires of the soccer players that are enunciate in literature.

**Key words:** psychological profile, youth, soccer player.

### Introduction

Personality is the set of psychic capabilities, “the individual psychic particularities”, the things that make the difference between one individual to the other.

Are more meanings of the personality concept: *anthropological* one – personality form during life only as a result of action and living together in a social environment; *psychological* one – personality appear like a set of internal conditions appears as a set of internal conditions. Internal conditions relate to intelligence, emotional, motivational, energy, skills and attitudes; *axiological* one – personality appear like a moral, social, cultural and spiritual value (M. Zlate, 2000).

Exploring personality was achieved by standardized methods in order to create the knowledge. The methods are different in terms of construction and how the issues concerned. However they can be grouped into four categories: 1. questionnaire 2.

projective techniques, 3. objective tests; 4. testing situation.

The following is a brief review of the psychological characteristics of the soccer game, and implicit of the soccer player, as they are presented in literature.

Soccer game is a collective game which requires the direct contact with the opponent, a game which solicits the player multilateral because of complexity of movements and various conditions from field. The technical level is based on automatically skills with original elements which confer a high qualificative to the executions. Are requiring analysers, like kinesthetic analyser, propioceptiv analyser, that confer control in executions. On the same way, the corporal scheme and laterality are engage in this game. We can forget the spatial perception which can help on the developing sense of ball, sense of goal and the placement. Regarding higher mental processes, noted the following: Regarding higher mental processes, noted the following:

- Attention – capability of concentration attention must be maximal, because the players must be focused simultaneous on self execution, team-mate and to the opponents and, in the same time, its must eliminated the disturbance stimulus. Generally it is about attention flexibility and distribution.

- Thinking – soccer game require operativity and flexibility of this process.

- Imagination – soccer game require both imagination: reproductive type (reprise of tactical schemes have been suggested by coach) and, creative type (by creation of new solutions).

On the personality trait we have the subsequent: as temperament it is recommendate the sanguine type and/or choleric type, because they are very efficiently in competitions. From other ways, the soccer player must be: optimistic, sociable, courageous, happy, open character, easy adaptable, prompt reactions, dashing, able to take decisions, accentuated volition, upper aggressivity/combativity, domination tendencies.( N.,Martin, 2002).

### Method

In our study we use the techniques based on questionnaires – Freiburg Personality Inventory –G (FPI-G). For a good understanding of psychological profiles which will be presented we make the subsequent remarks: grades 1 and 9 of the profile represent dominant marks, which means obvious characteristics of personality; grades 2-3 and 7-8 represent trend, potential, latent, un-manifest behavior; grades 4, 5 and 6 characterize the normal population.

### Subjects

The study was done on 5 athletes – soccer players – with age between 15 and 17 years old and they playing and training soccer from 4 years.

### Results

We present the psychological profiles of the subjects and the signification of data from grades 1, 2, 3, 7, 8 and 9, separately, for each subject. We took in to consideration only these grades because those represent exactly the note characteristic for each subject.

The psychological profile of subject no 1

Scale	Rate		Grades												
			1	2	3	4	5	6	7	8	9				
FPI-1 Nervosity	1	Without psychosomatic disorders													With psychosomatic disorders
FPI-2 Aggresiveness	16	Non-aggressive, Controlled													Aggressively spontaneous emotional immaturity
FPI-3 Depression	8	Satisfied, confidence													Mood, un-confidence
FPI-4 Excitability	11	Quiet, resistant to frustrations													Irritating, sensitive to frustrations
FPI-5 Sociability	24	Unsociable,													Sociable
FPI-6 Calm	13	Irritable, restless													Calm, balanced
FPI-7 Dominance trends	16	Tolerant, temperate													Aggressive, reagent
FPI-8 Inhibition	2	Relax, capable of human contacts													Inhibited, tense
FPI-9	12	Closed, non-critical													Open, self-critical

Sincerity														
FPI-E Extraversion	20	Introverted												Extraverted
FPI-N Emotional lability	9	Emotionally stable												Emotionally instable
FPI-M Masculinity	21	Typical female												Typical male

**Characterization:**

- Factor 1 – nervositas are the value 1. In this case, the following is significance of this factor: the subject don't have body complaints, and somato-emotional resonance is reduced.

- Factor 2 – aggressivity are the value 8. Meaning: spontaneous aggressive acts (physical, verbal), emotions are relieve on objects and animals, forms of social aggression (hoaxes, exaggerated jokes), need for change, variation.

- Factor 5 – sociability are the value 8. Meaning: the relationships with others are easily assign, is friendly, communicative, active.

- Factor 7 – dominance trends are the value 8. Meaning: aggressive physical and verbal acts, self-centered concept, masterly behavior.

- Factor 8 – inhibition are the value 1. Meaning: spontaneity, reliance, trust their own forces, able to assign relationships with others.

- factor E – extraversion are the value 8. Meaning: sociable, likes to make oneself conspicuous, active, communicative.

- factor M – masculinity are the value 8. Meaning: aware of their own value, active self-assertion, balanced mood, rare manifestations of stage fright.

The subject is a communicative one, masterly, active, present normal limits for aggressive tendencies, echilibrated mood, when is confronted with frustrating situations he don't have body complaints (butterflies in the stomach, trembling of the limbs).

In conclusion he presents psychological qualities that are necessary to practise soccer game with real succes

**THE PSYCHOLOGICAL PROFILE OF SUBJECT NO 2**

Scale	Rate		Grades												
			1	2	3	4	5	6	7	8	9				
FPI-1 Nervosity	4	Without psychosomatic disorders													With psychosomatic disorders
FPI-2 Aggressiveness	5	Non-aggressive, Controlled													Aggressively spontaneous emotional immaturity
FPI-3 Depression	11	Satisfied, confidence													Mood, un-confidence
FPI-4 Excitability	6	Quiet, resistant to frustrations													Irritating, sensitive to frustrations
FPI-5	10	Unsociable,													Sociable

Sociability																
FPI-6 Calm	14	Irritable, restless														Calm, balanced
FPI-7 Dominance trends	10	Tolerant, temperate														Aggressive, reagent
FPI-8 Inhibition	18	Relax, capable of human contacts														Inhibited, tense
FPI-9 Sincerity	12	Closed, non-critical														Open, self-critical
FPI-E Extraversion	8	Introverted														Extraverted
FPI-N Emotional lability	10	Emotionally stable														Emotionally instable
FPI-M Masculinity	13	Typical female														Typical male

#### Characterization:

- Factor 1 – nervositas are the value 3. Meaning: without body complaints, and somato-emotional resonance is reduced.
- Factor 5 – sociability are the value 3. Meaning: propensity to isolation, reserved, non-communicative.
- Factor 6 – calm is the value 7. Meaning: calm, unruffled, self-reliance, optimism, positive mood.

- Factor 8 – inhibition are the value 7. Meaning: timidity, embarrassed, inhibited in their relations with others.

- Factor E – extraversion is the value 3. Meaning: limited sociability, tendency to isolation, non-communicative, do not like fun, avoids excelling, preferring to be left alone.

Although subject is not a very communicative person, have other psychological qualities that recommended him for soccer practice: calm, self-reliance, optimism, positive moods, good responses in frustrating situations.

#### THE PSYCHOLOGICAL PROFILE OF SUBJECT NO 3

Scale	Rate		Grades													
			1	2	3	4	5	6	7	8	9					
FPI-1 Nervosity	4	Without psychosomatic disorders														With psychosomatic disorders
FPI-2 Aggressiveness	5	Non-aggressive, Controlled														Aggressively spontaneous emotional immaturity
FPI-3 Depression	8	Satisfied, confidence														Mood, un-confidence



FPI-4 Excitability	6	Quiet, resistant to frustrations																		Irritating, sensitive to frustrations
FPI-5 Sociability	9	Unsociable,																		Sociable
FPI-6 Calm	11	Irritable, restless																	Calm, balanced	
FPI-7 Dominance trends	11	Tolerant, temperate																	Aggressive, reagent	
FPI-8 Inhibition	8	Relax, capable of human contacts																	Inhibited, tense	
FPI-9 Sincerity	8	Closed, non-critical																	Open, self-critical	
FPI-E Extraversion	7	Introverted																	Extraverted	
FPI-N Emotional lability	9	Emotionally stable																	Emotionally instable	
FPI-M Masculinity	14	Typical female																	Typical male	

Characterization:

- Factor 1 – nervousity are the value 3. Meaning: without body plaints, and somato-emotional resonance is reduced.
- Factor 2 – aggressivity are the value 3. Meaning: reduced aggressive tendency, constant self-control.
- Factor 5 – sociability are the value 3. Meaning: propensity to isolation, reserved, non-communicative, shiftless.

- Factor E – extraversion is the value 2. Meaning: limited sociability, tendency to isolation, non-communicative, do not like fun, avoids excelling, preferring to be left alone.

On this subject, barring the isolation tendency, other psychological qualities required for practicing soccer are presents in the normal limits (most of physiological factors put into evidence by the test frame in grades 4-6).

**THE PSYCHOLOGICAL PROFILE OF SUBJECT NO 4**

Scale	Rate		Grades																
			1	2	3	4	5	6	7	8	9								
FPI-1 Nervosity	5	Without psychosomatic disorders																	With psychosomatic disorders
FPI-2 Aggresiveness	6	Non-aggressive, Controlled																	Aggressively spontaneous emotional immaturity

FPI-3 Depression	9	Satisfied, confidence																	Mood, un-confidence
FPI-4 Excitability	4	Quiet, resistant to frustrations																	Irritating, sensitive to frustrations
FPI-5 Sociability	5	Unsociable,																	Sociable
FPI-6 Calm	13	Irritable, restless																	Calm, balanced
FPI-7 Dominance trends	9	Tolerant, temperate																	Aggressive, reagent
FPI-8 Inhibition	13	Relax, capable of human contacts																	Inhibited, tense
FPI-9 Sincerity	8	Closed, non-critical																	Open, self-critical
FPI-E Extraversion	5	Introverted																	Extraverted
FPI-N Emotional lability	10	Emotionally stable																	Emotionally instable
FPI-M Masculinity	12	Typical female																	Typical male

Characterization:

- Factor 1 – nervousity are the value 3. Meaning: without body plaints, and somato-emotional resonance is reduced.
- Factor 4 – excitability are the value 3. Meaning: calm, self control, resistant requirements, tolerance to frustration.
- Factor 5 – sociability are the value 1. Meaning: tendency to isolation, reserved, reticent, reduced initiative and action.
- Factor 8 – inhibition are the value 7. Meaning: timidity, embarrassed, inhibited in their relations with others.

- Factor E – extraversion is the value 1. Meaning: limited sociability, tendency to isolation, non-communicative, do not like fun, avoids excelling, preferring to be left alone.

Limited sociability and lack of communication in the case, are not only behavioral tendencies, but notes of dominant personality abilities. But it is too early to decide on this, because, at this age, the personality is in plain processes of developing. With much help from educators (parents, coach, teachers), the subject can change this behavior. The rest of psychological qualities are normal, which can help it to overcome the barriers of communication.

**THE PSYCHOLOGICAL PROFILE OF SUBJECT NO 5**

Scale	Rate		Grades												
			1	2	3	4	5	6	7	8	9				
FPI-1 Nervosity	2	Without psychosomatic disorders													With psychosomatic disorders

FPI-2 Aggressiveness	12	Non-aggressive, Controlled																		Aggressively spontaneous emotional immaturity
FPI-3 Depression	6	Satisfied, confidence																		Mood, un-confidence
FPI-4 Excitability	11	Quiet, resistant to frustrations																		Irritating, sensitive to frustrations
FPI-5 Sociability	21	Unsociable,																		Sociable
FPI-6 Calm	10	Irritable, restless																		Calm, balanced
FPI-7 Dominance trends	15	Tolerant, temperate																		Aggressive, reagent
FPI-8 Inhibition	5	Relax, capable of human contacts																		Inhibited, tense
FPI-9 Sincerity	11	Closed, non-critical																		Open, self-critical
FPI-E Extraversion	17	Introverted																		Extraverted
FPI-N Emotional lability	9	Emotionally stable																		Emotionally instable
FPI-M Masculinity	17	Typical female																		Typical male

#### Characterization:

- Factor 1 – nervousity are the value 1. Meaning: without body plaints, and somato-emotional resonance is reduced.
- Factor 2 – aggressivity are the value 7. Meaning: spontaneous aggressive acts (physical, verbal), emotions are relieve on objects and animals, forms of social aggression (hoaxes, exaggerated jokes), need for change, variation.
- Factor 3 – depression are the value 3. Meaning: balanced mood, positive affective terms, self-reliance, self-satisfied, optimistic.
- Factor 5 – sociability are the value 7. Meaning: the relationships with others are easily assign, is friendly, communicative, active.
- Factor 7 – dominance trends are the value 8. Meaning: aggressive physical and verbal acts, self-centered concept, masterly behavior.
- Factor 8 – inhibition are the value 3. Meaning: spontaneity, reliance, trust in their own forces, able to assign relationships with others.

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The subject is a communicative one, masterly, active, present normal limits for aggressive tendencies, echilibrated mood, when is confronted with frustrating situations - he don't have body plaints (butterflyes in the stomach, trembling of the limbs). From this point of view, the subject correspond to the psychological profile of the football player presented in literature.

**Conclusions.** Allowance the fact that the prsonality of all subjects is in plain processes of developing, we can conclude that they correspond to the psychological requirements to be a soccer player that these are presented in literature. It is remark that on the all soccer players, first factor – nervousity – present the most smaller values. One explication will can be this one: the practicing of exercise can do to an increase of positive abilities of personality (curage, self-reliance, trust in their own forces), and also to the reduces of anxiety. Another explication can be a litle un-sincerelly atitude of subjects regard to their reaction on frustrating situation. Also, we can line out that majority of factors that are include in test are frame for all subjects, in middle grades, that denote the normal values – that characterize the normal population.

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## COMPARATIVE STUDY ON THE SHARE OF THE MAIN MEANS USED DURING THE PREPARATION OF OUTDOOR SEASONS IN 2007 AND 2008 TO THE ATHLETES OF C.S. ȘTIINȚA BACĂU

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VOROVENCI CRISTIAN, Prof.

### Abstract:

The degree of acutality of the current work stems from the fact that it falls on the concerns of specialists in the athletic field. The intensive increase in sports performance worldwide, in the athletics, involves continuous improvement of the organizational and methodological forms of preparation of athletes at this level. As a result the attention of experts is focused not only on the development of the methodology of high level sport training, but also on the development of the athletes' preparation system.

**Key words:** means, preparation terms, athletes.

### Introduction

Athletic training is described as an organized system of the assistance of an athlete of a group of athletes in order to help them, to prepare them, to train them in achieving a development and in the end an athletic performance.

Athletic training is the art which is retreated from body exercises practice based on theoretical knowledge. Both theoretical and practice knowledge are very important both for the beginner trainer and the experienced one.(G.Rata,1997).

Athletic training represents the summary of long work realised by the passion of the player- sports trainer couple, based on the thorough knowledge of scientific data. (R. Ababei, 2006)

### Supposition

We left from the assumption that the share of the main means used during the preparation terms of the outdoor seasons 2007-2008 of the athletes of C.S. Știința Bacău is different depending on the trial applied, preparation level, but also on the preparatory stage.

### Assignments of the research

In accomplishing this work, we purposed to solve the following tasks:

- Assigination of the plan of the work
- Assigination of the supposition of the work
- Accomplishment of the bibliographic study and collecting as many existing data in specialised literature and on the Internet
- Analysis and processing the found data
- Display of data in a graphical optimal form
- Presentation in an appropriate form of the obtained data

### Subjects and methods of research

The research was developed during

October 2007- May 2008, for 8 months, not only in Bacau county, but also in the cantonments which the athletes developed together.

**The subjects of the research** are the athletes from the Sports Club Stiinta Bacau:

- **Zaizan Ioan ( Z.I.)- age 24**
- **Vorovenci Cristian( V.C.)- age 22**
- **Ifrim Constantin ( I.C.)- age 22**
- **Cucerenco Dan ( C.D.)- age 21**

In accomplishing this work, we used the following methods:

- **Study of the specialised literature**( documentation)- searching and extracting different information from literature and Internet
- **The method of speaking**- discussions with the coordinator of the work, with different experts in the field( teachers, coaches) whom we managed to contact, but the most important with the subjects of this research( the athletes of Sports Club Stiinta Bacau)
- **The method of observation**- referrences to the comparisons between the training plans of the athletes of the Sports Club Stiinta Bacau
- **Analysis and process of the data**
- **The graphical method**- necessary because it allows the detachment of the general grade and of the essential more efficient

### I. Applied intervention

In order to realise this work there were a lot of discussions with the athletes legitimated at C.S. Știința Bacău who gave us much information regarding their training plans and the terms of development, but the most important was that we found out a lot about the aspects regarding the means used during our research term( the training term April,May)

In order find more about the means used by the athletes from C.S. Știința Bacău during the training terms we used as base the training notebooks of the four athletes and the discussions with them.

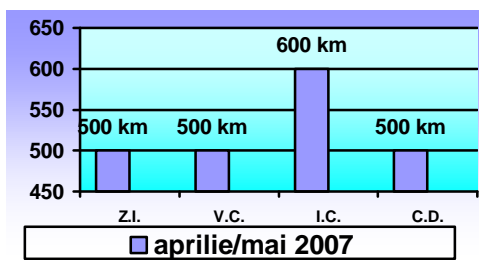
In the athletes Z.I. and V.C. case, the peak of shape had to be obtained in the year 2007, in June, during the Cup of Europe, and in the case of V.C. the peak of shape had to be maintained until July, when the European Youth Championship took place. In the year

2008, given that the established purpose was the qualification to the Olympic Games, the peak of form was obtained at the end of July in order to realize the necessary standard to participate at the Olympic Games and had to be maintained until August when the Olympic Games began.

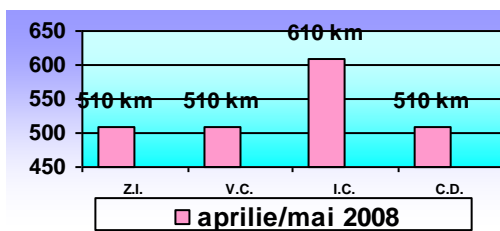
For I.C. the main purpose was to achieve a medal at the Seniors National Championship and for C.D. was the qualification in the final of Youth National Championship.

### Results

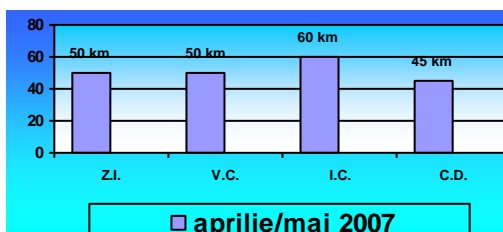
Running in time( April/May 2007 values expressed in kilometers)



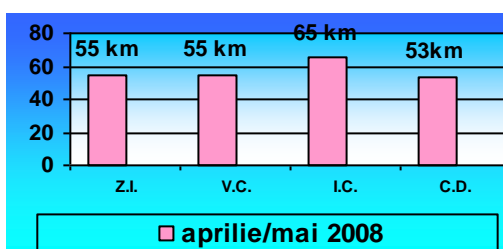
Running in time( April/May 2008 values expressed in kilometers)



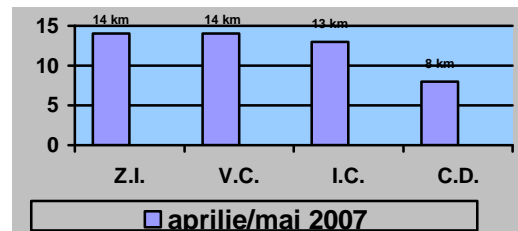
Running in sustained tempo( April/May 2007)



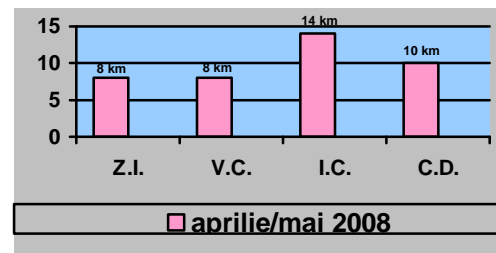
Running in sustained tempo( April/May 2008)



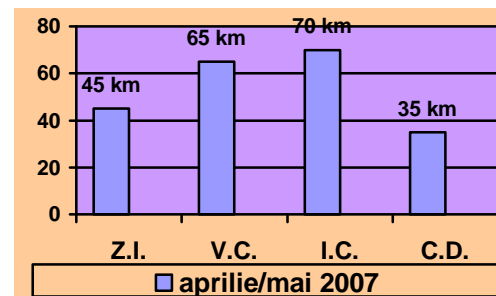
Running in declivity( April/May 2007)



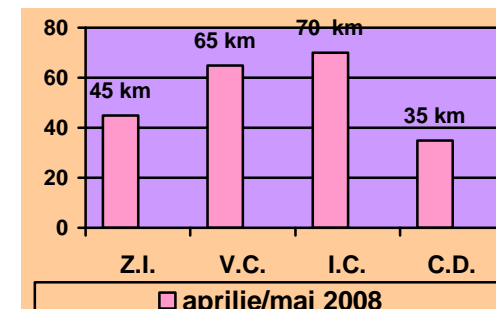
Running in declivity( April/May 2008)



Fartlek( April/ May 2007)



Fartlek( April/May 2008)



### Conclusions

As a result of the analysis and process of the data achieved during the research we came up with the following conclusions.

The supposition regarding the „share of the main means used during the preparation of outdoor season 2007 and 2008, at the athletes of C.S. Stiinta Bacau depends on the practiced trial, the level of preparation but also on the preparatory stage” is proved. In this manner:

- The main means used by the four



athletes are similar, just that their share during the training term was different due to the athletic trial they were preparing for.

- Due to the fact that both Z.I. and V.C.

are semifond runners(800-1500 m) and they are also team mates, their trainings are alike also regarding the high level of preparation of both.

- Z.I. in April and May through fartlek

achieved in 2007 and 2008 45 km, unlike V.C. who in April and May 2007 and 2008 achieved 65 km of fartlek emphasising the 1500 trial.

- I.C. has a bigger share of the main

means as he is a fund and expanded fund runner( 5000-10 000m ), and , in addition we noticed that he uses as another main means running with intervals- in the year 2007 he achieved this way 15 km in April and 20 km in May. In the year 2008, the athlete achieved 17 km in April and 20 km in May.

- C.D. is less prepared than the other

three athletes what results from the data obtained and also from the results in the competitions he attended. The weak results are also a result of an injury he suffered in 2007 which had severe repercussions on the training months of the 2008 year.

- The purposes the athletes need to

accomplish are very important because analyzing them we can identify in a certain way the level of preparation of the athletes. In the

case of the athletes Z.I. and V.C. the purposes for the year 2007 was to participate in the Cup of Europe and for the athlete V.C. was also the qualification at the Youth

European Championship. In the year 2008, the purpose established was the qualification at the Olympic Games.

- I.C.'s main purpose was to achieve a medal at the Seniors National Championship and C.D.'s was to qualify in the final of the Youth National Championship.

Another conclusion reached by analysing the data was that the share of the main means used during the training in the year 2008 increased in comparison to the share of the main means used during the training in the year 2007. This happened due to the fact that in 2008 the main purpose of performance was the qualifications at the Olympic Games which assumed the continuation of the training from the year 2007, but at other level of preparation.

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## MUSCULAR POWER AND SPEED PERFORMANCES IN PREPUBESCENT SOCCER PLAYERS

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### ABSTRACT

#### Introduction

Soccer is one of the most widely played and complex sports in the world, where players need technical, tactical, and physical skills to succeed. There are many factors important in determining the success of a soccer player. Although its popularity compared with other sports at each age level, there is a scarcity of information on the technical, physiological and conditioning aspects of pre-pubescent players. The information available for prepubescent players is much less than that for adults. To date, there were limited study has investigated the physical and physiological characteristics of very young soccer players (Gil *et al.* 2007).

Therefore, the aim of the present study was to investigate the physical, muscular power and speed performances of 10-year-old prepubescent soccer players.

#### Methods

Participants: Eighteen 10-year-old soccer players who were actively participating in the Turkish Youth Soccer Championships participated in the study.

Fitness testing battery: Standard height, body weight and calculated body mass index (BMI), speed (30m sprint), vertical jump and estimated lower body muscular power (vertical jump) were the tests selected to be measured.

Means and Standard Deviations of the height, body mass, BMI, vertical jump and speed (30m) are given as descriptive statistics of young soccer players.

#### Results

Physical measures of prepubescent soccer players were as height  $138.06 \pm 5.06$  cm, body mass  $31.02 \pm 5.14$  kg and BMI  $16.42 \pm 1.92$  kg.m<sup>-2</sup>.



Vertical jump, power and speed (30m) measures of prepubescent soccer players were as  $23.00 \pm 2.79$  cm,  $746.16 \pm 253.13$  watt and speed  $5.25 \pm 0.22$  sec.

### Discussions

Identifying the physical and physiological characteristics of prepubescent soccer players provides insight into the physical and physiological qualities that are important for becoming a member of the team and playing success, while also identifying the factors that may limit performance. In addition to this, physical, physiological and skill attributes may contribute to select talented soccer players

The most important issue for the trainer and soccer player is to determine improvement of fitness through a well-designed training programme

Although anthropometric and physiological profiling is best viewed as an objective means of monitoring young players, the physiological data cannot be the unique predictive of competitive success in soccer. On the other hand, succession in related physiological standards is an important prerequisite for success in soccer. The physiological standards play a decisive role in the selection of soccer talent. In addition, emphasis in training programs also should be placed on technical skills and engagement in teamwork.

Further studies are needed to investigate the all physiological characteristics of prepubescent soccer players and their development with the training programmer.

**Key Words:** Soccer, Speed, Power, Prepubescent.

### Introduction

Soccer is one of the most widely played and complex sports in the world, where players need technical, tactical, and physical skills to succeed.

The game is physically demanding, requiring players to participate in frequent bouts of high intensity activity (e.g. sprinting, physical collisions, and tackles), separated by short bouts of low intensity activity (e.g. walking and jogging) (Shephard, 1999; Reilly, Bangsbo and Franks, 2000; Bunc and Psotta 2001; Reilly and Gilbourne 2003; Gil *et al.* 2007).

There are many factors important in determining the success of a soccer player. Soccer players have to adapt to the physical and physiological demands of the soccer game.

Players may not need to have an extraordinary capacity within any of the areas of physical performance but must possess a reasonably high level within all areas. Some of these physical and physiological factors are easily measurable such as running speed and jump capacities (Reilly, Bangsbo and Franks, 2000; Gil, Ruiz *et al.* 2007). In addition, the one of the most discriminating factors among elite and non-elite soccer players were sprint time (Reilly and Gilbourne 2003).

The assessment of the physical capacities of players is widely utilized in an attempt to gain an understanding of the player's performance capabilities (Swensson and Drust 2005). Physiological considerations are increasingly essential to optimal performance, not only in adults, but also in young children. Nowadays, the early participation of children involves intensive training and participation in sport (Diallo, 2001).

Although its popularity compared with other sports at each age level, there is a scarcity of information on the technical, physiological and conditioning aspects of pre-pubescent players.

The information available for prepubescent players is much less than that for adults. To date, there were limited study has investigated the physical and physiological characteristics of very young soccer players (Gil *et al.* 2007; Reilly, Bangsbo, Franks, 2000).

Therefore, the aim of the present study was to investigate the physical, muscular power and speed performances of 10-year-old prepubescent soccer players.

### Methods

#### Participants

Eighteen 10-year-old soccer players who were actively participating in the Turkish Youth Soccer Championships participated in the study. They had at least 3 years of training level, which consisted of two about 90 min sessions per week for about 9 months of the year.

An informed consent was obtained from the players and their parents before the study began.

#### Fitness testing battery

Standard height, body weight and calculated body mass index (BMI), speed (30m sprint), vertical jump and estimated lower body muscular power (vertical jump) were the tests selected to be measured.

Tests performed at the end of the competitive season in May. All tests were performed outdoors, in dry conditions, on an artificial grassed surface. Subjects completed the speed and vertical jump tests in football shoes. Subjects were instructed to refrain from strenuous exercise for at least 24 h prior to the fitness testing session and consume their normal pre-training diet prior to the testing session.

#### Body Mass Index

Height was measured using a stadiometer and body mass was measured using calibrated digital scales.



BMI was calculated using the standard formula ( $\text{kg} \times \text{m}^{-2}$ ). BMI is commonly calculated as a measurement for percentage body fat. A high BMI suggests relatively more body fat than a low BMI.

### Vertical jump

Lower body muscular power was estimated by means of the vertical jump test using a vertical jump device (Newtest 2000, Norway). Players were requested to stand with feet flat on the ground, fully extend their arm and hand, and mark the standing reach height. After assuming a crouch position, each subject was instructed to spring upward to the highest possible point.

Vertical jump height was measured to the nearest 1 cm with the highest value obtained from two trials used as the vertical jump score.

### Peak power (W)

## Results

The physical characteristics of the young soccer players are shown in Table I.

**Table 1.** Height, Body Mass and BMI Measures of Soccer Players (N=18).

Parameters	Mean	±SD
Height (cm)	138.06	5.06
Body Mass (kg)	31.02	5.14
BMI ( $\text{kg} \cdot \text{m}^{-2}$ )	16.42	1.92

Physical measures of prepubescent soccer players were as height  $138.06 \pm 5.06$  cm, body mass  $31.02 \pm 5.14$  kg and BMI  $16.42 \pm 1.92$   $\text{kg} \cdot \text{m}^{-2}$ .

The vertical jump, power and speed (30m) performances of soccer players are shown in Table II.

**Table 2.** Vertical Jump, Power and Speed (30m) Measures of Soccer Players (N=18).

Parameters	Mean	±SD
Vertical Jump (cm)	23.00	2.79
Peak Power (W)	746.16	253.13
Speed (30m) (sec)	5.25	0.22

Vertical jump, power and speed (30m) measures of prepubescent soccer players were as  $23.00 \pm 2.79$  cm,  $746.16 \pm 253.13$  watt and speed  $5.25 \pm 0.22$  sec.

## Discussions

Identifying the physical and physiological characteristics of prepubescent soccer players provides insight into the physical and physiological qualities that are important for becoming a member of the team and playing success, while also identifying the factors that may limit performance. In addition to this, physical, physiological and skill attributes may contribute to select talented soccer players (S. Gil, Ruiz *et al.* 2007; T. Reilly and D. Gilbourne 2003, T. Reilly *et al.* 2000).

V. Bunc and R. Psotta, 2001, in their study of physiological profile of very young soccer players (age

Peak vertical jump power was calculated using the Sayers equation (Farlinger *et al.* 2007);

$\text{Power (W)} = (60.7 \times \text{vertical jump displacement (cm)}) + (45.3 \times \text{weight (kg)}) - 2055$

### Speed

The running speed of players was evaluated with a 30m sprint effort using dual beam electronic timing gates (Newtest 2000, Norway). Players were instructed to run as quickly as possible along the 30m distance from a standing start. Speed was measured to the nearest 0.01 s with the fastest value obtained from two trials used as the speed score.

### Statistical Analysis

Means and Standard Deviations of the height, body mass, BMI, vertical jump, power and speed (30m) are given as descriptive statistics of young soccer players.

8.1±0.1 years) found out the body mass as  $28.2 \pm 3.2$  kg and body height as  $132.4 \pm 4.3$  cm of the players.

G. Vicente-Rodriguez *et al.*, 2003, found out that prepubescent soccer players at the age  $9.3 \pm 0.2$  years had height  $135.2 \pm 1.2$  cm and body mass  $31.9 \pm 0.9$  kg of the players.

Diallo *et al.* (2000) reported the body mass  $41.2 \pm 4.8$  kg and height  $153.1 \pm 6.9$  cm for  $12.3 \pm 0.4$  years young soccer players.

In another study, R.M. Malina *et al.* (2000), identified the body mass and height of different age groups of elite soccer players.

They found out the body mass and body height of  $12.34 \pm 0.52$  year's players as,  $43.1 \pm 7.0$  kg and  $151 \pm 0.08$  cm;  $13.65 \pm 0.70$  year's players as  $52.5 \pm 8.7$





kg and  $163 \pm 0.08$  cm;  $15.70 \pm 0.35$  year's players as  $64.1 \pm 5.3$  kg and  $174 \pm 0.06$  cm respectively.

S.M. Gil, Ruiz et al. , 2007, reported that, body weight  $60.4 \pm 1.1$  kg, height  $172.1 \pm 1.1$  cm, BMI  $20.4 \pm 0.4$  for 14-year-old team; weight  $67.6 \pm 1.1$  kg, height  $174.2 \pm 1.1$  cm, BMI  $22.3 \pm 0.4$  for 15-year-old team; weight  $72.5 \pm 1.2$  kg, height  $177.2 \pm 1.2$  cm, BMI  $23.1 \pm 0.5$  for 16-year-old team respectively.

The measures of height and body mass of the soccer players' increase as the age of players increases.

G.Vicente-Rodriguez *et al.*, 2003, investigated that vertical jump and speed (30m) performances of young soccer players aged  $9.3 \pm 0.2$  years were  $18 \pm 1$  cm and  $5.8 \pm 0.1$  sec respectively.

The present findings of vertical jump and speed (30m) are in agreement with previous studies that have found by G. Vicente-Rodriguez *et al.* 2003.

It appears that the training effects are important in which subjects have been specially trained in jumping (specificity of training) and speed ( O.Diallo 2001).

Vertical jump is commonly regarded as a valid measure of leg power in athletes ( C.M. Farlinger *et al.* 2007).

Physiological tests can provide useful information on the physical capacities of players and on the training status of the athlete. Such assessment provides a logical framework for the use of performance tests to gain insight into the physiological demands of soccer (B. Drust *et al.* 2007).

To plan effective training sessions, components of performance need to be trained in relation to specific populations and activities L: (Capranica *et al.*, 2001).

The most important issue for the trainer and soccer player is to determine improvement of fitness through a well-designed training programmers without under developing player's game performance and without neglecting skill development.

This is a special and important concern for very young soccer players, who must firstly improve their basic motor abilities by training programmer.

It is likely that an increase in fitness level will be more useful if there is an improvement in the player's skill and game sense ( V.Bunc and R. Psotta 2001).

Although anthropometric and physiological profiling is best viewed as an objective means of monitoring young players, the physiological data cannot be the unique predictive of competitive success in soccer.

On the other hand, success in related physiological standards is an important prerequisite for success in soccer.

The physiological standards play a decisive role in the selection of soccer talent. In addition, emphasis in training programs also should be placed on technical skills and engagement in teamwork.

Further studies are needed to investigate the all physiological characteristics of prepubescent soccer

players and their development with the training programmers.

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## OPTIMIZING MILITARY-MARINE STUDENT'S PERFORMANCE FOR THE OBSTACLE COURSE TEST

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### Abstract

The experimental researching followed a way in which the structure rationalization and training content contributes to a new orientation achievement of the military pentathlon special training methodology. This experiment took place at THE `MIRCEA CEL BATRAN` NAVAL ACADEMY sporting base and included the two groups: experiment and witness based on military-marine students( navigation and Naval Electromechanics).

**Key words:** optimizing military-marine student's performance

### INTRODUCTION AND RESEARCH OBJECTIVE

The experimental researching followed a way in which the structure rationalization and training content contributes to a new orientation achievement of the military pentathlon special training methodology. (Nicu, A., 1993, Antrenamentul sportiv modern)

This experiment took place at THE `MIRCEA CEL BATRAN` NAVAL ACADEMY sporting base and included the two groups: experiment and witness based on military-marine students (navigation and Naval Electromechanics).

Sports training components, structure and training lessons content were tackled on the period of 5 mesocycles macrocycle experimental research along the next stages:

■ First stage included the special literature study. By the existing literature the researching program was checked and composed.

-The pedagogical observation permanently followed the research along the experimental study and along military-marine students achievements permanent pursuance.

■ Second stage consists in organising the experimental stage, at THE `MIRCEA CEL BATRAN` NAVAL ACADEMY, Constanta, where the training for the obstacle course took place.

Both experimental pattern and witness were done of 45 military sportives each. - Inside the experiment 3 tests were accomplished: initial, mediate and final. -The experimental first

stage registered results encompassed the reference data respectively the mediate testing database whereby we continued the research.

■ The final testing was established at the end of the macrocycle with a continuance of eight months, respectively 5 mesocycles. Thus the elaborate researching program, foreseen with a different training system as structure and content, for a macrocycle period was deployed in the experiment group training program.

Third stage consists in finishing our researching. The gathered data were scientifically interpreted.

The statistic processing was deployed in two sequences:

- for each sample grouped by tests: morphological, functional; general and specific actuations of the military pentathlon (for each separated group);
- comparing the two groups (experiment and witness)

### PRESENTING THE MILITARY PENTATHLON TEST

- TARGET SHOOTING;
- OBSTACLE COURSE
- SWIMMING AVOIDING OBSTACLES
- GRENADE THROWING
- RUNNING

### PRESENTING THE OBSTACLE COURSE

The length of the obstacle course is 500 m. The track comprises 20 obstacles placed at 10 m



intervals at least. (Ene, Virgil, 2003, Orientări moderne în antrenamentul sportiv din Pentatlonul Militar).

Each lane should have a width of 2.50 m. The minimum width is 2 m. The course must be measured 0.3 m from the inner edge. The actual running distance is not taken into account. The form of the course is left to the discretion of the organiser depending upon the area available.

For World and Continental Championships a course with at least two lanes must be ensured.

The surface must be firm. The prepared earth in the landing pits shall be flat. Heaped up sand should be avoided.

Lines marking the beginning and the end of an obstacle are part of the obstacle. It is not permitted to touch lane lines, delineating the inner edge of the curve of a lane. At least four identical cones will be placed in the curves.

- ROPE LADDER (1);
- DOUBLE BEAM (2);
- TRIP WIRE (3);
- NETWORK OF WIRES(4);
- FORD(5);
- ESPALIER(6);
- BALANCE BEAM(7);
- SLOPING WALL WITH ROPE(8);
- HORIZONTAL BEAMS (OVER-UNDER)(9);
- IRISH TABLE(10);
- TUNNEL AND TW BEAMS(11);
- FOUR STEPS OF
  - BEAMS(12);
- BANQUETTE AND PIT(13);
- ASSAULT WALL(14);
- PIT(15);
- VERTICAL LADDER(16);
- ASSAULT WALL II (17);
- BALANCE BEAM (ZIGZAG)(18);
- CHICANE(19);
- 3 ASSAULT WALLS IN SUCCESSION (20).

(\*\*\*, (2000), Obstacle Course)

### ACTUATING STRUCTURAL DIMENSIONS ANALYSIS OF THE OBSTACLE COURSE SAMPLE

In view of optimizing the military-marine students training process and not only, for the obstacle course(military pentathlon), was necessary to continuously study and investigate the obstacle course actuating structure, the dynamic effort during the testing deployment, as well as the most handfull procedure for passing the obstacles. The obstacles for the course test are presented, in the same order that they appear in the contest.

Therewith the next actuating structural dimensions aspects are consigned:

- working length;
- working optimal intensity;

- cardiac frequency;
- effort type;
- the type of retrieval for the three energetic systems; - what we teach, develop, train;
  - preponderant ways and methods;
  - control tests;
  - influence factors;
  - recommendations.

### GOALS:

1. Theoretical and methodological substantiation of the paperwork.
2. Establishing instruments and tests in order to measure the performance capacity in the military pentathlon(obstacle course);
3. Elaboration of an obstacle course test model, whereby the structural actuation and the effort characteristics, are building up the dimensional referral for the training process.
4. Preliminary study regarding students performing behaviour in the obstacle course test.
5. Establishing the instructional objectives, the annual and operational training projects
6. Experimenting elaborate training programs
7. Obtained results statistical interpretation.
8. Finishing the eperimented training programs
9. Editing the paperwork and sustaining it.
10. Elaborating the publical sustain of three scientific communications.

### RESEARCH METHODS AND PROCEDURES PAPERWORK'S PURPOSE

- Optimizing training strategy, in view of performance improvement of the *THE 'MIRCEA CEL BĂTRÂN' NAVAL ACADEMY* Military-marine students.
- Performing behavior within the military pentathlon, pursuant to NATO structures.

### PAPERWORK HYPOTHESIS

The preparation for the obstacle course must be streamlined and rationalized since it plays a distinguished importance in training military students for battles.

Upon this point of view the next speculations are emitted:

1. If we analytically work for improving the technique of passing every osbtacle and then bonding more obstacles until the correct pass of all the obstacles is complete, then the results of all the military-marine students will be more improved;
2. the military demonstration performances will increase if we configurate the practicing conditions and every obstacle specific solicitations.
3. If we will improve the actuating and functional capacity of the military-marine students with the help of athletic sports specific training



strategies, then the performance behaviour for the obstacle course test will be improved.

## RESEARCH METHODS AND TECHNIQUES

In the experimental research we used the next methods:

- Special literature analysis;
- Pedagogical observation
- Measuring methods
- test for checking the morphological development; -
- test for checking the functional capacity; -
- test for checking the general physical training;
- test for checking the specific physical training;
- Pedagogical experiment;
- Comparative method;
- Mathematical Methods of Statistics for processing and executing assignments;
- Graphical representation method

## PRELIMINARY STUDY UNFOLDING CONDITIONS

The experimental researching followed a way in which the structure rationalization and training content contributes to a new orientation achievement of the military pentathlon special training methodology. This experiment took place at THE `MIRCEA CEL BATRAN` NAVAL ACADEMY sporting base and included the two groups: experiment and witness based on military-marine students( navigation and Naval Electromechanics.

Sports training components, structure and training lessons content were tackled on the period of 5 mesocycles macrocycle experimental research along the next stages:

First stage included the special literature study. By the existing literature the researching program was checked and composed.

- The pedagogical observation permanently followed the research along the experimental study and along military-marine students achievements permanent pursuance.

■ Second stage consists in organising the experimental stage, at THE `MIRCEA CEL BATRAN` NAVAL ACADEMY, Constanta, where the training for the obstacle course took place.

Both experimental pattern and witness were done of 45 military sportives each.

- Inside the experiment 3 tests were accomplished: initial, mediate and final.

-The experimental first stage registered results encompassed the reference data respectively the mediate testing database whereby we continued the research.

■The final testing was established at the end of the macrocycle with a continuance of eight months, respectively 5 mesocycles. Thus the elaborate researching program, foreseen with a different training system as structure and content, for a macrocycle period was deployed in the experiment group training program.

Third stage consists in finishing our researching. The gathered data were scientifically interpreted.

The statistic processing was deployed in two sequences:

- for each sample grouped by tests: morphological, functional; general and specific actuations of the military pentathlon (for each separated group);
- comparing the two groups (experiment and witness)

## DESCRIBING THE ACTUATING STRUCTURE OF THE OBSTACLE COURSE TEST WITHIN THE MILITARY PENTATHLON

The training methods were selected term on the peculiarity of the military pentathlon tests. Each training method was tackled in the training lesson within the specific ways:

1. Consequent training method;
2. Alternative/progressive method;
3. Fartlek method;
4. Interval training method;
5. Repetitive training method;
6. „Stress” training method;
7. Surveillance training method;
8. Amazonian method.

## SYSTEM WAYS OF FORMING SPECIFIC ACTUATING SKILLS

1. Exercising for jumping skills
2. Exercising for balance
3. Exercising for crawling skills
4. Exercising for climbing skills
5. Exercising for escalade

Basic fitness training provides the minimum level of fitness required for crossing the obstacle course. Therefore, training on the obstacle course should begin after some period of basic military training or when some degree of physical fitness is ensured.

The crossing of the obstacle requires different skills. These techniques should therefore be trained in several steps, which are:

- familiarising with the equipment;
- learning standard techniques for selected obstacles;
- tackling the entire obstacle course
- competition technique.

## Landing techniques

Correct landing is a basic requirement for crossing obstacles. It is suggested that landing techniques are trained in the following order either before or when tackling the obstacles:

- four-point landing (obstacles 1 and 16)
- two-point landing on obstacles 6 (one foot in front of the other) and 17, and;
- on-point landing on obstacles 7 and 18.



## Basic Crossing Techniques

For crossing the specific obstacles certain movement skills are needed - basic crossing techniques:

These are:

- table technique - Irish table (10);
- ladder technique - Rope ladder (1); Espalier (6); Vertical ladder (16);
- wall technique - Sloping wall with rope (8); Pit (15); Assault wall II (17);
- flanking technique - Double beam 2; Horizontal beams(Over-under) (9); Tunnel and twin beams ; Assault wall 14; Three assault walls in Succession 20 )
- rhythm technique - (Trip Wire (3); Ford (5); Four steps of beams (12); Banquette and pit (13)
- balancing technique - (Balance beam Zigzag (18); Balance beam (7)

These techniques must be learned at the beginning. Other basic techniques follow later. Training should be conducted within groups of similar performance.

After

mastering the basic crossing techniques, they should be tried on groups of similar obstacles where they can be applied. Explanations, exercises and corrections (frequent comparison of achievement and training goal) are methods to improve movement and its economy till all standard techniques are mastered. Drill exercises are to gain perfection. Perfection should be achieved by increasing the demands. This involves:

- Higher crossing speed (at obstacles),
- Higher running speed (between obstacles), or
- Tackling longer sections (6 to 10 obstacles) in one go
- Tackling the entire obstacle course in one go, and
- Use competition technique

## ELABORATE TRAINING TECHNIQUES/ PROGRAMS EXPERIMENTATION

For elaborating a judgements planning there was made an allowance for the judicial analysis of the training process quantity and quality level that was developed last year.

The elaboration was made in last year's transition period, because the sportsmen perspective and ability can only be judicially analyzed in the contest time ending, you can fix the goals and tasks for the next period of time from negative and positive aspects. This graphical way of presenting the annual planning in training the military-marine students in the obstacle course test, has the advantage that is clear and explicit. You can watch when and how the training is taking place (training time for the obstacle course – with each preparatory, competitive and transitional afferent sub-period), the follows to train along the whole year of practice (based on a technique and fitness training), when the control norms and tests will take place, all of these based on the main contests that will take place. In view of respecting the training

planification was made an allowance on respecting the next requirements:

- training goals achievement solid control, included in the training plans, of more of the sportsmen;

- once with the announcement of the competition calendar no modification of the competitions deployments data should occur, because this would have a negative influence on the training.

- avoiding to participate at contests in the exam session;

- in the contests establishment the traditional contests must be considered.

## Conclusions

The hypothesis in which the manipulated arguments led to the experimental group is confirmed with the help of the next results:

- military students functional capacity grows, obtaining a growth

- vital capacity from 4675,5(I.T.) to 5395,5 (F.T.) with over 620 units and in the same time they situate over the witness group with 380 units;

- heart frequency from 78,11 (I.T.) to 72,48(F.T.), with over 5.53 heartbeats/min, and in the same with 1.18 better than the witness group;

- actuating capacity grows

- 1000 m. – from 3:12,97 to 3:01,57 with 11,40 sec, and with over 13,68 seconds better than the witness group;

- long jump - from 248,7 to 261,3 cm, with over 12,6 cm, and with 0.90cm over the witness group;

- floatings – from 39,22 to 44,44 exec, with 5,22 better, and with 2,22 more than the witness group.

The analytic work for improving passing each obstacle and bonding more obstacles technique, till the correct passing of each obstacles technique made the marines performances grow:

- from 3:17,15 to 2:58,44 with 18,61 sec. from the initial testing to the final one, and with 13,12 better than the witness group of which result is 3:11,56 sec.

Researching results are not getting influenced by the anthropometric data although even here you can notice a very little growth that does not influence the final result at any kind.

All these different characteristics growths measured in time of the experiment they finally led to the semnificative growth of the military-marine students results-experimental group- at the obstacle course test.

From the graphical representation you can actually see the fact that both groups(experiment and witness) are growing, but only growing the performance of the experimental group is significant and this performance medium value is with over 13 seconds better than the witness group.



### General conclusions

Both witness and experiment groups effected study, had the purpose on a way of verifying the training methods applied on the two groups and on the other way verifying actuating and functional components role in developing military obstacle course necessary abilities process, which plays an important role in training the military students for fighting.

Owing to the obtained results based on the statistical arrangements that are applied on the actuating and physiological characteristics adequate data, we can affirm:

1. The specific actuating and physiological characteristics of the two groups, witness and experiment, are significantly different from the initial testing to the final one, the training progress is having an ascending trend.

2. The applied training methods for the experimental group subjects led to obtaining better results, results that are confirmed by the statistics arrangements applied to the final tests measured characteristics data. „The long jump” without spring and „heart frequency” tests are making an exception from this statement where the obtained results of the subjects of the two groups at finish are significantly alike in the statistics point of view.

3. Both groups subjects obtained results have an ascending trend, ascertaining a performance improvement from one testing to another.

4. Better results obtained from the experiment group at the obstacle course test are in this phase due

to the training technique, which key factor progress (when all the military-marine students are having the best training fitness, realised by Fitness classes, military training and refreshment and also the sporting training).

5. Planning a one year training with clear training stages, realising some training programs according to domain's novelty emphasized on this first year's training on the correct technique attribute of passing the obstacle in different condition, until the ones in the competition (only having the best fitness training), led to results improving and to tend international level results.

6. Ph-functional characteristic value growth, passing the obstacles continuously perfecting, will make that the next period's training results (with the selected one's) will grow in value.

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## APPLYING THE SOCIODRAMAS AND PSYCHODRAMAS WITH THE PURPOSE OF IMPROVING THE PSYCHOSOCIAL RELATIONS IN SPORTS TEAMS

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### Abstract

The contemporary significance of this theme is motivated by the necessity of theoretical and practical argumentation of the training content in order to create an optimal psychosocial climate between the sportive teams' players.

The experiment was conducted at the Știința Club in Bacău, inside which two teams are active. The teams are conducting their practical activity at the Sports Hall in Bacău, the theoretical and video presentations take place at the Știința Club and in the Multimedia cabinet of the Faculty of Movement, Sports and Health Sciences, the post-effort recovery is conducted at the sportive medicine office of doctor Bora Teofil and in the recovery base of the Municipal Stadium in Bacău. Having all the necessary material conditions, we conducted our experiment under good conditions.

The program of improving the psycho-social dimensions of the sportive teams sets to activate and stimulate the sportive performance, through the development of positive psychosocial relations, reducing tensions and decreasing conflicts, rebalancing the psycho-social construction of sportive teams.

Following the experiments we can see that, according to the sociograms and other tests applied to athletes, that the relations between the members of the two teams have improved, the number of reciprocal attractions has increased and the number of rejections has decreased, the conflicts between players have been reduced, the players' self-confidence is increased, also their ambition, their need for more, their responsibility towards teammates.

**Keywords:** psychodramas, sociodramas, psychosocial relations, performance



**Introduction and research objectives.** The performance capacity of the sportive teams can be enhanced if, together with the enhancement of the athletes' physical performance, stamina, schemes and original game strategies, we will take into account the uniqueness of players.

In Romania, the sportive teams do not take into consideration the opinions of psychologists and sociologists because the trainers and game leaders base their strategy more on intuition and experience.

The European teams, on the other hand, do take into consideration the social studies, thus they have a perfect mirror of the relations established between the members of a team, common attractions and rejections, etc.

This way, the trainers can establish if one player or another is compatible or not with their position on the court.

The most important factor that influences the behavior determining every sportsman in the group learning social behavior and conduct and the team is the result of psychosocial relations. (D.E Colibaba., I. Bota, 1998, p 40). Applying the technique sociometric sports psychologist and coach provides a precise and concrete picture of the interpersonal relations among staff (M. Epuran., 2001, p 131). The sportsmanship involves various relationships and interference with multiple determinations social phenomena in putting the essence of its social value (F Georgescu, 1971, p 43).

**Research methods and procedures.** Inside the sportive groups, the conflicts are unavoidable, being determined by the communication difficulties, decision-making, competition for limited resources, influence strategies that can hurt (threats, offences), personality traits of the individuals involved. Multiple knowledge and evaluation methods and techniques for the relations between the members of a sportive group can be used by trainers: *psychosocial observation*, questionnaire method, experiment method, the opinions and attitudes scale method, the objective personality evaluation method, sociometrical techniques, sociometric test; the sociometric matrix, the sociometrical indexes, the sociogram (the graphic representation of relations); the sociometrical frames, the psychogram (or the psychological monography), the psychodrama presentation of the results.

Through the *sociometric test* as an instrument of the sociometrical method we could determine:

- the placement, the status of athlete in the field of interpersonal relations (leader, popular, isolated, ignored, rejected, etc.);
- the global psychological structure of the group and its sub-groups;
- various centers of influence;

In this research, I have had in view the following *objectives*:

1. Identifying the intervention possibilities in order to improve certain psycho-social dimensions that compete for the enhancement of the teams' performance capacity.

2. Conceiving and implementing psychodramas in order to rebalance the psycho-social relations, reducing tensions, eliminating conflicts and emotional reconstruction of the studied sportive teams.

3. The study of specific socio-metric dimensions at the sportive teams.

The contemporary significance of this theme is motivated by the necessity of theoretical and practical argumentation of the training content in order to create an optimal psychosocial climate between the sportive teams' players.

**Research hypotheses.** We presumed that *if beside the continuous improvement of the training level we will optimize the psycho-social dimensions of the sportive teams (the court, the ambiance, norms, the emotional relations, cohesion, motivation etc.), then we will succeed in mobilizing all the bio-psycho-social availabilities of the team (of the players), as well as if in the psycho-social field and ambiance of the team are identified psycho-social states of tension or conflict, then they can be reduced or eliminated with the help of psychodramas and sociodramas.*

- group perception towards a certain group member;
- group cohesion, etc.

Based on the informations given by the sociometrical test we could accomplish a positive orientation of the group relations, we have explained the latent or manifested tensions, we could convert negative relations into positive educational-formative relations.

The questionnaire was applied to the „Știința Municipal Dedeman” Bacău male handball team and the „Știința Bacău” female volleyball team and comprises 14 items. Every question has three answers. The choices were marked with (+), and rejections with (-).

The option recording was made in a table with double entry, in which the team members are marked vertically and horizontally, and the relations between them with (+), (+) for attractions and (-), (-) for rejections (sociometric).

Also, we made a sociogram of the groups, a sociogram for attractions and one for rejections. The sociometrical test was applied to the athletes at the beginning and the end of our research.

**The psychogram** (or psychological monography) is an inventory, a description, an



expertise and cataloguing the psychological demands for each player.

The experimental research was conducted on two groups of athletes: the „Știința Municipal Dedeman Bacău” male handball team – under the direction of coach Armanu Gabriel, and the senior female players of the Știința Club Bacău, under the direction of professor coach: Grapă Florin, between April 2007 and March 2008.

**Subjects** The experiment groups were formed as follows:

- the first group is formed of 16 senior male handball players – of which: 3 goalkeepers, 2 left wings, 4 right backs, 1 centre back, 2 pivots, 4 right wings.
- the second group is formed of 12 senior female volleyball players – of which: 4 setters, 3 middle blockers, 2 opposite hitters, 2 outside hitters and one libero.

**Results.** The experiment was conducted at the Știința Club in Bacău, inside which two teams are active. The teams are conducting their practical activity at the Sports Hall in Bacău, the theoretical and video presentations take place at the Știința Club and in the Multimedia cabinet of the Faculty of Movement, Sports and Health Sciences, the post-effort recovery is conducted at the sportive medicine office of doctor Bora Teofil and in the recovery base of the Municipal Stadium in Bacău. Having all the necessary material conditions, we conducted our experiment under good conditions. The exercises of focusing the attention, the idea-motor representation of game actions, were included in the first part of the training, during warm-up, whereas the self-evaluation of the players' performance, in the final part.

The structures used in order to increase the indexes of the players' emotional capacity were induced during the training, the part in which the athletes are active, these structures not replacing the specific training, but enhancing it.

The testing was made for the serving, blocking, gate shooting during movement drills, speed drills, stamina drills, focused and distributive attention, balancing the emotional state, attention styles, tests applied in order to find out the personality of each player, relations between players inside each team, in order to complete the individual and team sociograms, as well as to evaluate the evolution of the subjects. The final test (May 2008) was conducted under similar circumstances with the initial test, using the same index categories.

The evaluation of the human resources was made through the gradual integration of the researcher inside the sportive group. By being present at the training, discussing with the coaches and players, I have observed the determination of their moral, civic and sportive behavior as well as their performance. I have considered that this integration and reciprocal

knowledge will contribute to eliminate possible interior tensions and discomfort, unfavorable to the research.

During meetings with the team coordinators, I have requested informations regarding the team history, the conflicts inside the two teams, how they appeared, how they were resolved, methods of training, etc.

The program of improving the psycho-social dimensions of the sportive teams sets to activate and stimulate the sportive performance, through the development of positive psychosocial relations, reducing tensions and decreasing conflicts, rebalancing the psycho-social construction of sportive teams.

One of the sociometrical techniques created by Moreno is the *psychodrama*. It resembles theater and is by excellence a group working method in which every person becomes a therapeutic agent for the other, conducted in a special place, with a stage, props, lights, a balcony.

Out of the multitude of the psychological games I have selected the ones that use the exaggeration of a predetermined behavior, in order to emphasize the personal and/or social consequences of that behavior. Other games introduce conflict situations inside the group: the players are invited to express their aggressiveness or to do the opposite of what they would normally do, in order to be able to enlarge their behavioral sphere. The technique of role changing allows the observation of the game situation from another psychological perspective. Certain games use the repetition of various communication styles and allow the experimentation of different consequences.

The groups participate to the activity of psychodramatic warm-up with a great emotional charge, with frequent fusion moments. The psycho-dramatic warm-up starts up intrinsic mechanisms in order for the subjects to be able to understand the significance of the conflict situations that they were in, mobilizing their adaptive forces, but also their desire to communicate and relate.

According to the sociograms, we find that inside the two teams there are reciprocal attractions and rejections, some of the subjects are being the center of the majority's attraction, while others are rejected by the majority. Also, we can see that there are totally ignored subjects that are neither rejected nor given much attention by the others.

According to the initial sociograms, inside the handball team there are two informal leaders, CO and RI and inside the volleyball team, the informal leaders are HM and TM. We find that at the end of our experiment, there is a single informal leader inside each team: CO – for the handball team and HM – for the volleyball team.

By calculating the *person association index* (the higher the values for the association index, the better are the group relations) for the two teams, we have obtained:



**Tabelul nr. 1**

	INITIAL	FINAL
<b>Handball team</b>	<b>1.28</b>	<b>1.36</b>
<b>Volleyball team</b>	<b>1.19</b>	<b>1.24</b>

By calculating the *group cohesion index* (expresses the quality of socio-metric relations inside the group; the higher the index value, the more cohesive the group is) we have obtained

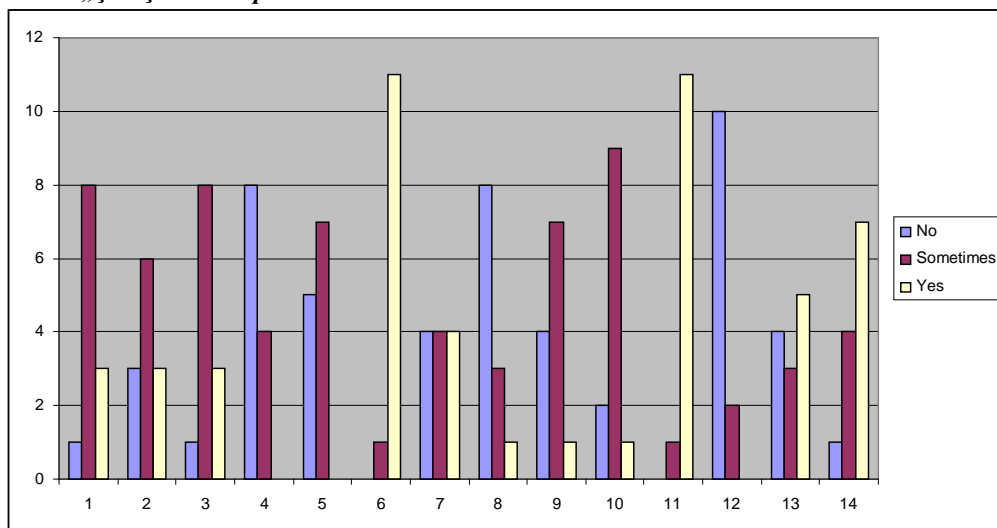
**Tabelul nr. 2**

	INITIAL	FINAL
<b>Handball team</b>	<b>0.82</b>	<b>0.83</b>
<b>Volleyball team</b>	<b>0.79</b>	<b>0.81</b>

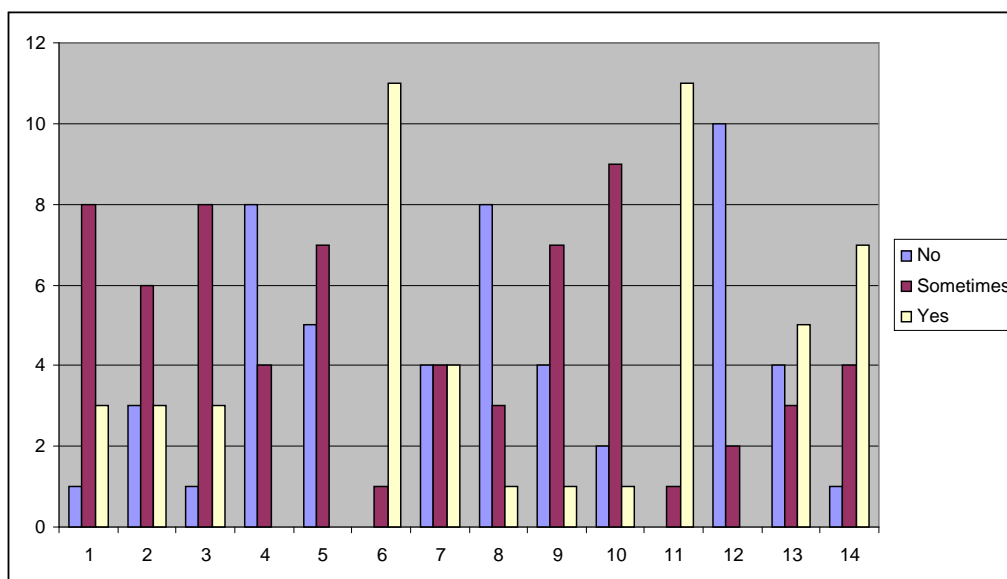
During our experiment, we have calculated other socio-metric indexes as well (*the socio-metric status index, the socio-metric expansion index, the person association index*) that have shown an improvement of relations inside the two sportive teams.

We present in the following charts the evolution (nr. 1 & 2) of certain personality features in members of the two teams, during our experiment.

**Graficul nr. 1 The „Știința Municipal Dedeman” Bacău handball team**



**Graficul nr. 2 The „Știința Bacău” volleyball team**





### Legend:

1. Performance
2. Self-confidence
3. Responsibility towards the team
4. Conflicts with teammates
5. Conflicts with the coach
6. Achievement aspirations
7. Emotions before competitions
8. Emotions during competitions
9. Nervousness
10. Emotiveness
11. Ambition
12. Predisposition towards accidents
13. Self-content
14. Need for more

**Conclusions** Following the experiments we can see that, according to the sociograms and other tests applied to athletes, that the relations between the members of the two teams have improved, the number of reciprocal attractions has increased and the number of rejections has decreased, the conflicts between players have been reduced, the players' self-confidence is increased, also their ambition, their need for more, their responsibility towards teammates.

Psychodramas and sociodramas became a factor of progress, of sportive growth, of reducing the team tensions, of self-knowledge and personal growth. Also, we can see an increase in the group cohesion in both teams, reflected in the sportive performances of the year 2008.

The psycho-dramatic activity is a continuous resource for all specialists that have as goal to help their fellows in order to overcome the socio-cultural barriers of creativity.

The psycho-dramatic setting helps the one who wants and assumes the change, to rediscover that well-being, spontaneity, on which basis one's own creative power manages to identify the optimal solution for each contextual situation.

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## THE COMPARISON OF URINE ZINC VALUES OF FOOTBALLERS IN THE INDUSTRIAL REGION AND OUTSIDE THE INDUSTRIAL REGION

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### ABSTRACT

The aim of this study is to examine urine-zinc values of footballers living and doing training in industrial region and footballers living and doing training outside industrial region.

In the research,14 amateur footballers , whose age-average is  $24,00 \pm 3,46$  year, height-average is  $1,76 \pm 0,05$  meters, body weight average is  $70,79 \pm 6,70$  kg and sports-age average is  $11,71 \pm 3,49$  year and who do training in industrial region and 10 amateur footballers , whose age-average is  $20,40 \pm 0,84$  year, height-average is  $1,75 \pm 0,07$  m, body weight average is  $69,70 \pm 7,81$  kg, sports-age average is  $6,50 \pm 1,84$  year and who do training outside industrial region , were participated voluntarily.

One tube of urine specimen was taken from the footballers participated in the research. The urine specimen taken was analyzed in Biochemistry laboratories through Anodic Stripping Voltammetry (ASV).

A statistical difference has been determined between zinc values of footballers participated in the research considering their doing training in industrial region and outside industrial region. ( $P < 0,05$ ).The zinc values of footballers living and doing training in industrial region have been found to be higher than the zinc values of footballers living and doing training outside industrial region in the research.

To conclude, it is thought that the trace elements in human body are affected by working and living environment and as well, it can be said that this situation should be taken into account by the trainers.

**Key words:** industrial region, zinc, footballer.



## INTRODUCTION

Many minerals considered as essential (materials that body can't produce and should be taken from outside) are necessary for organism's doing its function healthily (B.L.Vallee, K.H.Falchuk, 1993). Although zinc, being one of these elements, ranks number 23 considering the position of being on earth, it is commonly used in biology. So indeed, zinc is the only metal being in each enzyme class. As a natural result of this, it exists nearly in every cell of body (B.L.Vallee, D.S. Auld, 1989). 1.4-2.3 gr zinc exists in an adult male and 60 mg zinc exists in a newborn infant. % 80-90 of all body zinc exists in muscles, skin and bones, but it doesn't form a storage since its mobilization is limited (Y.Üçkardeş, 2006).

Since zinc is necessary for many enzymes in metabolism, a serious zinc absence will affect muscle functions negatively. A low muscle-zinc level will decrease the capacity of endurance as a result (A. Cordova, AlvaM.rez-Mon,1995). Zinc doesn't have a very special storage like iron as well as its toxicity is low. So taking zinc regularly through a diet is needed. For the continuation of zinc level, zinc loses with sweat, urine and similar ways should be replaced (A.S.Prasad, et all., 1993). It was reported clearly that physical exercise affects zinc metabolism (M. Marrella, 1993) and a short-time exercise has an effect on zinc metabolism (A. Cordova, M. Alvarez-Mon, 1995). Trace mineral zinc has an important role on endocrine and immunity systems. Zinc mostly exists in liver and it is stored as an independent enzyme in musculoskeletal system. Physical exercise may affect antioxidant enzymes like CuZn-SOD and Mn-SOD. But its effect on regular acute exercise and physical activity is disputable (C. Nakao, 2000). Nowadays, it is known that zinc has important roles in metabolic events, protein, carbohydrate, energy, nucleic acid,

lipid and hem synthesis, gene expression, immune system maturation, tissue synthesis and embryogenesis (A. Karadağ, 2006).

Therefore, it is aimed in this study to compare urine-zinc values of footballers doing training in Middle East Industry-Trade Center (MEITC) and footballers doing training outside MEITC.

## MATERIAL AND METHOD

In the research, 14 amateur footballers, whose age-average is  $24,00 \pm 3,46$  year, height-average is  $1,76 \pm 0,05$  meters, body weight average is  $70,79 \pm 6,70$  kg and sports-age average is  $11,71 \pm 3,49$  year and who live and do training in Ankara MEITC region and 10 amateur footballers, whose age-average is  $20,40 \pm 0,84$  year, height-average is  $1,75 \pm 0,07$  m, body weight average is  $69,70 \pm 7,81$  kg, sports-age average is  $6,50 \pm 1,84$  year and who live and do training outside MEITC region, were participated voluntarily.

Footballers participated in research had the same physical level. Because, when the research was carried out was the competition term. One tube of urine specimen was taken from the footballers participated in the research when they were rested during competition season. The urine specimen taken was analyzed in Gazi University Education Faculty Biochemistry laboratory through Anodic Stripping Voltammetry (ASV).The gotten results were recorded in computer environment

## Statistical Analysis

SPSS 10,0 packet program was used in the analysis of the gotten data. The data were abstracted through average and Standard deviation. T test was used in independent groups in comparison of urine-zinc values of footballers living and doing training in industrial region and footballers living and doing training outside industrial region. The error level was evaluated as 0.05 in this study.

## RESULT

**Table 1.** Physical characteristic data for the test subjects.

Variables	Footballers in industrial region (n = 14)	Footballers in outside industrial region (n = 10)
	M ± SD	M ± SD
Age (year)	24,00±3,46	20,40±0,843
Body height (m)	1,76±0,056	1,75±0,078
weight (kg)	70,79±6,70	69,70±7,81
Sport of Experiences age	11,71±3,49	6,50±1,84

When table 1 was examined, it has been determined that age-average is  $24,00 \pm 3,46$  year, height-average is  $1,76 \pm 0,05$  meters, body weight average is  $70,79 \pm 6,70$  kg and sports-age average is  $11,71 \pm 3,49$  year of

the footballers doing training in industrial region and age-average is  $20,40 \pm 0,84$  year, height-average is  $1,75 \pm 0,07$  m, body weight average is  $69,70 \pm 7,81$  kg,



sports-age average is  $6,50 \pm 1,84$  year of the footballers

doing training outside industrial region.

**Table 2.** The comparison of urine zinc values for footballers.

Variables	N	Mean	SD	St. Error	Difference means	t	P
Footballers in outside industrial region ( $\mu\text{g l}^{-1}$ )	10	1,5040	0,3554	0,1124	1,2810	3,401	0,003*
Footballers in industrial region ( $\mu\text{g l}^{-1}$ )	14	2,7850	1,1458	0,3062			

\* $P < 0,05$

When table 2 was examined, a statistical difference has been found in comparison of zinc values of footballers doing training in industrial region and footballers doing training outside industrial region.

#### Discussion and conclusion

In this study aiming the comparison of urine-zinc values of footballers doing training in industrial region and footballers doing training outside industrial region, a statistical difference has been found between zinc values of footballers participated in research considering their doing training in industrial region and outside industrial region ( $p < 0.05$ ). In the research which Pizent et al. (2003) carried out over 156 control group and 299 healthy men aged 20-25 and living in industrial region in Zagreb and being exposed to zinc, copper and cadmium elements, they reported that these elements had an important effect on serum concentration (Al.Pizent, J. Jurasović, S. Telisman, , 2003). In this study which was carried out with the aim of determining if there was a difference between the trace element levels in 24-hour urine of the workers in Cinkur and the trace element levels in urine specimen of control group and examining the effects of working environment on trace element amounts in human body, the elements such as Fe, Zn, Pb, Mn and Cu in 24-hour urine of the study group were observed to be statistically higher at a significant level than the control group (Y. Yagmur, 1994). In a research which was carried out over male workers having no illness in Black sea Copper Operations Joint Stock Company Samsun Operation management, no difference in copper and zinc levels in people in the company was observed compared to the people outside the company. The result why copper and zinc levels are normal may result from plasma levels' being unable to show body copper and zinc situation entirely (S.Asan, 1999). E. Kara (2007) carried out a zinc application over 20 young male wrestlers and determined that serum and zinc levels measured after application increased significantly compared to the ones before application and showed that zinc application activated antioxidant system in athletes (E.Kara, 2007). In the study which C.J. Koury et al. (2004) carried out over triathletes, sprinters, marathoners and short-long distance swimmers, whereas a significant decrease was observed in plasma zinc values of triathletes, an

( $p < 0,05$ ) The zinc values of footballers doing training in industrial region have been found to be higher than the zinc values of footballers doing training outside industrial region in the research.

increase was observed in erythrocyte zinc values during the comparison of triathletes to other groups ( $p < 0.01$ ) (C.J. Koury, Oliveira De Va, et al., 2004). It is known that exercise changes zinc density a lot in circulation. Physical activity includes soft tissue trauma and also affects plasma zinc concentration. Plasma and serum zinc density increase immediately after the exercise with short, dense and long-term endurance exercise (C.H.Lukaski, 2000).

To conclude; in this study carried out, zinc values of footballers living and doing training in industrial region have been found to be higher than the zinc levels of footballers living and doing training outside industrial region. Therefore, it is thought that the trace elements in human body are affected by working and living environment and as well, it can be said that this situation should be taken into account by the trainers.

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## WORKOUT WITH HIGH AND LOW REPS

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### Abstract

The article is an essay on a four weeks training combining high and low reps in order to reach in the same time three goals: endurance, muscular growth and muscular strength. In this program you will hit each body – part twice a week, which translates to six days in the gym. The good news is that you will start with only one – two working sets for each body – part. The bad news is if you are used to doing 8 – 10 reps, each set will feel like a marathon.

**Key words:** reps, highs, lows, endurance, size, strength.

### Introduction

It is important to be notified that this type of training it is not a cruise – control workout; it is a training that is more intense and more demanding than the majority of known training routines.

The high & low reps workout is a very intense training but in the same time an intensity – wise training, despite its non-traditional rep scheme.

Some people prefer to eschew high – rep range work altogether, figuring light – weight leads to small muscles, or high – rep sets are just for burning calories. That is simply not true. High reps not only provide a fantastic pump but can also assist your growth. (EB. Collinander, PA. Tech and P. Kaiser., 1986)

While you will perform sets of up to 24 reps in this program, you will also blast through big – weight sets of 4 -6 reps and moderate – load sets of 8 – 12. The intense pace of the workouts (there is little rest between sets) amplifies your metabolism, all but eliminating the need for additional calorie – burning cardio.

In this program you will hit each body – part twice a week, which translates to six days in the gym. The good news is that you will start with only one – two working sets for each body – part. The bad news is if you are used to doing 8 – 10 reps, each set will feel like a marathon.

In each workout you will train for either strength and size (days 1-3), or size and endurance (days 4-6).

When training for strength and size, you will top out 12 reps and go as slow as four. For size and endurance you will go as high as 24 reps and as slow as eight. Every set has two parts, each a mirror image of the other. The reps you perform in the second half of a set will be the reverse of the first half. (C. O. Mihailescu, 2007)

On a size and endurance day, for example, you will choose one pair of dumbbells with which you fail at 12 reps one lighter pair for high - spectrum (24 reps) switching off between the two throughout the set. In the other words you do your heavier set of 12 reps,



then dive right into your set of 24 reps with a lighter weights. Then you will immediately grab your heavier dumbbells again and aim for 10 reps. Switch back to the lighter set and try for 20 reps. Return to heavy for 8 reps, then go back to the lighter weights with a target of 16 reps.

Rest 2 – 3 minutes, then reverse the climb using the same weights. On the way up you did 12–24, 10-20, and 8-16, so on the way down you will do 24-12, 20-10, 16-8. That is one set. During a strength and size workout, you will perform half as many reps: 6-12, 5-10, and 4-8 on the way up and 12-6, 10-5, and 8-4 going down.

Utilizing both ends on the rep-range spectrum will help you built strong; dense muscles while whittling away body-fat.

Dumbbells are ideal because of the resistance and overall muscle recruitment they provide. Plus, you can grab two pairs of weights without impeding others to train. Machines also work well because you can easily move the pin between rep ranges. We do not recommend using barbells because clamming two of them is a difficult score in any gym. (Textier J., 1989) The program is progressive in that you add one exercise per body-part in weeks 3 and 4, nearly doubling the already substantial volume and pushing your pain threshold – and your metabolic rate – to the limit. By the end you will be doing 2-3 working secundes.

Strength & Size (S & S)	Size & Endurance (S & E)
6 reps & 12 reps	12 reps & 24 reps
5 reps & 10 reps	10 reps & 20 reps
4 reps & 8 reps	8 reps & 16 reps
<b>Rest 2-3 minutes, then reverse</b>	<b>Rest 2-3 minutes, then reverse</b>
12 reps & 6 reps	24 reps & 12 reps
10 reps & 5 reps	20 reps & 10 reps
8 reps & 4 reps	16 reps & 8 reps

Weeks 1 + 2					
Strength & Size (S & S)			Size & Endurance (S & E)		
Day 1 = Chest & Arms			Day 4 = Chest & Arms		
EXERCISE	SETS	REPS	EXERCISE	SETS	REPS
<b>CHEST</b>			<b>CHEST</b>		
Incline flye	2-3 <sup>1</sup>	8-12	Dumbbell flye	2-3 <sup>1</sup>	8-12
Incline dumbbell press	1	S & S	Dumbbell press	1	S & E
Machine press	1	S & S	Smith machine Incline bench press	1	S & E
<b>BICEPS</b>			<b>BICEPS</b>		
Preacher curl	2-3 <sup>1</sup>	8-12	Incline dumbbell curl	2-3 <sup>1</sup>	8-12
Barbell curl	1	S & S	Standing dumbbell curl	1	S & E
<b>TRICEPS</b>			<b>TRICEPS</b>		
Press down	2-3 <sup>1</sup>	8-12	Press down	2-3 <sup>1</sup>	8-12
Seated overhead cable extension	1	S & S	Machine dip	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		
Day 2 = Legs & Abs			Day 5 = Legs & Abs		
EXERCISE	SETS	REPS	EXERCISE	SETS	REPS
<b>QUADS/HAMS</b>			<b>QUADS/HAMS</b>		
Leg extension	2-3 <sup>1</sup>	8-12	Leg extension	2-3 <sup>1</sup>	8-12
Leg curl	2-3 <sup>1</sup>	8-12	Leg curl	2-3 <sup>1</sup>	8-12
Leg extension	1	S & S	Leg extension	1	S & E
Leg curl	1	S & S	Leg curl	1	S & E
<b>CALVES</b>			<b>CALVES</b>		
Standing calf rise	1	S & S	Standing calf rise	1	S & E
<b>ABS</b>			<b>ABS</b>		
Machine crunch	1	S & S	Machine crunch	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		
Day 3 = Back, Shoulders & Traps			Day 6 = Back, Shoulders & Traps		
EXERCISE	SETS	REPS	EXERCISE	SETS	REPS
<b>BACK</b>			<b>BACK</b>		
Lat pulldown	2-3 <sup>1</sup>	8-12	Pull-up	2-3 <sup>1</sup>	8-12
Seated row	1	S & S	Close-grip lat pulldown	1	S & E



Dumbbell row	1	S & S	Wide-grip seated row	1	S & E
<b>SHOULDERS</b>			<b>SHOULDERS</b>		
Machine lateral raise	2-3 <sup>1</sup>	8-12	Lateral rise	2-3 <sup>1</sup>	8-12
Overhead dumbbell press	1	S & S	Machine overhead press	1	S & E
<b>TRAPS</b>			<b>TRAPS</b>		
Smith machine shrug	1	S & S	Dumbbell shrug	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		
<b>Weeks 3 + 4</b>					
<b>Strength &amp; Size</b>			<b>Size &amp; Endurance</b>		
<b>Day 1 = Chest &amp; Arms</b>			<b>Day 4 = Chest &amp; Arms</b>		
<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>	<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>
<b>CHEST</b>			<b>CHEST</b>		
Incline flye	2-3 <sup>1</sup>	8-12	Dumbbell flye	2-3 <sup>1</sup>	8-12
Cable crossover	1	S & S	Dumbbell press	1	S & E
Incline dumbbell press	1	S & S	Smith machine decline bench press	1	S & E
Smith machine bench press	1	S & S	Smith machine incline bench press	1	S & E
<b>BICEPS</b>			<b>BICEPS</b>		
Preacher curl	2-3 <sup>1</sup>	8-12	Incline dumbbell curl	2-3 <sup>1</sup>	8-12
Barbell curl	1	S & S	Standing dumbbell curl	1	S & E
Incline dumbbell curl	1	S & S	Dumbbell Scott curl	1	S & E
<b>TRICEPS</b>			<b>TRICEPS</b>		
Pressdown	2-3 <sup>1</sup>	8-12	Pressdown	2-3 <sup>1</sup>	8-12
Seated overhead cable extension	1	S & S	Machine dip	1	S & E
Close-grip Smith machine bench press	1	S & S	Rope pressdown	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		
<b>Day 2 = Legs &amp; Abs</b>			<b>Day 5 = Legs &amp; Abs</b>		
<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>	<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>
<b>QUADS/HAMS</b>			<b>QUADS/HAMS</b>		
Leg extension	2-3 <sup>1</sup>	8-12	Leg extension	2-3 <sup>1</sup>	8-12
Leg curl	2-3 <sup>1</sup>	8-12	Leg curl	2-3 <sup>1</sup>	8-12
Leg extension	1	S & S	Leg extension	1	S & E
Leg curl	1	S & S	Leg curl	1	S & E
Machine leg press	1	S & S	Smith machine squad	1	S & E
<b>CALVES</b>			<b>CALVES</b>		
Standing calf rise	1	S & S	Standing calf rise	1	S & E
<b>ABS</b>			<b>ABS</b>		
Machine crunch	1	S & S	Machine crunch	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		
<b>Day 3 = Back, Shoulders &amp; Traps</b>			<b>Day 6 = Back, Shoulders &amp; Traps</b>		
<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>	<b>EXERCISE</b>	<b>SETS</b>	<b>REPS</b>
<b>BACK</b>			<b>BACK</b>		
Lat pulldown	2-3 <sup>1</sup>	8-12	Pull-up	2-3 <sup>1</sup>	8-12
Seated row	1	S & S	Close-grip lat pulldown	1	S & E
Dumbbell row	1	S & S	Pullover	1	S & E
Smith machine bent-over row	1	S & S	Standing cable row	1	S & E
<b>SHOULDERS</b>			<b>SHOULDERS</b>		
Machine lateral raise	2-3 <sup>1</sup>	8-12	Lateral rise	2-3 <sup>1</sup>	8-12
Overhead dumbbell press	1	S & S	Machine overhead press	1	S & E
Smith machine upright row	1	S & S	Reverse peck-deck flye	1	S & E
<b>TRAPS</b>			<b>TRAPS</b>		
Smith machine shrug	1	S & S	Dumbbell shrug	1	S & E
Dumbbell shrug	1	S & S	Shrug	1	S & E
<sup>1</sup> warm-up			<sup>1</sup> warm-up		



### Conclusions

In conclusion the Workout with High and Low Reps is a training method combining the two kinds of reps for reaching in the same time three goals: endurance, muscular growth and muscular strength. Another advantage resulting from using this training is the boosting of the metabolism. Equally, this training will enhance the number of consumed calories thus eliminating the need for additional cardio training. Although most of the people usually come to the gym for the daily stress relief, and this training will do so, in the meantime it will build up another stressful estate, but this time will be a pleasant kind of stress. In a nutshell, Workout with High and Low Reps, although stressful and tough, will eventually increase your strength, size and endurance.

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## EXPERIENCES CONCERNING THE MOULDING/CONSOLIDATION OF THE PSYCHOLOGICAL SKILLS FOR THE 400 M EVENT

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### Abstract

The main objective of the sportive training and its finality is the sportive performance. The athlete that has to achieve the performance has to join in the training process on three plans: biological, psychological and social.

**Methods:** The paper is based on a longitudinal experimental research, a study case, on two athletes (a man and a woman), components of the Romanian Olympic/National Team, that were trained in different periods: 2002 – 2008, respectively 1996 – 2000.

**Results:** During the trainings of the two athletes I used the psychological training strategy presented in table 1, in symbiosis with the strategies used for the other training factors ( Mihailescu, L., 2008) and I evaluate specific motive behaviour, the tiredness indices, the muscular work efficiency, the motivational indices and obviously the performance capacity in the contest event.

**Conclusions:** The results of our research confirms the work hypothesis and represents an example of well practise concerning concretization of the “total training” concept and its effects in a track and field event which requires the training/consolidation/perfection of the psychological skills, that can become spring of the performance maximization.

**Key word:** psychological skills, total training, didactical strategy

### Introduction and research objective

The main objective of the sportive training and its finality is the sportive performance. The athlete that has to achieve the performance has to join in the training process on three plans: biological, psychological and social. The performance behavior of the athlete includes the capacity of expression, the affirmation desire, the effort and abnegation, the needs and pressure of the social ambient.

### Research premises

- Making a permanent research in the direction of the performance sportive psychology, synthesizing the results of all the sportive psychologists, on international plan, analyzing, the theoretic models

concerning the sportive training factors, (Gujalovski, Schroter, Weineck, Gagea), professor M. Epuran promotes, starting with 1979, the concept “The 4<sup>th</sup> of the sportive performance”. The concept is based on two theoretic postulates:

- the human being, the one that realize the performance, is a complex product of the biological, psychological and socio – cultural factors;
- the optimization of the educative processes referring to the growth and development depends on how the teacher/coaches are using the scientific data.
- The concept of “total training”, appeared in the seven decade of the XX century, promoted the idea





that the maximization of the performance can't be obtained without the maximization of the athlete personalization. In this concept, the sportive training contains: the *proper training* (physical, technical, tactical, theoretical, psychological training, recovery); *the mental training*; *the psycho – control training* (the moulding the psychic skills); *the invisible training* (diet, rest, sexual life, social activities, hobbies, etc.).

#### **Research hypothesis**

#### **Research purpose and objectives**

**The purpose of this research** is to demonstrate, in an experimental way, the contribution of the psycho control training in the manifestation of the performance capacity in the objective competition, by the moulding and consolidation of the psychic skills auspicious to the performance in the 400 m event in a training macro cycle.

**The objectives of the research** were focused on the following aspects: the establishment of the psychic skills that are auspicious to the sportive performance from the studied event; the determination of the moulding level to the studied athletes; the establishment of the precise elements from the didactical strategy framework; the establishment of the evaluation methods and techniques of the psycho control capacity and of the motivational level.

The paper is based on a longitudinal experimental research, a study case, on two athletes (a man and a woman), components of the Romanian Olympic/National Team, that were trained in different periods: 2002 – 2008, respectively 1996 – 2000.

From our experience, we consider that the psychological skills specific to the performance in the 400 m event are: goals establishment, the control of the tired sensation; the control of the motivation; the control of the positive thinking.

During the annual macro cycle we approached the moulding and consolidation of the psychological skills simultaneously with the level of the self knowledge moulding and development from two perspectives: the somatic aspects (kinesthesia, self receptive) and the internal functional (the control of the relaxing and excitation; the respiratory control; the capacity to appreciate the physiological reactions concerning the effort and the rest; the capacity to appreciate the value of the effort after the physiological reactions), settling a specific strategy, that is integrated to the global strategy of the training.

The operationalization of the psychic training of the athletes in the specific training of the 400 m event can determine the maximization of the performance in the objective competition, by the moulding, consolidation and perfection of the requested psychic skills, the control and self control of the psychic states of the athlete and the stimulation of the motivation.

#### **Content, methodology**

The psychological training is very complex and includes: the psychological teaching of the athletes, the psychology of the teaching; the education psychology, the psychic training for the competition, the psychic states control and self control, the prophylaxis, the psychotherapy, the psychological assistance.

The athletic events challenge the athlete on all plans: biologic, psychic, mental, and makes the training process, at any formative level, from the advancers up to be very complex. The 400 m event challenges the particularization of “the 4<sup>th</sup> A” in generally, but also each one of them. The event rules challenge the willing capacity, the space orientation, the attention concentration, the distributive of the attention, the rhythm sense, the coordination of the athlete.

The content of the didactical strategy used in the annual macro cycle to direct the psychological training

Final objectives	Followed competencies	Means	Methods	Materials	Organization forms
● The establishment of the self proposed objectives for training and competition	The manifestation of the usage to establish aims in training and competition	Example Exercises of aims establishment in training and competition	The conversation The practise	Folders with formulations of diverse aims. Putting the performance objectives in visible places	Individual
● The moulding of the self control, tiredness to the specific effort skill	The self control of the tiredness sensations and their self control	Introspection Self suggestion Autogenic training elements Stressed training	The practise The Schultz method Relaxing techniques minimization of the tiredness sensations Stimulation	-	Individual
● Construction of some strong intrinsic motivations that will sustain the effort from the training and competition	The manifestation of some motivation concerning the sustaining of the effort from the training. The support of the self purposes and/or moulded by solid motivational tasks	Example Exercises of the motivational intrinsic construction Motives, needs,	Self evaluation Practise Modeling Conversation	Folders with formulations of diverse aims. Putting the performance objectives in visible places	Individual
● The training of the positive thinking in training and competition approach	The achievement of the positive thinking in the voluntary support of the training efforts and in the approach of any level competition	Example Himself taking	Mental training, suggestion, self-suggestion, the behavior reconstruction, self evaluation, conversation	-	Individual
● The building/consolidation of the skill that refers to the consciousness of the movement rhythm in training and competition	The correct perception of the movement velocity by rendering the time of different executions or the distance from the contest.	Executions on variable distances and the appreciation of the crossing time, the mental exercise of the contest run with the recording on the time watch	The conversation, mental training, mobilization, perceptive consciousness	Time watch	Individual
● The development of the skill concerning to the movement of the own body or its segments	The manifestation of the capacity to spoke about the correctness or incorrectness of some phases of the practiced motive structures.	Self movements discussion exercises	Corporal awareness, practise, conversation	Video camera, monitor, Conditions simulator type II, simulators	Individual
● The	The awareness of the	Exercises with	Mental training,	Blood pressure	Individual

assimilation of the skill concerning the appreciation of the training stress by effort physiological indices.	tress level from the training and competition effort, the self control of the effort involvement	the description of the subjective stress level. Exercises with the determination of the physiological parameters during, effort, after effort and after the brake.	the behavior restructuration, self consciousness, introspection	meter, lactate meter, time watch	
● The assimilation of the skill concerning the appreciation of the training voluntary effort from training by the control of the physiological reactions	The self control of the effort physiological reactions	The exercises with the require of some active participation in a self control sense on physiological indices	Self evaluation, mobilization, mental training, introspection	Blood pressure meter, lactate meter, time watch	Individual

**Results, discussions**

During the trainings of the two athletes I used the psychological training strategy presented in the previous table, in symbiosis with the strategies used for the other training factors (Mihailescu, L., 2008) and I evaluate specific motive behaviour, the tiredness indices, the muscular work efficiency, the motivational indices and obviously the performance capacity in the contest event.

From table 2 we can see that the muscular work efficiency determined by Rosetti indices, shows

grows of it from 2.8 (medium) to 3.8 (good) in men and from 2.6 to 4.1 what means from “medium” to “very good” in women and we consider that by psychological training its been moulded skills concerning “The sustaining of the self proposed and/or learned by solid motivational leavers” and “The wariness of the effort stress in training and competition, the self control of the effort participation” which had determined this evolution.

**Table 2.** The athletes results to the effort and motive evaluations

M/F/year	Rosetti index		Tiredness index		500,300,200m B: 10 min		400m in competition		The global motivational index	
	1	2	1	2	1	2	1	2	1	2
M/1	2,8	3,2	45,0	42,8	72,3 38,1 24,5	70,3 37,6 24,0	49,14	48,11	236	288
M/2	3,6	3,8	43,2	40,6	70,2 37,0 23,6	68,4 36,5 23,2	47,82	47,53	302	378
F/1	2,6	3,0	49,3	47,0	74,2 40,4 27,8	73,0 39,8 27,1	53,82	52,32	259	300
F/2	3,5	4,1	46,3	44,1	72,6 40,0 27,5	71,8 39,5 26,4	51,87	50,50	340	368



The tiredness index (I.,Dragan, 2002, pg.174) is lower for both athletes and it means that the global anaerobic capacity and maximum power is growing from a year to another, function of the minimum power of each one of them. This effects of the total training are reflected in better and better results from the standard training “500 – 300 – 200 m, b: 10 min”, and in competition too, and we consider that reflects the achievement of the psychological training objectives concerning “The training of the skill concerning the achievement of voluntary effort of training by the self-control of the physiological reactions of effort” and “The construction of some strong intrinsic motivations that will sustain the effort from the training and competition.

The Global Motivational Index (G.M.I.) determined after some previous researches (Mihailescu, L., 2006) has a permanent upper evolution, during the experiment, to both athletes, and that determine us to say that by using the proposed strategy (table 1) had been accomplished the skills concerning “The manifestation of the capacity and usage to settle aims in training and competition”, “The manifestation of a support motivation of the training effort”, “The support of the self proposed and/or trained by strong motivational levers.

#### Conclusions

The results of our research confirms the work hypothesis and represents an example of well practise concerning concretization of the “total training” concept and its effects in a track and field event which requires the training/consolidation/perfection of the psychological skills, that can become spring of the performance maximization.

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## STUDY OF TRAINING PROCESS FOR FEMALE 100 m HURDLERS

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#### Abstract

Modern sprint hurdlers are first of all sprinters. They must possess the characteristics of speed specialists - reflexes, power and strength. To this must be added the right physique - hurdlers should be tall, or have proportionally long legs to ease hurdle clearance - and have hurdling technique, without which nothing is possible. It is a question of flowing over the 10 hurdles without seeming to break stride.

**Methods:** best 5 female hurdlers from Romania. The study took place in the summer of 2007 and during indoor season in 2008. Most used drills in training: Speed running 30-80 m, 120-250 m, running over the hurdlers 1-3, 3-5, 8-10 hurdlers, running over the hurdlers with unstandardized distance.

**Results:** All 5 athletes worked first for motor quality development and then for technique improvement. From the athlete's training plans we can see that in competition periods they work for maximum capacity effort with specific nature.

**Key words:** hurdlers, running, motor quality, training

#### Introduction

In the current training of sprinters and hurdlers, one of the monitored objectives is the development of maximum speed, as well as the maintenance thereof during the entire distance. This can be obtained by the improvement of the resistance in a speed regime ( F. Neder, 2002).

During a competition period, the physical training is oriented towards the functional training, or better said towards the preparation of the capacity of maximum effort with specific character. The reaching of a superior sportive performance is the direct result of the adaptation of the sportswomen to different types and methods of training.



The training is a complex process, organized and planned according to various stages which are implemented consecutively. During such training stages and especially during the competition stage, the sportswomen reach a certain level of training (D.C Alexandrescu,1991). The reaching of the peak of the sports shape for the main competition of the year is possible and doable only with a high level of physical training where all bio-motor skills were perfected, and the technical and psychological training reaches maximum levels. This can be achieved only after the draw up, by the coaches, of specialized training programs (T. Ardelean,1991).

An entire series of factors contributes for the obtaining of superior performances, among which we mention: the physical and psychic qualities of the runner, its morphological development, its technical and tactical training. An important requirement consists in the adaptation of the technique to the actual conditions for the performance of the event, which results from the level of assimilation of the correct technique and the degree of applicability thereof (F. Neder ,2002).

A high level performance is the result of many years of intense, methodical and well planned training. During all this time, the sportswoman tries to adapt the functions of her body to the specific requirements of the selected event. The level of adaptation is reflected in the capacities of performance. The greater the level of adaptation, the better the performance (D.C. Alexandrescu 1991). The adaptation to training is the amount of the transformations caused by a repeated system exercise. These structural and physiological changes arise from the specific strain to which the sportswomen subject their bodies by the activity they perform, according to the volume, intensity and frequency of the training sessions.

The physical training is profitable as long as it forces the body to adapt to the stress of the effort. If the stress does not represent a sufficient strain, the adaptation does not take place. On the other hand, if the stress is intolerable, the result may lead to injury or over-training.

The time necessary for the installation of a high degree of adaptation depends on the complexity of the skill and the physiological and psychological difficulty of the event or sports. Since athletics is a difficult and complex sports, the training time necessary for the neuromuscular and functional adaption is longer.

In this work we established a series of **tasks**, as follows:

- the study of the bibliographic materials;
- the establishment of the panel included in the research;
- the means that will be included in the structure of the micro-cycles;
- the establishment of the loads with which the works will be performed according to the

- maximum possibilities of every sportswoman;
- the draw up of the work sheets (the number of repetitions for every exercise included in the respective micro-cycle)

**The purpose of the work** is represented by the performance of a study over the specific activity of training during the competition period of the best senior-athletes for 100 hurdles.

#### **The hypothesis of research**

1. If we record the content of the training sessions of a micro-cycle for the first 4 senior athletes for the event of 100 m hurdles during the competition time, then we will be able to analyze the results and we will be able to optimize the content of the training sessions.
2. If by the content of a micro-cycle applied to one of the 4 athletes of the country at 100 m hurdles the proposed objectives are met, then the micro-cycle can be applied by adaptation for other athletes with a lower training level.

**Used methods of research:** *Study of the specialized literature, Case Study, Bibliographic Study, Pedagogic Observation, the Analysis of the plans of specific training for a competition, the Questionnaire Method.*

The high level of performance of the modern sports imposes a continuous perfecting of all aspects of the sports training and directly depends on a series of factors and directions of improvement of the sports training.

Taking into account the complex human effort, the efficacy of the training depends on the degree of scientific knowledge, the personal experience, the applied method and the planning capacity. By using scientific data adequate for the training, planning can become a means of utmost importance in the effort of drawing up and managing a well organized training program.

We have applied the method of the questionnaire of the coaches, which included simple and to the point questions regarding mainly opinions with respect to the development of the motor qualities: how much, how and when the training must be performed and on what motor quality it should focus more. Moreover, the means that are recommended to be repeated for the development of pure speed and of speed in a resistance regime and the exercises that are used, in addition to the crouched start for the development of the speed of reaction as well as the opinions of the coaches with respect to the development of the force.

After studying the annual training plans of the 4 sportswomen we have selected the main means used by the coaches for training during competition periods: months of July and August 2008: Accelerated race 30 – 80 m (km.), Accelerated run 120 – 250 m, Standard hurdles race with a rhythm of 3 steps 1-3 hurdles (no. /%), Standard hurdles race with a rhythm of 3 steps 1 – 7 hurdles (no. / % .), Standard hurdles race with a



rhythm of 3 steps 1 – 5 hurdles (no. / %.), Non-standardized hurdles race including 3 steps (no. / %.), Force development with burdening (tons / %), Development of detent for multiple jumps (no. / %.).

The control tests and trials were performed at the beginning of the training period 01.04. – 30.05. 2008 and at the beginning of the *competition period* 01.07. – 31.08. 2008 (see table no 1).

The main technical-methodic conclusions of 2008:

In 2008 athlete **Țigău Viorica** managed to surpass the planned parameters:

- 100 m hurdles - planned 13.50 / achieved 13.47
- She managed to improve the indices of the travel speed and of the special resistance;

Athlete **Radu Elena Andreea** managed to surpass the planned parameters:

- 100 m hurdles - planned 13.85 / achieved 13.73
- She managed to improve the indices of the travel speed and of the special resistance;
- In the future she will have a lot of work to do, especially regarding the correction of certain technical faults at the start for the hurdles event;

#### **Lucaci Lăcrămioara**

- The rational and judicious orientation of the means and methods of actuation as well as of the values of the main parameters of the training effort – volume and intensity– so as to perform two lines of sports shape corresponding to the competition season - indoors and in open air. In such context, the improvement. From the athlete's training plans we can see that in competition periods they work for maximum capacity effort with specific nature.

2. From this we can deduct that the used methods and means are highly efficient and have a very wide range of use.

3. From the training plans of the 5 athletes we can notice that during the competition period the physical training is oriented in the direction of the functional training, for the preparation of the capacity of maximum effort with specific character.

4. The reaching of the maximum sports shape in important competitions established in advance was

achievement of the maximum performance will be the goal at the objective competitions: national indoors championships and open air championships;

- Perfecting the rhythm of the run between the hurdles;
- Improving the indices of the dominant motor qualities – reaction speed, travel speed, force and especially resistance in a speed regime;
- The perfecting of the crouched start and start launch – in the conditions specific for the hurdles race.

A.M. Caragață Ana Maria, 2008, succeeded to reach the planned parameters:

- la 100 mg – planned 14.60 / achieved 14,31;
- 100m plat – planned: 12.91sec. / achieved 12,65sec.;
- She managed to improve the indices of the travel speed and of the special resistance;
- In the future she will have a lot of work to do, especially regarding the correction of certain technical faults at the start for the hurdles event;
- She must perfect the crouched start both for the 100 m race as well as for the 100 m flat race ;
- The coach thinks that the main race will become the 100 m hurdles, and the 100 m flat will become the secondary race.

#### **Conclusions**

All 4 athletes worked first for motor quality development and then for technique attempted and achieved. This was possible only after the draw up by the coaches of certain specialized training programs.

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**Table no. 1 Table with control tests and trials control for the 4 runners subjected to the research**

N o.	Event	Țigău Viorica		Radu Elena Andreea		Lucaci Lăcrămioara		Caragață Ana Maria	
		Training Per.	Compet. Per.	Training Per.	Compet. Per.	Training Per.	Compet. Per.	Training Per.	Compet. Per.
1.	30 m. standing start (sec.)	3.80	3.78	3.91	3.83	3.92	3.90	4.20	4.12
2.	60 m. standing start (sec.)	7.20	7.15	7.47	7.45	7.48	7.47	7.89	7.80
3.	100 m standing start (sec.)	11.90	11.85	11.98	11.94	11.97	11.95	12.97	12.90
4.	1 hurdle block- start (sec.)	2.58	2.50	2.67	2.60	2.68	2.61	2.87	2.81
5.	3 hurdles block- start (sec.)	4.47	4.40	4.58	4.54	4.71	4.69	4.97	4.89
6.	5 hurdles block- start (sec.)	6.30	6.27	6.47	6.43	6.95	6.89	7.13	7.03
7.	7 hurdles block- start (sec.)	8.88	8.80	8.96	8.92	9.20	9.15	9.80	9.76
8.	Standing long jump (m.)	2.87	2.91	2.95	3.03	2.70	2.76	2.70	2.76
9.	Standing triple jump (m.)	8.20	8.25	8.47	8.68	8.39	8.50	7.89	7.97
10	Standing penta- jump (m.)	14.48	14.56	14.70	14.89	14.13	14.43	13.87	14.00
11	Wall Bars Crunches 10 sec. (nr.)	9	10	10	10	10	10	8	9
12	Genuflect ions (kg.)	120	125	130	135	130	140	90	100
13	Back straighten ing (kg.)	90	95	95	100	90	100	60	70



## STUDY OF MOTOR QUALITY CONSIDERED ESSENTIAL FOR TOP CLASS 100 m HURDLER

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### Abstract

Hurdlers must always search for a fluidity that is impaired neither by the aggression of the start, nor the need for rhythmic speed between hurdles, nor the act of hurdling. This event is both a running race and a field event. The 10 jumps must be accomplished with perfect linear movement. Here more than anywhere else, style is king.

**Key words:** competition, performance, runner, speed.

The dynamism, harmony and roundness of the movements in which the run and the fight for the overcoming of the obstacles is dominant make the hurdles race one of the most spectacular athletics events.

These characteristics make the hurdles races of competitions be expected with a live interest both by the connoisseurs of the athletics as well as by the less specialized spectators.

Performance, as a result, depends, to a very large extent, on the performance technique and rhythm units. A rhythm unit is considered as a section of the run in time and space which takes place between two landings. The objectives of the rhythm unit are: a time which is as short as possible, the standardization of the times, the smallest time average of all nine running spaces (Neder F., 2003).

The hurdles race is divided, according to the evolution of the speed on the track, in the following stages: response time, first acceleration stage – from the start line to the third hurdle 3, the speed stabilization stage – between hurdles 4-6, the loss of speed stage – between hurdles 7-10, the second acceleration stage – from hurdle 10 to the finish line.

Unlike the 100 m flat race, where the sprinters can increase or vary the frequency and length of the leg span for the entire distance, in the 110 m hurdles race the steps of the runners are standardized with respect to their length, and they can continue the positive acceleration only by means of the increase of the frequency (Neder F., 2003).

In the current practice of the sprinters and hurdlers, one of the targeted objectives is the development of the maximum speed, as well as the maintenance thereof for the entire distance. This can be performed by the improvement of the resistance in a speed regime.

### The objectives of the research

1. The assimilation and consolidation of the theoretical knowledge based on the study of the existing bibliography.

2. The draw up and argumentation of the content of the means of management of the variation and maintenance of the travel speed along the distance. The results of the scientific research can contribute to

the supplementation of the theoretical base for the training for the 100 m hurdles event.

3. The analysis and studying of the structure of the training level of the hurdlers and especially the specific and technical training;

**The purpose of the current work** is to obtain the objective data in the management of the training for the 100 m hurdles event, having in view the positive and negative influences of the variation of the travel speed for the obtaining of special performances for this event.

The following **hypothesis** was the basis for the draw up of this work: It is assumed that speed is the basic motor quality of the 100 m hurdler.

**Used methods of research:** *Method of Bibliographic Study, Method of Observation, the Analysis of the plans of specific training, Statistical-mathematical method.*

Subjects of the experiment were 4 seniors female 100 m hurdlers.

Important components intervene in the perfecting of the technical skills of the hurdlers, and the correct determination thereof influences the success of the special training for the competition: the technique under the influence of fatigue, absolute speed, running speed for the first half of the race distance, as well as the resistance in a speed regime. In the various stages of the sportive perfecting the meaningfulness of these components differs.

An entire series of factors contributes to the obtaining of superior performances, out of which: the physical and psychic qualities of the runner, his or her morphological and functional structure, technical and tactical training (Nicu Alexe, 1993). An important requirements consists in the adaptation of the technique to the actual conditions of performance of the event, which also results from the level of assimilation of the correct technique and the degree of applicability thereof.

The motor qualities necessary for the speed runner and hurdler are speed, resistance (especially the anaerobic capacity), force, detent, mobility, flexibility and dexterity.

Speed is a complex quality, which is rather innate than acquired. Therefore it depends first of all on the appropriate activity of the cortex, namely on the





quality of the fundamental nervous processes – excitement and inhibition – ca: mobility, force, intensity, tenacity, concentration (Stoica M., 2000).

The sportsperson who does not have an appropriate neuromuscular coordination cannot achieve a running speed.

Speed is the main motor quality of the sprinter and hurdler. The development of speed on all ways, combined with the other technical skills and motor qualities necessary for the runner have various aspects, according to the type of manifestation:

- the frequency of the movements in a time unit or the *repetition speed*,
- the speed of the separate movements or the *execution speed*
- the speed of the latent period of the motor reaction or the *response speed*.

In the hurdles race speed is manifested as follows:

- the response speed at the start – a quick response at the sound of the start gun;
- the execution speed upon the jumping over the hurdle – the quick performance of a complicated and well established movement;
- the repetition speed for the run between the hurdles and the maintenance of the rhythm – the capacity of performing a certain number of identical movements in a certain period of time;
- the travel speed during an event – traveling the distance as quickly as possible.

For the development and perfecting of all forms of manifestation of the speed the repetitions method is used (Nicu Alexe, 1993; Stoica M, 2000). The resumption of the effort is performed after the body is fully recovered.

A frequently used method is the one in which the speed of the repetitions increases progressively, until the maximum speed is reached. That is how the necessary technical corrections can be performed and muscle accidents are avoided. Another variant consist in the fact that the maximum speed is reached from the very beginning. Each run should be followed by a break of 5-10 minutes, and the running distance shall be of up to 60 m.

The maximum speed a sportsperson can obtain during the performance of various motor actions and drills (technical procedures) does not depend only on the actual speed which he/she has, but also on other factors such as: force, flexibility and joint mobility, the degree of assimilation of the technique procedures.

The bigger the volume of work is better the performance are. There is an important connection between suggested drills and 100 m hurdlers race (see table no 1).

We analyzed 21 drills and 6 of them had correlation coefficient significantly statistic for  $P < 0,05$ , 13 for  $P < 0,01$ , and 2 for  $P < 0,001$ . In conclusion, we can say

that the methods used in this experiment can be apply in 100 m hurdlers training.

After studying the annual training plans of the 4 sportswomen we have selected the main means used by the coaches for training. Further on we present some exercises we applied during our experiment.

Speed can be improved by: the perfecting of the neuromuscular processes, the increase of the force-detent and the improvement of the running technique. The development of the speed by the improvement of the neuromuscular processes is performed to a small extent, the other two ways being the main ways.

Exercises for the improvement of the *response speed*:

- running from a standing and crouched start on command,
- while doing the pawing drill the quick raising, on command, of a knee;
- the same exercise performed while supporting oneself with the hands on the wall .

Exercises for the improvement of the *execution speed*:

- jumping over small hurdles placed at normal or small distance, with three running steps between the hurdles;
- running from a standing and crouched start at will;

Exercises for the improvement of the *repetition speed*:

- running over 3-5 hurdles placed according to the rules;
- running over small hurdles located at 2.5-3 m with just one step between them;
- running over 8-10 hurdles placed at small intervals, with three running steps between the hurdles;
- running over hurdles placed according to the competition rules.

Exercises for the improvement of the *travel speed*:

- flying start running,
- running from a standing and crouched start at will or on command, on flat grounds or by jumping over the first hurdles;
- running with speed changes both on flat ground as well as over hurdles;
- running by accelerating on the last part of the distance;
- uphill and downhill runs.

Exercises for the improvement of the *acceleration speed*:

- pawing drill with acceleration to the maximum tempo, for a distance of 20-30 m;
- knees up running with acceleration up to the maximum tempo, for a distance of 20-30 m;
- standing start takeoffs, with acceleration up to the maximum tempo, for a distance of 10-50 m;

In the case of the hurdlers, the training is performed analytically in order to develop the speed of the takeoff leg, of the trail leg, and globally for the development of the speed of the step over the hurdle.



The speed of the movements is conditioned by other motor qualities as well, such as the muscle force and the neuromuscular resistance. Any movement takes place by defeating a bigger or smaller external, and in order for this to be performed as quickly as possible a certain muscle force must be used.

The last factor which conditions the speed of the movements is the technique of the motor action. No movement can be performed quickly, even if most of the conditions are fulfilled, without an accurate control of the technique of the respective movement.

During the training of the hurdlers emphasis is placed on the exercises which come close, as form and content, to the technique of the event.

A hurdler has numerous motor and psychic qualities. For the hurdlers sprinter qualities and athletic training are required, namely "detent and force during speed, great mobility and muscular elasticity".

Among the methods of development of the force and detent of runners, the following are the ones used most often:

1. the power-training method monitors the development of detent, but also of the force and speed, using three main groups of exercises: with weights (dumb bells), medicine balls and acrobatic balls. The progression elements are: the increase of the load, of the number of repetitions and of the performance speed.
2. The work method with dumb bells (weight lifter method) is one of the most widespread manners of development of force and detent. Dumb bells are usually used, and the main element of progression is the increase of the load. Some of the exercises that are most frequently used are: genuflexions and semi-genuflexions, performed in series, ended or not with small jumps, raising on the tip of the toes, lunged walk, small jumps on the spot, hopped and leaped steps with light weights (2-10 kg).

Exercises for the improvement of the detent:

- multiple horizontal leaps. They include the following combination: simple, triple and quintuple, in the three forms: successive (on the same leg), alternative (from one leg to the other), simultaneous (on both legs).
- uphill sprint and with trailing. The trailing is ensured with a rubber tied with a string of 3 m, fixed on the belt of the sportswoman.
- jumps with legs closed, over obstacles.
- running with hopped steps.

The special resistance in the hurdles events has the character of a resistance in speed and force regime, in the form of detent. From a physiological point of view, the special resistance in the hurdles runs is of anaerobic type, since it entails the performance of an intense effort with a large lack of oxygen.

In a hurdles race the runner must maintain the speed obtained at takeoff for the entire race, the length of the steps must be maintained as constant as possible, and the jumps over the hurdles must be performed with the same ease as in the beginning. A very important aspect of the special resistance is the possibility of performing

2-3 runs in a short interval of time, situation characteristic to the important athletics competitions.

The sprint and hurdles runners use the accelerated run from a standing start for 50-150 m, the consistent tempo run from a standing start, for 200-400 m, varied tempo run performed for a distance of 150-250 m.

A hurdler can maintain a high running speed up to the end of the distance by developing a specific resistance. For this purpose, the lesson must include the following exercises:

- repeated run for 100 m with the passage over the first 5 hurdles;
- 100 m run the first 47 m from the start line being hurdles free, the five hurdles being located on the last part of the distance. In order to attack the first hurdle in a determined manner it is recommended to mark a control line 4 steps before the hurdle;
- Repeated run for a distance of 50-110 m over hurdles of different heights. In order to maintain the running speed on the second part of the distance, a hurdle will be removed from the place where the decrease of the speed occurs, or the height of the hurdles can be decreased in the second half of the distance.

The hurdlers perform specific series of exercises:

- 3x50 m hurdles, break for 3-5 minutes;
- 50 m hurdles, break for 3 minutes;
- 100 m hurdles, break for 10 minutes.

A hurdler must be very flexible and mobile. The mobility influences and is influenced by the other motor qualities. An appropriate mobility has a positive effect upon the dexterity, speed of execution, force and detent. The intensive practice of the force exercises has a negative effect upon the movement of the segments, limiting their range.

A hurdler must have good mobility in the following joints and regions of the body: the coxo-femoral joint, the knee, the ankles and the lumbar region of the spine.

It is highly indicated to grant importance to the movements performed with every segment, the symmetrical development of mobility being a very important condition for the accurate technical execution.

*Mobility and flexibility* are of outmost importance for the hurdlers. They are developed by: gymnastics exercises performed with great range, performed freely, on devices and with special objects which are addressed to the segments which take part in the actual movement, with the help of the partner, exercises specific for the hurdler performed with and without hurdles, on the spot and in movement. These exercises can be performed during every warm-up drill. Exercise for the development of the mobility and flexibility:



1. taking the position for jumping over the hurdle on the ground, bending the torso towards the takeoff leg, the opposite arm is moved forward-sideways;
2. lying face up, rolling backwards and moving the feet over the head, going back to the hurdle position, bending the torso towards the takeoff leg;
3. the trail leg placed on the hurdle (wall bars), bending the torso towards the takeoff leg;
4. the trail leg placed on the hurdle (wall bars), repeated bends of the torso;
5. from a leaning position to the wall, the performance of the trailing movement without a hurdle or with a hurdle placed normally or with the bar placed crosswise;
6. the performance of the takeoff movement at the wall, by raising on the tip of the trail leg and moving the pelvis to the front;
7. the performance of the takeoff and trail movement while walking;
8. from a leaning position bent forwards, bringing the tip of the toes to the fingers and back;
9. sitting on the knee of the takeoff leg, leaning on the hands, the performance of the trail movement starting from the upper back;
10. technique exercises with a hurdle on the wall, from a leaning position forwards-downwards (the body being bent at 90°);
11. takeoff exercises: the leg stretched in front, pulling an elastic band (tied onto the ankle) forwards-backwards;

12. trail exercises: the performance of the trail movement with weights of 1-2 kg for the respective leg or with an elastic band.

#### Conclusions:

1. The strain specific to the hurdles events is part of the speed efforts group. A hurdler who wants to have great performances must, first of all, have great speed.
2. During the training of the 100 m hurdlers, the accent is laid on the development of the predominant motor qualities: speed, force, specific resistance, mobility and flexibility.
3. The careful analysis of the degree of training of the hurdler (lacks and qualities), of the level of development of the physical and psychic qualities indicate the exercises and their manner of use which can be used during the training session.
4. The experiment took place in natural conditions of training and enabled us to establish the efficiency of methods proposed, which is materialized into significant improvement of results in 100 m hurdlers event.

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Table no 1

Item	Training methods	$\rho$	t
1.	Standard hurdles race with a rhythm of 3 steps, 1-3 hurdles (m)	0,791	<0,01
2.	Standard hurdles race with a rhythm of 3 steps, 4-7 hurdles (m)	0,842	<0,01
3.	Standard hurdles race with a rhythm of 3 steps, 8-10 hurdles (m)	0,864	<0,01
4.	Standard hurdles race with a rhythm of 3 steps, 11-12 hurdles (m)	0,888	<0,001
5.	Non-standardized hurdles race (m)	0,797	<0,01
6.	Speed running 20-60 m, 90-100% (m)	0,849	<0,01
7.	Speed running 61-100 m, 90-100% (m)	0,755	<0,05
8.	Speed running 61-100 m, 80-90% (m)	0,664	<0,05
9.	Launch standing running 20-60 m (m)	0,742	<0,05
10.	Launch standing running 60-100 m (m)	0,742	<0,05
11.	Speed running over hill 20-60 m below 15° (m)	0,746	<0,05
2.	Block-start in hurdlers training (no.)	0,818	<0,01
3.	Block-start in speed training (no.)	0,706	<0,05



4.	Special endurance 120-300 m, 90-100% (m)	0,803	<0,01
5.	Special endurance 120-300 m, 80-90% (m)	0,803	<0,01
6.	Development of detent for multiple jumps (no.)	0,827	<0,01
7.	Development of detent for multiple jumps on hill/ stairs (no.)	0,806	<0,01
8.	Development of detent for multiple jumps over medium hurdlers (no.)	0,839	<0,01
19.	Force development with burdening (kg)	0,839	<0,01
20.	Force development with weight lifting (kg)	0,815	<0,01
21.	Speed running with drive 30-60 m (m)	0,900	<0,001

## THE IMPLICATIONS OF THE STATIC AND DYNAMIC BALANCE IN THE RHYTHMIC GYMNASTICS

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### Summary

The modern concep of training in performance sports and implicitly in rhythmic gymnastics is essentially based on the increase of the rator of the used means, a fact leading to the idea of complex analysis of the efficiency of each used means.

In the compositional structure of gymnastics exercise it is usually targeted that the number of corporal elements and the number of imposed object elements exist. The exigencies of the Code of points are very clear and precise> any element of difficulty can increase the total value of the exercise, if it is corectly executed. The evaluation is made under three aspects> the technical value, the artistic value and the execution.

We consider that the tracking and application of specific tests and specific exercises to improve the capacity of spatial/temporal orientation, the coordination and balance of the gymnasts will lead to obtaining valuable executions based on the accuracy of the body technique and handling the portable objects.

**Key words:** sense of balance, corporal elements, motric capacity

### Introduction

Balance conditions performance in rhythmic gymnastics through the majors implications it has in the accomplishment of some body elements belonging to the fundamental groups and wich consequently compose the difficulties for which bounties are granted. It is noticed, nationally and internationally, that the non grating of the body elements connected to the object elements, because of unbalance, represent a frequent fact, this decreasing the exercise value considerably.

The execution technique being characterized by exactness, maximum amplitude of movements, elasticity of jumps, precision of support and displacements, ease in the global execution, it has to be upgrade in the training, so that the granting of bounties afferent to the difficult connections and the object elements is not considered as objectives difficult to reach anymore. (V.Horghidan, 2000)

For the succesfull education of the sense of balance we must take into account the whole range of proprio and exteroceptive sensations, of movement,

kinesthetic, tactile, visual, as well as the internal factors commanding the release of the movement (the representations and images of the concrete movements which have to be executed). (A.Dragnea., A.,Bota, 1999),

### Research methods and procedures

We started out from the hypothesis that the improvement of the executio, both of technical element balance and other corporal elements, in which the sense of balance is involved, can be accomplished by applynig systems of actuation, precisely directed and under hardening conditions, in junior training. To the purpose of experiencing optimal means of perfecting the static and dynamic balance in the compositional structure, we opted for the team of rhythmic gymnastics of the School Sport Club Nr.1 of Constanta, managed by Serif Filis. The 10 components are beginners, having participated in a small number of competitions.

In rhythmic gymnastics the static and dynamic balance can be correlated with the aspect of somatic



development of the sports women. In this sense we identified and measured the anthropometrical variables, as follows: height, weight, bust length, thigh length, calf length, plantar length.

The purpose of the appreciation of the level of the development of the specific motric capacity we applied a battery of tests for the mobility of the scapulohumeral, coxofemoral joints, static (on the whole sole), active and passive (on demipointe).

The specific balance tests applied were: the test of static balance (Romberg test), tests of dynamic balance (Matorin test and Barany test). In the absence of the Barany chair the test took place as follows: a pirouette passe 360° is executed, then the gymnast must walk on a line on the floor towards a target. The deviations are recorded in centimeters.

In order to check the sense of balance specific to the rhythmic gymnastics, we accomplished two structures of exercises in which the specific element of the fundamental group balance was placed in the middle of the structure and respectively at the end of the structure. The structure were executed with the actuation of portable objects the string. The gymnasts were timed for as long as they kept this element.

The experiment started in January 2008 with the initial testing which envisioned:

- anthropometrical measurements in order to establish the level of general development of the subjects;
- motric tests in the system of measurements for juniors and seniors in national teams;
- specific tests to check the sense of balance;
- tests specific to the rhythmical gymnastics in order to test the possibility of the correct maintenance of a balance element.

The system of actuation for the development of the sense of balance which we experienced were structured so that the degree of difficulty grows gradually from easy to difficult, from simple to complex.

We applied actuation systems from the classical ballet for the consolidation of the technique of execution of the body elements, for the improvement of the balance, at the wall bar, at the center of the carpet, while walking on a line on the floor, on the gymnastic bench, with portable object, in a circle, on suppressing the sight.

After applying these exercise, in each training, systematically and logically, we accomplished an intermediary testing (november 2008), recording only the values at the classical tests (Romberg, Matorin and Barany). This testing took place under the same conditions as the initial one. We consider this testing as oportune, especially because the gymnasts in question were to participate in the national Championship, the result being able to be confirmed or contested by the evolution in this competition.

The correlation of the results of this (intermediate) testing with the accomplishment of the body elements (in which the sense of balance is involved) under competition conditions lead to the confirmation of the effects targeted by applying actuation systems.

The final testing took place under the same conditions and with the same subjects as the initial testing and the intermediate testing. The final testing took place in May 2009. through this operations we intended to record the progress of the components of our sampling on concluding the experiment.

According to the measurements recorded in the team of rhythmic gymnastics in Constanta, we tried to established a model close to what we consider to be the ideal somatic model, which to successfully accomplish the tasks involved in the balance execution of the body technical elements. So, we tried to determine the share and the degree of influence of the somatic and motric factors in the most clear, definite and ample expression of the body elements connected to the object elements.

**Table 1. Somatic indexes**

	M+Ds		Cv (%)	
	Initial test	Final test	Initial test	Final test
Body height (cm)	132,5+4,3	136,9+4,09	3.24	2.99
Body weight (kg)	23.6+1.99	26.05+2.16	8.46	8.31
Bust length (cm)	47.85+1.57	49.5+1.50	3.29	3.04
Thigh length (cm)	39.8+1.81	41.1+1.76	4.55	4.27
Calf length (cm)	38.6+1.76	43.6+1.79	4.56	4.10

**Table 2. Motric tests**

				M+Ds		Cv (%)	
				Initial test	Final test	Initial test	Final test
Scapulo-humeral				14,2±1,66	15,2±1,81	11,69	11,90
Coxo femoral	Dr.	Whole sole	Active	128±26,79	133±28,08	20,92	21,11
			Passive	140±33,99	167±18,58	24,27	11,12
		Demi pointe	Active	120±25,22	124±26,54	21,01	21,40
			Passive	161±17,28	164±31,60	10,73	19,26

	Stg.	Whole sole	Active	103±13.58	107±13.80	13.18	12.89
			Passive	156±13.14	159±13.84	8.42	8.70
		Demi pointe	Active	103±15.82	105±17.15	15.35	16.33
			Passive	155.5±16.74	157±16.19	10.76	10.31

**Table 3. Balance classical tests**

	M±Ds			Cv (%)		
	Initial test	Intermediate test	Final test	Initial test	Intermediate test	Final test
Romberg	4.9±4.65	8.3±4	16±13.23	94.89	48.19	82.70
Barany	19.8±7.26	13.5±5.79	10.2±6.33	36.71	42.94	62.14
Matorin	8.3±0.67	9.8±1.47	11.2±1.31	8.13	15.05	11.75

**Table 4. Specific rhythmic gymnastics tests**

Balance element into the structure	M±Ds			Cv (%)		
	Initial test	Intermediate test	Final test	Initial test	Intermediate test	Final test
In the middle	1.6±0.51	5±0.66	2.7±0.48	31.87	33	17.77
In the end	1.7±1.05	2.4±1.42	3.5±2.06	61.76	50	58.55

### Discussions

Somatic measurements. The measurement of the height shows significant growth between the testings, but concerning the general balance the growth of the average does not satisfy because the difficulty of maintaining the balance increases with the growth of height of the gymnast. At the weight test also growth is recorded, which is not satisfying, because of the fact expressive dynamic is influenced by this parameter.

The length of the bust influences the balance by relating to the height. We also know that the weight center is between L1 and L2, so the longer the bust is, or equal to the length of the legs, the lower the weight center is, which ensures a more stable balance. But in the rhythmic gymnastics this influences the esthetic somatic aspect.

The well proportioned inferior segments are essential elements of the ideal somatic model in the rhythmic gymnastics. The length of the legs related to the length of the bust must be greater or at least equal with it. This means that the weight center will be higher. From the point of view of stability of the balance, the placement of the average for the length of the calf is greater than the one calculated for the length of the thigh, both on the initial testing and the final one. This finding has a very good significance for the general somatic aspect.

Regarding motricity (articular mobility) a significant increase of the final indexes is recorded, which explains the high level of the specific training, the attention given to this essential aspect.

The fact that the most sportswomen easily reach the performance of 170°-175°, with the preferred leg or not, with or without aid, on demipointe or on the whole

sole, shows very good muscular elasticity and articular mobility.

If we take into consideration the fact that the difficulty of the body element is given by the amplitude of the form, the values of the degrees to which the gymnasts of the sampling lift their legs are satisfactory for the requirements of the national regulations in force. Concerning the balance, the exaggerated articular mobility negatively influences the stability of the positions, favoring the apparition of the body oscillations.

The scapulohumeral mobility represents a requested parameter in the selection process, expressing itself in the capacity of the gymnasts to handle the portable objects in an original way, expressive and ample movements, accomplishes especially with the upper train.

Testing of the mobility of the spine in the anterior and posterior plane resulted in satisfactory indexes for both tests.

After the analysis of the sense of balance through the „classical” tests (Romberg, Barany and Matorin) very good values were recorded.

Noticing the values obtained at the sensibled Romberg test, we notice an increase of the average during the three testings, the standard deviation having medium values.

At the Barany test the average of the values for the deviations decreases, which materializes in an improvement of the sense of spacial orientation. The averages calculated for the Matorin test reveal the fact that under the aspect of general coordination, the whole sampling records increases of this parameter. According to posting the standard deviation we can say



that the dispersion of the individual values is low with tendencies towards low dispersion.

At the specific tests in the rhythmic gymnastics, carried out with portable objects, the results show the efficiency of the systems of actuation applied during the experiment. From the analysis of the results to the two tests we notice increases of the averages, but the recorded values do not agree with the values obtained at the classical tests.

The handling of the portable objects negatively influences the time of balance maintainance when it is executed in the middle of the structure, but also when it is executed at the end. Next to this negative factor the force of inertia also acts and the stability of the positions becomes precarious.

As a conclusion, one can notice the low values of the indexes recorded at the first testing and their gradual increase at the intermediate and finale testings. The intermediate testing proved to be an efficient means of control of the effects of the applied operational models.

The final testings revealed the relatively increased values (in the majority of the gymnasts), values with significant significations in the rhythmic gymnastics. Still, in order to increase the level of performance, one has to intervene with a greater volume of work in the technique of the object elements. In order to be able to accomplish the boy element easily, with imbalance.

### Conclusions

The results of the experiment confirmed the hypothesis of the research in the rigorous mode in which the planning of the actuation system was made during the trainings and the way of their development.

The dependence of the balance of somatic indexes is quite obvious according to the development experiment and the tests made, against some anatomo-functional aspects with the values recorded at certain tests.

Tracing the evolution of the motric parameters, we noticed the improvement of the articular mobility of all joints in questions, under conditions of ambidexterity and ambipodality.

The balance tested in the classical tests showed real resources of the gymnasts, offering the possibility of the continuous improvement in this sense. In the tests conceived by us we tried the combination of three senses through the connection of several elements, through imposing a rhythm of execution and through the accomplishment of the structure under conditions of handling apparatus, the place of the body element influences the balance accomplishment, that is clear and definite, or the respective movement or position. The indexes recorded at both tests have accentuated the perturbing effect of both the external forces and the portable objects, mirrored in the values obtained.

As a conclusion, the sense of balance in tight connection with the spacial orientation and the coordination has multiple implications in the perfect accomplishment of the technique of execution of the object elements.

The main condition in the rhythmic gymnastics, the ample, clear execution of the elements in the compositional structures, can only be accomplished by taking into account the general capacity of balancing of the gymnasts. So, the obtaining of the bounties afferent to the increased difficulty elements will be possible, a seemingly difficult thing, if we notice the execution of the gymnasts of Romania and the ones of the world top.

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## THE INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL PERFORMANCE and LUNG FUNCTION TESTS AT SPORTSMEN

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### ABSTRACT

Importance of exercise in measuring the sportive performance of the sportsmen has been increasing in recent years. Therefore, lung function and exercise tests have been quite attractive for the researchers in specifying the appropriate sportsmen and evaluating their pre-seasonal performance.

This research has been planned to specify the relationship between the lung function and exercise tests of the footballers and basketballers playing with Diyarbakir Amateur Group and identify the differences between them and those not engaged in sports (the sedentary).

All groups were taken through the physical performance test and the time they completed the running distance was specified. Yet, spirometric measuring as lung function tests of all individuals was taken.

According to the outcomes of this study, the Vital Capacity, one of the static parameters of the lung was found high due to the control group of the basketballers ( $P < 0,05$ ). The dynamic respiration parameters of the basketballers FEV1/FVC, MVV values ( $P < 0,001$ ) and FEF%25 of the basketballers were found to have considerable difference with those of sedentary.

Whilst the increase observed with FEV1/FVC ratio and MVV with footballers, the FEV1 and FEF%25 value was found to be rather high as  $P < 0,05$ .

Whilst no difference between the time to cover the running distance between basketballers and sedentary was specified, this time period was found to be rather low with footballers compared with other two groups.

It was concluded that lung function tests are required to be handled together with skill and coordination tests in evaluating the competence and the performance of the sportsmen.

**Key Words:** Basketball, football, physical performance, spirometric tests.

### Introduction and purpose

Sport has become a major social event nowadays. Sport maintains its development as an important sector via planning made in accordance with scientific principals. Besides, it can also be evaluated as gaining the habit of regular exercising which is important in terms of health. The aim of people dealing with sport is to develop physical and mental health, to provide the sense of self-confidence and to achieve the ultimate performance.

In recent years, the perception of the importance of sport for the health of both the individual and the society resulted in positive developments in sport sciences. Exercise physiology which is an important branch of the sport science also developed with a great acceleration in parallel with these developments and became one of the most important subjects in terms of sport.

The importance of regular exercise for health is clarified each passing day. Exercises enable the muscles, bones, articulations and cardiovascular system to function most properly.

Making sport regularly and for a long period increases the cardio-respiratory activity. Physiological properties that are specialized according to sport constitute the basic components for successful sport performance. Effective inspiratory capacity and physical appropriateness are the principal ones. In this context, determination of inspiratory capacity and

application of improving exercise methods have become a crucial event in modern sports. Spirometrical measurements which give information about the resistance of air lines and air stream speeds and which are made in order to show the competence of the pulmonary function are frequently used in respiratory function laboratories.

This study is planned in order to determine the response of the football and basketball players in Diyarbakir amateur group to lung function tests and exercise tests and in order to put forward their difference from the sedentaries who do not make sport regularly.

### Scope

Since both offence and defense systems are interbedded in sports of football and basketball and since the games are exciting, contentious and there is a struggle in close contact, every moment of watching the games give excitement to the spectators. Aside from depending on technical intelligence and mental factors, basketball and football games are sports that also require anthropometric and physiological parameters. Anatomic appropriateness, physiological strength and condition are not only the complement of team cooperation, technique and tactic but they are also an important effect in showing technical skill and in withstanding injuries and mutilations. Outstanding structural adjustment and physical strength are necessary to be successful and keep pace with the



football and basketball of our day which is played in high tempo.

Today, team sports like basketball and football are more contentious and depend more on physical strength. When we analyze 1980s and 1990s, games in those periods depended more on technique. Coming to 2000s, that understanding changed and is replaced by another understanding which is completely different and which prioritize physical strength. Thus, in such team sports, more strong and powerful players in all aspects have began to be needed in order to obtain equity and superiority. The definition of athletically strong and powerful player is described as someone whose engine properties are developed (fast, swift, enduring) and who have the physical ability, muscle structure and a maximal inspiratory capacity that his/her branch requires. Therefore, along with the changing understanding of sport and type of struggle, training models and methods also show changes day by day. Together with the changing models, training methods that improve physical strength, include muscle work out appropriate to the branch and increase inspiratory capacity started to be applied in all branches and categories from amateur teams to professional ones. All these studies and measurements aim to use more objective determiners in player selection by determining the most appropriate anthropometric, physiologic and psychological properties for basketball, football and all sport disciplines.

In the light of all these improvements, basketball and football have become very attractive sport branches for researchers.

This research is carried out with 45 volunteer individuals from Güneydoğu Dicle Basketball Club, Yolspor Futbol Club and sedentaries from peer groups.

#### Material and method

In order to form the test groups, 15 basketball players (age:  $16.80 \pm 0.14$ ) in amateur league level and 15 footballers (age:  $16.87 \pm 0.34$ ) were included in the study. Besides, a control group was formed with 15 peer sedentary individuals (age:  $17.27 \pm 0.27$ ). All of the experimental subjects are males and they have been playing actively in the related branches for 5 years. The All measurements were carried out in accordance with ATS (American Thoracic Society) criteria. Biometrical properties of the subjects were taken as

The results were tested via Analysis of Variance (ANOVA). LSD method was used in the Post Hoc evaluation of the differences between groups.

#### Findings

In Table-1 the biometric properties (age, height, body weight) of individuals are compared. According to that, while there is not a meaningful difference between the groups in terms of age and body weight, it is determined that the basketball group individuals' heights are significantly higher in proportion to the control and football groups ( $p < 0.001$ ).

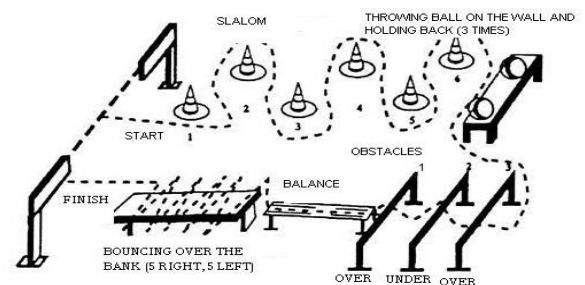
sedentary individuals who are the control group have not performed actively in any sport activity until today.

The study is comprised of two stages;

- Physical Performance Test (Skill and Coordination Test)
- Lung Function Test

In the first stage, the subjects are tested in the skill and coordination track prepared for them. This stage depends on the principle of subjects' completing the skill track racing against time. While preparing the track, it is taken into consideration that the test would not be peculiar to only one branch but it is aimed that the track would determine the skill, coordination, balance, speed, swiftness and flexibility of the sportsmen and sedentaries in general. Arterial blood pressures and hematocrit values of the sportsmen were measured before the physical test. In order to determine the hematocrit values, blood samples were taken before the exercise and preserved in capillary tubes. These blood samples that were preserved in tubes were later centrifuged and the hematocrit values of the subjects were determined.

Figure 1 - Skill and Coordination Track



As for the second stage, the subjects were taken to the laboratory and their spirometrical tests were performed. In order to avert the factors such as device adaptation problem, excitement and stress, pilot tests were performed before the main test. In the following stage, it was passed to the measurements.

basis while determining the predictive values of the parameters.

In the statistical evaluation of the results, SPSS 16.0 For Windows package program was used.

The hematocrit values and systolic and diastolic blood pressures of all individuals are shown in Table-2. There is not a meaningful statistical difference between the groups in terms of these parameters ( $p > 0.05$ ).

In Table-3 the respiratory parameters of all groups and comparison results of track completion duration average values among groups are shown.

According to that, Vital Capacity value which is one of the statistical parameters of lungs is determined to be significantly high only in basketball

group individuals compared to the control group ( $p < 0.05$ ).

Taking dynamic respiratory parameters of lungs into consideration, a significant statistical difference is determined when FVC1, FVC1/VC, MBC values ( $p < 0.001$ ) and MFRE values ( $p < 0.01$ ) in basketball group is compared to the control group.

As for the footballer group, while there is an increase in FVC1/VC rate and MBC value compared to the control group, FVC1 and MFRE value is found to be higher in a  $p < 0.05$  rate importance.

When the individuals are handled in terms of physical exercise tests, it is determined that the track completion durations of footballers are significantly lower than both control and basketball groups ( $P < 0.001$  and  $P < 0.05$  respectively). There is not a significant difference between the basketball group and control group individuals in terms of track completion duration.

**Table 1** – Comparison of the biometrical properties of basketball, football and control group individuals

GROUPS	AGE (year) $\bar{X} \pm SE$	HEIGHT (cm) $\bar{X} \pm SE$	BODY WEIGHT (kg) $\bar{X} \pm SE$
CONTROL	17,27 $\pm$ 0,27	177,47 $\pm$ 1,25	73,47 $\pm$ 1,76
BASKETBALL	16,80 $\pm$ 0,14	187,07 $\pm$ 1,44* $\Delta$	74,53 $\pm$ 1,63
FOOTBALL	16,87 $\pm$ 0,34	175,20 $\pm$ 1,05	70,33 $\pm$ 0,97

\*; Statistical importance of the difference when compared with the control group  $p < 0.001$ , ( $x \pm SE$ ).

$\Delta$ ; Statistical importance of the difference when compared with the footballer group  $p < 0.01$ , ( $x \pm SE$ ).

**Table 2** – Comparison of the Hematocric value, systolic and diastolic pressure average value among groups before the physical test.

GROUPS	HTC (%)	SP (mmHg)	DP (mmHg)
CONTROL	43,20 $\pm$ 0,30	126,33 $\pm$ 4,79	73,33 $\pm$ 1,59
BASKETBALL	44,07 $\pm$ 0,34*	125,67 $\pm$ 4,52*	72,67 $\pm$ 1,53*
FOOTBALL	43,47 $\pm$ 0,33*	123,67 $\pm$ 3,95*	76,00 $\pm$ 1,84*

\*; Statistical importance of the difference when compared with the control group  $p > 0.05$ , ( $x \pm SE$ )

**Table 3** – Respiratory parameter values and track completion durations of all groups.

GROUPS	FVC1 (L)	FVC1/VC (%)	MFRE (L/sec)	MFRME (L/min)	MBC (L/min)	TV (L)	ERV (L)	IRV (L)	VC (L)	TCD (sec)
CONTROL	304 $\pm$ 0,06	76,94 $\pm$ 0,54	4,11 $\pm$ 0,13	3,76 $\pm$ 0,11	103,64 $\pm$ 1,10	0,68 $\pm$ 0,04	1,31 $\pm$ 0,05	1,97 $\pm$ 0,04	3,96 $\pm$ 0,06	35,46 $\pm$ 0,61
BASKETBALL	345,07*** $\pm$ 0,07***	82,99 $\pm$ 0,63***	4,75 $\pm$ 0,18**	4,13 $\pm$ 0,19	114,70 $\pm$ 2,48***	0,71 $\pm$ 0,04	1,43 $\pm$ 0,07	2,05 $\pm$ 0,04	4,19 $\pm$ 0,08*	34,09 $\pm$ 0,48*
FOOTBALL	328 $\pm$ 0,08*	82,61 $\pm$ 0,72***	4,61 $\pm$ 0,14*	3,74 $\pm$ 0,12	114,64 $\pm$ 2,71***	0,67 $\pm$ 0,03	1,31 $\pm$ 0,05	2,03 $\pm$ 0,03	4,00 $\pm$ 0,07	32,31 $\pm$ 0,42***



\*\*\*; Statistical importance of the difference when compared with the control group;  $p < 0.001$ , ( $x \pm SE$ ),

\*\*; Statistical importance of the difference when compared with the control group;  $p < 0.01$ , ( $x \pm SE$ ),

\*; Statistical importance of the difference when compared with the control group;  $p < 0.05$ , ( $x \pm SE$ ).

$\Delta$ ; Statistical importance of the difference when compared with the footballer group;  $p < 0.05$ , ( $x \pm SE$ ).

### Discussion and conclusion

In order to research if there is a correlation between the physical performance test values and respiratory functions of sportsmen from different sport branches, individuals in youth category consisting of basketball players, footballers and control groups whose ages range between 15–19 are included in the study.

The physical performances of individuals are evaluated on the basis of their completion durations of the prepared skill and coordination track. As for their respiratory functions, it was performed by measuring their lung volume and capacities via spirometrical method. After the statistical analysis of the acquired results, it was passed on to the comment stage.

In course of the literature scanning we made before starting the study, we noticed that there are many studies available on the physical performances of the sportsmen; however, there are not so many studies researching the relationship between the respiratory functions and physical performance tests of the sportsmen. From this point forth, we carried out this study with 45 young male individual consisting of basketball, football and control groups.

According to the results we acquired, it was observed that the respiratory parameters of the footballers and basketball players are significantly high as compared with the control group individuals. Moreover, it was determined that the physical performance tests of the football group individuals are in an advanced level as compared with both basketball players and control group.

Consequently, it can be said that there is a positive relationship between the respiratory functions and physical performance tests of the sportsmen. We are of the opinion that taking some physiological parameters into consideration in parallel with the

sportive skills while selecting players would be beneficial in order to increase sportive success. However, we consider that some more comprehensive researches must be done in order to make an ultimate judgement.

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## INFLUENCE OF JUMPING EXERCISES ON THE DEVELOPMENT OF DETENTION AT HANDBALL AGED 12 -13 YEARS

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### ABSTRACT

**Objective.** Jumps exercises put in handball training are a good method to develop the as it can be remarked on this essay our intention is to develop the vertical detachment of twelve-thirteen years old (12-13) boys, knowing the fact that the force can not be developed by bar bells at this age.

**Research Methods and Procedures.** The research was conducted over 6 months, TI has made in September 2005, and the TF in February 2006. The trainings were held both outdoors and in both groups by training room is under the same conditions, the difference exists only in the fundamental experiment in group training where exercises were introduced themselves (which included the independent variable) for the development of detente .

The difference in driving systems of the two groups was the application for development exercises detention of the experimental group. Otherwise drive systems have followed the general physical and driving qualities, the same for both groups. In the number of training sessions were conducted three workouts per week that was identical for both groups so that the second training experiment group contained the independent variable.

**Results.** On the experimental group will see the results of subjects in the 3 successive jumps ( $541.667 \pm 21.197$  baseline and after six months  $573.75 \pm 18.563$ ; at a threshold of significance  $p \leq 0.0005$ ), vertical detachment on two legs ( $33$ , initial  $75 \pm 2.179$  and  $40.917 \pm 2.61$  after six months, at a threshold of significance  $p \leq 0.0005$ ) foot vertical separation of battle ( $42.25 \pm 2.094$  initially and after six months  $48.833 \pm 2.368$ ; at a threshold of significance  $p \leq 0.0005$ ) increased due to implementation of training programs that contain the independent.

**Discussion and Conclusions.** Assuming the paper, the behavior of the dependent variable (distance traveled during the long jump 3 successive away with two feet vertically and on foot fighting) in the two groups (experimental group and control group), resulting in application independent variable (placing in training exercises for jumping).

Confirmed the hypothesis, that the method of jumping to handball novice influence of performance of subjects in the experimental group on the distance traveled during the 3 successive jumps, two feet vertical separation and vertical separation foot battle.

**Key words:** handball, detention, jumping exercises

### Introduction

Modernization sport is a complex process of reassessment, the reassessment of what has proved and still proves valuable, and introducing new features requested by current guidance (D. COLIBABA - EVULEȚ, 1998). Continuous modernization of sport must find new methods, procedures and capacity to act in practice and continuous improvement of existing ones, those so-called classical In line with this task of great importance to sports we have developed this work aimed at achieving the higher odds of a goal important enough in general physical training novice athletes namely motor skill development and in particular the development of detention (G. RAȚĂ, B. RAȚĂ, 1999).

Almost impossible due to increased performance (that can not provide results of high level of skills young people have not even above average) to find the most appropriate methods and means of developing a task, and detention is a concern of many experts.

### The purpose and tasks work

The purpose of the present work was observed jumping exercises influence on the development of detention at a beginner handball group consists of boys aged 12-13 years. Starting from the initial test is to measure the distance traveled during the three jumps

chain, measuring the vertical detachment both run on two feet and breaking the leg of stroke and 6 months after final testing is accomplished in the same conditions as initial testing to see if they have had influence on the performance achieved by the distance traveled during the three jumps chain, the detachment foot vertical separation battle and, in a word on detention.

### Research hypothesis

Selection and quantification of training is a necessary means outstanding in the current training process. (C. GEVAT, A. LARION, C. POPA, 2007).

Standardization and streamlining of training means the coach can provide sound and effective use of training time by testing exercises (C. RIZESCU, 2005). Given the purpose of the work - ways of developing detente legs, using the beginning I started jumping in handball at the following hypothesis:

➤ Which is contributed by jumping exercises used as a means of training the children start training on the behavior of the dependent variable, namely distance covered during the 3 successive long jump, the vertical detachment on two legs and foot fighting.

### Subjects

When performing this experiment was attended by 24 male subjects engaged in group of beginner



handball and who have never practiced any sport. The 24 subjects were formed into two distinct groups: the experimental group and control group (children being trained by Professor Georgescu Adrian at Sports Club Medgidia).

#### Protocol research

The research was conducted over 6 months, TI has made in September 2008, and the TF in February 2009. The trainings were held both outdoors and in both groups by training room is under the same conditions, the difference exists only in the fundamental experiment in group training where exercises were introduced themselves (which included the independent variable) for the development of detente .

Groups of control and has conducted training in the same conditions, not including the training exercises which included the independent variable.

Research monitors the two variables, the dependent variable and independent variable and positive or negative influence of these variables exerted by certain factors throughout the research. Evolution of the dependent variable, namely the evolution of the results on two feet vertically away with that on foot jump shot and three intertwined, like the independent variable is applied in the training and test conditions themselves. Thus both tests (TI and TF) were made in the room at a temperature of between 19-24 degrees in the morning on Monday at 8.30. Testing was done on the first day of the week because the children came after two days in which we are not specific effort, the rest.

Testing the dependent variable (two feet vertical separation that on foot jump shot and three chain) has been made on the parquet, by carrying out two tests, whichever is the best outcome for each subject, is written to achieve treatment statistical data.

Sports equipment during the test subjects was identical. There were no reported injuries or health problems (muscular or otherwise) arising before testing that could adversely affect the performance of subjects.

Actuation systems (the actual exercise of the training) were designed for the physical body with emphasis on speed of implementation force (without weight), detention and technical. In the preparation had an important role in implementing technical exercises themselves because the child had to acquire the correct mechanism to achieve coordination movements very good. Resistance has not been neglected; being developed in game motion weighted less in the preparation. Force had a higher share in developing the upper limb and trunk to the development of lower limbs. Detention of completed quality motive force for development of lower limbs. In the speed to pursue the development of amplitude, frequency movements, reaction speed and in particular the speed of execution.

The difference in driving systems of the two groups was the application for development exercises detention of the experimental group. Otherwise drive systems have followed the general physical and driving qualities, the same for both groups. In the number of training sessions were conducted three workouts per week that was identical for both groups so that the second training experiment group contained the independent variable.

## Results

Table nr.1

GROUPS	Testarea	P	Distance traveled during the 3 successive jumps cm.	Vertical separation on two legs cm.	Foot vertical separation of battle cm.	Waist cm.	Weight Kg.
EXPERIMENTAL	INITIAL	M ± Ds	541,667 ± 21,197	33,75 ± 2,179	42,25 ± 2,094	160,167 ± 11,51	50,33 ± 10,272
		Cv	3,913%	6,456%	4,956%	7,013%	20,408%
	FINAL	M ± Ds	573,75 ± 18,563	40,917 ± 2,61	48,833 ± 2,368	161,333 ± 11,19	50,83 ± 10,241
		Cv	3,235%	6,379%	4,849%	7,014%	20,146%
CONTROL	INITIAL	M ± Ds	539,583 ± 20,038	34,083 ± 1,881	42,75 ± 2,301	160,417 ± 11,14	50,33 ± 10,272
		Cv	3,714%	5,519%	5,382%	6,949%	20,408%
	FINAL	M ± Ds	540 ± 19,268	34,833 ± 1,749	43,333 ± 2,229	161,5 ± 10,85	50,75 ± 9,965
		Cv	3,568%	5,021%	5,144%	6,718%	19,635%



## Discussions

In the present study were followed over 6 months, several parameters such as distance covered during the 3 successive long jumps away with two feet vertically and on foot fighting, size, weight.

Assuming the paper, the behavior of the dependent variable (distance traveled during the long jump 3 successive away with two feet vertically and on foot fighting) in the two groups (experimental group and control group), resulting in application independent variable (placing in training exercises for jumping).

On the experimental group will see the results of subjects in the 3 successive jumps ( $541.667 \pm 21.197$  baseline and after six months  $573.75 \pm 18.563$ ; at a threshold of significance  $p \leq 0.0005$ ), vertical detachment on two legs ( $33$ , initial  $75 \pm 2.179$  and  $40.917 \pm 2.61$  after six months, at a threshold of significance  $p \leq 0.0005$ ) foot vertical separation of battle ( $42.25 \pm 2.094$  initially and after six months  $48.833 \pm 2.368$ ; at a threshold of significance  $p \leq 0.0005$ ) increased due to implementation of training programs that contain the independent.

Results of control group subjects in the 3 successive jumps ( $539.583 \pm 20.038$  baseline and after 6 months  $540 \pm 19.268$ , at a threshold of significance  $p \leq 0.05$ ), vertical detachment on two feet ( $34.083 \pm 1.881$  initially and after  $34.833 \pm 1.749$  six months, at a threshold of significance  $p \leq 0.01$ ) and vertical detachment battle foot ( $42.75 \pm 2.301$  initially and after six months  $43.333 \pm 2.229$ , the threshold of significance  $p \leq 0, 01$ ) increased only by application programs which did not contain the independent variable.

It is noted that the successive jumps 3 (experimental group  $541.667 \pm 21.197$ ,  $539.583 \pm 20.038$  control group, at a threshold of significance  $p \leq 0.05$ ), vertical detachment on two legs (the experimental group  $33.75 \pm 2.179$ , group  $34.083 \pm 1.881$  control, at a threshold of significance  $p \leq 0.05$ ) and vertical detachment foot battle (the experimental group  $42.25 \pm 2.094$ , control group  $42.75 \pm 2.301$ , at a threshold of significance  $p \leq 0.01$ ) difference between experimental group and control group on initial testing is significant but a small threshold, which means that at the beginning of the experiment subjects in both groups were very slightly different on the results achieved by During the 3 successive long jump, vertical separation on two legs and foot vertical separation of battle since the subjects have not practiced any sports.

The difference between the two groups of test subjects in the final 3 successive jumps (the experimental group  $573.75 \pm 18.563$ ,  $19.268 \pm 540$  control group, the threshold of significance  $p \leq 0.0005$ ),

vertical detachment on two legs (group experiment  $40.917 \pm 2.61$ ,  $34.833 \pm 1.749$  control group; at a threshold of significance  $p \leq 0.0005$ ) foot vertical separation of battle (the experimental group  $48.833 \pm 2.368$ ,  $43.333 \pm 2.229$  control group at a threshold of significance  $p \leq 0.0005$ ) due to the introduction of training programs experiment group independent variable (jumping exercises). On the tests applied, results in the 3 successive jumps, two feet vertical separation and vertical separation foot battle if we can confirm that the effects of introducing the work and training programs jumping exercises are positive (significant) in children aged 12 -13 years.

## Conclusions and proposals

Confirmed the hypothesis, that the method of jumping to handball novice influence of performance of subjects in the experimental group on the distance traveled during the 3 successive jumps, two feet vertical separation and vertical separation foot battle, which leads to the following conclusion:

❖ *Jumping method improves detention, significantly influencing the outcome of the distance covered during the 3 successive jumps, two feet vertical separation and vertical separation foot battle to handball novice aged 12 to 13 years.*

Size and weight of subjects over 6 months of days have evolved differently (significant difference between experimental group and control group on the TI and TF) so that did not influence the results of two groups, the distance covered during the 3 successive jumps, breaking the upright on two legs and foot vertical separation of battle. We believe that placing the preparation handball jumping exercises is beneficial in enhancing performance detente legs, but it is conducted on a longer period of time, at least one year and on this basis we propose a model for training in composition to finds himself jumping exercises

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## ASPECTS FOR IMPROVING A HIGHER IN TECHNICAL LEVEL ON RUGBY PLAYER

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### Abstract

**Purpose:** Increasing the percentage of successful executions of the procedures and technical elements specific to each post. Introduction of new techniques that the modern game are based on a solid muscle training.

**Material and Methods:** To carry out research we used a series of control samples for testing somatic indices, physiological, general physical training, physical training and specific technical level. out the tests used in the successful scrum, maulul, transmission ball and tackling technique.

**Results:** Average tackle missed the game where players from the forward of, a group experiment, the initial testing was reduced from 14 to 10 tackle missed the final testing. Nr. 9 managed to pack a 40% decrease in the number of errors between initial testing and final. I recorded a decrease in the case of back line players, if the initial test on the average game was 24 in the compartment, the final test value decreased to 18 missed tackle on average. Players compartment from the forward are the only ones who have seen a decrease in the number of passing errors between the two tests. Value of 14 errors on average for a game was reduced to 13 errors on average in final testing. Nr. 9 had a lot increasing number of errors between the two trials from 5 such errors on initial testing game average has reached 6 to final testing. Average passing game for the wrong players back in line at initial testing was 12, the value increasing to 14 passing errors on average for each game.

**Conclusion:** Augmentation technical level of each player for each compartment and full, with training programs muscle was the most important objective of the training, resulting in a significantly lower number of errors committed by both players batch experiment in individual actions and in the compartment, at times fixed and dynamic game.

**Keywords:** rugby player, training, tackle, passing.

### Introduction

Sports Training is a complex process, in all sports disciplines, although many features make them very different times. "The desire to prepare through training seriously big competitions' (J.Ulmann, 1977) is not new. Dynamic training planning should consider the preparation variables. In modern rugby emphasis is on intensity, this discipline is characterized by speed and power. D. Badea, 2003, stresses "the need to address scientific training rugby teams." Also, the game of rugby has undergone substantial changes and unknown, especially in the last decade, with the switch to professionalism in the sense of improving the game. After a long period of time the concept of training was centered on defense and the techniques that led to a decrease in the degree of attractiveness of the games, teams from the southern hemisphere have moved to share preparation techniques and new tactical approaches to attack. Although predictability phases in modern rugby is increased, the attractiveness of the games is increasing in both hemisphere. Increased predictability phases, the sequence of actions submission package led to a situation in which the tactical and technical executions proposed coaches players can not be achieved at best due to the physical preparation maladjustment general and in particular muscle training to new approaches to the modern game of rugby. "These new trends of recent years have led to changes in anthropometric data of rugby players, both for the submission of the package and for the line three-quarters (J.Greenwood, 2000).

After a long period of time the concept of training was centered on defense and the techniques

that led to a decrease in the degree of attractiveness of the games, teams from the southern hemisphere have moved to share preparation techniques and new tactical approaches to attack. Although predictability phases in modern rugby is increased, the attractiveness of the games is increasing in both hemispheres. Increased predictability phases, the sequence of actions submission package led to a situation in which the tactical and technical executions proposed coaches players can not be achieved at best due to the physical preparation neadaptarii general and in particular muscle training to new approaches to the modern game of rugby. "These new trends of recent years have led to changes in anthropometric data of rugby players, both for the submission of the package and for the line three-quarters (J.Greenwood, 2000.).

Rugby is a sport in which actions are carried out more in speed and the hard contact with the opponent asks the athletes to a level not often encountered in other disciplines. However, systems and functional parameters of human body are those who establish the requirements and principles that govern muscle preparation, which needs to be adapted to meet the complex field sports differ among themselves by driving their specific structure. In other words "includes all equipment and technical features structures in a certain precise and efficient motion by athletes who performs a specific task" (T.Bompa, 2006). A good example is the technique tackle players when pushing bunch of neat. The individual equipment is better with both energy consumption is lower and push the power is higher. As a result, the following



equation seems to express this reality sports oval balloon.

Technical rugby game includes all the actions executed correctly driven in terms of efficiency, and making rational and economical for all types of movements specific to that discipline. Given that it is applied in the competitive activities, Diacikov, 1973, quoted by (A. Dragnea, 1996) refers to technical skills as a system of structure, conducted in economic result to obtain a maximum in difficult conditions of the competition. The increasingly complex facing players require technical training to "enable the athletes to adjust performance in order to cope with complex competitive situations." T. Bompa, 2006) Improving integrative model of the game involves "the finishing analytical models game" (A. Petrache). This approach is caused by sections of "common - typical strategies that require special training" (D. Colibaba-Evuleț, 2007). Friederich Fetz cited by G. Duck, R. Duck (G. Rață, B. Rață, 2006) stated in 1969 that "employment depends muscle than muscles able to fulfill its function, but is always determined by the intelligence, motivation and power of will.

### Material and methods

Basic experiment was conducted in the muscle preparation and rugby ground. Number of players in the batch experiment was 24 of 12 players and 12 players forwards of the back line. Number of players in the control group was 24 of 12 players and 12 players forwards of the back line. To carry out research we used a series of control samples for testing somatic indices, physiological, general physical training, physical training and specific technical level. out the tests used

G.O.	scrum	Totaled feet are moving ahead with the submission package after the introduction of its own (where to store the bag and possession on such an attack) or the introduction of the opponent, until the balloon leaves grămezii contours.
A.	Maul	Distance in meters that earns the players who participate in congestion, if it is kept possession of the ball.
M.	Lineout	It sums feet with the ball carrier which moves in adverse terrain, in different actions.
PA G.	Passing errors	Is total number of passing can not be received or placed in very difficult situations that the players try to receive the balloon.
PL.R.	Missed tackles	Include the plywood, or attempts to prevent adverse player forward, allowing the player carrying the ball to escape, or to advance in good paseze teammates a continuing phase of attack.

### Results and discussion

Number tackles failure compared between the two tests is clearly lower at final testing compared to baseline testing. A 43% decrease in the number of mistakes to be found in tackle compartment players advance in the average game. No.9 reduce the number of mistakes from 8 in the initial testing at 6 errors in the final testing. If players on line of back line I saw a decrease of 4 plywood missed on average for each Tab. 1 Numărul mediu de pase greșite și placaje ratate

in the successful scrum, maulul, transmission ball and tackling technique. Research methods used in this work has an interdisciplinary character, "research activities driven synthesis applicative is fundamental, anthropological, probabilistic, causal, they are all specific areas to study human movement. In order to achieve goals and tasks which we have suggested we use the following methods of research: data analysis and generalization of literature, observations pedagogical method, the survey method - a questionnaire, method of measurement and testing (somatic, physiological, driving) educational experiment; statistico-mathematical method of processing data, comparative analysis, graphical method. In scientific research using traditional and nontraditional methods to verify various aspects of sports training in accordance with current requirements of high performance sport. Testing technical preparation 1. Tries marked. Aggregate tests are successful experiment team for each round of play throughout the round of games compared to the return. 2. Average mauls in five games in which players team. 3. Average kicks in five games, the players made the team. 4. The average number of passing data in the five games. 5. Number of passing data from each compartment. Average passing data to each compartment in the five games. 6. Scrum number. It amounts to the scrum in two groups, first is the scrum the balloon is introduced opponent as a result of mistakes committed by a player in the batch experiment and the second group where the balloon is inserted by a player in the batch experiment, as a result of the mistake committed by the opponent. Technical 7. Fixed moments of the game, scrum, edge and mauls, passing errors and missed tackle.

game, comparing the values between the two tests tackles missed number compared between the two tests is clearly lower at final testing compared to baseline testing. A 43% decrease in the number of mistakes to be found in tackles compartment players advance in the average game. No.9 lot to reduce the number of mistakes from 8 in the initial testing at 6 errors in the final testing. If players on line of back line I saw a decrease of 4 tackle missed on average for each game, comparing the values between the two test



			Grup experiment		Grup martor	
			T.I.	T.F.	T.I.	T.F.
			Average/game	Average/game	Average/game	Average/game
1	PA.G.	I	14	8	14	13
		M	8	6	5	6
		T	15	11	12	14
2	PL.R.	I	14	10	12	11
		M	10	6	13	12
		T	24	18	22	24

I – players from forward ; M – Nr. 9 ;  
T – players from backline ; PA.G. – passing errors; PL.R. – tackle missing

Players of the forward compartment of the group are the only ones who have seen a decrease in the number of passing errors between the two tests. Value of 14 errors on average for a game was reduced to 13 errors on average in final testing. No.9 the lot has been increasing number of errors between the two tests such mistakes at 5 per game average initial testing reached 6 to final testing. Average per game passing errors to players back in line at initial testing was 12, the value increasing to 14 passing errors on average for each game. Analysis game between initial testing and

final of a bold between values of the two compartments of the team, except in the case No.9 bunch that both group and in the experiment obtained the same value of 6 passing errors on average per game. For forward compartment of passing the wrong number is 8 for the experiment and 13 witnesses in the case group. The players in the back line also recorded an increase of errors in passing average per game from 11 to 14 in final testing.

Tab. 2 Average distance of advancement of the ground target with start from scum, maul, lineout.

			Grup experiment				Grup martor			
			T.I.		T.F.		T.I.		T.F.	
			Average/game		Average/game		Average/game		Average/game	
			Nr.	m	Nr.	m	Nr.	m	Nr.	m
1	G.O.	LP	11	12	12	22	8	14	10	15
		IA.	3	4	5	12	4	5	5	4
2	A.		62	279	66	355	71	281	68	278
3	M.	R.P.	11	122	16	156	14	112	15	68
		R.A.	1	5	3	6	2	0	2	0

If scrum ordered the initial test, the experiment group showed an increase in the distance made by introducing its own from 12 feet to 22 feet at the final testing. Growth was maintained, and where adverse entries in the lot, being from 4 feet on average to 12 yards in final testing. The number of meters with advanced experiment group keeping possession of the bag when scrum increased spontaneous and in this case the from 279 to 355 meters on average.

**Conclusion:** Augmentation technical level of each player for each compartment and full, with training programs muscle was the most important objective of the training, resulting in a significantly lower number of errors committed by both players batch experiment in individual actions and in the compartment, at times fixed and dynamic game.

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## THE ANALYSIS OF THE PERFORMANCE CAPACITY OF THE FRENCH MALE NATIONAL HANDBALL TEAM DURING THE OLYMPIC GAMES FROM BEIJING – 2008 AND DURING THE WORLD CHAMPIONSHIP FROM CROATIA - 2009

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### Abstract

The male national team of France is the winner of the latest two handball world competitions. The present paper analyses the performance capacity within the Olympic Games and the World Championship. We have analysed the contest system, as well as the parts of the model of the game for the male teams: possessions of the ball, throwings to the goal, balls gained in defence, fouls, goals received, goals scored.

**Key words:** handball, performance capacity, male teams, Olympic Games, World Championship.

### Introduction

The scientific knowledge of the training process is based on the actions and activities specific to the teams and players, thoroughly studied, as well as on the players' reactions to the effort during the matches and trainings. The players' activity during the official full-sized competitions (final tournaments of the European and World Championships or of the Olympic Games) offers up-to-dateness information to the specialists, say I.K.Ghermănescu, 1978 and E. Baștiurea, 2006.

The main features of the handball game as they are recognized by all national teams are: rapidity, dynamism, offensiveness and aggressiveness both in the attack and in the defence phases, a high level of technicity accompanied by a tactic judgement that helps all the actions succeed, is considered by D.Colibaba-Evuleț, I. Bota, 1998.

The modelling scheme of the educational process in handball allows us to understand clearly that the activity of modelling implies the existence of a model of the game. The model of the game determines and it is determined by the training model, says I.Bota, 1984, 1987. Between them there is a strong relationship. The existence of a game model, as well as the modelling of the training help the trainers think globally about all aspects of the activity they develop with their players.

Nowadays the sportive performance in handball is determined by many factors and nobody can surely say which of them is the most important. The performance is based mainly on the human being's (player's) desire for perfection during the training process or for self-outrunning of the own capacity for performance during the competitions (official matches).

The French national team is the winner of the last two major competitions of the world handball: the Olympic Games and the World Handball Championship. Since 1993, the national team of France have demonstrated their value during each important competition. „Les Bleus” have played seven times the semifinals of the last eight final major tournaments of the male handball. In 2008 they had won the bronze

medal of the European Championship, just before they became olympic champions.

**The hypothesis of the research:** We have assumed the fact that studying the performance capacity of the winner team of the Olympic Games and of the World Championship will help the modelling of the performance capacity in the male handball (the parts of the game model), as regarding the national teams.

**The object of the research** consists of the performance capacity of the handball players of the national team of France during the final tournament of the Olympic Games in Beijing 2008, and during the World Championship in Croatia, 2009.

**The subject of the research** is modelling the capacity for performance of the senior players in the national handball teams.

**The aim of the research** consists of the optimization of the training process of the senior handball players by means of modelling the performance capacity in accordance with the model of the game played by the winner team of the Olympic Games and of the World Championship, the national team of France.

### The objectives of the research:

1. To study and generalize the data from the handball studies, as regarding the model of the game in the senior handball teams.
2. To appreciate the importance of modelling the performance capacity for the senior handball teams in accordance with the latest results in the world.
3. To determine the parts of the game model for senior players.
4. To create a new game model for the male national teams, based on the performance capacity of the winner team of the two world tournaments.

**The research methods:** In order to fulfill the research tasks we have used the following scientific methods: analysing speciality works, pedagogical observation, statistical method of processing and analysing of the research data.

### The research data and their interpretation:

Analysing the players we can see that during those two world tournaments (the Olympic Games and the World Championship), 16 players were used during each tournament. During the second tournament, World Championship, some players weren't convoked to the team, so there were 6 new players. The average age is 28.2 at the first tournament, and 28.7 at the second one. Studying the experience of the international matches we can notice a big amplitude of the number of international matches for the players during each tournament. There are 5 players with a good international experience (more than 200

international matches), and also 3 debutant players for each tournament. An arithmetical average of the international matches is 155 for the Olympic Games and 129 for the World Championship. An arithmetical average of the goals of the French national team is 323. There are players with a minimum number of 2 goals and also with a maximum of 1073 goals scored for the national team by Fernandez Jerome (32 years old). The super-star Nikola Karabatic has an average of 557 goals scored in 131 matches at the age of 24, and all the specialists think that this young man will be one of the greatest handball players in the world. of 54 attacks during a match, at a distance of 66.6 seconds one after another and the players ran a total distance of at least 3000m.

Table no. 1 The efficiency of the shots

The parts of the model	O. G. Goals / Shots	Efficiency 8 matches	W. Ch. Goals / Shots	Efficiency 10 matches
<b>Total shots</b>	228/381	60 %	296/468	63 %
<b>6 m shots</b>	59/76	78 %	66/98	67 %
<b>Wing shots</b>	25/48	52 %	29/57	51 %
<b>9 m shots</b>	56/137	41 %	88/177	50 %
<b>7 m shots</b>	17/20	85 %	30/37	81 %
<b>Fast breaks</b>	49/71	69 %	46/56	82 %
<b>Breakthroughs</b>	22/29	76 %	37/43	86 %

There is a difference between the number of shots and that of goals scored during each final tournament, but this difference is not a significant one from the statistical point of view, because of the fact that the contest system has 8 matches in the final tournament of the Olympic Games and 10 matches in that of the World Championship. The efficiency of the shots to the goal presents insignificant differences in some scoring methods. The inefficiency values of each part of the model are at the 'very well' level.

Physical stress can be noticed in the number and duration of the attacks and defences during the match, so the national team of France had an average

The registrations about the efficiency reveal other different aspects. From the total number of the goals, at the Olympic Games the wing players had a contribution of 10,9 %, from the distance of 6m were scored 25,9 %, from 9m players scored 24,6 %, from 7m were scored 7,5 %, by fast breaks 21,5 %, and by breakthroughs were scored 9,6 % from the total number of goals. In the other contest, from the total number of goals, the most of them were scored by 9m shots (29,7 %), then by 6m shots (22,3 %); the fast breaks mean 15,5 %, and the breakthroughs 12,5 %. The 7m shots mean 10,2 %, and the wing shots were the least, only 9,8 % of the total number of the goals scored at the World Championship.

Table no. 2 The efficiency of the offence, defence and penalties

The parts of the model		O. G./ 8 matches	The average /match	W. Ch./ 10 matches	The average /match
<b>Offence</b>	<i>Assists</i>	117	14,6	116	11,6
	<i>Technical faults</i>	91	11,4	121	12,1
<b>Defence</b>	<i>Steals</i>	50	6,2	57	5,7
	<i>Blocked shots</i>	33	4,1	34	3,4
<b>Penalties</b>	<i>Yellow cards</i>	26	3,3	28	2,8
	<i>2 minute suspensions</i>	22	2,8	19	1,8
	<i>Red cards</i>	0	0	1	0,1
	<i>Exclusions</i>	0	0	0	0

During the offence, the assists are in a number of 117 at the first tournament and 116 at the second one. The technical faults punished by the referees have

a close arithmetical average in the two tournaments (11,4-12,1). The number of steals is 50 at the Olympic Games and 57 at the World Championship. Speaking



about this method of getting the ball, we can notice the fact that the average is close, there are small differences. There are very close values with the blocked shots, the average is 4.1 at the Olympic Games and 3.4 at the World Championship. The penalties

against the French players are not in a big number for such a high level. There were 2-3 temporary suspensions, and the specialists think these are normal values in handball.

Table no. 3 The efficiency of the goalkeepers

The parts of the model	O. G. Saves / Shots	Efficiency 8 matches %	W. Ch. Saves / Shots	Efficiency 10 matches %
Total shots	109/294	37 %	132/343	38 %
6 m shots	13/56	23 %	14/68	21 %
Wing shots	12/33	36 %	17/36	47 %
9 m shots	69/121	57 %	84/155	54 %
7 m shots	7/30	23 %	6/29	21 %
Fast breaks	6/36	17 %	9/43	21 %
Breakthroughs	2/18	11 %	2/12	17 %

The goal-keeper has a very important role in a handball team. The value of the goal-keepers in the French national team is confirmed by the high efficiency of these players, an efficiency of 37-38%, which means "very well" in the standards of handball federations. The highest efficiency in saves was in the case of 9 m shots, and we can talk about 54-57 % saves.

#### Conclusions:

1. This study is the first step in drawing up of a new model of the game for the male national handball teams, starting with studying the parts of the game of a single team that succeeded in winning the gold medal in the Olympic Games and also the gold medal in the World Championship. We shall not forget about the fact that before these great performances, the national team of France have won the bronze medal in the European Championship.

2. From statistical point of view we can notice that there was a better efficiency during the second tournament, both in the case of the field players and in the case of the goal-keepers. The other parts of the game model were also improved, those that refer to the phases of the game: the offence and the defence, and the penalties.

3. It is obvious for any handball coach that in order to have a significant performance in a big final tournament, he must get the same or even more than the statistical indicators obtained by the male national team of France.

4. On the base of this game model (present and up-to-date) the entire process of selection and training must be modelled, and we give the following game model:

- the efficiency of the shots: minimum 60 %
- the efficiency goal-keeper + defence: minimum 35%
- penalties: maximum 2 -3 suspensions/match.

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## STUDY WITH RESPECT TO PLANNING AND PROGRAMMING THE CONTENT OF THE MAIN INDICATORS OF THE TRAINING ON THE LEVEL OF A SCHOOL ATHLETIC TETHRATLON TEAM

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### Abstract

Planning and programming the content of the main training indicators on the level of a school athletic tethratlon team is an action in which there is taken into consideration the level of training characterizing those in charge with this action, their possibilities of progress and the estimative results that will be obtained on the national scale on this level. There will not be neglected their school activity, the support from the family and not in the least their material basis.

**Keywords:** planning, programming, indicators, athletic tethratlon.

The diminution of the number of pupils practising this type of competitions on the level of the primary school, as well as of the performance athletes on the level of the juniors, the early specialization in some cases constitute reasons which make us note the *actuality of the theme* (C.Bobei, 1978).

**Hypothesis.** We supposed that through optimizing the set of methods for planning and programming of the training on the level of the school tethratlon athletic team, there may be obtained superior results of the level of the basic motric qualities, as well as of the sportive motric skills (C.Barbu, 1999).

**Purpose of the research** consists in optimizing the set of methods for planning and programming during the training of a school tethratlon athletic team.

The study was carried out on the level of the pupils participating in the county phase Braşov of the school athletic tethratlon within the National Olympics of the School Sport.

Out of the analysis of the first 10 results on the category girls (table 2) there ensues that in the event of 60 mp down start, only three sportswomen managed to obtain performances that allow the accumulation of more than 80 points, the rest obtaining modest performances, following which the number of the accumulated points have an average of 71,9p.

As regards the long jump, only C.L. succeeds in accumulating a number of points superior to the speed running, 81 against 78 of the other girls, with more than 80 points accumulated at the long jump, obtaining an inferior score, the average of the results being of 66,7p.

As regards throwing the oina ball, the value of the performances is very modest, excepting H.A. who succeeds a throw of 43m with whom she obtains 70p, the rest of the sportswomen with superior scores not achieving superior performance and consequently the number of points is much under the scores for the first two events with an average of 46p.

For the event of 800m only three sportswomen achieve performances which allow them to accumulate more than 70p, the majority obtaining

performance which only allow the accumulation of 40-50p.

On the basis of the analysis of the level of the performance obtained at the county phase of the school athletic tethratlon, I submit a model of training on this level (table 1) with the purpose of optimizing the set of methods for planning and programming the training, which should lead to the improvement of the performance on this level.

I planned the training along 30 weekly cycles, since the 1<sup>st</sup> of October up to the 26<sup>th</sup> of April, among whom 25 training cycles and 5 competitive cycles, with a frequency of 4-5 weekly trainings.

Out of the analysis of the main specific indicators of the training, I paid special attention to the polyvalent athletic training, specific to this level of age and performance, at the deficient events of the athletic tethratlon, in which there were achieved modest performances.

Due to the fact that the sportswomen achieved modest performance at throwing the oina ball, I planned a high number of throws with the oina ball, both standing and with running start, in order to consolidate and to perfect the throwing skill.

As regards the development of the specific motric qualities necessary for the resistance running of 800m in optimum time, I introduced within the training, the running on varied terrain, as well the running on portions with different tempos, particularly with speeds of more than 75%.

I likewise paid special attention to the hurdle training, both for raising the number of acquired motric skills, and for the orientation, if such is the case, in the future, towards the hurdle events.

During the competitive period, I introduced the participation, before the county phase of the school athletic tethratlon, of 2-3 verifications in events specific to the tethratlon, on the level of group in training.

Out of the analysis of the content of the weekly training cycles from the different stages of the annual cycle, we note that during the first stage of the preparing period, of autumn-winter, the content of the



training is oriented towards consolidating the technique of the events in the framework of the tetrathlon, with the sportsmen who hold an acceptable level of the training, and towards learning the technique of the events in the case of those recently co-opted within the training team, as well as towards the development of the basic motric qualities.

During the second stage of the training period, of winter-spring, the orientation of the training is directed towards consolidating the technique in the events specific to the tetrathlon, as well as towards developing the motric qualities specific to the tetrathlon. (Gârleanu D., 1981)

There are specific to the stages of the competitive event the accomplishment of the technique of the tetrathlon, as well as the verifications type competition for one or two events from the tetrathlon.

### Conclusions:

1. Out of the analysis of the participation in the county phase of the school athletic tetrathlon, there ensued that the number of the participants with an acceptable training level is low.

2. The participation, in certain cases, was done not on the basis of an action of preparation and selection on the level of the school, but out of the wish of mere competition in many cases, the lack of the minimal sportive bases being acute.

3. Not all primary schools in the county made efforts in order to participate with their best pupils in this competition, an action which did not give the

possibility of evaluating during the competition the endowed elements within every school.

### Recommendations:

1. Planning and programming during the training of a sufficient number of lessons, so as to raise the level of training at the default events within the athletic tetrathlon.

2. Comprehension within the preparing group of the athletic tetrathlon of the most endowed pupils in the school, the selection having permanent character.

3. Organization and provision with materials on the level of the school of a minimal basis of training specific to the athletic tetrathlon.

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National olympics of the school sport

STAGE: county , CLASS V-VIII, LOCALITY: BRAȘOV, DATE 12.04.2008, Girls

Table no.1

Loc class	Name and first name	School	Class	60 m		Long jump				Oina ball throwing			800 m		Total points
				res	points	res	1	2	points	res	1	2	points	res	
1	Mbisuc M	Gen.5.Bv	VIII	8,6	86	4,28	4,53	81	30,5	29	45	2,36	81	293	
2	Kelemen A	Gen.23.Bv	VII	8,7	82	4,5	4,56	82	27	26	36	2,36	81	281	
3	Carasila L	Gen.29.Bv	VI	8,8	78		4,54	81	27	26	38	2,51	66	263	
4	Haures A	LPS	VIII	9,0	71	3,88	4,04	64	X	43	70	3,01	56	262	
5	Mihai A	L.Gr. Antipa	VI	8,5	89	4,33	4,03	64	26	29,5	43	3,11	46	252	
6	Salman D	Gen.22.Bv	VII	9,3	61		3,58	49	39	37	62	2,44	73	245	
7	Mickschi D	Gen.22.Bv	VI	9,0	71	4,15	x	68	32	28,5	41	3,1	47	227	
8	Circiogel I	Gen.14.Bv	VI	9,2	65	4,07	3,8	68	25,5	25,5	35	3,03	54	220	
9	Pantelim R	Gen.19.Bv	VIII	9,5	55	3,75	3,83	57	38	37	60	3,1	47	219	
10	Popescu I	Gen. 4. Bv	VII	9,3	61	3,69	3,27	53	31	X	46	3,00	57	140	
			$\bar{X}$	8,99	71,9	4,13		66,7	32,25		47,6	2,56	60	240	
			$\sigma$	0,32	11,03	0,31		10,71	5,68		11,47	0,24	11	49,6	
			$\pm m$	0,10	3,67	0,10		3,57	1,89		3,82	0,08	3,7	16,5	



**Planning the main indicators of the training**

**Table no.2**

AGE		12-15 year
INDICATORS		Submitted model
Number of trainings annually		<b>120-140</b>
Number of cycles weekly		<b>30</b>
Number of trainings weekly		<b>4-5</b>
Duration running		<b>300</b>
Distances, tempo.	Up to 60-80m, 95%	<b>70</b>
	More than 80m 85%	<b>30</b>
	More than 80m 80%	<b>35</b>
	More than 80m 75%	<b>22</b>
Cross (km)		<b>150</b>
Technique: nr of starts	on the flat	<b>230</b>
	on hurdles	<b>230</b>
Long jump(nr)	with variable start	<b>200</b>
	with complete start	<b>60</b>
Oina ball throwing(nr)	without start	<b>200</b>
	with start	<b>400</b>
Force		<b>x</b>
Detent (detachments) (nr)		<b>2000</b>
Sportive games (hours)		<b>34</b>
Competition	in the basic event	<b>2-3</b>
	in other events	<b>5</b>

**Brief scheme of the weekly training cycles during the different stages of the annual cycle Table no.3.**

Days	Preparing stage autumn - winter	Winter - spring stage	Competitive stage
<b>Monday</b>	- consolidating the technique of speed running -educating/developing the explosive force	- consolidating the technique of the speed running - educating/developing the general skill	- educating/developing the skill specific to the sports branches, -perfecting the technique of the speed running
<b>Tuesday</b>		- consolidating the technique of the hurdle running. - educating/developing the resistance	
<b>Wednesday</b>	-consolidating the technique of the long jump with running start -education/development of the resistance	- educating/developing the speed - consolidating the technique for throwing the oina ball	- educating/developing the repetition speed. -perfecting the oina ball throwing
<b>Thursday</b>			- consolidating the skill of the long jump with running start. -perfecting the down start and the launch from the start
<b>Friday</b>	-consolidating the technique of throwing the oina ball. -education/development of the speed	-consolidating and perfecting the technique of the long jump - educating/developing the force	
<b>Saturday</b>	-consolidating technique of the resistance -education/development of the skill		-evaluating the pupils' potential at the events from the school athletic tetraathlon



## STUDY REGARDING THE USE OF PREPARING GAMES FOR TEACHING HANDBALL, DURING THE NINTH GRADE PHYSICAL EDUCATION LESSON

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### Abstract

We can say that the use of preparing games and specific handball relays ensured an increased efficiency of the physical education lessons.

The preparing games ensured all the students, boys and girls alike, a superior motivation, determining them to engage themselves in the specific effort, at the same time assimilating the knowledge and skill necessary for practicing handball.

The goal and tasks of this paper represent the desire to contribute to the improvement of physical education teaching at ninth grade, by using handball preparing games.

The experiment emphasized the students' ability to learn handball faster through the use of preparing games.

The results of the experiment regarding the teaching of handball at ninth graders based on game structures, confirmed that the preparing game is an important means of the physical education for this age.

The use of means and methods which are specific to handball preparing games, in order to develop motor skills, lead to a positive evolution of these skills in all of the experimental groups, the results serving as evidence.

**Keywords:** physical education lesson, handball, teaching, preparing games.

### Introduction

#### The contemporary significance of this theme

The objectives of physical education are oriented, almost completely, towards the aspects of training, teaching and developing the general or specific motor skills, and less or not at all towards the short term aspects, such as the leisure, compensating, or psychological-motor activities.

The lack of the leisure, compensating and recovery directions from the school curriculum is in contradiction with the children's motivation for this discipline. Any curriculum must take into account the motivation of the people involved. The pupils come to the physical education lessons in order to relax, to enjoy themselves, to have fun, to recover their psychological - motor skills, to consume their energy in a pleasant manner, playing without any outside disturbance (Gh, Mița, AL. Mogos, 1972).

The game of handball is an excellent means of teaching physical education in high-school, due to its motor characteristics, with multilateral influences, appreciated by children and teenagers alike ( E. Alexandru , A. Acsinte A., 2002).

We can see the fact that the game of handball is very popular at high-school students, due to its competitive character, high emotional level, and the fact that it constitutes a useful way of spending their free time, in a recreational, independent manner, encouraging group friendships and helping relations (C. Șufaru, 2005, 2006).

The formative valences of the handball game recommend it as an effective tool of the physical education in school, a reason for which it is present both in the compulsory physical education lessons from school, and in other leisure-sportive activities, in middle-school and high-school (V.Tudor, 2001).

Inside the physical education lessons, handball subordinates itself to the structure of the physical education discipline, included in the high-school curriculum (D. Colibaba-Evuleț., I. Bota, 1998).

Starting from the formative valences of handball, I have chosen this theme for study in order to experiment the introduction of handball preparing games in the physical education lessons, and to collect as many games in this category as possible, thus, to contribute to the elaboration of a large bibliographical material for physical education teachers, with the purpose of improving high-school physical education lessons.

We can say that the use of preparing games and specific handball relays ensured an increased efficiency of the physical education lessons.

The preparing games ensured all the students, boys and girls alike, a superior motivation, determining them to engage themselves in the specific effort, at the same time assimilating the knowledge and skill necessary for practicing handball.

#### Research objective and tasks

The goal and tasks of this paper represent the desire to contribute to the improvement of physical education teaching at ninth grade, by using handball preparing games.

By using the existent bibliographical material, I was able to design the basic elements of this paper, thinking that I would be able to improve the handball component, from such a vast domain as the physical education.

#### Research hypothesis

In this sense, this study is based on the hypothesis that the specific handball methods, in our case, the preparing games, used intensively during the high-school physical education lessons, can contribute





efficiently to a faster learning of the handball game and to its practice by the students in an autonomous, independent way.

### Research methods

1. Bibliographical research and study method
2. Observation method
3. Demonstration method
4. Experimental method
5. Testing method
6. Statistical-mathematical method

### Research procedure - time, subjects

The experiment took place at the L.P.S. high-school, Bacău, during the academic year of 2007-2008, the experimental group having a number of 11 boys and 14 girls, and the control group, 14 girls and 11 boys.

**The control drills applied in this research were:**

#### a. General physical training drills

The evaluation of the general physical training was made through three control drills:

1. 50 m speed running;
2. High jumping;
3. Endurance running.

#### b. Specific handball drills

1. Pole dribbling drill (30m)
2. Technical complex - the student leaves from the 6 m semicircle, having at the starting moment the front leg on the 6 m line and the handball in his hand. There is a dribbling from running, a jump shoot from the opposite 6 m semicircle, a fall back (up to the center of the court, facing own gate, backwards from the center). The timer stops when the student surpasses with both legs the initial 6 m line (enters in the semicircle).

### Results obtained at the general physical training control drills

All the control drills were conducted in two stages: the first in October and the second in March, during the 2007-2008 academic year.

By analyzing the individual or group obtained results, we can emphasize a few significant aspects:

- The first aspect is that the average results of both groups show a progress between test 1 and test 2.
- A second aspect is that almost all of the students improved their results in all drills, at some being a larger, at some smaller progress.
- Of course, the results mirror also a normal bio-physiological growth of their bodies, which, at some students, is the consequence of a regular practice of physical exercise.

A short analysis of each drill would emphasize other aspects:

In the 50 m **speed drill** the following results have been recorded:

- Class ninth A – experimental
- test 1 (T1) – 8 students have accomplished the standard quota
- test 2 (T2) – 21 students have accomplished the standard quota
- Class ninth B – control
- test 1 (T1) – 6 students have accomplished the standard quota
- test 2 (T2) – 10 students have accomplished the standard quota

Both groups registered a great progress regarding the standard quota, but the experimental class registered a larger progress, as we can observe a difference of eleven students who have accomplished the standard quota, between the experimental and the control group.

In the **high jumping drill** the following results have been recorded:

- Class ninth A – experimental
- test 1 (T1) – 6 students have accomplished the standard quota
- test 2 (T2) – 21 students have accomplished the standard quota
- Class ninth B – control
- test 1 (T1) – 3 students have accomplished the standard quota
- test 2 (T2) – 11 students have accomplished the standard quota

Both groups registered a great progress regarding the standard quota, but the experimental class registered a larger progress, as we can observe a difference of ten students who have accomplished the standard quota, between the experimental and the control group.

**The endurance drill** was of 600 m running for girls and 800 m for boys. The following results have been recorded:

- Class ninth A – experimental
- test 1 (T1) – 8 students have accomplished the standard quota
- test 2 (T2) – 22 students have accomplished the standard quota
- Class ninth B – control
- test 1 (T1) – 8 students have accomplished the standard quota
- test 2 (T2) – 13 students have accomplished the standard quota

Both groups registered a great progress regarding the standard quota, but the experimental class registered a larger progress, as we can observe a difference of nine students who have accomplished the standard quota, between the experimental and the control group.

### Results obtained at specific handball drills

We can say that the physical education lessons, conducted in the experimental class ensured the specific physical development. The games played between the groups demonstrated that the technical-



tactical skills in the experimental group are obviously more developed than the ones in the control group and we would like to point out that the decision making mechanism was, in most situations, a key for success, for the experimental groups.

In the **dribbling drill** the following results have been recorded:

- Class ninth A – experimental
- test 1 (T1) – 6 students have accomplished the standard quota
- test 2 (T2) – 22 students have accomplished the standard quota
- Class ninth B – control
- test 1 (T1) – 6 students have accomplished the standard quota
- test 2 (T2) – 12 students have accomplished the standard quota

It was a great progress for both classes, but more for the experimental one, as it can be seen, there is a difference of 10 students who have accomplished the standard quota, between the experimental and the control group.

In the last event, **the technical complex drill**, the following results have been recorded:

- Class ninth A – experimental
- test 1 (T1) – 7 students have accomplished the standard quota
- test 2 (T2) – 24 students have accomplished the standard quota
- Class ninth B – control
- test 1 (T1) – 6 students have accomplished the standard quota
- test 2 (T2) – 13 students have accomplished the standard quota

Thus, it is clear that at class ninth A and ninth B it was registered a great progress regarding the standard quota, but the experimental class registered a larger progress, as we can observe a difference of eleven students who have accomplished the standard quota, between the experimental and the control group.

Generally, we can see a great increase at all events, for the experimental group, in comparison with the control group.

#### **Conclusions and suggestions**

The development of the experiment and the interpretation of the results lead to the following **conclusions**:

- We can say that the use of preparing games and specific handball relays ensured a growing efficiency of the physical education lessons, thus confirming our initial hypothesis. The preparing games enhanced the motivation of all students, boys and girls alike, determining them to engage themselves in the specific effort, assimilating the knowledge and skill necessary for playing handball.

- The experiment emphasized the students' ability to learn handball faster through the use of preparing games.

- The results of the experiment regarding the teaching of handball at ninth graders based on game structures, confirmed that the preparing game is an important means of the physical education for this age.

- The use of means and methods which are specific to handball preparing games, in order to develop motor skills, lead to a positive evolution of these skills in all of the experimental groups, the results serving as evidence.

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## STUDY REGARDING THE MECHANICS OF BREATHING AND THE IMPLICATIONS IN THE ROWING SPORTIVE PERFORMANCE

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### Abstract

The academic rowing is a sport with extremely high requirements related to the capacity of effort whose particularity consists of the necessity of concomitant manifestation of the sportsman's opposite motor skills: endurance, speed and strength.

### Purpose and goals of the research

We intended to analyze in the present study the effects of the respiratory musculature training performed besides the ordinary training sessions and the benefits (if any) brought by this training related to the achievement of improved sportive performances.

**Key words:** respiratory musculature, sportive performance, training, research

### Goals

-scientific information and documentation in conformity with the topics submitted to the cu experimental research.

- comparative study of the results emphasized by the implementation of the training program that we have proposed and the benefits brought by this one versus the results obtained by the witness lot by the application of the traditional training.

**Research stages and carrying out.** The experiment was carried out along six months, from the 1<sup>st</sup> of September 2007 up to the 15<sup>th</sup> of February 2008. The devices used for the sportsmen's training were the „classic” ones they were used to, namely:

- boats 1X (simple);
- ergometer rowing machines (Concept II Rowing Ergometer, Morisville, USA);
- apparatus and bar bells existing in the gym;

Subjects. In this experiment have been involved 30 rowers of national and international level, aged  $16.7 \pm 1.0$ , members of the Juniors' Olympic Team Năvodari, with an average training period of  $2.4 \pm 1.2$  years approximately, and a participation in two Juniors' National Championships at least. Along the experiment, these sportsmen performed thirteen training sessions a week and were familiarized with all tests imposed by the protocol of the present study.

The subjects were distributed in two groups, the witness group (M) and the experiment one (E), each group counting 15 sportsmen ( $n=15$ ). Both groups had a high homogeneity as for the training level and the physiological and morphological data. The goal was the experimental argumentation of the development of the muscular system involved in the process of breathing in the 15 to 18 years old rowers' training. The experiment was conducted along a macro-cycle, divided into 5 mezzo-cycles\*.

An analysis of the data presented points out that there are no significant differences at the initial testing between the witness group and the experiment one regarding anyone of the parameters compared: size, height in sitting down position, span, weight, thoracic

perimeter at rest, in maximum inspiration and maximum expiration or the thoracic elasticity. It was noticed that during the final testing for the experiment group, the mean increases significantly at a single parameter, the thoracic cage elasticity. Calculating the significance of the differences between the means of the (T. Bompa, 2001) *Analysis and interpretation of the data resulted from the tests of morphological development*.

It was noticed that during the final testing for the experiment group, the mean increases significantly at a single parameter, the thoracic cage elasticity. Calculating the significance of the differences between the means of the two sportsmen's groups, it was found out that at the final testing this difference is significant at  $p < 0.05$  as the value of  $t$  is  $1.74 > 1.701$ .

### Thoracic elasticity (centimeters)

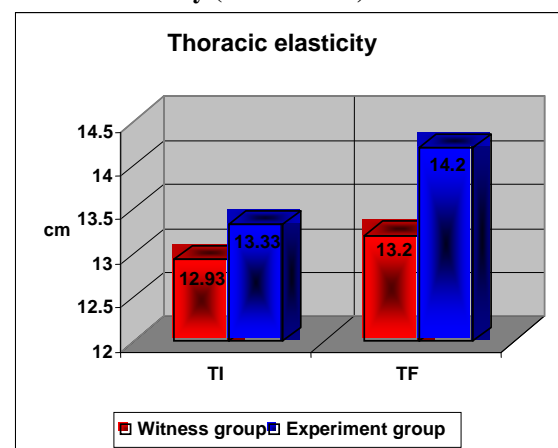


Figure 1. Results of the thoracic elasticity measurements

As a result of the recorded data, it is noticed that the mean of the results of the witness group was 12.93cm at the initial testing and 13.2cm at the final testing. The difference between the means of the two tests was 0.27cm. After an analysis of the recorded data it can be noticed that for the experiment group the mean of the results recorded during the initial test

was 13.33cm, and at the final test the mean was 14.2cm. The difference between the initial tests means and the final tests means was 0.87cm. The significance of the difference between the means of the experiment group and the witness group at the final test is expressed by  $t$  with the value  $1.74 > 1.701$  from Fisher's table at  $p < 0.05$ , the difference being significant from statistical point of view. The increase of the difference between the thoracic perimeter in inspiration and expiration (that means the elasticity) is very likely caused by the significant increase of the maximum strength of the aspiratory and expiratory musculature, which was able to extend and to compress the thoracic cage to a greater extent.

*Analysis and interpretation of the data resulted from the tests of functional capacity.*

For the testing of the functional capacity were measured the following parameters: maximum PE, maximum PE after effort, maximum PI, maximum PI after effort, vital capacity, apnea duration and maximum VO<sub>2</sub>.

Comparing statistical indicators at the functional trials of the experiment group sportsmen and of the witness group sportsmen in the initial stage of the experiment, there were not any statistically significant differences at anyone of the parameters.

Regarding the significance of the differences appeared at the final test between the group means that characterize the rowers' functional training, it can be noticed that statistically significant differences appear at maximum PE, maximum PI, maximum PE after effort and maximum PI after effort. The differences between the witness group and the experiment group regarding the other indicators are not relevant from statistical-mathematical point of view (at  $p < 0.05$ ).

#### Maximum PE (mm Hg)

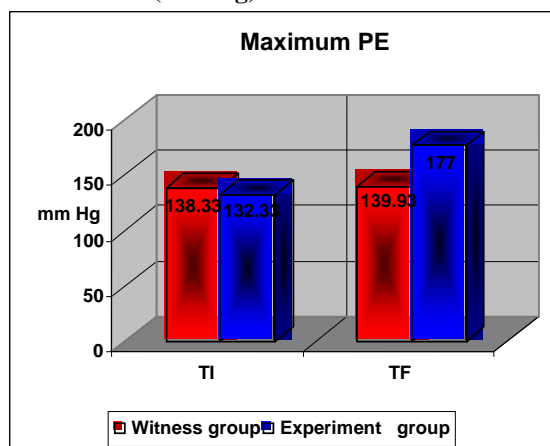


Figure 2. Results of maximum PE testing

At the initial testing, the maximum PE mean for the witness group was 138.33mm Hg, and at the final testing the mean was 139.93mm Hg. The difference of the maximum PE means between the initial and the final test was 1.6 mm Hg. If at the initial testing the maximum PE mean for the experiment group was

132.33mm Hg, at the final testing the maximum PE mean was 177mm Hg. It can be found out a progress ratio of the maximum PE mean at the final testing of this group equal to 44.67mm Hg. Calculating the significance of the difference between the means of the experimental group and the witness group final testing it shall be obtained  $t$  with the value  $3.22 > 2.763$  in table, at  $p > 0,005$  a difference statistically significant.

#### Maximum PI (mm Hg)

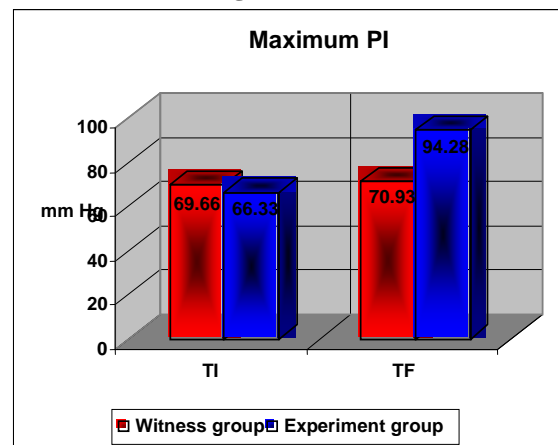


Figure 3. Results of maximum PI testing

The recorded data show that the mean of the results for the witness group at the initial testing was 69.66mm Hg, and at the final testing was 70.93mm Hg. The difference between the means of the two tests was 1.27mm Hg. Analyzing the recorded data (appendix 2) it can be noticed that for the experiment group the mean of the results recorded during the initial testing was 66.33mm Hg, and at the final testing the mean was 94.28mm Hg. The difference between the means of the initial and the final testing was 27.95mm Hg. The significance of the difference of the means between the experimental and the witness group at the final test (appendix 4) is expressed by  $t$  with the value  $5.07 > 3.674$ , significant at  $p < 0,0005$ . These two parameters are considered the indicators of the respiratory power that we proposed to develop within the experimental protocol. It can be seen that at the witness group, the values have increased significantly, while at the experiment group the increases have values of 33.75% and 42.13% respectively. There is no doubt that the application of the experimental training has positively influenced the maximal power of the musculature involved in breathing.

#### Maximum PE after effort (mm Hg)

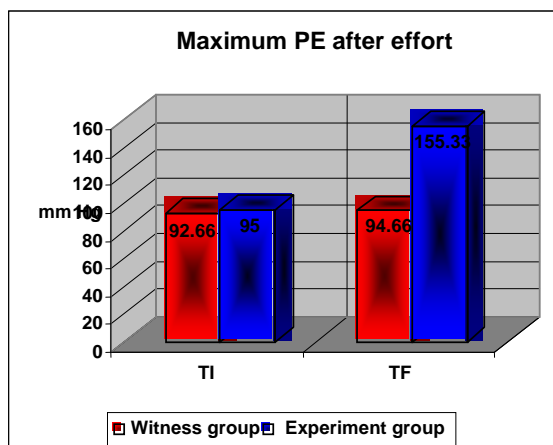


Figure 4. Results of maximum PE testing after effort  
The mean recorded at the initial testing by the witness group was 92.66mm Hg, and at the final testing was 94.66mm Hg. The difference between the means of the initial and final testing is 2mm Hg. For the experiment group, the mean of the maximum PE results was 95mm Hg at the initial testing and 155.33mm Hg at the final testing.

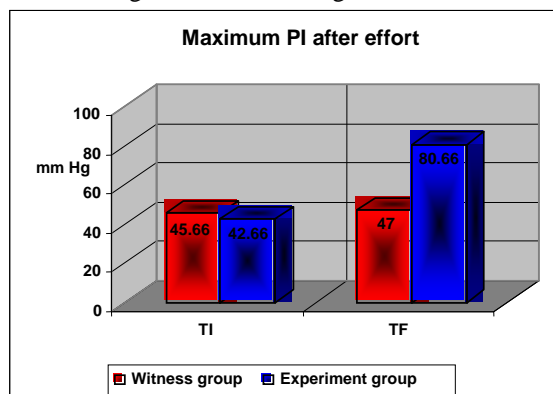


Figure 5. Results of maximum PI after effort testing

At the initial testing, the witness group had a mean of the maximum PI of 45.66mm Hg, and during the final testing the mean was 47mm Hg. It can be noticed an increase of the mean by 1.34mm Hg. At the initial testing the experiment group recorded a mean of 42.66mm Hg, and at the final testing the mean was 80.66mm Hg. One can find out the increase of the mean at the final testing by 38mm Hg. Calculating the significance of the difference between the means of the two rowers' groups (experiment group and witness group) we obtain a value of  $t$  of  $9.69 > 3.674$  from Fischer's table at the final testing, statistically significant at  $p < 0.0005$ .

These two indicators characterize the maximum muscular strength \*\* that can be generated after effort, that we have also tried to improve by the experimental training program. The lower values of PEmax and PImax after effort related to the rest ones prove the fatigability of the respiratory musculature. During the final testing can be seen that at the witness group these values increase in a non-significant way

(see appendix 1), while at the experiment group the increases have values of 42.45% and 89.07% respectively. Moreover, in the case of maximum PE after effort, this one had a value of 71.79% out of the maximum PE at TI and 87.75% respectively at TF. The maximum PI after effort formed 64.31% out of the maximum PI at TI related to 85.55% at TF. All these values prove that the isolated training of the muscles involved in the breathing increases the resistance of these ones against the tiredness.

*Analysis and interpretation of the data obtained at the specific physical training tests*

During the specific physical training trials we have tested the capacity of effort at the following trials: simulated race of 2000m, during which were recorded the time and the power in watt, horizontal rowing and genuflexions 7 min. long as well as 2000m running.

**Time on 2000m (seconds).**

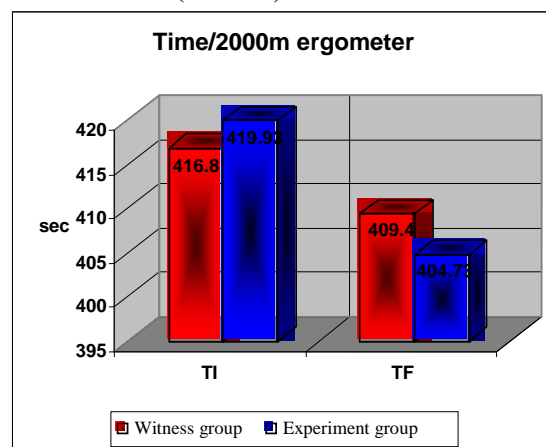


Figure 6. Results of the ergometer rowing machine testing

The witness group recorded a mean of the results at the initial testing of 416.8sec., while at the final testing the mean was 409.4sec. The difference between the means of the initial and final testing is 7.4sec. The mean recorded by the experiment group at the initial testing was 419.93sec., and at the final testing was 404.73sec. The difference of the means of the two tests is of 15.2sec. The significance of the means difference between the experimental group and the witness group is represented by  $t$  with the value  $0.40 < 1.701$  at the significance threshold  $p > 0.05$ , the difference of the means being non-significant.

### Conclusions

1. Following up the analysis of the specialty bibliography, it results that a thorough theoretical substantiation regarding the respiratory musculature training of the rowers of any age and training level does not exist for the present moment.

2. The testing of the physiological parameters necessary for the confirmation of the present work hypothesis pointed out the fact that the muscles involved in the breathing process at the junior rowers get tired following up the intense effort represented



by a typical race, and that also the isolated training program of the respiratory musculature suggested by us decreases their level of tiredness after effort, simultaneously with an increase of the strength and endurance capacity of the respective muscles.

3. The improvements brought to the respiratory musculature by the experimental training is positively reflected in the performance during the rowing specific effort, the progresses recorded by the experiment group having higher values by an average of 7.8 seconds (from 419.93 to 404.73 for the experiment group and from 416.8 to 409.4 for the witness group) related to the witness group that was submitted to a traditional training program.

4. The study of the correlative matrix shows the multitude of statistically significant correlations at  $p < 0.05$ , a great significance having the high threshold of significance between the parameters of the morphological development and the results of the specific physical training testing, fact that validates the selection system base (V. Albu, M. Roman, 1996)

on the measurement of the morphological parameters applied in the rowing at the present moment. High thresholds of significance were emphasized between the physiological factors that characterize the musculature strength and endurance and the values obtained during the simulated race for the time and watt parameters, from which result the validity and applicability of the respiratory musculature training in the current training of the rowers.

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## STUDY CONCERNING THE IMPROVEMENT OF LIFT AND PULL FORCE IN FREE FIGHTS

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#### Abstract

In the past years, the International Federation of Amateur Fight Associations has done some modifications in the challenge rules. These modifications convicted the specialists in the domain to conclude that the investigation of the ways for improving the results must be directed onto enlargement of technical skill. A perfect technique, dubbed by a rich technical diversity is what always marked the Romanian fighting school.

**Key words:** free fights, fighting school, technique.

#### Introduction

Free fights is an acyclic sport, characterized by variable intensity of the effort and fast modifications of the fighting situations.

At the ground, the biomechanical analysis of the fighting skill is based on the analysis of the procedures from the basic mechanical positions. It were examined the modifications made by positioning the weight center of one fighter conditioned by another fighter's weight center movement. The technical preparation is centrally into the training process for the fighters. The dynamics of the challenge fight and its growing spectacular are correlated with the usage of a great number of technical and tactical exercises during the fight. This fact imposes for the fighters the learning of a rich, vast arsenal of technical skills, related to the solicitations and orientations of the competition rules. The preparation for official engagement forces the fighters to improve the technical and tactical skills in a

difficult environment of the competition and rule set, which, in the past 2 decades was in a continuous change. Some authors gave a definition for the technique in this circumstances, xposed below: A. Dragnea, 1996, "The technique is a system composed by movement-like structures specific to each sport branch, executed rationally and economically for obtaining a maximum proficiency in competitions" – Antrenamentul sportiv. Teorie și metodică. București, Editura Didactică și Pedagogică, 1996. G. Cișmas, 1981, "The Greek-Roman fights technique is composed by a large container of natural moves specific to the humans, structured and adapted to the rules of this branch, concerning the slamming of the opponent into proper positions for fixing him back to the floor". M. Epuran, 1990, "Complex psycho-movement process, engaging cognitive, affective, willing and mechanical factors seen in these problematic situations. The tactics is the activity in which the sportsman reveals all his possibilities to

obtain the best results defending different opponents

### Methods

This study concerns the revealing of the relations between the technical procedures specific to feet and floor fight used by the juniors in the competitions for a better, objective planning of the training.

The study implied:

- the selection of the subjects
- the selection of the place for the study
- the identification of the parameters observed
- registering the data obtained and making the graphs

Our paper is an innovative work due to its problematic, related to the actual aspect of the competition for free fights, on juniors level, less analyzed in specialty literature.

### Results

As we can clearly see from the table 1, the sum of technical procedures executed is larger in the first round than the second, and, also, larger in floor-fight than feet-fight. The percent of technical procedures specific to floor-fight is situated around 60%.

**Table 1. Types of technical procedures involved in fights (National Free Fights Challenge for Juniors, 2007)**

Pos.	Type of fight	Percent
1.	Feet-fight	40,12 %
2.	Floor-fight	59,88 %

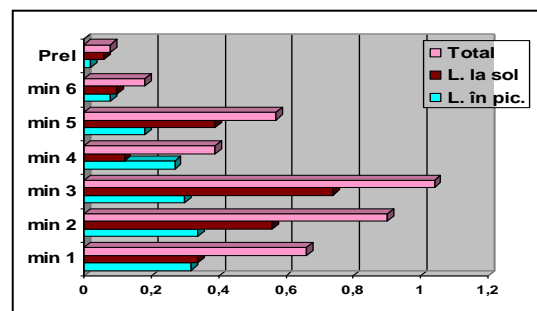
The floor fight has a great share than feet fight concerning the number of technical procedures executed. It is obvious the tendency of junior fighters for a worn-out feet fight or their preference for gaining points using floor fights. The average results for the technical procedures, on categories and time, can be observed below, in the following tables. From our records, the 54kg category is more obvious than the 76kg category by the fact that in the 3<sup>rd</sup> minute were executed an average of 3 procedures in the 54kg category case apart by the 76kg category where was executed an average of 1.6 procedures, the rest of categories being below these values (table 2).

**Table 2. The average of technical procedures executed (floor and feet) on weight categories and fight time.**

and conditions.

Weight case	The average of technical procedures executed						
	1	2	3	4	5	6	Pr.
50	0	0,7	0,5	0,5	2	0,5	-
54	0,5	1	3	1	1	0	-
58	0,5	1,7	0,7	0,5	0	0,2	-
63	1	0,7	1	0,7	1	0,5	-
69	0,7	0,8	1,3	0,4	0,7	0	-
76	0,2	1	1,6	0,2	0,8	0,2	0,4
85	1	1	0,6	0,3	0,3	0,3	-
97	1,2	0,2	6	0	0	0,2	0,6
130	1	0,9	0,2	0,1	0,1	0	-

Analyzing the results about technical procedures executed we succeed making the time-model of the challenge fights, i.e. the style of dealing the fight of the juniors. Such, from the table 3 and the graph 1 we can observe that in the first round is executed the most of the technical and tactical exercises.



**Graph 1 The average number of technical procedures (NFFJC 2007)**

From the graph 1 we can see that the 2<sup>nd</sup> round is less content-rich concerning the number of technical procedures executed. It is obvious that in the 1<sup>st</sup> round the fighters are looking for gaining an advantage to keep constant in the 2<sup>nd</sup> round, without an useless risk. Also, the exhaustion and the perspiration of the teguments appears impeding the execution of opponent engagement for a better defense.

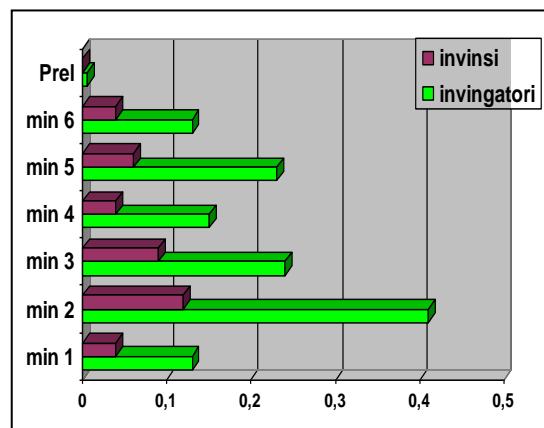
As about the technique used during the fight (table 2) we can remark the procedures from the floor taken family in the feet fight case (38%), and rolling procedures in the floor fight case (72%). This remark makes us to seriously reflect about the dealing style of the fight for juniors. Taking into

account that the stake for a national junior championship is relatively big, we can appreciate somehow motivated this victory-rush fight type.

**Table 3. The procentual repartition of procedures groups specific to floor and feet fight.**

Procedures group		TOTAL
Case	Feet Fight	PROC. %
1	Floor taken	38,5
2	Knock-downs	16,9
3	Overturns	15,4
4	Suspending thrown	6,1
5	Haunch thrown	4,6
6	Breast thrown	10,8
7	Back thrown	7,7
8	TOTAL	100
Case	Floor fight	PROC. %
1	Somersaults	72,1
2	Knock-downs	12,4
3	Rolling	11,4
4	Opponent bypassing	4,1
5	TOTAL	100

We must not forget that the final scope of junior training is obtaining great performance at senior level. The precocious growing of juniors technically and tactically speaking and forcing the performances at this level could generate negative and definite effects on their conducting at senior level. As about floor fight, both the winners and losers execute frequently technical procedures of rollings (especially knitting the shakes rolling and simple key feet rolling). This fact can be explained by the great stake of the challenge, the fighters preferring the safe procedures, not very efficient but risk less.



**Graph 2. The rate between the average of technical procedures used by winners and losers on floor fight**

On feet fight we remarked at the winning fighters a greater average of breast thrown procedures (superior pointed procedures) and also knock-down and overturns methods. Also, as in floor fight case, there are no risk procedures used (floor taken), contradictory to the modern conception of the fight (totally, universal, spectacular, innovative and virtuous).

### Conclusions

In our study we succeeded a “transparent view of actual challenge fight on juniors level”. Such, the trainers have a larger view about the physical anatomy of challenge fight, with an apart importance in making the training strategy of the fighters. In a national championship the decisive factor for obtaining the victory was the floor fight, more floor fight procedures being executed in contrast with feet fight procedures. The complex fight, actioning on the feet, combined with actions on the body and superior members is the decisive factor in winning the challenge, fact which needs corrections in the training methodic of our juniors.

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## TO INVESTIGATE OF RELATIONSHIP BETWEEN AEROBIC POWER AND PULMONARY FUNCTION IN ATHLETES

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### Abstract

This study was aimed to examine relationship between aerobic power and pulmonary functions in athletes. 31 wrestler who live in ERZURUM were participated in this study. As volunteers the average age of athletes; 14.75, weight; 50.30 kg, height; 157.97 cm.

Pulmonary functions test of athletes were measured by COSMED spirometry, and aerobic power was measured by shuttle-run test. Data was analyzed spss 11.5 for windows packages program. Relationship between aerobic power and pulmonary function was used by Non-parametric-Spearman's rho test.

The results of this study were found significantly relate between values of Max VO<sub>2</sub> and values of all pulmonary functions (p<0.05)

In conclusion there is positive relationship between values of pulmonary function and MaxVO<sub>2</sub>. As values of pulmonary function increase, values of MaxVO<sub>2</sub> may increase.

**Key words:** MaxVO<sub>2</sub>, Pulmonary functions, athletes.

### Introduction

There are some performance criterias that affect and determine athlete's performances. Usage of maximum oxygen and the functions of liver are just two of these performance criterias as it was reported by the researchers that, the athletes have better of these two criteria than the people who live stable. However, it was also reported that the athletes have better liver functions than the non-athletes. At the same time, the literature says the physical aerobic increases the value of maxVO<sub>2</sub> about % 5-30. It was not found often that the study which studies the relationship between these performance criterias, despite it has a great importance for athletes. As a result, it is aimed in this study that whether there is a relationship between pulmonary function and aerobic power.

### Material and method

### Results

Table 1: The average values of the aerobic power, pulmonary functions and athletes' physical aspects.

	AGE (year)	LENGTH (cm)	WEIGHT (kg)	VC (l)	FVC (l)	FEV1 (l)	PEF (l/s)	MVV (l/m)	MAXVO <sub>2</sub> (ml kg/dk)
N	29	29	27	31	31	31	31	31	31
X	14.75	157.97	50.30	3.54	3.42	3.05	6.18	135.33	46.25
SS	1.69	10.54	11.96	0.87	0.90	0.84	1.79	60.89	4.17

Table 2: The relationship between the values of maxVO<sub>2</sub> and pulmonary functions of the athletes.

		FVC	FEV1	PEF	VC	MVV
MAXVO <sub>2</sub>	R	.443*	.552**	.470**	.565**	.682**
	P	.013	.003	.008	.001	.000
	N	31	31	31	31	31



As seen in the table 2 there is a statistically meaningful relationship between  $\text{maxVO}_2$  and

### Discussions

The aim of this study is to determine whether there is a relationship between aerobic power and pulmonary functions. For this the tests showed that there is a positive meaningful relationship between  $\text{maxVO}_2$  and FVC, FEV1, PEF, VC and MNV values. In healthy people  $\text{maxVO}_2$  is related with the age, gender, length, weight and body composition. Pulmonary functions are related also with, age. Gender, length, weight and body composition. (PH.Klijn et al., 2004, AW Watson,. 1995). For it can be though that there is a relationship between  $\text{maxVO}_2$  and pulmonary functions. In the patients with cystick fibrosis, in addition to good muscle and pulmonary functions the high level of physical activity is in relation with high aerobic capacity. In patients with cystick fibrosis, lung function, body composition and muscle strength is in a relationship with  $\text{maxVO}_2$ , and all these parameters are affected by regular exercise. The measurability of relationship between  $\text{maxVO}_2$  and life quality were reported as physical appearance and physical functions, and these were converted into positive behaviours towards physical fitness in patients with cystick fibrosis related with high  $\text{maxVO}_2$ . There are

pulmonary functions.

many factors that can explain the relationship between  $\text{maxVO}_2$  and physical activity. These are; body size gender, lung functions and muscle strength. It can be said that these parameters have affect on resistance physical activity on  $\text{maxVO}_2$  can be possible with the help of breathing muscle. As a result, data gained from this study and literature related with the subject have shown that there is a reasonable relationship between  $\text{maxVO}_2$  and pulmonary functions. According to this result, it can be said that the pulmonary functions being good can increase  $\text{maxVO}_2$ .

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## ❖ KINETOTHERAPY

### NEW METHODS OF DATA ACQUISITION AND WALKING ANALYSIS IN MULTIPLE SCLEROSIS AFTER FUNCTIONAL ELECTRICAL STIMULATION

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#### ABSTRACT

In multiple sclerosis the difficulty in walking represents one of the main patients concern. This difficulty is due to the instability of the muscles of the foot to lift it up during the swing phase of walking, known as dropped foot. Different alternatives in the rehabilitation treatment try to improve the walking, but at the present moment, in clinical medicine, scientific quantification and analysis of human walking mechanism is not highly accurate due to the lack of an objective analysis. Progress quantification in walking is essential in evaluation of the efficiency of rehabilitation procedures, improvement of these procedures or elaboration of individual models for each patient.

#### Purpose

The purpose of the present research is represented by both the completion of a prospective study regarding efficiency of functional electrical stimulation in walking rehabilitation at patients with multiple sclerosis and the use of last generation non-invasive methods in analyzing and quantifying the results.

#### Methods

The present paper is a case report regarding the results obtained after application of functional electrical stimulation to a patient with multiple sclerosis. Functional electrical stimulation was applied in order to stimulate muscular groups involved in walking by the use of a 2 channel neurostimulator (O2CHS II). The trigger points choosed for stimulation permitted to obtain dorsiflexion and eversion of the foot, associated with knee flexion. Acquisition and analysis of the data specific to walking (contact pressure, forces, moments) were made by using a pressure plate for static and dynamic measurements (RSSCAN) before and during stimulation.

#### Results

Registered by the pressure plate allowed identification and quantification of improvements of the patient's walking problems by the use of electrical functional stimulation.

#### Conclusions

Functional electrical stimulation offers an alternative within the rehabilitation treatment in multiple sclerosis, by encouraging active movement of the foot and by constantly taking the foot through the full range of movement with walking, and avoiding stiffening up of the ankle. Identification of certain analysis models in walking, will offer a viable instrument in evaluation and treatment of multiple sclerosis and sustainable results on national and international level.

**Key words:** multiple sclerosis, functional electrical stimulation, walking evaluation, plantar pressure

#### Introduction

Multiple sclerosis (MS) is a chronic neurological disease of unknown etiology which affects central nervous system, especially the brain, spine and optic nerves (A. Achiron and Y. Barak, 2000) and is characterised by demyelination of nerve fibers. Among clinical MS symptoms a common one is represented by motor and balance disorders: spasticity, muscular weakness and ataxia, decreased mobility (A.J.Lenman, F.M.Tulley, G. Vrbova et al, 1989). MS evolution is extremely variable and unforeseeable. In the absence of specific treatment, a percent of over 30% of MS patients will develop significant physical disability within 20-25 years since the onset of the disease. After 25 years only 1/3 of the

patients are capable of working and 2/3 can walk (K.J. Aronson, 1996). But this prognosis is permanently changing due to the new therapies. Approaches nowadays focus on the idea that MS treatment does not mean only drug administration, but also kinetotherapy, ergotherapy, consultancy and psychological therapy.

MS rehabilitation treatment should focus on encouraging normal movements and functional activities, such as walking, which will facilitate and stimulate balance mechanisms. Unfortunately, as mentioned before, walking is affected in most of MS cases. Consequently, any procedure to improve motor activity and walking is of high benefit. Functional electrical stimulation (FES) involves applying low



level electrical current to the neuromuscular system for either functional or therapeutical purposes. Therapeutical applications of FES aim to impede or reverse the progression of a disabling condition, and are typically used to strenghten weak muscles, but also the patient can benefit of muscular activity maintainace and spasticity reduction. In most countries FES is a common treatment for the patients who suffered a stroke, but FES as treatment in multiple sclerosis is rare due to the lack of clinical documentation. The benefits of using electrical stimulation through FES in therapeutic purpose can be summarized as follows: improvement in muscular tonicity, preventing of muscular atrophy, increasing in muscular force (T.A. Fredriksen, S. Bergman, J.P. Hesselberg et al., 1986; M. Javidan, J. Elek, A. Prochazak., 1992). By sequence activation of lower limb muscle groups a complex movement can be produced, similar to voluntary activities performed by the patient previous to demyelination in the nervous central system (J.H. Burridge. P. Taylor, S Hagan et al., 1997; J. H. Burridge, I.D. Swain, P.N. Taylor., 1998). At present, walking analysis is not highly accurate in clinical medicine due to the lack of an objective walking analysis (Bogey, 2004), including functional analysis of anatomic segments involved in walking activity. For the purpose of data collection and biomechanical modelling of human movement is highly necessary to measure the contact force (reaction) at the level of distal segment and the plantar pressures.

#### **The research hypotheses**

The efficiency of functional electrical stimulation within the rehabilitation treatment in MS will be shown by improvement of walking parameters, the most affected function in this disease. In order to obtain a correct scientific evaluation it is highly necessary to implement clinically methods in generation, standardization, data acquisition and analysis (walking analysis). Operational motivation in application of proposed non-invasive methods such as measurements of plantar pressures by pressure plates is given by the fact that the newest systems of measuring and scanning plantar pressures are capable not only of recording and analysing accurately plantar charge but also to predict the characteristics of rapid movements of the limb and shank.

#### **Methods**

As mentioned before, the purpose of the present research is the completion of a prospective study regarding efficiency of functional electrical stimulation in walking rehabilitation at patients with MS. The initial extended study includes 20 patients with MS, but the is not yet finished, so we choose to present some intermediary results regarding only one of the patients. So the present article represents a case report regarding the results obtained after application of FES to a patient with multiple sclerosis within the framework of previous mentioned study.

We mention that the study had obtained the written consent of the patients or of their families in the individual evaluation files. The Ethics Commissions of the University of Medicine and Pharmacy and of the other clinical units involved approved the studies in the project conform to the Order of the Ministry of Education and Research no. 400/22.02.2007. The patients were introduced in the study after the request and written consent of them or their families. They were informed of the study motivation, data used and respect of their confidentiality.

**Subject.** The patient data are summarised.:

General data: Patient B.V. male; residence: urban; educational level: university; social status: married; family support: adequate; diagnosed in 2001 with MS, age at the disease onset: 35 years old; onset symptomatology: neuro-muscular fatigue; hereditary history: insignificant; physiological history: insignificant; pathological history: insignificant; disability level: incapacity to adapt 90%; remaining work capacity 10%.

Clinical neurological examination indicates motor disabilities represented by inexplicable fatigue, misunderstood by his family and friends, decrease of muscular force, especially at the level of lower limbs, pyramidal signs (spasticity, abnormal reflexes), walking disorders. Among sensitive findings there were recorded paresthesia and sensitive ataxia (a spastic ataxic walking).

Walking examination indicated disorders in walking, respectively crural motor bilateral deficiency, orthostatism and spastic/ paraparetic walking, crural pyramidal bilateral hypertonia, lower limbs clonoidia, RCA abolished, RCP-bilateral extension.

Paraclinical examinations indicated: glycemia 105 mg/dl; urea 29 mg/dl, cholesterol 208 mg/dl, triglycerides 45 mg/dl, HDLC 45 mg/dl, LDLC 154 mg/dl, GPT 18 U/L, VSH (1 h) 8 mm, VSH (2 h) 16 mm, WBC 13400, NeSe%= 67%, LY %=25%, MO%=5%, EO%=3%, Hb 13,8 g/100ml.

In 2003 and 2004 the patient was evaluated by magnetic resonance imaging (MRI). In 2003: MRI of head showed a hyperintensity centimetre lesion visible only in sagittal FLAIR sequence, (im.9.sc.5) deep in the white matter which may correspond to a focal degenerative lesion. There were no abnormalities of focal type in favour of MS diagnosis; ventricular system on medial line, cranial nerves, normally visible vascular structures. Investigations at the spine level were recommended.

In 2004: MRI of thoracic spine was performed, showing: vertebral bodies with homogenous signal without focal abnormalities or degenerating corporeal or disk processes. Thoracic spinal duct with normal dimensions (35 mm) without any symptom of extrinsic compression. Homogenous medullary thoracic parenchyma with AP diameter of 7 mm, without any abnormalities of focal signal or pathologic point of contrast substance.



### *Electrical functional stimulation*

A 2 channel neurostimulator (O2CHS II) produced by the department of Medical Physics and Medical Engineering Salisbury was used for bilateral correction in walking. This is a neural prothesis designed to improve walking, with 2 channels associated with a switch off device placed at the heel level to obtain dorsiflexion and foot eversion by stimulating extern sciatic popliteal nerve (SPE). The shank flexion could be performed depending on the electrodes placement. Electrical stimulation was realized by impulses of rectangular shape, using surface electrodes. In the case of muscles with intact motor neuron, stimulated by surface electrodes, the electric signal is a train of rectangular impulses of a frequency between 20 Hz and 40 Hz and a pulse duration between 5 $\mu$ s and 350  $\mu$ s. Intensity of stimulation varied between 20 mA and 40 mA. Despite the fact that there was the possibility of using a current of a frequency up to 100 MA, it was taken into account the rapid fatigue of the stimulated muscle caused by the regulation of the parameters of current intensity and rectangular impulse duration.

### *Data acquisition and analysis using pressure plates in static and dynamic regime*

In our study we used a footscan plate scientific version, RSSCAN International, Olen, Belgium to record plantar pressure distribution and pressure values. In our experiment we used a plate of surface of 0,5m x 0,4m, with a total of 4096 sensitive pressure sensors (4 sensors per cm<sup>2</sup>) which allows the measurement of vertical pressure. Data were recorded at a frequency of 50 Hz. The patient was asked to walk along the platform as natural as possible. The platform recorded forces and pressures along z axe in the above-mentioned areas in a file type Working Sheet Microsoft Excel. The measurements were made in the Centre of Research in Human Movement at the Faculty of Physical Education and Sport, University of Craiova.

As the sensor size is known (0,27cm) pressure is determined automatically. It is very important to perform the current measurement in a natural way. Therefore, the plate was placed in a normal route long enough to allow a normal walking, covered by a thin layer of EVA material. This material does not influence or alter the measurement, the route is comfortable for the patient and they do not "target" the plate as it is invisible. The system permits automatic detection of left and right limb, static (at rest) or dynamic measurements (walking, running).

### *The studied parameters included:*

- image of pressure distribution on both soles for each movement moment (each frame). These images were stocked in **bmp** format for each walking moment of the patient (each frame); dynamic pressures and center of pressure line; pressure/time for each foot zone.

- force values for each time unit for the 10 specific zones: halluxes (1), phalange (1), metacarpals (5), mediane zone (1), the two medial and lateral zone of calcaneus (2);

- mean pressure values for the 10 zones depending on time; surface of the 10 contact zones for each frame;

- specific angles (hallux valgus, open-close foot, etc) for each frame (depending on time).

- movement analysis: heel rotation, foot balance, medial forefoot balance, forefoot rotation, forefoot balance, meta loading, center of pressure line, center of pressure line of rearfoot, inversion – eversion, flexion – extension, hallux activity, hallux stiffness

The system allows visualization in different colours depending on the value of applied pressures; the graph force/time for each limb whenever necessary or desired; calculations such as: determination of foot dimension, comparison of two measurements sets, graph pressure/time for each limb zone, comparison of contact percentages or rear- mid- fore foot with the impulse of the respective foot parts, calculation of average in several measurements.

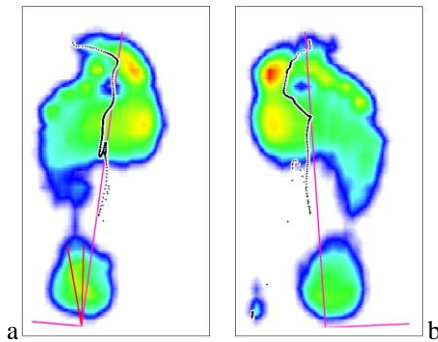
**Data stocking:** data obtained directly from the measurements and those processed by specific RSSCAN software for walking and balance are in Excel, depending on time and stocked in the computer in an integrated data basis.

### **Results**

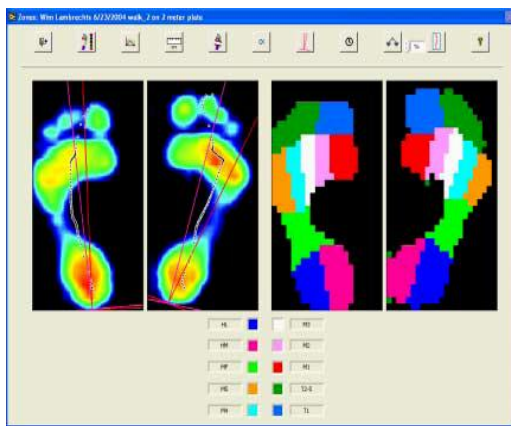
We could appreciate plantar pressure distribution in static and dynamic measurements for walking in a patient with MS, before and during FES (patient: V.B., age: 43 years old, 70 kg, foot size 42).

Recorded data were obtained directly from measurements or by processing of initial data by a specific RSSCAN software for the analysed movement. The data were automatically converted in Excel format, and mean values of recorded parameters were performed. The evolution of contact pressure depending on timing parameters and its distribution on characteristic anatomic plantar zones when the patient supported himself unilaterally and bilaterally during walking were also analysed.

**Static measurements.** Each foot was split into ten anatomical zones: medial and lateral zone under the rear foot, the midfoot, the five metatarsals, the hallux and the other toes. With this feature, the pressure under the foot can be linked to the relevant anatomical zones. In fig 1 is represented the distribution of contact pressures in stance phase for both lower limbs at ground contact, center of pressure and walking axis (red) towards walking direction (pink). in fig 2 is represented the normal distribution of plantar pressures in ratio with the 10 anatomic zones above-mentioned.. The magnitude of pressure distribution is shown based on a colour scale, blue representing the lowest pressure, red representing the highest pressure. Black represents absence of pressure. In comparison



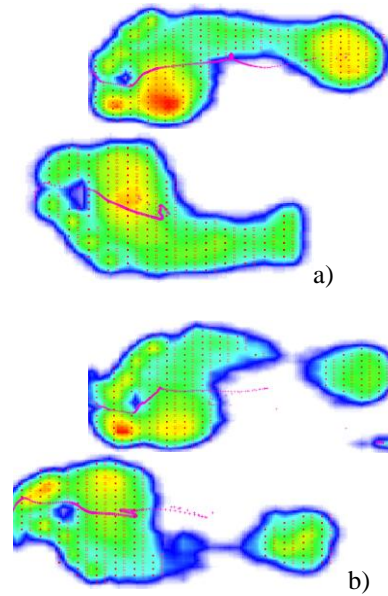
**Fig. 1. Static picture of the pressure distribution under the patient's feet, while the patient is standing on the plate. Maximum pressure measured under the foot during stance phase can be observed (a) without FES; (b) with FES**



**Fig.2. Normal distribution of plantar pressure for the 10 anatomical regions (static measurement)**

- |                  |                       |
|------------------|-----------------------|
| HL: Heel Lateral | M3: Metatarsal 3      |
| HM: Heel Medial  | M2: Metatarsal 2      |
| MF: Midfoot      | M1: Metatarsal 1      |
| M5: Metatarsal 5 | T2-T5: Toe 2 to toe 5 |
| M4: Metatarsal 4 | T1: Hallux            |

**Dynamic measurement** captures the pressure under the patient's feet, in time over the full length of the step from the initial contact of the footscan plate until the end of the foot roll-off. The measurement was taken individually for each foot, recorded and the software proceeded the information. It detected the left and right limbs and placed them in corresponding graphs. (fig.3a.b).

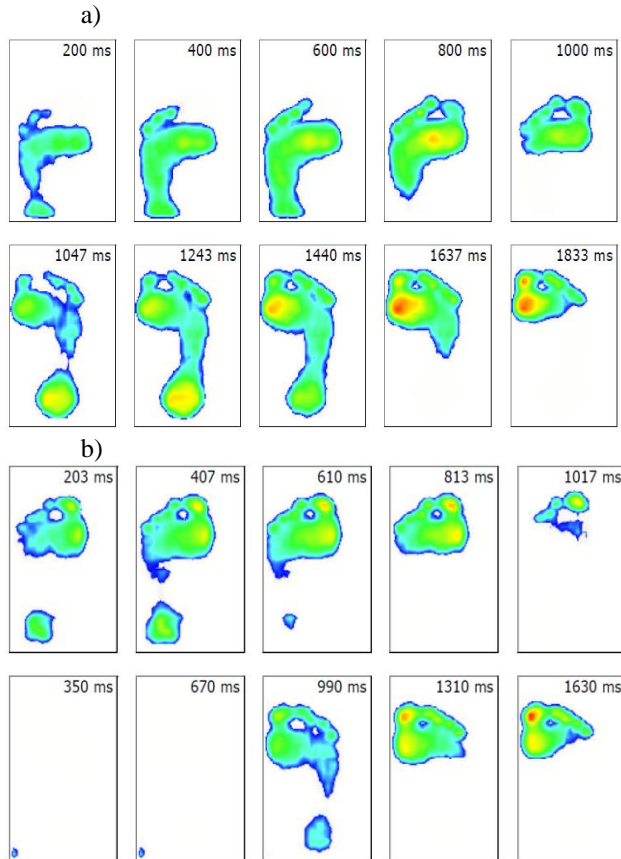


**Fig.3. Record of a single step in dynamics (a) without FES; (b) with FES**

The dynamic image of the pressure during roll-off of the foot can be observed. The view loops continuously through all frames. The software calculates the values of contact pressure N/cm<sup>2</sup> during one step, on each characteristic zone of the foot (the load rate). The load rate represents the speed of loading under the anatomical zones, in N/cm<sup>2</sup> and can also be graphically presented in different points on the sole for both lower limbs. In our study we noticed the maximal pressure values for metatarsal zone M2 at the left foot, in comparison with the right foot, where contact pressure values are the highest, reaching 24N/cm<sup>2</sup>. We can also notice the positive influence of stimulation which leads to the decrease of maximal pressures to the value of 19N/cm<sup>2</sup>, which means that a greater surface of the foot is on ground contact; that means also a decrease of the stress in the foot.

The evolution of contact surface for both feet at 5 successive time moments from a step duration, without stimulation (a) and with stimulation (b) is presented in fig. 4 (timing parameters of significant events - a sequence of images from the roll-off of the foot, the timing for each image is indicated in milliseconds). We can notice the zones of maximum contact pressure which is in hallux and metatarsal zone 1 for the right limb and in metatarsal zone 3 without stressed pressure in the hallux or calcaneus for the left limb. We can also notice a correction in the distribution in both limbs but especially in the left one after stimulation, with the formation of plantar arch (disappearance of the contact in this zone). We can notice (in the case without stimulation) the great tendency of avoiding complete support on the left limb, and so there is not any zone with high pressure contact values (red); we can also observe the fact that the patient has ground contact with his calcaneus and

metatarsal zones, the contact extending to plantar arch. When the left foot leaves the ground, the contact remains on metatarsal and phalangeal zones. At the right foot, the contact begins on the hallux, metatarsal 1 and calcaneus, completing on metatarsal and phalange, at its maximum on hallux/metatarsal. In case of stimulation, we can notice the rehabilitation of plantar arch at the left foot, correct distribution of pressures on anterior side and calcaneus. The system memorized to print inadequate times and that is why the results for the left foot seems incomplete.



**Fig.4. The graph of plantar contact surface in different walking moments (a) without FES; (b)with FES**

For each representation of the measured pressures there can be shown the measured forces as well (fig.5 a.b). The force curves show the vertical force in time during stance phase. The X-axis shows

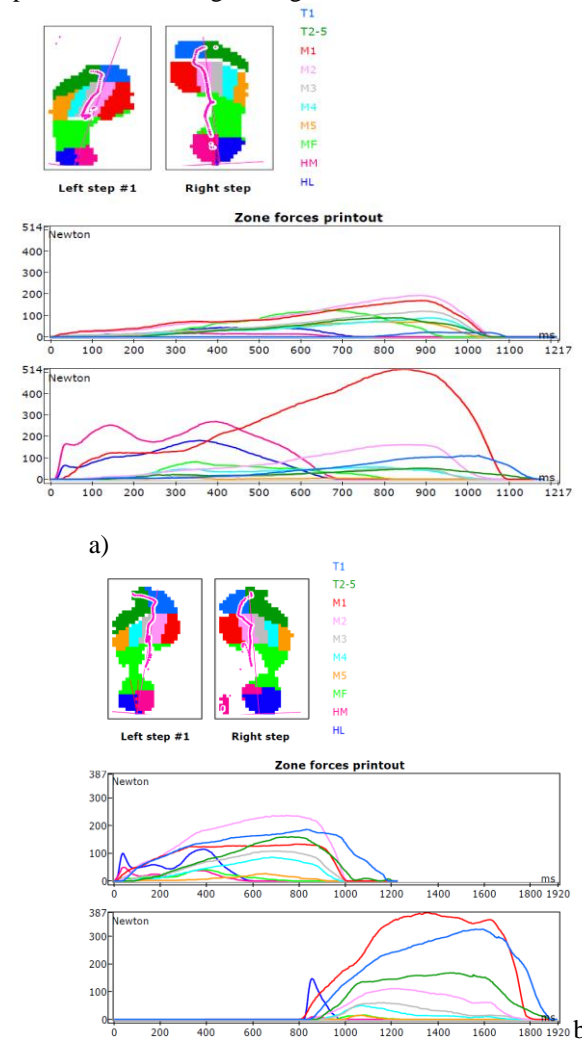
**Fig. 5. Graph: Force/time for each foot zone (a) without FES; (b) with FES associated with the forces graph. The graphs of the force (N) for each zone during foot contact can be observed. The**

The contact percentages & foot axis printout shows the contact percentages under the foot, direct information over the exo and endo rotation from the foot and an indication on the rearfoot pronation. In fig. 6 a we can notice a use of only 12% for calcaneus in comparison with 19% for the right foot; for both feet anterior metatarsal/phalangeal zone is predominant in

the time in ms (milliseconds), the Y-axis shows the force in N (Newton).

When the forces are shown the graph represents total force of the calculated zone. If the pressures are shown, then the force shown is divided on the surface in which it is applied. When the forces are shown we can click to see the calculated force.

The percentages in which total contact is divided on the sole, among anterior, medial and posterior zones of the foot represents the usage degree during the step (impulse) and it can be used to identify plantar zones of high charge.



**graph of forces distribution is similar to that of pressures with maximal values of 514 N for M1 zone of the right foot.**

the contact. The impulse offers information of the most important zones in propulsion, they representing frontal part of the foot in both cases. The great angle of foot axe towards walking direction at the left foot shows the tendency of interior rotation. We can clearly notice the improvement of the angles the foot makes in walking

direction in the case with stimulation on (b), decreasing for both feet to 9.6, respectively 4.8 degrees

a)

In fig. 7 are also represented the representative moments and zones such as anterior zone, calcaneus or first/last contact, as well as the foot axes. The inappropriate negative values of the left foot show that the patient's first contact is insecure, he cannot make the contact at first, but finally he can touch the ground with anterior side of his sole.

In the last figure we can notice that the last patient's contact with the left foot does not fit to pressure centers; thus, we can conclude that the patient is insecure and after lifting his foot he reaches back in ground contact for another second due to lifting of foot to an insufficient height. This problem is corrected by stimulation (b), pressure center line is improving and the patient does not hesitate to lift his left foot any longer.

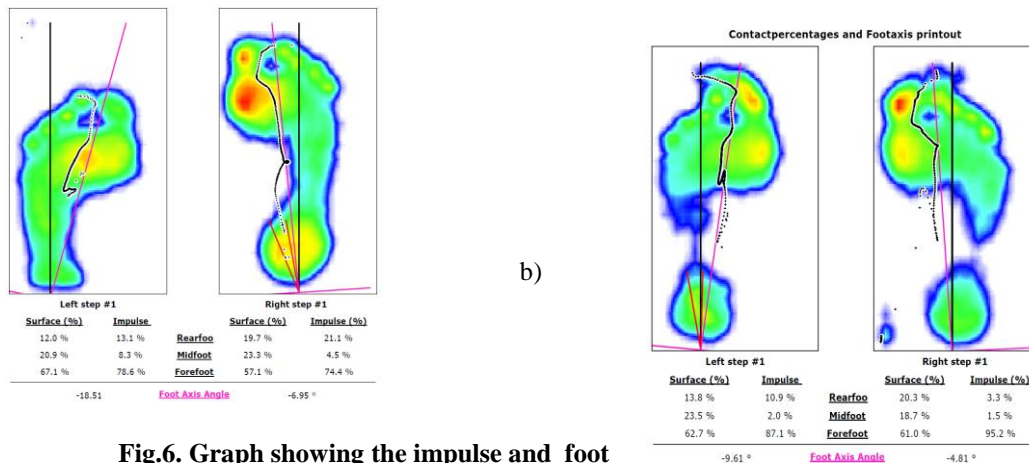


Fig.6. Graph showing the impulse and foot axis (a) without FES; (b) with FES

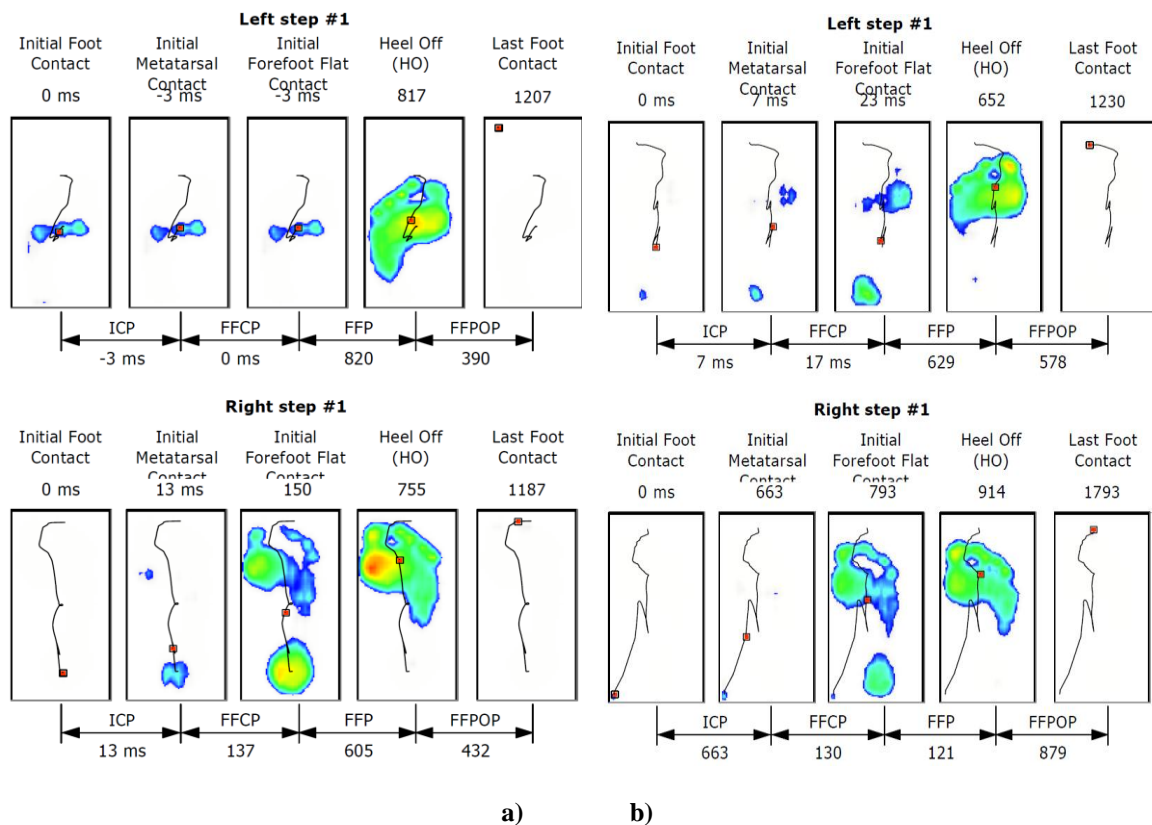


Fig.7. Multisteps analyse mode (a) without FES; (b) with FES



This way of time measuring allows concentration on spatial and temporal parameters of and among different steps is called *multi-steps pattern*

The screen offers detailed information of different time parameters, both in milli-seconds and in percentages for the contact phase with calcaneus, initial contact with anterior part, complete contact or balance, propulsion. We can notice the exceed of normal values at the left foot in comparison with the right one, where the zones in which the values are higher are metatarsal 1-4. While stimulation, at the left foot the normal values are higher at the movement initiation as the patient has the tendency to keep ground contact with his left foot owing to muscular contraction following stimulation.

Subsequently, there was drawn a table with time standard values (table 1). The *timing table* lists the timing values according to the zones and the significant events during gait, compared to reference timing values.

Three colors are used to indicate the relation between the measured values and reference values

**Blue:** the timing parameter is early in time compared to the reference timing value.

**Green:** the timing parameter is within the range of the reference timing value. **Red:** the timing parameter is late in time compared to the reference value. This table evaluates (in comparison with normal values) the contact duration for the zones medial/lateral calcaneus, metatarsal 1/5 as well as the phases during walking and contact phase

*Heelstrike (%)*: defined as the instant the heel region (HM-HL) first contacts the footscan® plate until one of the metatarsal heads contacts the footscan® plate.

*Pre-Midstance (%)*: defined as the instant when one of the metatarsal heads contacts the footscan® plate until all the metatarsal heads made contact with the footscan® plate.

*Midstance (%)*: defined as the first instant all the metatarsal heads made contact with the footscan® plate until the heel region lost contact with the footscan® plate.

*Propulsion (%)*: defined as the instant the heel region lost contact with the footscan® plate until last contact of the foot on the footscan® plate.

Table 1. Timing values according to the zones and the significant events during gait, compared to reference timing values (a) without FES; (b) with FES

a

	Start Time (%)	End Time (%)	Total Time (%)	Peak Time (%)	Impulse (%)
<b>Left Foot</b>					
Med heel	0 0.8	50-65 63.8	50-65 63.0	15-22 27.9	45-55 30.7
Lat heel	0 0.8	50-65 67.9	50-65 67.1	15-22 43.6	45-55 69.3
M1	13-25 0.0	73-96 88.5	50-83 88.5	50-78 71.2	13-21 27.5
M2	10-20 0.0	80-95 89.6	70-85 89.6	50-75 73.2	14-24 25.0
M3	8-16 0.0	85-93 88.8	77-85 88.8	59-74 73.4	15-23 15.6
M4	7-15 0.0	84-92 88.5	77-85 88.5	55-73 74.5	10-18 14.3
M5	5-15 0.3	65-87 87.9	50-82 87.7	50-77 72.3	4-11 17.6
Heelstrike	0 0.8	5-15 0.3	5-15 -0.5		
Pre-Midstance	5-15 0.3	10-20 67.9	45-55 67.7		
Midstance	10-20 0.3	55-65 67.9	42-52 67.7		
Propulsion	55-65 67.9	100 100.0	35-45 32.1		
<b>Right Foot</b>					
Med heel	0 0.0	50-65 63.5	50-65 63.5	15-22 11.8	45-55 63.2
Lat heel	0 0.6	50-65 62.1	50-65 61.5	15-22 28.9	45-55 36.8
M1	13-25 0.8	73-96 94.1	50-83 93.3	50-78 68.0	13-21 51.9
M2	10-20 1.4	80-95 93.3	70-85 91.9	50-75 67.1	14-24 21.5
M3	8-16 1.4	85-93 92.1	77-85 90.7	59-74 67.7	15-23 11.2
M4	7-15 1.1	84-92 92.1	77-85 91.0	55-73 65.2	10-18 13.9
M5	5-15 12.4	65-87 79.2	50-82 66.9	50-77 26.1	4-11 1.4
Heelstrike	0 0.0	5-15 0.8	5-15 0.8		
Pre-Midstance	5-15 0.8	10-20 63.6	45-55 62.8		
Midstance	10-20 12.4	55-65 63.6	42-52 51.2		
Propulsion	55-65 63.6	100 100.0	35-45 36.4		

Low Optimal High

b

Timing values printout

	Start Time (%)	End Time (%)	Total Time (%)	Peak Time (%)	Impulse (%)
<b>Left Foot</b>					
Med heel	0 0.0	50-65 50.7	50-65 50.7	15-22 3.5	45-55 34.7
Lat heel	0 0.0	50-65 53.1	50-65 53.1	15-22 31.2	45-55 65.3
M1	13-25 0.0	73-96 83.2	50-83 83.2	50-78 27.6	13-21 20.0
M2	10-20 0.0	80-95 85.4	70-85 85.4	60-75 55.6	14-24 37.0
M3	8-16 0.3	85-93 84.6	77-85 84.3	59-74 54.5	15-23 18.7
M4	7-15 0.3	84-92 83.7	77-85 83.5	55-73 54.7	10-18 16.6
M5	5-15 1.6	65-87 79.4	50-82 77.8	50-77 53.7	4-11 7.8
Heelstrike	0 0.0	5-15 0.3	5-15 0.3		
Pre-Midstance	5-15 0.3	10-20 53.0	45-55 52.7		
Midstance	10-20 1.6	55-65 53.0	42-52 51.4		
Propulsion	55-65 53.0	100 100.0	35-45 47.0		
<b>Right Foot</b>					
Med heel	0 6.6	50-65 52.1	50-65 45.5	15-22 45.3	45-55 47.5
Lat heel	0 42.0	50-65 54.2	50-65 12.2	15-22 44.8	45-55 52.5
M1	13-25 41.1	73-96 95.7	50-83 54.5	50-78 64.8	13-21 55.4
M2	10-20 41.3	80-95 93.8	70-85 52.4	60-75 62.0	14-24 23.4
M3	8-16 41.0	85-93 94.3	77-85 53.3	59-74 59.7	15-23 12.9
M4	7-15 41.3	84-92 92.5	77-85 51.2	55-73 56.1	10-18 7.7
M5	5-15 47.7	65-87 68.4	50-82 20.7	50-77 55.7	4-11 0.6
Heelstrike	0 6.6	5-15 41.0	5-15 34.4		
Pre-Midstance	5-15 41.0	10-20 54.2	45-55 13.2		
Midstance	10-20 47.7	55-65 54.2	42-52 6.5		
Propulsion	55-65 54.2	100 100.0	35-45 45.8		

Low Optimal High



### Discussions and conclusions

Most research studies analyse the clinical pathology retrospectively using clinic and para-clinic parameters in an advanced evolutionary stage of the disease. The modalities of approaching and evaluation presented in literature are usually chosen individually, without a common tendency based on trans-disciplinary research which will surely lead to better and faster results. That is why a complete research, associated with experimental studies based on corroboration of clinical data, characteristic for each specialty involved in functional rehabilitation program of the patient with MS, using computerized programs of movement analysis, will permit the creation of a complex system of data acquisition and analysis with direct application on human motility. Such a system (which can be standardized) will facilitate health cost reduction and social integration of patients with MS (economic and social effects).

**In our study** the records made using a pressure plate RSSCAN allowed identification of walking deficiencies such as: crural bilateral motor deficiency, orthostatism and para-paretic spastic walking. Credibility and validity of this method results from previous studies: *R.Darmana, M. Schandella, S. Salmeron et al., 2001; F. Hagman, 2003.*

The obtained data based on pressure measurements in the absence or presence of functional electrical stimulation lead us to the following conclusions:

- Functional electrical stimulation offers an alternative within the rehabilitation treatment in multiple sclerosis, encouraging active movement of the foot and by constantly taking the foot through the full range of movement with walking, avoids stiffening up of the ankle.

- The study shows that clinical implementation of the 2 channel neuromuscular stimulator (O2CHS II) can improve walking in MS patients. The benefits of ES through FES in therapeutic purpose can be defined as improvement in muscular tonicity and a decrease in spasticity. Stimulation of the muscles in a certain succession can realize walking movements. In MS case, voluntary command of movement and tune is affected by the lesions of central motor neuron, without being affected motor peripheral neuron, neural and muscular junction or other muscular cells. FES used with sequence activation of muscular groups in order of natural contraction can correct walking. Therefore, FES can be used to correct walking in the rehabilitation process of the patients with MS.

As this research is presenting intermediary results from a wider study, we must say that at this moment the patients with MS do not show a "carry over" effect without using the stimulator. Further studies will be carried on.

- Evaluation of walking by biomechanical parameters as pressure and forces in lower limbs offers a complex method.

So far, in all research studies which refer to FES use in neurologic rehabilitation, performances regarding walking improvement were quantified through two parameters: the speed of walking a distance of 10 m and PCI – physiologic cost index. These evaluations are relatively subjective, without offering a quantifying data system. Moreover, there are other aspects of walking which can not be mirrored by these evaluations. Identification of certain analysis model for the patients with MS that can be used before and after FES will represent a viable instrument to evaluate and treat this disease, with results at international level.

Correct evaluation of walking during therapeutic operation and establishing the objectives of rehabilitation program starting from clear data and clinic and para-clinic parameters will assure a better feed-back of therapeutic efficiency.

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## HEALTH STATUS ISSUES IN PERSONS WITH INTELLECTUAL DISABILITIES - THE SPECIAL OLYMPICS HEALTH PROMOTION PROGRAM (I)

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### Abstract

The transition of people with intellectual disability (ID) from care institutions to the community - according to Western policies - results in a shift of responsibility towards primary health care services. In order to provide optimal care to people with ID living in the community, general practitioners need to be aware of the specific health problems of this patient category. The aim of this paper is to present an overview of a recent study on the specific health problems of people with ID, according to the Special Olympics Health Promotion program.

**Key words:** intellectual disability, health care, bone mineral density, nutrition status

### Introduction

Health is more than the absence of disease. Health is a sense of physical, mental and spiritual well-being- is a process that involves health promotion, health monitoring and early intervention when needed. This assertion is also valuable for people with intellectual (ID) and developmental disabilities, which represent more than 3% of the total world population (S. Teodorescu, A.Bota, M. Stănescu, 2007).

For more than 10 years, Special Olympics has been serving athletes by offering free health screenings and health information at local, regional and World Games. In the process, Special Olympics has become the largest global public health organization dedicated to serving people with intellectual disabilities. By listening to athletes at events and conducting research over many years, S.O. became aware of the lack of quality health care for people with ID and found it unacceptable. As people with intellectual disabilities have a 40 percent greater risk for health issues, health care professionals have to be trained and experienced with caring for people with this type of disfunction (Special Olympics Health Promotion Manual).

The result was the launch of the Healthy Athletes program initiative in 1997. Today, Healthy Athletes provides health screenings free of charge at

SO competitions. Offered in a welcoming, fun environment, these screenings educate athletes on healthy lifestyle choices and identify problems that may need additional follow-up. Healthy Athletes currently offers health screenings in seven areas: Fit Feet (podiatry), FUNFitness (physical therapy), Health Promotion (better health and well-being), Healthy Hearing (audiology), Opening Eyes (vision) and Special Smiles (dentistry).

Over the past years, research assessing the prevalence of low bone mineral density for people with intellectual disabilities has proved that this population is at high risk for osteoporosis (Center, Beange, & McElduff, 1998; Jaffe, Timell, & Gulanski, 2001; Jaffe & Timell, 2003). Also, studies emphasized that a significant part of the ID subjects, mostly with Down syndrome, reveal a poor nutrition status, that is a high percentage of fat tissue – overweight type (N. Angelopoulou, V. Souftas, A. Sakadamis, K., Mandroukas, 1999). The mentioned authors also reveal the risk factors that place people with ID at high risk for osteoporosis: small physical frame; hypotonia; reduced mobility; vitamin D deficiency associated with anticonvulsant medication and frequent falls (Jaffe et al., 2001).

Research objectives:

In our study - a preliminary stage for a future experimental design, we established several research aims, as follows:

- identifying healthy or unhealthy habits concerning nutrition, smoking and physical practice for persons with ID, including SO athletes, involved in the Health Promotion program (HP).
- analyzing the nutrition status of the subjects involved in the HP.
- assessing the mineral bone density of subjects with ID, within the HP.
- identifying a possible correlation among the risk factors and bone density.

Hypothesis:

- one can assume that identifying (un)healthy habits in subjects with ID can lead to a better health education, carried out in different social settings;
- there might be found a statistical correlation among the survey data, body mass index and mineral bone density in investigated subjects;
- objective data might lead to revealing significant risk factors for health status, which must be considered in conceiving different health policies and programs.

**Material and method**

Research methods

- Bibliographical study.
- Survey research through a two category items questionnaire, concerning nutrition and smoking habits.

-Testing the mineral bone density, by means of a medical device - Sahara Clinical Bone Sonometer. Ultrasound bone sonometry is a safe, radiation-free modality that provides precise quantitative assessment of skeletal status, useful in identifying patients at risk of developing osteoporosis and for assessing their risk of future fracture.

Estimating a patient's bone mineral density is based on a quantitative ultrasound measurement of the calcaneus (heel bone), the preferred peripheral site proven in numerous studies to predict fracture risk.

- Statistical procedures, including numerical descriptors and correlation coefficients.

Research material

The present study involved 49 subjects with ID - 12 female subjects aged 20-30 years, 11 aged 30-40 years, 2 aged over 40. Also, 12 male subjects aged 20-30 years, 11 aged 30-40 years and one over 40 years old. Questionnaires were filled in and measurements were performed in two sessions: in Bragadiru and in Giurgiu residential houses, in December 2008 and March 2009. Data were inscribed on the SO Health Promotion forms.

In the following we present only the first two parameters of the study, the IBM and the MBD.

**Results and discussions**

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	25.30	24.00	5.87	17.00	23.21
30 - 40	26.55	26.60	4.61	9.00	17.35
Over 40	28.00	28.00	7.78	11.00	27.78

Table 1: Body mass index (BMI) - female subjects

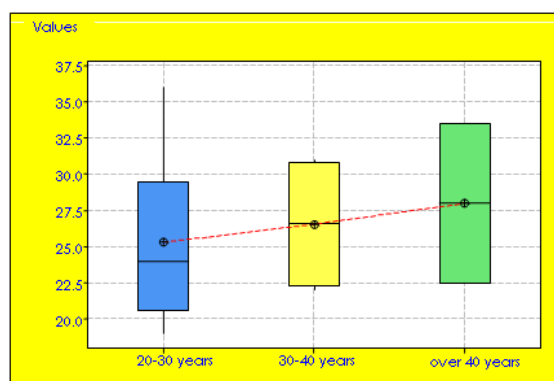


Diagram 1: Body mass index (BMI) - female subjects female

Even if BMI is not a diagnostic tool, it is used as a screening method to identify possible weight problems for adults. In the samples examined, all three age groups revealed that the average value surpasses 25, so that the subjects are considered overweight. Once they grow up in age, the BMI increases, being close to obesity for the subjects over 40. According to the variation coefficient, the groups have a great dispersion of the values, except the 30-40 years group which has a moderate variability.

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	0.56	0.53	0.14	0.39	24.86
30 - 40	0.45	0.47	0.12	0.27	25.83
Over 40	0.42	0.42	0.07	0.10	16.77

Table 2: Mineral bone density (MBD) - female subjects

The measured density in g per cm<sup>3</sup> is predictably greater for the younger female subjects. Still, the bone density as a proxy measurement for bone strength and resistance to fracture is better depicted by means of the T - score.

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	-0.19	-0.50	1.25	3.50	-672.13
30 - 40	-1.20	-1.00	1.04	2.40	-86.33
Over 40	-1.45	-1.45	0.64	0.90	-43.89

Table 3: T- score - female subjects

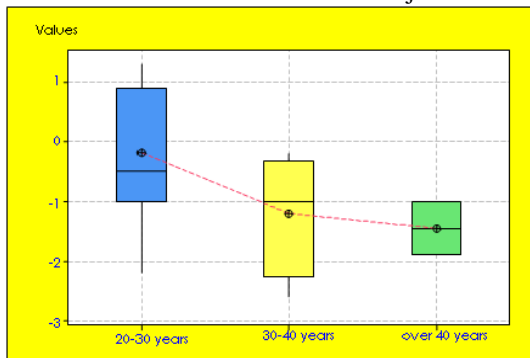


Diagram 2: T- score - female subjects

Normal	BMD > -1.0 below the young adult reference range
Low Bone Mass (Osteopenia)	BMD is -1.0 to -2.5 SD below the young adult reference range
Osteoporosis	BMD < -2.5 SD below the young adult reference range
Severe Osteoporosis	BMD < -2.5 SD below the young adult reference range and the patient has one or more fractures

Table 4: T- score: WHO Criteria for Osteoporosis in Women

According to the World Health Organization T- score table, the female subjects from the 20-30 years old group have a normal bone density, while the other two groups have osteopenia, more relevant in the over 40 age group. These have between 0, 2-0,45 standard deviations below the reference value of a healthy young woman.

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	20.89	22.00	5.13	15.60	24.57
30 - 40	25.33	24.50	4.80	14.00	18.96
over 40	25.25	25.25	0.35	0.50	1.40

Table 5: BMI - male subjects

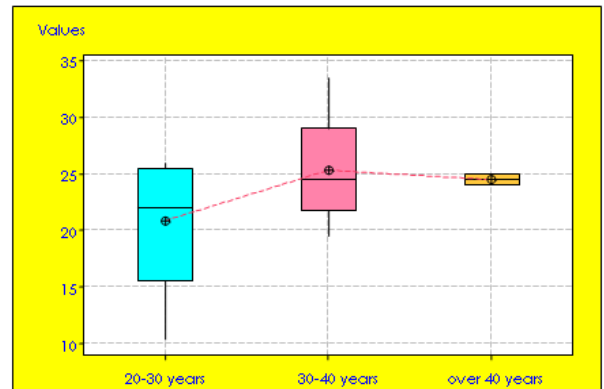


Diagram 3: BMI - male subjects

In the samples examined, the BMI has a normal average value for the younger male subjects, while the other two age groups have a slight overweight problem. According to the variation coefficient, the first group has a great dispersion of the values, the 30-40 years group has a moderate variability, while the over 40 group is highly homogenous.

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	0.51	0.53	0.18	0.57	35.68
30 - 40	0.44	0.44	0.11	0.40	26.03
over 40	0.39	0.39	0.01	0.01	1.61

Table 6: Mineral bone density (MBD) - male subjects

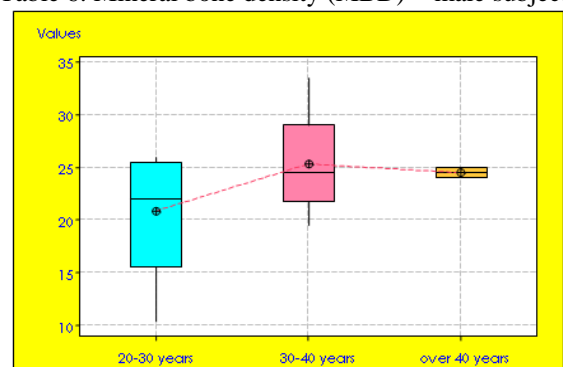


Diagram 4: Mineral bone density (MBD) - male subjects

Age	Average value	Mediane	Standard deviation	Amplitude	Variation coefficient
20 - 30	-0.64	-0.45	1.64	5.10	-256.55
30 - 40	-1.30	-1.30	1.01	3.60	-77.69
Over 40	-1.55	-1.55	0.07	0.10	-4.56

Table 7: T- score - male subjects

According to the WHO T - score table, the male subjects from the 20-30 and 30-40 years old groups have a normal bone density, while the other group has a mean value at the limit of osteopenia. The dispersion of the values is extremely high for the younger age groups, as the oldest group is the most homogenous.

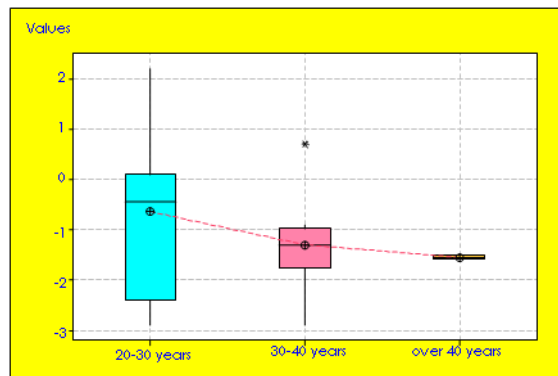


Diagram 5 : T- score - male subjects

### Conclusions

1. Research examining bone mineral density for an institutionalized population of 20-50 years old women and men with intellectual disabilities found that a bone density measure of the calcaneus (heel) indicated there is a variable degree of bone loss in this population (more than -1,5 standard deviations below the reference value), depending on the age group. Starting from 30, both women and male subjects have a more or less intense osteopenia, with a higher impact upon the first category. This evidence indicates that both genders are at risk for osteoporosis and should be directed toward prevention interventions.

2. Osteoporosis is a condition defined as low bone density along with micro-architectural distortion of bone that predisposes to fracture. Bone mineral density (BMD), which is a surrogate measure of bone strength, is an important predictor of fracture.

3. Both female and male subjects, from the samples tested prove to be overweight (BMI between 25-30), except the 20-30 yrs old male group. This extra weight has also relevance for the bone structure strength, which is exposed to a

greater physical exertion and thus to a greater traumatic risk.

4. As osteoporosis can be both prevented and treated, it's important that subjects get early screening, which includes bone-mineral density testing. Lifestyle choices in exercise and nutrition- including a diet rich in calcium and vitamin D- can prevent bone loss or decrease the rate of progression once it's started. Physician or nutritionist can and make specific diet recommendations, especially for the subjects with intellectual disabilities.

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## AEROBIC GYMNASTICS PROGRAM FOR CORRECTION OF SCOLIOSIS - A CASE STUDY

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### Abstract

The reaserch was conducted over a subject – a case study, male, 17 years old, diagnosed with idiopathic dorsal lumbar scoliosis balanced. The main goal of reaserch is to correct the deviation of column. So, the programme containe selected aerobic exercises, with canes, elastic band, exercises of stretching and breathing. The program was applied three month, in which the subject worked 72 hours for recovery. We had two sessions for evaluated him, in Pre Test we find a deviation of 10 degrees and at the final - Post Test, 7 degrees. The improvement of 3 degrees confirmed that the programme was very efficient.

**Key words:** aerobic gymnastics, scoliosis.

### Introduction

Zaharia C., (1980) outlook says that "the scoliosis is the permanent, lateral deviation of the spine on a greater or lesser degree, which at some stage of deformity the patient may voluntarily reduce it, but never reproduce it conversely on the same distance." Radulescu, (1961) says that the Scoliosis as an evolutionary disease is characterized by one or more lateral curvature of the spine, visible in the front, accompanied by rotation of vertebra, with the trend in higher compensation and lower curvature, but no trend to the reduction of the suspension or by clangour decubit and morphology of the trunk. A greater importance is given to vicious attitudes that schoolchildren usually take either upright or sitting when they read or write (John M. Dunn & Hollis F. Fait, 1989). Thus, the vicious attitude of writing with the back turned to the right with trunk leaning to the left or to the right towards the notebook for the required writing with the straight arm in abduction. (Keim H.A., 1972). This shows that over 65% of schoolchildren are likely to form a scoliosis in the shape of a reversed "S" with chest convexity on the right. Key words: scoliosis, aerobic gymnastics, recovery.

### Method

The reaserch represented by a case study

Subject: A C. V, male

Age: 17 years

Diagnosis: idiopathic dorsal lumbar scoliosis balanced

Measurements of curvature degrees: the subject presents a curvature of 10 degrees of the spine.

We have the approval of the subject to do the reaserch.

### Hypothesis

The intervention on idiopathic dorsal lumbar scoliosis balanced with aerobics exercises, with bands, canes, alternatives with correct breathing exercises and stretching exercises favor the correction of this affection.

### Organization of the experiment

Experiment was conducted over a period of three months. For the first month the subject trained for 50 min. For the next two months he trained for one hour and 10 min.

In the first month the subject trained three times a week for 50 minutes each. The total was 12 trainings and 10h.

In the second month the subject practiced 70min/training. The total was 28h in the second months. In the third month the subject worked 38 h.

### The classic topic of the training

- sitting exercises with the cane, lying on the back, facialy, standing on the knees and hands, sitting on the heels

-Working-on devices for refreshing paravertebral muscles corset and back muscles

### The proposed programme for the experiment

Aerobic programme with background music

\* Standing before the mirror: correction of global and segmentary position of the body; extention of the assets of the spine (autoelongare) alternated with relaxations.

\* Standing with arms alongside the body, rising the arms by the side and crossing them over the head, lifting on the tips and maximum vertical stretching, inspiration; returning with stretched arms through sideways in a relaxed position, with expiration.

\* Standing with the legs spread, facing the mirror: slowly leaning the body ahead with the back in extension, keeping the object by the extremities, and returning; same movement, lifting the arms through ahead and descenting them through sideways. This is perfomed with deep inspirations.

\* Tip-toe walking with hands above the head, keeping the object by the sides with the palms orientated up and elbows pulled back.

\* Tip-toe backwards walking, hands along the body, and with straight body.

\* Face hanging at the rib stall, passing to active hanging (self ascension, rising the neck from the shoulders, orienting the chin horizontal, stretching the arms) with approaching and distancing the legs.

\* Lain down with the arms stretched in the extension of the body , with the outlet on both ends of the object, legs spread: trunk extension, lifting the arms up and voluntary stretching; returning.

\* Lying on the back, hands under head, with the outlet at the middle of the objects, lifting the feet at 45-90 degrees, approaching and distancing the stretched legs, with regular breathing.

\* Standing on the knees and palms, move forward with the opposite hand and knee, and hand and knee on the same side.

\* Hanging with the back on the rib stall, legs stretched ahead at 90 degrees, approaching and distancing the stretched legs, with regular breathing.

\* Simultaneous tips rising and moving the arms back and forth, with the outlet on the extremities of the objects.

\* Tips rising moving the arms forth, with the outlet on the extremities of the objects.

\* Lifting on the tip of a leg, lifting the arms up and alongside with the outlet on the extremities of the objects.

\* Trunk bending sideways with arms stretched sideways, with the outlet on the extremities of the cane, the cane has to touch the tip of the leg towards which the bending was performed.

#### Relaxation Exercise:

\* Standing with arms alongside the body, lifting the arms ahead concomitantly with inspiration, then moving the arms backwards alongside the head and the body concomitantly with expiration, arriving in the initially position.

\* Standing with arms alongside the body, lifting the arms through sideways towards the ceiling concomitantly with inspiration, then moving the arms backwards alongside the head and the body concomitantly with expiration, arriving in the initially position.

\* Standing with arms alongside the body, lifting the arms forward with palms orientated towards the ground; then the subject will expire twisting the palms towards the ceiling, and flexing the arms alongside the body.

Exercises will run much slower, with revert to its original position after each movement, a position in which they will breathe more deeply, to avoid exhaustion. In these aerobic programs for persons with disabilities, efforts will run at an average intensity.

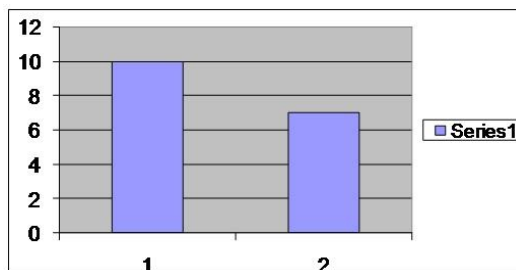


Chart 1 The degrees of deviation

#### Legend:

1. before the aerobic program
2. after performing the 3 months aerobic program

#### Discussions

The subject A.C.V was evaluated in two tests, Pre și Post Test. We applied the aerobic program with different exercises: stretching, correct breathing, with canes, and bands.

Pre test demonstrated that the idiopathic dorsal lumbar scoliosis has 10 degrees. To post test we find 7 degrees. The means used for the subject A. C. V. to correct the scoliosis proved to be effective, resulting an improvement of 3 degrees.

In addition, exercises were attractive, boosting their new subject to work easily with pleasure and enthusiasm.

#### Conclusions

The program was conducted to correction of scoliosis, so, the hypothesis was confirmed. The results of the reaserch show us that is very important to do systematical a special program for scoliosis correction.

The choice of exercises program where made very good and the program was efficient and oportun. The deviation improved with 3 degree.

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## THE EFFECT OF INJECTING ACUTE L-CARNITINE ON ENDURANCE TIME IN RATS EXPOSED TO DIFFERENT WATER TEMPERATURE

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### ABSTRACT

**Purpose:** Carnitine plays an important role in lipid metabolism by transporting long-chain fatty acids into the mitochondria for beta-oxidation. The effect of carnitine on exercise capacity is not clear. The aim of this study was to explain effect of injecting acute L-Carnitine on endurance time in rats exposed to different water temperature.

**Material and Methods:** Six groups ( E18°C, E28°C and E38°C groups made exhaustive swimming CE18°C, CE28°C and CE38°C groups given L-Carnitine and made exhaustive swimming exercises) were formed and a total of 36 Spraque Dawley male rats, weighing 250-300 g were used in this study. In the study, the L-Carnitine was given to the groups 1-1.5 hours before the exercises in the doses of 100 mg/kg by intraperitoneal (I.P.) way. Exhaustive swimming tests were made in a rectangle shaped glass water tank that was 80x60x60 cm<sup>3</sup>. The uncoordinated movements and staying under the water for 10 seconds without swimming at the surface were accepted as the exhaustion criteria of the rats.

**Results:** In the rats of CE18°C group the endurance time increased significantly comparing with the E18°C ( $P < 0.01$ ). There was not significantly different among other groups

**Conclusion:** This result suggests that carnitine may especially enhance the physical performance doing cold ambient. Carnitine might generate that effect by regulation lipid metabolism and mitochondrial functions.

**Keywords:** L-Carnitine; endurance time; Exercise; Rat; water temperature.

### Introduction

Fat and carbohydrates are the primary metabolic fuels utilised by contracting skeletal muscles during exercise and resting (M.J. Watt, J.F. George, Dj. Heigenhauser, Dyck And L.S. Lawrence, 2002). Thus, it is not surprising that a variety of metabolic and biochemical markers is related to exercise performance and training. Manipulations of bioenergetics have frequently been proposed as strategies to enhance exercise endurance or capacity. The functions of carnitine in skeletal muscle are critical to sustaining normal bioenergetics during exercise (P.E. Brass, W.R. Hiatt, 1998).

L-carnitine (4-N-trimethylammonium-3-hydroxybutyric acid), stored within skeletal muscle tissue as either free or acyl carnitine (F.B. Stephens, D.C. Teodosiu, D. Laithwaite, E.J. Simpson, And L. Paul, P.L. Greenhaff, 2006), is an endogenous molecule well-established roles in metabolism (E.P. Brass, 2000), and plays important physiological roles shuttling the long-chain fatty acids across the inner mitochondrial membrane for ATP production and  $\beta$ -oxidation in peripheral tissues (İ. Gülçin, 2006). For health and performance the importance of mitochondrial function has been highlighted during the last few years (D. Hood, A. Joseph, 2005). It is well known that oxidation of fatty acids (FA) is augmented and lactate formation is reduced during exercise after endurance training. This is explained by an increased mitochondrial density in skeletal muscle and a concomitant increased activity of oxidative enzymes (J. Holloszy, E. Coyle, 1984).

Impairment of muscle contractility due to fatigue may play a role in determining human performance.

Through unclear mechanisms, high carnitine concentrations were shown to delay muscle fatigue and permit improved maintenance of contractile force in studies using in vitro animal systems (M. Dubelaar, C. Lucas, W. Hulsmann, 1991; E. Brass, A. Scarrow, L. Ruff, K. Masterson, Van Lunteren, 1993). The relevance of these observations to human exercise is unknown.

Although some researchers declared that L-carnitine supplement, have beneficial effects on exercise performance (F.B. Stephens, D.C. Teodosiu, And P.L., Greenhaff, 2007; J.S. Volek, W.J. Kraemer, M.R. Rubin, A.L. Gomez, N.A. Ratamess, And P. Gaynor, 2002) the others, claimed that taking carnitine before exercise have no effect on performance (C. Greigh, K. Finch, D. Jones, M. Cooper, A. Sargeant, C. Forte, 1987; J.W. Ransone, And R.G. Lefavi, 1997).

Normal body core temperature during exercise varies depending on environmental conditions, such as the situation of training and acclimatization, the duration and intensity of exercise, and individual differences (H.N. Soutanakis-Aligianni, 2003). During physical exertion an understanding of thermoregulation is important in protecting athletes from injuries and in managing physical performance under cold and heat conditions. Thermal stress combined with physical exertion may lead to rise in body core temperature (C.L. Lim, C. Byrne, J.K. Lee, 2008; G.A. Khomenok, A. Hadid, O.P. Bloom, R. Yanovich, T. Erlich, O.R. Tal, A. Peled, Y. Epstein, D.S. Moran, 2008). Many endogenous mechanisms serve in thermoregulation responses (T. Reilly, B. Drust and W. Gregson, 2006). However the literature limited knowledge related to the effects of L-



carnitine on the exercise done hypothermic and hyperthermic ambient.

The aim of this study was to determine effect of injecting acute L-Carnitine on endurance time in rats made exhaustive swimming exercise in different water temperature, such as 18 °C, 28 °C and 38 °C.

### Material and methods

#### Animals and Groups

In this study, 36 healthy Sprague Dawley male rats, weighing 250–300 g, 4–6 months of age, provided from Firat University Experimental Animal Research Center (FUDDAM). The study was carried out in Atatürk University Research Center of Experiment Animals and the study was approved by the Ethical Committee of the Atatürk University (AUHADYEK, Ethical Committee Report No: 2008-51). Protocols used here were in accordance with Guidelines for Ethical Care of Atatürk University Research Center of Experiment Animals.

The rats were kept under special conditions and were sheltered in cages, each with 6 rats, at the room temperature (25°C), supplying with food (Bayramoğlu Yem Sanayi, Erzurum, Turkey) and water for 12-hour day and night cyclus. The rats were divided into six equal groups. Group 1: The ones that made exhaustive swimming exercises at the temperature of 18°C (E18, n=6). Group 2: The ones that made exhaustive swimming exercises at the temperature of 28 °C (E28, n=6), Group 3: The ones that performed exhaustive swimming exercises at the temperature of 38 °C (E38 n=6), Group 4: The ones that were given L-Carnitine and made exhaustive swimming exercises at the temperature of 18 °C (CE 18 n=6), Group 5: The ones that are given L-Carnitine and made exhaustive swimming exercises at the temperature of 28 °C (CE28 n=6), Group 6: The ones that are given L-Carnitine and made exhaustive swimming exercises at the temperature of 38 °C (CE38 n=6).

#### Chemicals

L-carnitine was obtained from Sigma (Sigma-Aldrich GmbH, Sternheim, Germany). In the study, the L-Carnitine was given to the groups 1-1.5 hours before the exercises in the doses of 100 mg/kg by intraperitoneal (I.P.) way (U. Panjwani, L. Thakur, S. Singh, B. Amita, S. Singh, P. Banerjee, 2007).

#### Exercise Protocol

Maximal intensely tired swimming exercises were applied to exercise and L-Carnitine exercise groups in test group (n: 36).

**Adaptation Training.** For the rats to have adaptation, they were first made to have swimming exercise in a pool, 80 x 60 x 60 cm<sup>3</sup> for 5 minutes during 5 days in water temperature at 26-28°C (This temperature is the most appropriate for rat metabolism). A resistance of 2200 V and a digital thermometer (GEMO, micro software and PID thermo controlled device) was used to warm up the pool. After swimming exercise, the rats were dried with towels,

made to rest for 30 minutes at a warm place and taken to cages.

**Exhausted Swimming Exercise.** All the rats in exercise group were made swimming at 18 °C, 28 °C and 38°C respectively until they felt tired. The uncoordinated movements and staying under the water for 10 seconds without swimming at the surface were accepted as the exhaustion criteria of the rats (R. Osorio, J. Christofani, V. Almeida, I. Picarro 2003).

#### Determination of temperatures

American Health Assembly (AHA), approved of normal body temperature as 36.5–37.2°C. The body temperature of rats is the same as those of humans. A naked person can keep body inner temperature fixed between 12.5°C and 55°C in dry weather (20). For the body to feel the heat depends on the temperature of the weather, moisture rate and wind rate. 26–30°C is the optimal temperature for performance in water sports (21).

In this study the temperature was determined 10°C more or less than average temperature 28°C as optimal temperature for performance, under 10°C hypothermic (18°C), over 10°C hyperthermic (38°C). In present study to determine temperature values of water, under 16°C and over 38°C posed risk for rats. The rats made to swim at 14 and 39°C died and had severe complications in 5-10 minutes (three out of six).

#### Statistical Analysis

The experimental results were performed in triplicate. The data were recorded as mean ± standard deviation and analyzed by SPSS (version 11.5 for Windows 2000, SPSS Inc.). Differences between exercise and carnitine-exercise group was made using by Mann-Whitney U test. Analysis inside of Group was made using by Kruskal -Wallis test and  $p < 0.05$  was regarded as significant.

### Results

Endurance time (minute) between exercise and carnitine-exercise groups, taking place in equal water temperature was indicated in **Table 1**. With reference to, endurance time of CE18 group was significant higher than E18 group ( $P < 0.01$ ). When compared E28 group and CE28 group, CE28 group was obtained a increased, but it is wasn't significantly. Additionally, endurance time wasn't significantly between CE38 group and E38 group.

**Table 1.** Comparison of endurance time (min.) between exercise and carnitine-exercise groups, taking place in equal water temperature.

Groups	n	mean±sd	Z	P
E18	6	92.00 ± 21.72		2.722
CE18	6	139.00 ± 31.37*		0.006*
E28	6	249.00 ± 42.46		1.761

<b>CE28</b>	6	291.00 ± 35.16	0.078
<b>E38</b>	6	97.00 ± 39.57	0.962
<b>CE38</b>	6	75.00 ± 39.14	0.336

(\* ) $P < 0.01$

Endurance time (min.) among them exercise and carnitine-exercise groups was presented in **Table 2**. With reference to, endurance time of among exercise groups E28 group veiwed significantly a increase in accordance with E18 group and E38 group ( $P < 0.05$ ). If endurance time of among carnitine-exercise groups CE28 group was significant higher than CE18 group and CE38 group ( $P < 0.05$ ). Also, CE38 group was significantly lower than CE18 group ( $P < 0.05$ ).

**Table 2.** Comparison of endurance time (min.) among them exercise and carnitine-exercise groups .

Groups	Z	P
<b>E28* - E18</b>	-2.201	.028*
<b>E38 - E18</b>	-.420	.674
<b>E38 - E28*</b>	-2.201	.028*
<b>CE28* - CE18</b>	-2.201	.028*
<b>CE38* - CE18</b>	-2.201	.028*
<b>CE38 - CE28*</b>	-2.201	.028*

(\* ) $P < 0.05$

### Discussion

Carnitine is an endogenous compound with well-established functions in cellular metabolism that are clearly important in muscle during exercise (S. Ahmad, H. Robertson, T. Golper, Et Al., 1990). An obligate for optimal mitochondrial fatty acid oxidation, it is a critical source of energy and also protects the cell from acyl-CoA accretion through the generation of acylcarnitines (E.P. Brass, 2000). Therefore, It is not surprising that the use of supplementary carnitine to improve physical performance has become widespread in recent years.

In this study, in rats given L- Carnitine was evaluate endurance time in exhaustive swimming exercise in different water temperature. According to obtained data, L- Carnitine stimulated endurance time at 18°C of water temperature, although there wasn't sgnificantly in favour of L- Carnitine groups on endurance time between exercise and L-Carnitine exercise groups at 28°C and 38°C (**Table 1**). Also, Comparison of among them exercise groups and L- Carnitine exercise groups was determined effect of L- Carnitine at 18°C (**Table 2**).

In the literature, there were different views with respect to the relationship between exercise performance and L- carnitine. Although there are some theoretical points favouring potential ergogenic effects of carnitine supplementation (O. Heinonen, J. Takala, 1994; H. Karlic, A. Lohninger, 1996), there is currently no scientific basis for healthy individuals or athletes to use

carnitine supplementation to improve exercise performance. (O. Heinonen, 1996, C. Greigh, K. Finch D. Jones, M. Cooper, A. Sargeant, C. Forte, 1987; Christoph Stuessi Æ Pierre Hofer Æ Christian Meier Urs Boutellier. L., 2005).

Slipandi (N. Siliprandi, F. Dilisa, G. Pieralisi, P. Ripari, F. Maccari, R. Menabo, Ma. Gamberardino, 1990), and Vecchiet(L. Vecchiet, F. Di Lisa, G. Pieralisi, P. Ripari, R. Menabo, M. Gamberardino, N. Siliprandi, 1990) noted that ingested 2 g. L-Carnitine before 60 min. exercise decreased blood lactat and increased performance and strenght. Greig et al.(C. Greigh, K. Finch D. Jones, M. Cooper, A. Sargeant, C. Forte, 1987) declared that carnitine supplementation wasn't beneficial effect to exercise performance since the observed effects were small and inconsistent.

The reserches relevant to effect of L- Carnitine on endurance time in the literature are limited number. Likewise, Trappe et. al. (S. Trappe, D. Costill, B. Goodpaster, M. Vukovich, W. Fink, 1994), notified that L-carnitine supplementation does not provide an ergogenic benefit in performance times in highly trained swimmers. Another study making on thirty-two male rats was pointed out that in exercise endurance time were no changes by supplementation in untrained animals, however endurance times were longer in long-trained supplemented animals than in long-trained non-supplemented.(E. Kim, H. Park, Y. Cha, 2004).

The thermoregulatory mechanisms play important roles in maintaining physiological homeostasis during rest and physical exercise. Physical exertion poses a challenge to thermoregulation by causing a substantial increase in metabolic heat production. However, within a non-thermolytic range, the thermoregulatory mechanisms are capable of adapting to sustain physiological functions under these conditions (L. Chin Leong, C. Byrne, J. Lee, 2008).

Many endogenic mechanisms serve in thermoregulation responces (T. Reilly, B. Drust, And W. Gregson, 2006). However the literature knowledge related to the effects of L- carnitine on the exercise done hot and cold ambient. Jansens et al., (G.P.C. Janssens, J. Buyse, M. Seynaeve, E. Decuypere, And R.D. Wilde, 1998), announced that heat production has decreased in exercising pigeons after L-carnitine supplementation.

Skeleton muscles have used free fatty acids both at rest and during exercise. For this reason, L- Carnitine deficiency may cause to decrease in skeleton muscle funcios and in exercise capacity, In humans, cold-induced thermogenesis is attributable to skeletal muscle contractile activity (U. Chu, M. Larsson, T. Moen, S. Rennard And L. Bjermer). Humans initiate this thermogenesis through involuntary shivering or by voluntarily modifying behavior, i.e., increasing physical activity . While certain animals exhibit an increased metabolic heat production by noncontracting



tissue (brown adipose tissue) in response to cold exposure. In cold ambient, in skeleton muscles increase using free fatty acids both at rest and during exercise (A. Strup, 1986; B. Cannon And J. Nedergaard, 2004). For this reason, L- Carnitine deficiency may cause to decrease in skeleton muscle functions and in exercise capacity (S. Gültük, A. Demirkazık, S. Erdal, T. Demir 2007). Exercise intolerance, carnitine palmitoyl-transferase enzyme deficiency (CPT II) has been postulated to depend on low - carbohydrate-high - fat diet, exhaustive exercise, fasting, hypothermia and insomnia (M. Orngreen, R. Ejstrup, J. Vissing, 2003), and especially, it created skeletal muscle damage (A. Gentili, E. Lannella, F. Masciopinto, M. Latrofa, L. Giuntoli, S. Baroncini, 2008). Little is known about energy substrate metabolism and energy utilization in hibernating species under conditions of hypothermia and rewarming. Belke et al (D. Belke, L. Wang, G. Lopaschuk, 1997), reported that total energy substrate metabolic rates were greater in rat than ground squirrel hearts during hypothermia, despite a lower level of work being performed by the rat hearts, indicating that rat hearts are less efficient than ground squirrel hearts during hypothermia. Because of this reasons, in cold water - in view of improved heat production and energy metabolism- increased using fatty acids. this study may say that L- Carnitine supplement helped to energy output at 18°C water temperature.

### Conclusions

In conclusion, according to this study carnitine may especially enhance the physical performance doing cold ambient. Carnitine might generate that effect by regulation lipid metabolism and mitochondrial functions. Effect of this study Carnitine will inform useful that to be supported by molecular trial and advanced researches

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## PREVENTION OF MUSCULO-SKELETAL TRAUMAS IN COMPETITIVE SPORTSMEN (Aspects regarding trauma incidence in volleyball and basketball teams)

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### ABSTRACT

Traumas occur frequently in the competitive sportsman’s life.

The causes and the mechanisms of musculo-skeletal traumas vary with every sport.

#### Objectives

1. To identify the factors that favour/determine traumas caused by overstress.
2. To determine the trauma incidence in the studied sportsmen.
3. To develop and implement prophylactic training protocols.
4. To detect musculo-skeletal traumas early, using modern investigation methods: musculo-skeletal ultrasound scan, MRI, CT.
5. To determine the main musculo-skeletal traumas occurring in sports practising.
6. The functional rehabilitation of the injured segment so that the sportsman can resume his/her competitive activity at best possible parameters and without the risk of relapse.
7. To create (clinical, imagistic and prevention) algorithms to monitor the sportsmen.
8. To keep trauma-affected sportsmen under a three-year monitorisation period and to draw the conclusions.

**Material and methods:** the study batch included 107 sportsmen of the volley, basketball, handball and football teams, league A1 and A2, from Timisoara and Lugoj, in the competition period 2006 -2009.

**Research methods:** bibliographic study, observation, inquiry, questionnaire, the statistical-mathematical method, the graphic method, radio-imagery methods (CT, MRI) of investigating sportsmen with musculo-skeletal traumas.

#### Treatment and prevention:

The rehabilitation therapy is complex and intensive. It should be correlated with the sportsman’s training level, his/her performance level at the time the trauma occurred, and the functional level the sportsman should reach in order to resume his competitive activity.

Relaxation, cryotherapy, anti-inflammatory and myorelaxing drugs, compressions, adjuvants are the first means to apply as soon as trauma has occurred.

**Means of rehabilitation:** massage, kinetotherapy, electrotherapy, thermotherapy, balneotherapy.

This paper brings forward several complex physical exercises focusing on groups of muscles and joints involved in specific types of motility required by different sports. The exercises were chosen so as to increase articular mobility and improve muscle and ligament flexibility.

In theory, all traumas can be prevented through training that is initiated and performed correctly, proper physical and psychical training and preventive imagistic monitorisation.

**Key words:** sportsmen, musculo-skeletal traumas, prevention, radio-imagery diagnosis, rehabilitation

### Introduction

Injuries are a common fact in the competitive sportsman’s life. They are caused by too short warm-up periods, faulty training, improper equipment, specific trauma, aggression on the court etc. The detection and treatment of the preclinical forms, the therapeutic conduct and the sportsman’s rehabilitation are only a few of the directions to pursue in finding viable solutions to sport performance related problems.

Prevention includes specific exercises as part of the training programme. Such exercises are meant to increase articular and periarticular structure flexibility, ligament resistance and muscular elasticity. They provide biomechanical joint consolidation, stability and maximum use of joint movement limit.

In addition to the above, massage and self-massage may be applied corresponding to the effort, the training period, and the protection of the trauma-exposed articular areas through taping and stretching (primary prevention) and proper treatment and rehabilitation (secondary prevention).

#### Objectives

1. To identify the factors that favour/determine traumas caused by overstress.
2. To develop and implement prophylactic training protocols.
3. To determine the trauma incidence in the studied sportsmen.
4. To detect musculo-skeletal traumas early, using modern investigation methods:

- musculo-skeletal ultrasound scan, MRI, CT.
- To determine the main musculo-skeletal traumas varying with every sport, longevity in sport practising, the anatomical and clinical condition, the uni/bilateral location of the affection, the number of days of partial/total rest required by the diagnosed clinical condition..
  - To establish clinical, imagistic and prevention algorithms to monitor the sportsmen.
  - To keep trauma-affected sportsmen under a three-year monitoring period and to draw conclusions.

#### Working hypotheses

This paper starts from the premise that high trauma incidence among the studied competitive sportsmen is caused by controllable factors. A distinction is made between extrinsic factors that are unrelated to the sportsman (improper state of the field, training errors, risk of sport-specific traumas, inadequate equipment) and intrinsic factors (the sportsman's anatomic and biomechanic characteristics, previous traumas treated improperly, Ca and Mg deficits, etc.). Primary and secondary prevention will lead to a decrease in the incidence of trauma.

#### Material and methods

The study batch included 107 sportsmen of the volleyball, basketball, handball and football teams in Timisoara and Lugoj, league A1 and A2, in the 2006-2009 competition period.

Given the necessity of cases that should benefit from an investigation protocol including CT, MRI, treatment and rehabilitation, we cooperated with the Radiology and Medical Imagistics Clinic of the Victor Babes University of Medicine and Pharmacy Timisoara, the Sanotim CT scan centre and a kinetic therapy and medical rehabilitation centre.

The sportsmen were monitored both while training and during games, with the help of medical sportsmen and kinetic therapy experts, and the medical staff representative for training camps and away games. The incidence of trauma was reported for all training stages.

Research methods: bibliographic study, observation, inquiry, questionnaire, statistical-mathematical methods, graphic methods and radio-imagery methods (CT, MRI) for investigating sportsmen with musculo-skeletal traumas.

#### Registered data, results and interpretations

##### The distribution of the study subjects on sports

No	Sport	Teams	Number of sportsmen	Total of subjects with traumas	%
1.	Volleyball	Lugoj League A 1 W	14	14	100 %
2.	Volleyball	Poli Tm League A 2 W	11	9	82%
3.	Volleyball	University of the West League A2 M	14	13	92.9%
4.	Basketball	Elba Timisoara League 1 M	12	12	100%
5.	Basketball	University of the West League A2 M	12	12	100%
6.	Basketball	University of Medicine and Pharmacy Timisoara M	12	11	90.91%
7.	Basketball	University of Medicine and Pharmacy Timisoara W	12	11	90.91%
8.	Handball	University of the West League A2	14	12	86%
9.	Football	C.F.R. Timisoara	18	16	89%

Injury prevention involves the identification of the first signs that can be noticed and analysed by the coach, the doctor and the sportsman.

#### Causes of injuries:

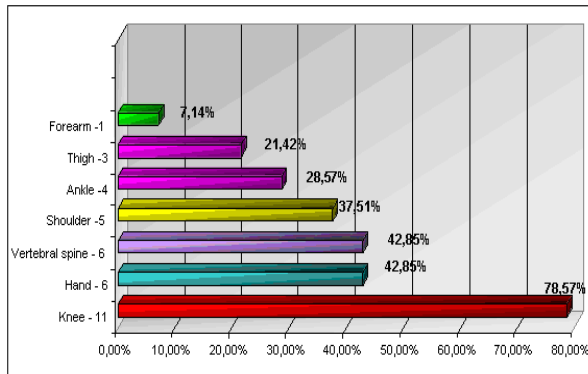
- lack of energy or torpidity that does not disappear after the first minutes of warming-up, indicating an overstress of the muscle-bone system structures
- the thought of giving-up and unexplainable poor performance
- chronic fatigue
- a 10 beats/minute increase of the heart rate
- lack of appetite, irascibility and/or depression, indicating overtraining
- too short
- wrong training methods
- movements not reaching the maximum movement amplitude
- tendon or joint overtraining
- articular imbalances
- weight gain
- insufficient rest
- lack of concentration
- tendon and ligament overstretching
- ignoring acute and localised pain

#### Results - Volleyball - Women - League A1

No	Name & surname Initials	Year of birth	First year of competitive sport practising	Player category	Player specialisation	Height (cm)	Weight (kg)
1.	B. S.	1988	1998	League A1	spiker	180	65
2.	C. L.	1987	2002	League A1	spiker	188	74
3.	S. A.	1989	1998	League A1	spiker	174	63
4.	B. D.	1988	1998	League A1	setter	172	63
5.	C. L.	1988	1998	League A1	spiker	177	65
6.	M. C. B.	1967	1980	League A1	setter	173	56
7.	M. I.	1989	2000	League A1	spiker	183	70
8.	H. A. M.	1988	1998	League A1	spiker	180	76
9.	L. D.	1986	1995	League A1	spiker	175	67
10.	S. M.	1988	1996	League A1	libero	167	65
11.	F. A. M.	1984	1995	League A1	spiker	183	68
12.	M. D.	1983	1994	League A1	libero	169	64
13.	C. G.	1985	1993	League A1	spiker	181	63
14.	C. A.	1989	1999	League A1	libero	169	59

#### Distribution of traumas based on the affected area Volleyball (a team of 14 sportswomen)

No	Area affected by musculo-skeletal trauma	Sportswomen with traumas	TYPE OF TRAUMA
1.	Knee	11 (78.57%)	Meniscal tears, fissures, sprains, tendinitis, collateral and cruciate ligament injuries
2.	Ankle	4 (28.57%)	Sprains, fractures
3.	Shoulder	5 (35.71%)	Tendinitis, rotator cuff tear
4.	Spine	6 (42.85%)	Cervical spondylosis, lordosis, scoliosis
5.	Hand	6 (42.85%)	Sprains, strains, fractures
6.	Thigh	3 (21.42%)	Muscle ruptures
7.	Forearm	1 (7.14%)	Fracture



### Result interpretation: volleyball

The most frequent traumas within the volleyball team were knee injuries: 11 cases (78.57% of the players). Among these, meniscal injuries were the most common (degeneration, fissure, tear). One sportswoman underwent meniscal tear surgery.

The musculo-skeletal trauma distribution within the volleyball team was as follows:

- ≥ 3 traumas - 10 players
- < 3 traumas - 4 players.

A number of 46 musculo-skeletal traumas were registered in the CSM Lugoj volleyball team of League A1 in September 2006 - April 2009. Most injuries were caused by falls and ball hits.

The injuries are associated with blocking and attacking, as both involve jumping. Both the upper and the lower part of the locomotor system are permanently strained. Injuries of the superior part account for over 50% of the traumas. Overstress injuries account for 80% of the traumas, while 20% are accidental lesions. Example: in the volleyball team, C.L. suffered from ankle sprain relapse and S.A. had right knee sprain and cruciate ligament injury.

The pathology in the volleyball team included the following affected regions:

- ✓ shoulder joint complex (impingement syndrome, rotator cuff pathology, acute or chronic instability)
- ✓ back (effort-related lumbar pain and paravertebral muscle contraction)
- ✓ knee joint (sprains, strains, collateral ligament injuries and meniscal tears)
- ✓ tibio-tarsal joint (sprains by inversion or eversion, strains, acute or chronic instability);
- ✓ hand phalangeal sprains and overstress

traumas

- ✓ frequent tendinitis, tenosynovitis, enthesitis of Achilles tendon, kneecap tendon, shoulder, muscle ruptures and myositis.

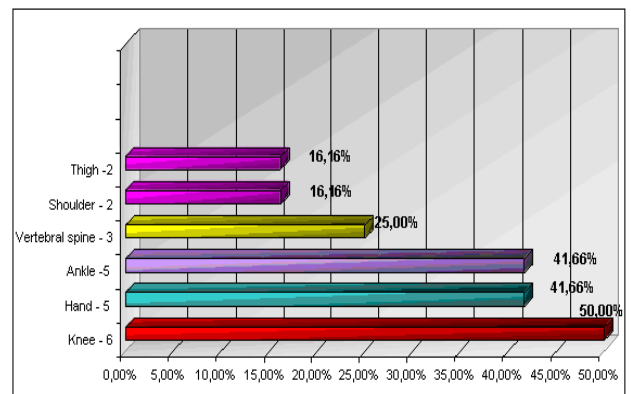
Other injuries in the volleyball team were contusions (which occur most frequently, but most of them are minor) and effort-related lumbar pains that cause pain and paravertebral muscle contraction.

### ELBA Timisoara Municipal Basket Club

No	Name & surname	Age (years)	Height (cm)	Weight (kg)	Player specialisation	Age of debut
1.	S. B.	21	196	92.5	Small forward	13
2.	T. D.	21	181.5	81	Point guard	12
3.	D. R.	28	185	82	Point guard	13
4.	V. U.	25	189	77	Shooting guard	9
5.	P. M.	24	203	102	Small forward	10
6.	V. N.	22	194	86	Shooting guard	9
7.	M. N.	27	196	94	Small forward	7
8.	P. D.	29	208	114	Centre	15
9.	G. B.	28	211	112	Centre	16
10.	C. P.	29	202	91	Small forward	12
11.	T. A.	25	202	112	Centre	14
12.	P. F.	21	194	76	Shooting guard	10

### Basketball (a team of 12 sportsmen)

No	Area affected by musculo-skeletal trauma	Sportsmen with traumas	TYPE OF TRAUMA
1.	Knee	6 (50%)	Ligament injuries, anterior cruciate ligament ruptures, bone edema
2.	Ankle	5 (41.66%)	Sprains
3.	Shoulder	2 (16.66%)	Tendinitis
4.	Spine	3 (25%)	Lumbar sciatica
5.	Hand	5 (41.66%)	Strains, tendinitis, fractures, sprains
6.	Thigh	2 (16.66%)	Muscle ruptures







### Result interpretation: basketball

In the basketball team, knee injuries were also the most frequent: 6 cases (50% of the players). Of these, the most common were ligament injuries (collateral and cruciate ligament affections).

The musculo-skeletal trauma distribution among the twelve basketball players was the following:

≥ 3 traumas – 6 players

< 3 traumas – 6 players.

A number of 40 musculo-skeletal traumas were registered in the Elba Timisoara basketball team in September 2006 - April 2009. Most lesions were caused by direct contact with the opponent, unreasonable violence and aggression on the basketball court and ball contact and hits.

The pathological aspects concern mainly the ligaments and the joint system.

The most common injuries are sprains of the ankle (tibio-tarsal sprains), knee and phalange, overstress traumas, tendinitis, tenosynovitis, enthesitis (Achilles and kneecap tendons, elbow and shoulder), muscle ruptures and myositis.

Other injuries were contusions (which occur frequently, though most of them are minor) and effort-related lumbar pains that cause pain and paravertebral muscle contraction.

The results of our study have revealed a larger number of traumas in the players than the literature of the field. The high trauma incidence is caused by an association of controllable factors:

- insufficient effort capacity
- hypocalcemia
- kyphosis, lordosis
- improperly treated previous traumas
- errors in the training methods
- inadequate basketball court

Given the importance of primary and secondary prevention, this paper brings forward a coherent programme of complex exercises focusing on the groups of muscles and joints involved in specific types of motility required by different sports.

The exercises were chosen so as to increase muscular balance, articular mobility and improve muscle and ligament flexibility (major factors in trauma prevention).

#### A complex of exercises

❖ **Warming-up** - 10 minutes' running (cross-over steps, backward running)

❖ **Stretching** (for the cervical region, the body, the arm and forearm muscles, the shoulder muscles, the inferior limb muscles and joints; they can be done individually or with a partner).

1. Bend your head forward, backward, to the right, to the left. Turn your head to the right, to the left (3 x 7-10 seconds, 2-4 seconds break).

2. Stand with your legs apart and stretch your right arm to the left. Place your right arm across your body at shoulder height and gently pull it toward your body with your left hand, holding your left forearm at the

right elbow level. (3 x 7-10 seconds, 4 seconds break). Repeat for the left arm.

3. Stand with your legs apart and hands behind your back. Clasp your right wrist with your left hand and pull it downwards while bending your head to the left (2 x 10-15 seconds, 4 seconds break). Switch arms and repeat.

4. Stand with your legs apart and raise your right arm. Clasp your hands at shoulder blade level. (2 x 10-15 seconds, 2-4 seconds break). Then raise your left arm and do the same.

5. Stand with your legs apart; bend your trunk with arms raised and palms on the stall bar. Keep your back straight. Then bend your trunk with hands on your hips. (2 x 15 seconds, 4 seconds break).

6. Stand with your legs apart, bend your trunk and touch the ground with your palms. Keep your back straight (2 x 15 seconds, 2-4 seconds break).

7. Stand with your legs apart. Bend your trunk to the left, raise your right arm, keep your left arm relaxed on the ground (2 x 15-25 seconds, 2-4 seconds break). Then bend your trunk to the right.

8. Sit down, bend your left knee and cross it over your right knee, with your sole on the ground. Turn your trunk to the left while touching your left knee with your right elbow and leaning your left arm behind on the ground (2 x 15-25 sec, 2-4 sec). Then bend your right knee and repeat.

9. Lie down on your abdomen and raise your arms. Do trunk extensions (3 x 10-15 seconds, 2-4 seconds break).

10. Forward lunges alternating right and left foot (3 x 15-25 seconds, 2-4 seconds break).

11. Stand and take a step to the right, flexing your right leg and stretching the left one. (3 x 15-25 seconds, 2-4 seconds). Switch sides and repeat.

12. Lunge forward, stretch your leg behind, and turn your trunk to the right with your right hand on your right knee and your left hand on the ground. Switch legs and repeat.

#### ❖ **Non-specific fitness exercises:**

- Running and jumping (pawing drill, high knees drill, heel kicks, skipping), 2 x 30 m, 30 seconds break.

- Standing with your legs apart, jump with your hands over your head, bend your trunk laterally, and rotate your trunk, 2 x 8 times, 10-15 seconds break.

- Sit-up jumps for lower limb extension and contracting abdominal muscles, 2 x 8 times, 10-15 seconds break.

❖ **Warm-up exercises typical of every sport following general warm-up.** They warm-up those parts of the body that are used mostly while practising a certain sport.

- Volleyball: shoulder rolls (headers), passing, receiving, attacking, blocking, and serving.

- Basketball: dribbling, passing, shooting etc

❖ **Weight lifting and resistance exercises.** This programme takes place weekly and involves isotonic and isometric exercises.

❖ **Taping and strapping**



The following **rules** will be obeyed:

- exercise to be repeated 3-4 times only
- slow speed
- for weight lifting, 80% maximum lifting load.

#### **OBSERVATIONS**

The stretching exercises became part of the training sessions to prepare the body for effort. They have a positive effect on the amplitude of the movements (make movements easier) and the muscle groups that are involved in common warm-up (intervertebral, intercostal, scapulo-humeral and abdominal oblique muscles).

These exercises have both an immediate effect and a cumulative effect in time, improving articular mobility and muscle and ligament elasticity – major factors in trauma prevention.

#### **Conclusions and suggestions**

Sport games are a chain of individual and collective movements involving high speed, force and precision. Body stress is variable: short periods of maximum stress followed by reduced effort, using a metabolic model of aerobic and anaerobic exercises.

The locomotor system (the knees, the ankles, the upper limbs, the scapulo-humeral and interphalangeal joints, the spine, especially the lumbar region) is subjected to overstress.

In addition to specific training, basketball and volleyball players need strong, mobile joints and well-developed muscles that allow a high level of quality movements both for performance and injury prevention.

The final conclusion will be drawn by monitoring the trauma incidence of the study teams after the suggested programmes have been applied.

The results of our study underline the importance of both primary prevention that eliminates factors causing injuries and secondary prevention, in the case of injury relapse (elastic contention, proper and total trauma rehabilitation and gradual training resume).

#### **Suggestions**

Given the importance of primary and secondary prevention, this paper brings forward a coherent programme of complex physical exercises focusing on the groups of muscles and joints involved in specific types of motility required by different sports. The exercises were chosen so as to increase muscular balance, articular mobility and improve muscle and ligament flexibility (major factors in trauma prevention).

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## THE PSYCHOMOTOR TRANSACTIONAL APPROACH

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### Abstract

The Psychomotor Transactional approach in its development is referred to children who have motor disorders and who would find a psychomotor balance inside the psychical dynamics like space and time.

We have chosen to report the intervention's phases developed during 1988 to the rehabilitation institute Santo Stefano in Porto Potenza Picena exploiting the actuality and the globality of approach to tempt to conduct the patience to discover his capacity and potentiality despite of motor disorders of cerebral's origin.

**Key words:** children, psychomotor transactional.

The conquest of personal autonomy, the differentiation and the consciousness of self-body, with the appropriate chosen of motor schemes, to respond to the external requests, represent important development's phases to exploit the world from child. As a result, children under six are linked to the concrete experience and to the perception of the world by the body and movement organizing themselves inside the psychical dynamics like space and time.

If in the normal child these acquisitions and consciousnesses are implicit, the disabled child needs to the adult's mediation, because he has scarce capacity to organize external and internal information with a consequent difficulty to choose with autonomy the right strategy to affront new situations (C. Ambrosini., C. De Panfilis, A. M. Wille, 1999).

The child who has motor disorders of cerebral origins, with a consequent movement's difficulty and above all, with a difficult to organize the body in the surrounding space and time, needs to a timely recovery's intervention, starting from a precocious diagnosis.

The pedagogical challenge, that is on the base of the Transactional approach, that we are going to analyze, is to be able, like therapist's rehabilitation, to intend and to imagine disabled children, like a potential autonomous individual, who brings inside himself a peculiar motor expressiveness intended like a modality to adapt him in the surrounding world.

As a result, every person with a particular own history expresses a peculiar modality to adapt himself through the movement and to show his emotions and sensations.

Making a synthesis we can refer on Aucouturier's thought who speaks about a peculiar psychomotor development of everyone that has its origins in the child's phantasmatic world and in his own psychical and emotional dimension (B. Aucouturier, 2000).

For this reason to intend disabled child like a potential autonomous individual, is very important to apply a psychomotor intervention thought to give to the patience discovering keys of his capacity to increase them, and at the same time, without forgetting the emotion's sphere that has a significative role in the process of knowledge of the world.

Starting from this theoretical point of view, the next concept that we are going to analyze, has been applied during 1988 inside the rehabilitation institute "Santo Stefano" in Porto Potenza Picena; where applying a lot of important phases of intervention tempts to conduct disabled children to the discovering the possibility to find a psychomotor balance inside the surrounding world, through the important mean of the body.

As a result, motor abilities are tightly linked to the autonomy's personal area, above all in the moment that the actions are thought and are made with external purpose, with sense and will from the child.

When the disabled child is accompanied to discover and to apply the actions for the cure of his person, such as dressing, washing and eating he has put in condition to make keener the praxia or rather a intentional movement organized from motor point of view, of cortical superior origins, to structure action's plans, that make independent the patience in the world to decide about his person.

Another important ability connected to expressiveness's motor regards to no verbal communication that is very important to take in consideration above all, inside the Transactional approach, in particular during the phase of tonic dialogue where the relation between the patience and the therapist reinforces itself through the visual contact, skin contact and body relation.

Later, when the child reaches the phase of the pre-operational thought, he needs to be conducted towards the decentralization of himself, discovering and intending company's experience like a resource to exploit own identity.

To focus on the attention on these concepts and questions we have chosen to analyze and to report the theoretical and practical aspects which characterized the Transactional Psychomotor intervention applied during 1988, underlining the actuality of the proposal to accompany disabled children to perceive the body like an important mean of knowledge; as a result, the consciousness of the transactions makes the patience able to reach motor skills, better and more appropriated for the action's execution. To put in practice this concept the



psychomotor activity is organized to perceive the body like referent point of every transaction to arrive, later, to the possibility to project self-body in the space, therefore to have access to those abilities which allow to have a correct and economic relation with the external surrounding, codes and symbols. (J.K.Carr, R.B.Shepherd, 2002)

The Psychomotor Transactional approach has some significative principles like the stimulation of the neurological function of person, intended as able to foment itself through the action of the person.

As a result, inside this perspective there is the attempt to establish a transaction through the process of communication, between the protagonist of the action, the exterior object and other people included in to the exterior surrounding. Through this theoretical point of view and the practical application used in to the institute Santo Stefano in Porto Potenza Picena in 1988, we are able to intend the Psychomotor approach like an original practice that tempts to accompany children with psychomotor disorders, to perceive the body like an important instrument, to know and discover the surrounding world (L. S.Vygotskij, 1996).

Specifically, inside the Psychomotor and Transactional approach, the body should be considered like a point of every transaction, but to realize this sensation is very important that the person had the abilities of cortical origin, that at the same time needs the phantasmatic capacity.

For this reason we are able to intend the Psychomotor Transactional approach like a therapy based on equation body-movement ability-associative phantasmatic, proposing to itself the important purpose to give to the patience means of knowledge to organize himself, through the important concepts of the space and of the time.

In this way, he is able to have access toward the interior and the exterior perception of the world and to reinforce his body-consciousness and his personal autonomy.

The pedagogical challenge finds its origins in the attempt to accompany child with motor disorders to perceive his body, with sense and significance, putting him in the condition to project himself in the space and in the time. These two concepts are intended like mental structures living together in interdependent way.

Now, what is important to underline is that the disabled children need to be led toward a psychomotor approach in order to structure concepts like space and time and in general we can say that through psychomotor activity, we can make keener the thought and specifically functions such as memory, language and attention.

The specific approach put into practice during 1988, at the rehabilitation institute "Santo Stefano" in Porto Potenza Picena, is based on important phases of intervention which we are going to analyze:

#### 1) **The phase of Tonic dialogue:**

The process consists on patience's body manipulation made by the therapist who applying the "dipping position" is able to dialogue with the newborn, above all, thanks to the contact through skin, eyes, and the research of the look. In particular the newborn's nape is lay over therapist's ankles to do a total manipulation's body.

On this activity is applied a ludic approach, that is intended like an important communication's presupposition in the familiar triangle built with little contrast activity to put the child in condition to perceive the first differences or oppositions inside the communicative relation.

Finally, the external surrounding should be silent, correctly illuminated and without visual stimulus.

In particular the rehabilitation's therapist with anointed fingers starts the massage from the child's thorax to go down on the abdomen returning toward the neck.

The next manipulation consists on put gently the child on side, starting to massage the arms making movements from the shoulder towards the wrist with the hands in opposition. The same movements are made for the legs.

About the massage of the face, the hands of the therapist start to stimulate the mouth passing to cheeks, the nose, the eyes arriving to the forehead.

After the first period, thanks to the tonic-communication that the child has established, together the therapist begins a sort of a body-game, by a manipulation through the contrasts, also by the use of the adult's voice and the answer of child.

#### 2) **The socialization's phase:**

As for the children under six, the process of socialization is very functional to make them more conscious about their body-self and about other people.

Specifically, a functional activity which should be proposed is to invite children to create a sort of circle-time, clapping hands together, respecting the rhythm of the other companies.

#### 3) **The phase of the object:**

In a second moment there is the insertion of the object like in the case of the ball that children should roll together in a simultaneous way.

The approach with the object, has its reasons because it should be intended like a communication's instrument because it is the container of a content so it assumes a specific sense inside a functional context for motor activity, as a result the object can be reached by the child through the body in movement, experimenting motor schemes such as roll, crawl or dragging the body. These are very important experiences with the body which conduct the child to exploit his body, above all when he hasn't a normal access to his motor faculty.

Inside the Psychomotor Transactional approach, the object has particular significance because it



conducts the child to discover that he could be the promoter of particular sounds and constructions, like in the case of the desks that should be used to sit but also to invent or to imagine different situations.

For example the children in groups can imagine to build a home or a car to transport materials.

In this way they are able to experiment that the desk which before was light, now has become weighty to transport.

After that the child has acquired motor schemes such as catch, push, pull is possible to learn also linguistic structure underlining always the importance of the contrast also about the semantic aspect, such as near/far; left/right; long/short, because the contrasts allow to child to start to discover discriminators process of the space and time.

About spatial process the child with motor disorders, through this type of intervention, is able to exploit that his body has a direction and at the same time to discover and to use spatial segments like the circle, the triangle or the square and their relation that conducts towards the research of plasticity and the eye-hand coordination.

Finally, we consider important to underline, that every form of intervention finds sense if it is supported and based on the patient's history, characterized by a particular anamnesis and diagnosis and above all it is referred on a body consciousness of everyone. In this way, we can consider the therapist's identity, like something that finds shape through the proposing of functional interventions, intending movement ability like a real mean of knowledge and relation starting from the very first moments of life.

This question finds particular significance when like experts of movement we comprehend that the motor skill exists because in specific cerebrals areas

there are the conditions to accomplish the motor action that is in relation with an exterior and interior situation or event, because the learning and the knowledge of the space and the body are linked together and represent the possibility of the action and means to know the world.

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## SOME DIFFERENCES IN PARAMETERS OF BONE MINERAL METABOLISM IN VARIOUS SPORT BRANCHES

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### ABSTRACT

#### Objective

This study was carried out in order to compare the differences of laboratory parameters related to bone metabolism such as alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P), in various sport branches.

#### Material and Method

Serum alkaline phosphatase, calcium and phosphorus, and magnesium levels were measured in 23 skiers, 21 runners, 24 wrestlers, 20 handball, 21 soccers and 30 sedentary living healthy individual.



## Results

The groups were matched according to age and sex. As expected, there were no significant differences according to age or the female-male ratio between the athletes and controls subjects ( $p>0.05$ ).

Serum alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were determined in the athletes and the healthy control subjects. In all the athletes and controls, routine biochemical parameters including alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were within normal limits (**Table 1**). The wrestlers had lower levels of calcium compared to control subjects ( $p<0,05$ ). The runners and handball had higher levels of phosphatase compared to control subjects ( $P<0,05$ ). Other parameters had no significant difference between athletes and controls (Table 2).

## Conclusion

When compared with control group, it has been found that wrestlers have low level of CA while runners and handball players have high level of P.

**Key words:** Serum alkaline phosphatase, calcium, magnesium, phosphorus and athletes.

## Introduction

Serum alkaline phosphatase is a member of a family of zinc metalloprotein enzymes that function to split off a terminal phosphate group from an organic phosphate ester. This enzyme functions in an alkaline environment (optimum pH of 10). Alkaline Phosphatases are a group of enzymes found primarily the liver (isoenzyme ALP-1) and bone (isoenzyme ALP-2). The primary importance of measuring alkaline phosphatase is to check the possibility of bone disease or liver disease. For an adult, 50-75 mg/dl is considered a reasonable optimal range (O. Maldonado, R. Demasi, Y.Maldonado et al. 1998, N. McIntyre, S. Rosalki, 1991, AG,Lieverse, GG. van Essen, GJ, Beukeveld. et al. 1990). Calcium is the basic mineral component of the skeleton and plays major roles in neurologic transmission, muscle contraction, and blood coagulation, in addition to being a ubiquitous intracellular signal. Calcium is mainly absorbed in the duodenum. Calcium absorption from GI tract is regulated by vitamin D and parathyroid hormones. The serum level of calcium (Ca) is closely regulated with normal total calcium of 9-10.5 mg/dL (D. Fraser, G. Jones, S.W. Kooh and I. Raddle, 1994, M.J. Berridge, M.D. Bootman, H. L. Roderick. 2003, W.C Robertson and R.W. Marshakk, 1981. Magnesium is an intracellular cation. It is essential for enzyme activity, for the synthesis of nucleic acids and proteins, and has an important physiological role in the neuromuscular and cardiovascular systems. Total body magnesium is approximately 1000 mmols, of which 60% is in bone, 20% in skeletal muscle, and less than 1% in the extracellular fluid. In the circulation, 65% of serum magnesium is free (ionised), about 20% is protein bound, and the rest is complexed with various anions (eg: phosphate and citrate). The body magnesium balance is regulated by intestinal absorption (predominantly in the ileum and colon), and renal reabsorption (65-75% by the thick ascending loop of Henle, 15-20% in the proximal tubules). The most commonly used method for assessing magnesium status is serum magnesium concentration (H. Classen, 1984; R. Elin, S. Al-Ghamdi, E. Cameron, R. Sutton, 1994). Of the phosphorus in the body, 80% to 85% is

found in the skeleton. In the extracellular fluid, including in serum, phosphorous is present mostly in the inorganic form. In serum, more than 85% of phosphorus is present as the free ion and less than 15% is protein-bound. Phosphorus also is an important component of phospholipids in cell membranes. The physiologic concentration of serum phosphorus (phosphate) in normal adults ranges from 2,5 to 4,5 mg/dL (0.80–1.44 mmol/L). Normal values range from 2,4 - 4,1 mg/dl (B. Kestenbaum, J. Sampson, K. Rudser, et al., 2005; G. Block, T. Hulbert-Shearon, N. Levin, et al., 1998; S. Silverberg, E. Shane, T. Clemens, et al., 1986).

This study was carried out in order to compare the differences of laboratory parameters related to bone metabolism such as alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P), in various sport branches.

## Material and Methods

Serum alkaline phosphatase, calcium and phosphorus, and magnesium levels were measured in 23 skiers, 21 runners, 24 wrestlers, 20 handball, 21 soccers and 30 sedentary living healthy individual.

In the skiers ( $n=23$ ), 5 subjects were females and 18 male (mean age:  $22,3 \pm 9,4$ , range: 19 – 25 years). In the runners ( $n=21$ ), 4 subjects were females and 17 male (mean age:  $25,1 \pm 8,4$ , range: 18 – 26 years). In the wrestlers ( $n=24$ ), 4 subjects were females and 20 male (mean age:  $23,7 \pm 9,1$ , range: 17 – 26 years). In the handball ( $n=20$ ), 3 subjects were females and 17 male (mean age:  $21,9 \pm 7,4$ , range: 16 – 27 years). In the soccers ( $n=21$ ), 5 subjects were females and 16 male (mean age:  $21,9 \pm 8,9$ , range: 20–24 years). We also studied 22 healthy volunteers personnel (5 females and 17 males; mean age:  $29,1 \pm 11,8$ , range: 21 – 29 years).

The athletes and controls volunteered to participate in the study and gave their informed consent. None of the athletes and controls were under the treatment of whatever drugs. None of the patients were had any other chronic disease. All the controls were sedentary living healthy individual. Subjects were excluded if they had used any drug such as corticosteroid,



methotrexate, etc., or had any disease or condition known to affect bone; had taken corticosteroid medications during the previous 6 months, had a history of chronic renal, hepatic, or gastrointestinal disease or traumatic lumbar compression fracture. Exclusion criteria included liver and kidney diseases, renal stones, diabetes, alcoholism, thyroid and parathyroid diseases hematological, lymph proliferative and other malignant diseases and drugs affecting bone mineral density such as anticonvulsants, corticosteroids, disease-modifying anti-rheumatic drugs (DMARDs), hormone replacement therapy (HRT), bisphosphonates, vitamin D, fluoride, calcitonin, calcium or thiazid group diuretics. Fasting blood samples of the study and control subjects were taken from the cubital vein and the parameters were examined by routine laboratory techniques. Serum ALP, Ca, Mg and Phosphorus were determined by using commercial autoanalyser

Data were processed using the SPSS 11,0 package programme. Laboratory results were given as mean  $\pm$  standard deviation (SD). Differences between groups were analyzed using the Mann-Whitney U test. The Wilcoxon rank test was used to compare paired populations. Statistical significance level was set to 0.05 for all calculations.

### Results

The groups were matched according to age and sex. As expected, there were no significant differences according to age or the female-male ratio between the athletes and controls subjects ( $p > 0.05$ ).

Serum alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were determined in the athletes and the healthy control subjects. In all the athletes and controls, routine biochemical parameters including alkaline phosphatase (ALP), serum calcium (Ca), magnesium (Mg) and phosphorus (P) were within normal limits (**Table 1**). The wrestlers had lower levels of calcium compared to control subjects ( $p < 0,05$ ). The runners and handball had higher levels of phosphatase compared to control subjects ( $P < 0,05$ ). Other parameters had no significant difference between athletes and controls (Table 2).

### Discussion

Serum alkaline phosphatase is a mixture of isoenzymes contributed primarily by bone, liver, and intestine. Most data indicate that the elevation of serum ALP occurs because of the accelerated de novo synthesis of the enzyme and subsequent regurgitation into the serum (J. Reichling, M. Kaplan, 1967). Because of these contributions, serum alkaline phosphatase determination has been used to help distinguish between normal and disease states of these organs (G. Szasz, T. Hausamen, R. Helger, W. Rick and W. Gross, 1967). Age-and sex-related effects relative to serum alkaline phosphatase have been demonstrated by several investigators (SJ. Silverberg, 1997). There are non-significant differences in serum

ALP concentrations between with all the different athletes and the control group. Because athlete groups aren't different from control group in respect of age and gender. However no body, who participated in this study including control group, has any disease which affects level of serum ALP. Calcium metabolism is complex, and other factors such as impaired liver and kidney function, poor nutritional status, and medications may act as confounding variables lowering calcium<sup>17</sup>. The present investigation reveals the net effect of these sport branches except for wrestlers group on serum calcium levels. In our study, serum levels of calcium were significantly lower only in the wrestlers group than the control group. The differences of the level or amount of daily diet may lead to low calcium level in wrestlers. Magnesium is an essential ion for many enzymatic reactions, especially those using high energy phosphate bounds (E. Ford, 1999). The low serum magnesium levels are associated with coronary heart disease (J. Ma, A. Folsom, S. Melnick, J. Eckfeldt, A. Sharrett, A. Nabusi, R. Hutchinson, P. Metcalf, 1995), atherosclerosis- (PA Marken, CW. Weart, DS. Carson, JG. Gums, MF. Lopes-Virella, 1989) dyslipidemia (PA. Deuster and A. Singh, 1993.) As a metabolic cofactor, Mg is important in energy metabolism and glucose homeostasis<sup>18</sup>. The findings on serum magnesium concentration in these groups of patients were completely normal. In our study, there was not a significant rise in serum magnesium levels between in the athletes groups compared with the controls. The results are in total agreement with some previously published reports. Accumulating evidence has shown a direct relationship between magnesium and exercise performance. Some studies have reported that serum or plasma magnesium concentration was decreased after exercise (M. Laires and F. Alves, 1991; M. Levi, RE. Cronin, JP. Knochel, 1992). No abnormal serum magnesium level has been found in any group including control group may be because they did not get exercise before the survey. The physiologic concentration of serum phosphorus (phosphate) in normal adults ranges from 2,5 to 4,5 mg/dL (0.80–1.44 mmol/L). A diurnal variation occurs in serum phosphorus of 0,6 to 1,0 mg/dL, the lowest concentration occurring between 8 AM and 11 AM. A seasonal variation also occurs; the highest serum phosphorus concentration is in the summer and the lowest in the winter. Major determinants of serum phosphorus concentration are dietary intake and gastrointestinal absorption of phosphorus, urinary excretion of phosphorus, and shifts between the intracellular and extracellular spaces. Abnormalities in any of these steps can result either in hypophosphatemia or hyperphosphatemia (K. Hruska, A. Gupta, 1998; JP. Knochel, R. Agarwal, 1996). In our study, there was also an alteration in serum phosphorus concentration in the groups with runners and handball. Potassium, the level of diurnal, has been measured as normal especially in healthy sedentary group. This can be explained by the fact that it was



winter afternoon when the blood samples were received.

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## EXPRESSION AND STIMULUS OF STRENGTH IN THE COURSE OF THE EVOLUTIONARY AGE

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### Abstract

For some time studies on training and on trainability of muscular strength have allowed precocious training interventions in favour of acquiring and stabilizing a good level of strength in individuals. Contrary to what is commonly claimed, the stimulus for such conditional capacity may be provided in the right way in children and adolescents as well. Indeed, the choice of stimulating muscular strength in the course of the sensitive phases of life allows a more harmonious strength development and exploits the preventive potential at the postural and bone level.

**Key words:** children, strength, training.

### Introduction

We can define muscular strength as: the capacity to oppose and win a resistance. In the sphere of strength we will make a distinction between maximal strength, resistance strength and rapid strength:

- **maximal strength:** that is the maximum strength which can be expressed with a sole voluntary type of contraction (D. Harre, 1976). Identifying the expression of the *static maximal strength* is possible if we talk about contractions aimed at overcoming immovable forces, therefore isometric type contractions, and the *dynamic maximal strength* when we are talking about a resistance which is moved subsequent to the contraction (overcoming), or which tends to make the muscles give way while carrying out only the negative phase of an exercise (yielding);

- **resistance strength,** that is the capacity to win over a resistance for an averagely long period of time; it finds its major influences by using the energetic substrates and by the efficiency of the oxidizing system;

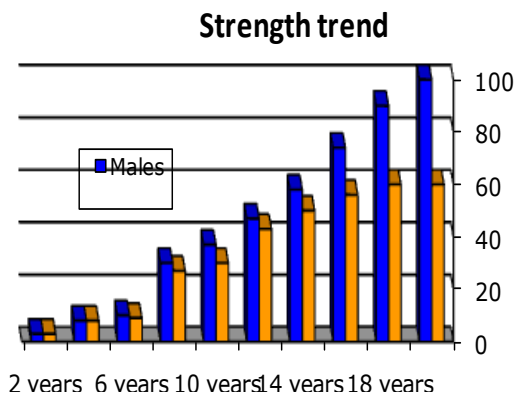
- **rapid strength:** that is the capacity to win over a resistance in the least time possible, thus with a high contraction speed (A. Dal Monte, M. Faina, 1985), it is inevitably influenced by maximal strength when the gesture, even though it is rapid, provides for a braking action of consistent resistances.

Various factors concur in determining the degree of expression of strength in an individual, the **transverse section**, that is the volume of a muscle, is decisive in understanding the strength potential which can be expressed. Each cm of muscle surface is able to determine about 4kg of strength.

The effective quantity of strength expressed, compared to the potential one, is mainly tied to factors of nervous type. And in particular to the **discharge frequency**, that is the frequency of the impulses which are transmitted by the motoneurons to the contractile muscle fibres (summation), and the **capacity to**

**recruit**, that is the number of muscle fibres activated by the nervous stimulus (intramuscular coordination). The capacity to recruit is the main one imputed in the degree of strength expression before puberty (Thomas R. Beachle, Barney R. Groves, 2000).

Thanks to the repetition of movements (training), the body is able to recruit a greater number of fibres and to selectively recruit the ones that are more effective to carry out the workout<sup>1</sup>. Untrained subjects can use from 20% to 50% of the fibres potentially useful for carrying out a gesture that requires strength, with a discharge frequency of 40/50 impulses a second (V.V. Kuznetsov, 1981), thus preserving an abundant **strength reserve** (the difference between potential strength and expressed strength) when considering that stimulating muscles with frequencies even greater than 100 impulses a second is possible and that frequency is a decisive element in maximal strength (J. Paillard, 1976).





Then there are non secondary parameters which act on the determination of the expressed strength, which however imply either a difficult capacity in measuring, such as for instance the ability to coordinate more than one muscle groups in synergy, or an only relative training intervention, such as for instance the type of fibres a subject possesses. This parameter is determined genetically and its training interferences are reduced. On the other hand, always with reference to muscle fibres, it is important to signal that their differentiation (in fast fibres and resistant fibres) is consolidated only at the end of the pubertal period, and in this phase a predominance of fast fibres clearly guarantees a greater degree of strength.

The strength trend in an individual, as in other characteristics and capacities, goes through different stages: maturation, stability and decline. In the course of the evolutionary age we assist a more rapid increase of this parameter, under the influence of hormone release. And precisely hormone interferences then determine the large gap that there is between males and females, especially after the age of 10/12 years. Before this age, in fact, the differences are much less significant. The age of about 12 corresponds, not by chance, to the best period to start training aimed at strength increase.

In the diagram below (modified by Hettinger) viewing the trend in the expression of muscle strength in the two gender and in their various ages is possible.

A question that may spontaneously arise is why hypothesizing a work of this kind at such a young age. The answers are many. Stimulation of muscle strength, obviously respecting individual potentiality and the degree of maturation, covers a crucial role in preventing postural alterations, with further advantages in favour of the bone structures. These advantages are generally achievable through motor activity, but more specifically with workouts focused on increasing strength. Controlled studies have shown how, this activity in the school age, can determine notable benefits on the bone structure. In particular, in subjects undergoing training for a long period (at least one year), an at least 5% (R.K. Fuchs, J.J. Bauer, C.M. Snow, 2001) increase in bone density has been noted with all the consequences which this may have in adulthood, even in the perspective of safeguarding and preventing demineralization. It is the process defined by Weineck as training *stimulus* which exploits pressure and traction actions produced by muscle activity, to stimulate a thicker cortical, that is wider, alignment of the spongiosa trabeculas in the direction of the traction and pressure lines, greater resistance of the connective tissue to traction (J. Weineck, *L'allenamento ottimale*, Ed. Calzetti Mariucci, Perugia).

This is not all. Precocious practicing of a sport, a very common event nowadays, causes in children as in adults, even serious decompensations, between the muscle structures stimulated by the sport discipline and the ones that are not much involved. In this perspective

a generalized strength programme becomes fundamental so that it can level off discrepancies. On the other hand even in this phase the subject responds very rapidly. Literature highlights that weak schoolchildren, or interventions on neglected districts of the body, have obtained average strength deficit decreases equal to 45% (M. Beuning, 1985).

However, dealing with muscle strength training in the first half of the evolutionary age, we inevitably meet two risks. An unsuitable stimulus which does not then allow to optimize the result, or an inopportune and **excessive stimulus** which may lead to even more serious consequences. Let us see what the guidelines are for workouts of this kind. First of all an activity aimed at strength should always be **multilateral** and not bring on excessive loads. When talking about loads it is proper to specify that this may be represented by one's own body weight, under the influence of the force of gravity or of centrifugal force, by small gym equipment, by exercises to be carried out on large equipment and, in a more adult phase, by specific isotonic machines or free weights. So the term load does not necessarily correspond to the use of a "weight". To be precise, in this phase of life, loads of this type are almost never mentioned.

Again on the matter of loads, in the 13 to 15 year old range a reasonable load is of about 50% of the body weight, obviously with appropriate variations on the basis of the required workout. The recovery intervals will be relatively long on the other hand.

In the 16 to 17 year old range, a strength workout may provide for loads equal to the athlete's body weight (some authors report maximum values equal to 20% more than the body weight). Even in this case it is evident that the choice must be modulated on individual characteristics, and on the training degree that has already been achieved. Here too the recovery interval between the exercises will not be less than 3 minutes long.

**Rapid strength** deserves particular attention; it is influenced by neuromotor evolution and by coordination. Late stimuli risk in this case compromising the maximization of this expression. This peculiarity can (indeed, it should) be stimulated ever since the first years of a subject's life. It is estimated that already starting from 6/9 years, and till adolescence, the greatest increases can be achieved, on the condition that specific training is gradually administered. It is obvious that in these first phases the accent will be placed on the role of coordination in the process of strength determination. In other terms, intervening on the first, there will be a direct benefit on the second. Before the age of 12 preference can be given to exercises/games that require rapid movements like jumps, running and sudden changes of direction, climbing, etc.; always very dynamic workouts which do not call for lactide type stimuli.

In this process moreover, in which coordination is the basis for the expression of rapid strength, it can be said that rapid strength represents the natural terrain



for the developing of maximal strength. In an ideal course aimed at increasing strength, we will therefore assist in the phase of 6/9 year-olds a workout purely of coordination, for the 9/12 year-olds we would expect stimulation of rapid strength, in the youngsters from 12 to 15 years old a workout based on general strengthening with natural loads, after 15 years old a first stimulus of maximal strength, destined ad increasing gradually **only at the end** of the pubertal age. Precocious stimuli may originate serious complications on the tendon, ligament and capsule structures.

When working with younger children, structuring a workout with natural loads will be possible which provides for jumps in various manners. Jumps with the feet together squatting down, semi-squatting, triple jumps, tossing objects etc. All is done in a game-like way, inventing obstacle tracks which stimulate this kind of activity.

So before the age of 12 the suitable manner in stimulating rapid strength consists in identifying an exercise that provides for one or more motor tasks among the ones listed, insisting so it is repeated for a

From the age of 12 to 15 exercises such as obstacle jumps, jumping through hoops, potato sack racing, throwing the medicine ball, tug-of-war etc. Even in this case everything must be carried out several times with breaks of at least one minute for recovery.

Up to now we have described **how** to arrange a workout aimed at increasing strength in the evolutionary age, we have made clear **why** it is important to start working precociously. The last of the questions, but not the least important, to which we must try to give an answer is **when** operating this way becomes particularly important.

Subjecting children and adolescents to the **Kraus-Weber test** is possible; it was conceived by two American physicians, and its purpose is to identify minimum muscle strength and minimum elasticity. The exercises take into exam the dorsal and abdominal muscles. Kraus and Weber realized a special variant for school children, testing it on four thousand individuals to perfect it. The required tests are the following (K. Bukup, 2004):

1. Have the subject lie on his back, with his hands behind his head and his feet blocked. He is required to slowly lift the trunk of his body till he reaches a seated position.
2. Have the subject lie on his back, with his hands behind his head and the lower limbs extended. He is required to lift his heels 10/20 cm from the ground and to keep the position for about ten second.
2. Have the subject lie on his back, with his hands behind his head, his legs bent and his feet blocked. He is required to lift the trunk of his body till he reaches a seated position.
3. Have the subject lie with his back upwards, with a cushion under his abdomen and his hands behind his head. The operator has to block the examined person's trunk and pelvis. He is required to lift his feet, his

certain number of times before taking a break. An example may be a 7/10 second workout which is followed by a recovery of about a minute. It is obvious that the workout time and the interval time will be assessed time by time on the basis of the tasks required and of the individual potentialities.

Carraro and Bertollo (A. Carraro, M. Bertollo, 2005) propose workouts of this kind for stimulating rapid strength before the age of 12:

- 10 leaps forward inside hoops
- 10 metres leaping ahead on one leg
- 10 metres running with the knees up
- 10 tosses of a rubber ball against the wall using both hands
- 10/15 skips with the feet together on the spot or with a rope

Each proposal will be repeated 3/4 times, with breaks of a least 1 minute. It is evident that all of this can be made more dynamic and fun by organizing circuits having this kind of activity.

lower limbs extended, and to keep the position for 10 seconds.

4. Have the subject lie with his back upwards, with a cushion under his abdomen and his hands behind his head. The operator has to block the examined person's pelvis and feet. He is required to lift the trunk of his body and to keep the position for 10 seconds.

5. Standing up, barefoot, and with his feet joined together. He is required to bend forward and try to touch the ground with his hands, keeping his lower limbs extended.

## Conclusions

Correct stimulus of muscle strength, in young and very young children, represents a fundamental and not secondary element. If on the one hand the exercises that have been chosen must be functional in relation to each age, on the other hand the role of the same exercises in preventing decompensations deriving from a sedentary life or of sport disciplines which do not stimulate all the main muscle districts homogeneously is undeniable. Lastly, as regards the bone segments, this stimulus improves growth and mineralization, carrying out an important preventive role with reference to the adult and senile phase.

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Test 2



Test 1



Test 3



Test 5



Test 4



Test 6

(Source of drawings: K. Bukup, op. cit.)

## CHANGE OF BLOOD SE LEVELS AFTER HIGH LEVEL AEROBIC EXERCISE

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### ABSTRACT

**Aim:**This study was carried out to determine the effect of high level aerobic exercise upon the anti oxidant Se levels. **Method:** the study was participated by 16 healthy male university students with an average age of  $20.09 \pm 1.22$  years. The participants were given a selenium free diet for a week before the start of the study.

**Results and discussions:** There were 5 cc venous blood samples taken from the participants before and after they were subjected to 20 m exhaustive shuttle runs after a resting period of 15 minutes. The selenium determinations were carried out with ICP. The results showed that the selenium levels showed statistically significant decrease between pre and post exercise values ( $p < 0.01$ ). The maximal aerobic exercise was observed to decrease the Se levels in blood .

**Key words:** blood, level, selenium.

### Introduction

Selenium is an essential micronutrient for the human body when taken in appropriate doses . Selenium attaches the proteins to form anti oxidant selenoproteins . During physical activity, the oxidative stress due to excessive oxygen consumption is compensated by higher levels of free radical scavengers and by an increase in the activities of antioxidant enzymes such as glutathione peroxidase enzyme containing Se (PM. Clarkson, HS, Thompson, 2000, R.R. Jenkins, 1993).In association with vitamin E and glutathione, Se is anticarcinogenic and delays aging and degenerative



neurological diseases. It protects the muscles, heart and arteries and helps combat inflammatory and allergic diseases (C. Mates, JM. Perez-Gomez, M.Blanca, 2000, R.J.Shephard, P.N.Shek, 1998). Few results are available concerning Se concentration during or following physical activity, and the levels of glutathione peroxidase reported in athletes are divergent ( R.J.Maughan, 1999, GD.Brites, PA.Avelson, MG. Christiansen, et al,1999). Endurance training may induce heterogeneous effects on oxidative and antioxidant adaptation independently of Se supplementation (GD.Brites, PA.Avelson, MG. Christiansen et al,1999). The daily Se need is estimated to be 55 micrograms [http://www.food-info.] However, athletes are generally not affected by Se deficiencies (R.J.Maughan, 1999).It is known that high level aerobic exercises trigger oxidative stress and amount of Se needed. This study was carried out to determine this effect.

### Material And The Method

#### Selection of the participants

The study was carried out on 16 male participants studying in various faculties of Ankara Bilkent University who did regular sports at fitness level. All the participants were volunteered to participate the study and they were briefed about the importance of the study and rules they had to obey. The participants were given a selenium free diet for a week.

#### The physical and physiological test

##### Age, height and weight of the participants

The ages of the participants were recorded in years, and the heights were determined with bare feet in meters. The weights were measured with bare feet and wearing a short only in kg with an accuracy of 0.01 kg. All the measurements were taken one day prior to the start of the test

##### Collection of the blood samples

After the determination of the anthropometric features of the participants there were 5cc of blood was collected from each participant at rest. The participants were subjected to 20 m shuttle runs to test their aerobic limits after 30 minutes of rest . There were 5 cc bloods collected after these runs.

##### 20 Meter shuttle runs and the determination of max VO<sub>2</sub>

The maxVO<sub>2</sub> values of the participants which show the cardiovascular aerobic capacity were determined in ml.g/min with shuttle runs. The results were evaluated from the related tables. The hearth beat rates of the participants were taken after the runs in order to determine their exhaustion levels.

#### Statistical analyses of the data

The analysis of the data obtained was carried out by the use of SPSS 10.0 statistical software. The comparison of the pre and post training measures was made by paired simple t-test.

#### Experimental method

##### ICP-OES Protocol microwave digestion procedure

On the 1 mL blood samples was added 2.0 mL HNO<sub>3</sub> and the samples were digested in Berghof / Microwave Digestion system MWS-3 microwave apparatus. The microwave were kept at 160 °C for five minutes and at 190 °C, 100 °C and 80 °C for ten minutes each. The totally digested samples were diluted to 10 mL with the addition of deionized water 18.3 mohm cm<sup>-1</sup>.

##### Selenium analysis with the use of ICP-OES apparatus

Se analyses were carried out in the laboratories of Science Faculty of Gazi University There were 100,250,500 and 750 ug/L standard Se solutions were prepared from its 1000 ppm standard solutions and a calibration curve was plotted . Then selenium analyses of each sample was performed by making at least five readings. The results are tabulated in Table 2 Selenium was converted to its hydride before the analyses. 1 mL of 10% HCL was added onto 1 mL of digested blood samples and kept at 90 °C for 20 minutes. The samples were analyzed with the use of Perkin Elmer Optima 5300 DV model ICP-OES after they were cooled down.

### Results

**Table 1:** Physical parameters of the participants.

Parameter	Mean values ( $\bar{X}$ )	SD	Minimal Maximal
Age ( year )	22.69	1.92	20.00–26.00
Height ( cm )	181.50	4.00	174.00- 190.00
Body weight ( kg )	80.69	2.89	76.00 – 87.00

<b>MaxVO2 (ml. kg/dk)</b>	50.01	3.07	42.4 – 53.7
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**Table 2:** The statistical analysis revealed that there is a significant difference between the pre and post- training Se values of the participants  $p < 0.01$

Element	N	Pre training mean value ( $\bar{X}_1$ )	SD	Post training mean value ( $\bar{X}_2$ )	SD	$\bar{X}_1 - \bar{X}_2$	p
<b>Selenium (<math>\mu\text{g} / \text{L}</math>)</b>	16	339.71	86.41	274.95	41.22	64.76	.000

### Discussion

Although the results in literature are contradictory it was clearly visible that there was a important decrease in the blood selenium levels of the participants after the test. This was attributed the increased oxidative stress induced upon them as a result of aerobic exercise. It can be concluded that the athletes should be supplemented with appropriate doses of selenium before aerobic exercises

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## A COMPARATIVE STUDY ON THE EFFICIENCY OF ASSOCIATING THE KINETIC TREATMENT TO THE OCCUPATIONAL THERAPY WITHIN THE GENERAL TREATMENT OF OSTEOPOROSIS

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### Abstract

**Introduction:** Osteoporosis has become a public health problem, with serious consequences both socially and psychologically. This is due to the huge costs implied, as well as to the morbidity and mortality caused by this malady.

### Purpose of the study

This study intends to demonstrate the importance of associating the medicament therapy with kinotherapy and with the occupational therapy in order to obtain more benefic results in the management of osteoporosis.

### Subjects and method

We considered two groups of subjects. Each group consisted of 10 female patients, with ages ranging from 50 to 70, diagnosed with osteoporosis Type I. The first group benefited from a medicament therapy associated with an occupational therapy programme, while the second one benefited from a kinotherapy programme, too. During the twelve months of study, the patients were evaluated periodically, i.e. at 6 months and at 12 months, respectively. The evaluation consisted in measuring the bone mineral density (T-Score).

### Results and interpretation of results

It has been noticed an increase of the bone mineral density level, with a better T-Score, for the patients who have also benefited from a kinotherapy programme, ratio to those who did not follow this programme ( $p < 0.5$ ).

### Conclusions

The association of the kinetic treatment to the occupational therapy within the general treatment for osteoporosis helps to prevent the loss of minerals from the bones, thus leading to an increased bone resistance which prevents the risk for fractures.

**Key words:** osteoporosis, kinotherapy, occupational therapy.

### Introduction

Osteoporosis is a metabolic disease extensively spread world wide and in our country as well as. It has become a major public health problem with serious consequences both socially and psychologically. This is due to the huge costs involved and to the high level of morbidity (Melton LJ III and Cooper C, 2001)

Taking into consideration the optimum influences of doing physical exercises on the human skeleton as well as to the bone mineral density, it has been discovered that physical exercises made under qualified supervision can bring a benefit to the persons suffering from osteoporosis. (Kelley GA, Kelley KS, Tran ZV, 2001)

The purpose of the paper: This study aims to demonstrate the importance of combining the medicament therapy with kinotherapy and with the occupational therapy in order to obtain better results in the management of osteoporosis

### Subjects and method

The research work made for this study was made on two groups of subjects, each one consisting of 10 female patients under medical supervision, and diagnosed with osteoporosis or postmenopausal osteopeny. For the selection of the two study groups the following criteria were taken into consideration:

- All the subjects have to be women;

- Ages ranging from 50 to 70;
- Subjects diagnosed with osteoporosis or osteopeny Type I;
- None of the subjects suffered before from fractures caused by osteoporosis or any other etiology than osteoporosis;
- Menopause duration: minimum 2 years;
- All the subjects are urban inhabitants;
- Subjects do not suffer from other illnesses which could prevent them to do physical exercises.

For this experiment the subjects were divided into two groups (see Tables 1, 2) and for the selection of the groups the following criteria were considered:

- each group consists of 10 subjects;
- subjects in the group have the same average age;
- the subjects in the group have the same T score average (obtained by osteotomodensitometry);
- T-score represents the bone density of the patient expressed in the number of standard deviations (DS) above or below the value of the bone density for a young normal adult. (Nguyen TV, Pocock N, Eisman JA., 2000)



**Table 1** – Subjects of Group 1**Table 2** – Subjects of Group 2

The first group of patients will benefit from a medicament therapy and from an occupational therapy programme. The second group will benefit from a kinotherapy programmes besides the medicament therapy and the occupational therapy programme.

The patients in both groups were explained the contents of the occupational therapy programme. The patients in Group 2 were also explained the contents of the kinotherapy programme. Both groups were submitted to a specific pre-therapeutic evaluation.

The study was conducted for a year. During the twelve months of study, the patients were evaluated periodically, i.e. at 6 months and at 12 months, respectively starting from the beginning of the study. The evaluation consisted in measuring the bone mineral density.

At the end of the study, the results were systematised, processed from a statistical point of view and compared with the help of T –test.

The periodic evaluations consisted in the following:

- discussions with the patients;
- questionnaires;
- special medical examinations;
- clinical examinations;
- motrical functional capacity;
- equilibrium tests (Tinetti);
- evaluation of the bone mineral density as T-score.

As a result of these evaluations, the activity programme was made and it was focussed on the following fields: environment, self care, productivity, motrical capacity, free time, cognitive and psychosocial. The occupational therapy meetings were held 4-5 times a week and lasted for 50-60 minutes.

The kinotherapy programme had the following objectives in view:

- relieve pain;
- reduce bone loss;
- improve or maintain the bone mass;
- maintain or improve the mobility at the articulation;
- reduce muscle contraction;
- build up muscular force;
- improvement of posture and corporal alignment;
- prevent the occurrence of deformities;
- improve the physical condition;
- improve equilibrium and coordination;
- improve respiration;
- stimulate metabolism;
- reduce the occurrence falling risk and fractures.

The kinotherapy programme consisted in numerous loading exercises which enhance the intramuscular and the intra-bone tensions, exercises to build up muscular force, exercises to consolidate equilibrium, exercises for muscular stretching and aerobic exercises. The kinotherapy sessions were held 3-4 times a week and lasted, on average, 40-50 minutes.

**Results and interpretation of results**

In what the structure of the groups according to the average age is concerned it can be observed the equality of the two groups (see Graph 1)

**Table 3** - Structure of the groups according to the average age

**Graph 1** - Structure of the groups according to the average age

The motrical functional capacity was evaluated with the help of a scale presented in Annexe (Piet Geusens, 1997). The maximum normality score of this scale is 20 points. In our study, 9 subjects in Group 1 and 8 subjects in Group 2 obtained 20 points. 19 points were obtained by 1 subject in Group 1 and two subjects in Group 2. This indicates that the majority of the subjects in the study have a good motrical functional capacity.

For both groups, we used Tinetti test (T. S Benghe, 2002.) to evaluate the equilibrium reactions of the subjects. The maximum normality score of this scale is: 28 points.

In Group 1, two patients obtained a total of 27 points, and the rest a total of 28 points. In Group 2, a subject obtained 26, one 27 and the other 8 a total of 28 points.

A special attention was paid to T-score (see Tables 3 and 4). The results obtained by each subject were systematised and are presented in the next tables:

**Table 4**- Values of T-score at subjects in Group 1, after 6 months and 12 months, respectively from the beginning of the study

**Table 5**- Values of T-score at subjects in Group 2, after 6 months and 12 months respectively, after the beginning of the study

Formula used for the calculus the increase of the T-score after 6 months and 12 months respectively, is the following:

$$\Delta \text{ Score Tto} \rightarrow 6\text{months} = \text{Score Tt1} - \text{Score Tto}$$

$$\Delta \text{ Score Tto} \rightarrow 12\text{months} = \text{Score Tt2} - \text{Score Tto}$$

Likewise, in the tables there were written the average increase of the T-score after 6 months and 12 months, respectively. (Greenwald L, Barajas K, White-Greenwald M., 2003)

The following formulas were applied:

$$ScorT_{0 \rightarrow 6 luni} = - \frac{\sum_{i=1}^n ScorT_{0 \rightarrow 6 luni}}{n}$$

$$ScorT_{0 \rightarrow 12 luni} = - \frac{\sum_{i=1}^n ScorT_{0 \rightarrow 12 luni}}{n}$$

In case of Group 1, after the data systematisation in the tables, it was noticed an increase of the T-score with an average of 0.2 units, after a period of 6 months, and of 0.4 after 12 months (see Graph 2).

#### Graph 2 – Values of T-score for Group 1

After test t (Student) was made, it was noticed that in the case of Group 1 a significant influence ( $p < 0.05$ ) of the medicament therapy and of the occupational therapy on T-score, after the 6 month and 12 month evaluations, as well. (Lewiecki EM, Laster AJ., 2006). The results correspond to the studies of the international literature, showing an increase of the T-score after the occupational therapy (Schwab P, Klein RF., 2008).

For Group 2, after 6 months, it was noticed an increase of the T-score, on average with 0.3 units, and after 12 months an increase, on average, of 0.5 units (Graph 3).

#### Graph 3 - Values of T-score for Group 2

After test t (Student) was made, it was noticed, for Group 2, a significant influence ( $p < 0.05$ ) of the combined medicament therapy, with the occupational therapy and kinotherapy on T-score at the 6 month evaluation. But the combined therapy has a very significant influence ( $p < 0.01$ ) on T-score at the 12 month evaluation, too.

If we compare the evolution of the score T 1 at the two groups, it can be noticed a significant difference of the T1 ( $p < 0.05$ ) (Graph 4). The evolution of score T2 at both groups is also significant ( $p < 0.05$ ) (Graph 5).

#### Graph 4 - Comparative value of score T (6 months) at the two groups

#### Graph 5 – Comparative value of score T (12 months) at the two groups

We can say that the subjects in Group 2, who benefited from kinotherapy, have obtained an increase of the bone density both at the 6 month and at 12 month evaluations, in comparison with the patients in Group 1 who did not follow this programme. (Lange U, Teichmann J, Strunk J, Mueller-Lander U, Uhlemann C., 2005).

#### Comments

The study made by Koike proved that the physical exercise plays a great importance, fact

demonstrated by the sedentary subjects who show a decrease of bone mass, and the increase of bone mass stimulates the bone formation (Hourigan SR, Nitz JC, Brauer SG, O'Neill S, Wong J, Richardson CA., 2008). Starting from this observation, many authors have studied the benefit brought by the physical activity to osteoporosis showing that regular physical exercises can contribute to the maintenance of the bone mass at people aged from 50 to 70 years (Schwab P, Klein RF., 2008). In our study we took into consideration a homogenous group of patients suffering from osteoporosis type I, which was submitted to a complex therapy associated with a kinotherapy programme. Similarly to the results presented in the specialist literature, we observed that our patients showed an increase of the bone density, fact illustrated by the increase of T –score (Koike T. 2006).

#### Conclusions

1. The physical activity made regularly helps to prevent the loss of minerals from the bones thus increasing bone resistance and preventing fracture risk.
2. We analysed 2 groups of 10 patients each, women with ages ranging from 50 to 70 and diagnosed with osteoporosis Type I. The age distribution was almost equal.
3. The first group benefited from a medicament treatment and also from an occupational therapy programme. The second group of patients benefited, besides the medicament therapy and the occupational therapy programme, from a kinotherapy programme.
4. The values of the bone density were recorded for the two groups at the beginning of the experiment (T0), then reevaluated after 6 months (T1), and after 12 months respectively (T2) since the initiation of the study.
5. The study showed that the patients who benefited from an extra kinotherapy programme for several months have recorded an increase of the bone density in comparison with the patients who did not follow this programme.

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- ANNEXE**  
**Evaluation of the motrical functional capacity**
1. Transfer from decubit position to sitting position :
    - without help-2
    - Assisted by a person -1
    - Assisted by two persons -0
  2. Transfer from sitting position to decubit position:
    - without help -2
    - Assisted by a person -1
    - Assisted by two persons -0
  3. Transfer from sitting position to orthostatic position :
    - without help under 3 seconds -3
    - without help over 3 seconds -2
    - Assisted by a person -1
    - Assisted by two persons -0
  4. In orthostatism:
    - Maintaining the position without help and ability to touch an object -3;
    - Maintaining the position without help, but needs assistance to touch an object – 2;
    - Maintaining the position, but assistance is needed-1;
    - Maintaining the position, but help is needed- 0.
  5. Walking:
    - without help, but with a cane -3;
    - without help but with a walking frame -2;
    - possible only with walking devices, uncertainty at turns, supervision is needed-1;
    - possible only with assistance and supervision-0;
  6. Timed walking test :6m in:
    - Less than 15 seconds -3;
    - 16-30 seconds -2;
    - Over 30 seconds -1;
    - Incapable to go 6 m independently -0.
  7. The capacity of the patient in orthostatic position to touch objects from around or at a distance of:
    - Over 16 cm -4;
    - 8-16 cm -2;
    - under 8 cm -0.

**Table 1 – Subjects of Group 1**

No.	Name and surname	Age	T-Score
1.	A.R.	51	-1,3
2.	C.L.	54	-1,6
3.	G.M.	62	-2,0
4.	I.V.	68	-2,4
5.	L.C.	60	-2,2
6.	N.D.	57	-1,6
7.	N.T.	66	-2,5
8.	O.B.	53	-1,8
9.	S.L.	64	-2,7
10.	S.R.	52	-1,9
Arithmetic mean	-	<b>58,7</b>	<b>-2,0</b>

**Table 2 – Subjects of Group 2**

No.	Name and surname	Age	T-Score
1.	B.D.	69	-2,8
2.	C.P.	50	-1,6

3.	E.G.	61	-2,6
4.	H.E.	65	-2,0
5.	I.N.	57	-2,1
6.	M.O.	70	-2,4
7.	M.Z.	55	-1,9
8.	N.I.	51	-1,5
9.	P.C.	56	-1,8
10.	Z.S.	53	-1,3
Arithmetic mean		-	<b>58,7</b>
			<b>-2,0</b>

**Table 3** - Structure of the groups according to the average age

Age of the group	50 – 60 years	60- 70 years
Lot 1	5	5
Lot 2	6	4

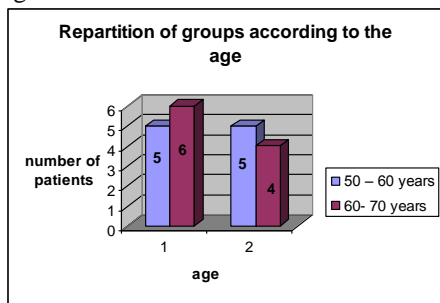
**Table 4-** Values of T-score at subjects in Group 1, after 6 months and 12 months, respectively from the beginning of the study

No.	Name and surname	age	Score To (0 months)	Score T1 (6 months)	Score T2 (12 months)	T1-To	T2-To
1.	A.R.	51	-1,3	-1,2	-1,0	0,1	0,3
2.	C.L.	54	-1,6	-1,3	-1,1	0,3	0,5
3.	G.M.	62	-2,0	-1,8	-1,7	0,2	0,3
4.	I.V.	68	-2,4	-2,3	-2,1	0,1	0,3
5.	L.C.	60	-2,2	-2,0	-1,8	0,2	0,4
6.	N.D.	57	-1,6	-1,4	-1,2	0,2	0,4
7.	N.T.	66	-2,5	-2,3	-2,0	0,2	0,5
8.	O.B.	53	-1,8	-1,5	-1,3	0,3	0,5
9.	S.L.	64	-2,7	-2,5	-2,3	0,2	0,4
10.	S.R.	52	-1,9	-1,6	-1,5	0,3	0,4
Arithmetic mean		<b>58,7</b>	<b>-2,0</b>	<b>-1,7</b>	<b>-1,6</b>	<b>-0,2</b>	<b>-0,4</b>

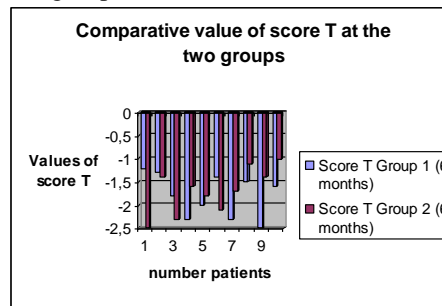
**Table 5-** Values of T-score at subjects in Group 2, after 6 months and 12 months respectively, after the beginning of the study

No.	Name and surname	age	Score To (0 months)	Score T1 (6 months)	Score T2 (12 months)	T1-To	T2-To
1.	B.D.	69	-2,8	-2,5	-2,2	0,3	0,6
2.	C.P.	50	-1,6	-1,4	-1,0	0,2	0,6
3.	E.G.	61	-2,6	-2,3	-2,1	0,3	0,5
4.	H.E.	65	-2,0	-1,6	-1,4	0,4	0,6
5.	I.N.	57	-2,1	-1,8	-1,5	0,3	0,6
6.	M.O.	70	-2,4	-2,1	-1,9	0,3	0,5
7.	M.Z.	55	-1,9	-1,7	-1,4	0,2	0,5
8.	N.I.	51	-1,5	-1,1	-0,9	0,4	0,6
9.	P.C.	56	-1,8	-1,4	-1,2	0,4	0,6
10.	Z.S.	53	-1,3	-1,0	-0,7	0,3	0,6
Arithmetic mean		<b>58,7</b>	<b>-2,0</b>	<b>-1,6</b>	<b>-1,4</b>	<b>-0,3</b>	<b>-0,5</b>

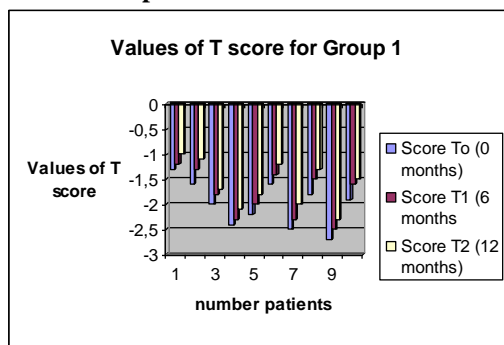
**Graph 1 - Structure of the groups according to the average age**



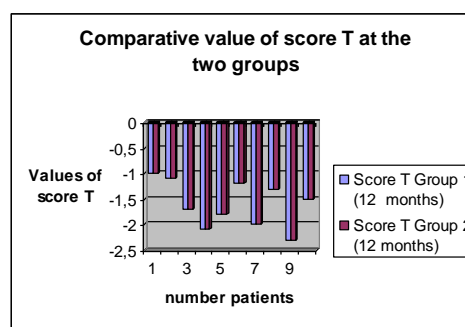
**Graph 4 - Comparative value of score T (6 months) at the two groups**



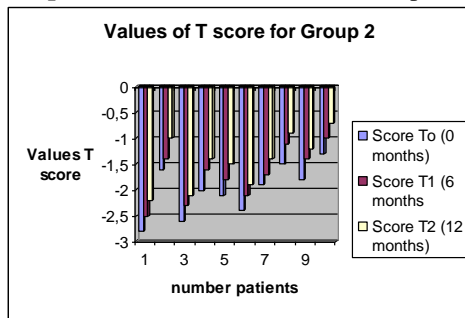
**Graph 2 - Values of T-score for Group 1**



**Graph 5 - Comparative value of score T (12 months) at the two groups**



**Graph 3 - Values of T-score for Group 2**





## ❖ MANAGEMENT

### STRATEGIC DEVELOPMENT PROJECTS FOR LOGISTICS STRUCTURES SPORTS

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#### Abstract

Lack of project justification information on logistics management in our field of activity.

Ggrant logistics precarious sporting clubs public performance compared to sports clubs performance of a private in the integration of all structures on the sports EU.

Program research aimed at finding ways and methods of procurement spending and effective and efficient logistics management specific items.

Logistic system is characteristic of military operations but in developed countries such as USA, Germany, France, Italy, have established councils of higher learning phenomenon that logistical support any kind of activity including sports performance.

**Key words:** logistics, management, project.

#### General principles and tasks of logistics

Among the basic principles of logistics, the following: logistics have made permanent, the establishment and maintenance of reserve materials (inventories), the supply is to be made a priority of sources of territory; logistics arrangement formations on the main effort ; dispersion forces logistics structures in the sport, each echelon responsible for the execution of transport for the own forces, each structure are liable to ensure their logistical support, logistical resources are used efficiently and economy (P. Dumitru, 2000).

#### Factors influencing the preparation and logistics

Then, the successful actions and sports activities, involve significant economic and social efforts, the fund cash reserves and materials to create conditions for maintenance, insurance and financial material, medical assistance should benefit both athletes and others engaged in sports structures.

Flow of economic resources from suppliers to customers is achieved through a network of channels and instruments that define logistics. Logistics is a system of relationships, human forces, and means matariale money, and activities carried out by the rules and standards specified, aimed to provide logistical support (technical, material, financial,

medical, transport, services and other) necessary to restore (P. Dumitru, 2000).

Logistics business in sport is influenced by several factors which are grouped into general factors, specific factors and factors that directly affect logistics missions.

#### The legislative framework that ensures financial resources, material, human

Diagnosing the legislative framework to ensure financial resources, material, human and all the information needed educational activities with sports, sports clubs carried in performance.

Application of modular structural elements and features in accordance with the laws of physical education and sport (especially the Law 69/2000) to develop sports clubs performance.

#### Procedural and structural changes envisaged by the project

Structural organization consists of grouping items, functions, activities, duties and tasks based on certain criteria and the allocation of their organizational subdivisions, in order to achieve them, groups and individuals, to ensure the best conditions for achieving goals and overcoming organization (I.I. LADOR, 2000).

It requires that each club sport performance and to streamline activities and to promote the



necessary logistical activity which does not miss the following items (D. Colibaba, E.vulet., C. Popa, 2007):

- Financial support;
- Base material – administrative;
- Maintenance;
- Transport;
- Medical insurance;
- Feeding and providing the equipment representation, training and competitions.

#### **Objectives and activity levels**

1. Develop a prototype of logistics development project leading to a new concept on the organization and activities (C. Popa, 2008).

2. Practical implementation of a logistics project management leading to the formation of a new organizational behavior.

#### **Tools for developing strategic projects / institutional development**

##### **1.SWOT ANALYSIS - 2 sizes:**

- STRENGTHS AND WEAKNESSES - internal environment;
- OPPORTUNITIES and THREATS - namely: resources, motivation, etc. experiența.; the external environment, namely: relations with local government, other institutions, community, socio-economic, sponsors, funding, risk factors.
- weaknesses - disadvantages.
- strengths - advantages (strategic goals);

##### **2. THE LOGIC METHOD (LFA Logical FRAMEWORK APPROACH)**

-used for development projects and institutional projects for funding;

- shows the following summarizes the categories of information;

- it tries to make the project - how it proposes to achieve the aims;

- what elements are necessary to provide for walking;

- how to measure project progress;

- What are the project risks.

3. **PERT Diagram** (Program Review Technique) - is a management project, which contains information about the tasks of a project and give a clear picture on the relationship of dependency between tasks, the time allocated to each task.

4. **GANTT Chart** - a planning tool (developed by Henry L. Gantt) commonly used in project management, which provides a graphic illustration of a program of activities and helps coordination and monitoring of specific tasks within the project.

#### **Project implementation in practice**

Of the many structural models of a development project suggested for practical implementation of logistics management that the rational development project must have the following functional structure:

1. **Diagnosis of internal and external environment and resources (underlying development strategy especially by setting goals - goals and strategy options).**

Main forms of diagnosis and analysis of:

- Analysis of qualitative information.
- Analysis of quantitative information.
- Knowledge of interest groups - the areas in which it operates - avoid sources of Analysis of the goals of the
- Analysis Complex analysis of the community.
- Analysis conflict of organization.
- Analysis PESTE (E).

2. **Develop strategy** involves going through the following steps:

- Description of the social-General on regional and local level.
- Setting goals for institutional development project.
- reformulation mission organization.
- Defining options.

#### **3. Implementation strategy:**

- Operational Plan.



- Resources.
- Responsibilities.
- Evaluation Indicators.

### Structural elements of an institutional development project (POPA, C., 2008)

#### 1. Identification data of the club (institution):

- name, address, fax, website, the management team.

#### 2. Organization Culture: traditions.

- club history, place and role in the community;

#### 3. Quantitative information:

- population (school, sports);
- number athletes with good results and good;
- number athletes on the steps (liceuri training)
- number athletes of health problems, social.
- teachers: coaches, athletes and trainers (owners / substitute, grade teachers, coaches categories);
- resources: training spaces (rooms, halls related offices, laboratories, workshops, library, office, etc., land):
  - extra spaces and toilet areas;
  - revenue Training materials etc.;
  - devices, funding;
  - own income through related services.

#### 4. Information quality:

- The environment from which the athletes: family, neighborhood, school level;
- qualification of teachers and support staff;
- promovabilitate rate;
- sports beginning.

#### 5. Presentation of the institution mission and vision.

#### 6. Presentation of targets / goals, and strategic options in relation to the general objectives of the project (the latter will be in the operational plans).

##### Valorisation project

1. Promote ideas and proposals of our *Logistics Management* in the sports clubs in order

to optimize offers and services available locally, nationally and internationally.

2. Involving geographical environment and natural resources of the county to increase the quality and efficiency of activities of sports associations and clubs - with DSJ, Sports Clubs, School Inspectorate and other institutions.

#### Conclusions

1. In all clubs there is a resistance to change from the old officials who see no radical improvement in the quality and efficiency of work performed but rather an additional load, changing the old concepts, and especially not afraid to face the new requirements of the job.
2. Therefore we believe that our intervention on promoting and improving logistics management is salutary being accepted by all top managers.

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## ❖ PHYSICAL EDUCATION AND SPORT

### VIEWS OF PHYSICAL EDUCATION TEACHERS ABOUT DIMENSION OF THE MATERIAL AND MEASUREMENT EVALUATION OF THE NEW EDUCATIONAL PROGRAM OF PHYSICAL EDUCATION COURSE OF THE PRIMARY SCHOOL

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#### ABSTRACT

The education in every country admits to educate the human force in the qualification in order to operate the systems which are vital for the society as a task. In order that the education completes this task, the educational institutions' functions, operations and educational programs are arranged so that they meet the needs of individuals and social requirements. The physical education is the integral part of the common education. Both educations, which there is a parallelism between their objectives, bear a qualification which is complement to each other. It has been discussed to arrange the educational programs according to the today's needs in our country, and the primary and secondary educational programs have been changed based on the developments in the world and Turkey. The views of the physical education teachers, who will apply this program, about the new program are very important. Therefore, whether the views of the physical education teachers about the dimension of the material and measurement evaluation of the new educational program show difference based on the sexes and seniorities of the teachers is a subject which must be examined.

#### Methods

Survey included total 110 physical education teachers (65 males, 45 females). A scale in the Likert type in five has been prepared in order to determine the views of the physical education teachers about the dimension of material and measurement evaluation of the new educational program of the physical education course of primary school. In the scale, 12 cases have been presented to the teachers about the material and measurement evaluation dimension of the program, and it has been requested that the teachers have stated their views about those cases. It has been found that the scores of the permanent variables did not show meaningful difference between the groups, and two groups have been tested with t-test, three groups with single direction variance analysis, and in order to determine the difference between the groups, Scheffe-Dunnnett C Multiple Comparison Test has been used. The significance level in the survey has been accepted as 0.5.

#### Results

As a result, the male teachers think that they experience lesser problems than the female teachers in the measurement evaluation dimension of the primary school's new physical education course program. The teachers, who have the 11–15 years of seniority, find the measurement evaluation dimension more positive than the teachers who have the seniority between 1–5 years and 6–10 years, and the views of the teachers about the material dimension of the primary school's new physical education course program did not change much based on their seniorities. And it has been determined that the male teachers have experienced lesser problems than the female teachers in the measurement evaluation dimension of the primary school's new physical education course program.

#### Discussion

According to the study by Yaşar et al. (2005), the teachers need the education about the measurement evaluation dimension of the program. According to the study by Gözütok et al. (2005), it has been stated that the teachers found themselves more unqualified about the measurement evaluation subject than about other dimensions of the program. According to the study by Yaşar et al. (2005), it has been found that the teachers needed the education about the educational technologies of the program and material development dimension, and according to the study by Özşaker and Orhun (2005), the state schools were insufficient in the aspect of area, facility, tools sufficiency in the schools at 45,8% and the views of the teachers did not show the much difference based on their seniorities.

**Key words:** primary school, physical education, teachers.

#### Introduction

The education in every country admits to educate the human force in the qualification in order to operate the systems which are vital for the society as a task. In order that the education completes this task, the

educational institutions' functions, operations and educational programs are arranged so that they meet the needs of individuals and social requirements. The physical education is the integral part of the common education. Both educations, which there is a parallelism between their objectives, bear a



qualification which is complement to each other. It has been discussed to arrange the educational programs according to the today's needs in our country, and the primary and secondary educational programs have been changed based on the developments in the world and Turkey. The views of the physical education teachers, who will apply this program, about the new program are very important. Therefore, whether the views of the physical education teachers about the dimension of the material and measurement evaluation of the new educational program show difference based on the sexes and seniorities of the teachers is a subject which must be examined.

### Material and Method

110(65 male,45 female)physical education teachers participated the research.A scale of five Likert type wasprepared to determine the Physical Education teachers views on the new teaching programme of material and testing/measurement&evaluation in

primary schools Physical Education lessons.In the scale, 12 situations at the material and testing/measurement&evaluation level were given and the teachers were asked to give theirviews about these situations.Whether the results of the continuous variables have a meaningful difference between the groups was tested by T test for two groups,one-way variance analysis for three groups.To find the difference between the groups,Scheffe-Dunnet C Multiple Comparison Test was used.The level of significance was regarded as .05.The research environment consists of physical education teachers teaching at 89 official primary schools in Keçiören,the district of Ankara in 2007-2008 Education year.This research is about the programme which has been in use for two years. To determine the Physical Education teachers'views on the new Primary Schools Physical education Teaching Programme,a scale has been developed.The scale is shown in **Table 1**.

**Table 1**

	Expressions	I don't agree at all		I don't agree		I am not sure		I agree		I absolutely agree	
		f	%	f	%	f	%	f	%	f	%
Material	1. I think that the technological hardware is enough to carry out the new education program of the physical education course for primary schools.	39	35.5	52	47.3	7	6.4	12	10.9		
	2. I think I can benefit from technological tools adequately.	19	17.3	39	35.5	9	8.2	41	37.3	2	1.8
	3. I think that my students can benefit from technological tools adequately.	25	22.7	52	47.3	13	11.8	20	18.2		
	4. I think the sources are enough for the preparation of the needed materials	18	16.4	41	37.3	29	26.4	19	17.3	3	2.7
	5. I have financial problems when it comes to making copies of the measurement and evaluation forms.	4	3.6	20	18.2	17	15.5	54	49.1	15	13.6
Measurement and Evaluation	6. I think the existence of many measurements and evaluations creates a problem.	11	10.0	55	50.0	31	28.2	8	7.3	5	4.5
	7. I'm able to use observation forms, performance tests and scales adequately.	6	5.5	28	25.5	48	43.6	28	25.5		
	8. I have problems in pursuing the classifying of the students product files.	12	10.9	56	50.9	19	17.3	21	19.1	2	1.8
	9. I have problems reflecting the measurement results that are gotten from different measurement tools to grades.	6	5.5	52	47.3	26	23.6	24	21.8	2	1.8



10. I think that the measurement and evaluation system is complex.	17	15.5	36	32.7	14	12.7	37	33.6	6	5.5
11. I have problems in performance exercises.	6	5.5	64	58.2	15	13.6	22	20.0	3	2.7
12. I think that it is a problem that performance exercises are done by families..	31	28.2	59	53.6	14	12.7	6	5.5		

The material dimension of this scale has been assessed as the first sub problem and the measurement and evaluation dimension has been assessed as the second sub problem.

**1. Findings about the first sub problem**

The first sub problem is “the views of the physical education teachers about the material dimension of the physical education course of the new education program of primary schools.”

The material dimension of the study was expressed as follows:

- a. Does it show differences according to the gender of the teachers?
- b. Does it show differences according to the seniorities of the teachers?

a. The question; “does the material dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?” was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 2:

**Table 2**

**The differences of the views of teachers about the material dimension of the program according to their genders**

	Sex	N	$\bar{X}$	S	t	P
Material	Male	65	13,17	3,54	,873	,385
	Female	45	12,58	3,43		

In table 2 views of teachers about the material dimension don't show a statistically meaningful difference according to their genders.

b. The question; “does the material dimension of the physical education course of the new education

program of primary schools show differences according to the seniority of the teachers?” was analyzed with statistical processes and a one-way variance analysis (Anova). According to the test the following findings were gotten and shown in table 3:

**Table 3**

**The differences of the views of teachers about the material dimension of the program according to their seniority**

	The source of the variance	KT	sd	KO	f	p
Material	In groups	86.533	4	21.633	1.831	.128
	Inside groups	1240.885	105	11.818		
	Total	1327.418	109			

	seniority	N	$\bar{X}$	S
Material	1. 1-5 Years	11	11.64	2.97
	2. 6-10 Years	58	12.53	3.58
	3. 11-15 Years	18	13.55	1.98
	4. 16-20 Years	7	15.57	5.09
	5. 21 and more	16	13.37	3.65
	Total	110	12.93	3.49

p<.05

In table 3 views of teachers about the material dimension don't show a statistically meaningful difference according to their seniority.

## 2. Findings about the second sub problem

The second sub problem is "the views of the physical education teachers about the measurement and evaluation dimension of the physical education course of the new education program of primary schools."

The tasting/measurement and evaluation dimension of the study has been expressed as follows:

a. Does it show differences according to the gender of the teachers?

b. Does it show differences according to the seniorities of the teachers?

a. The question; "does the testing/measurement and evaluation dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?" was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 4:

**Table 4**  
**The differences of the views of teachers about the material dimension of the program according to their genders**

	Sex	N	$\bar{X}$	S	t	p
Measurement and Evaluation	Male	65	19,48	3,43	5,657	,000
	Female	45	15,51	3,87		

In table 4 there is a statistically meaningful difference in benefit of the male teachers in the measurement and evaluation dimension.

b. The question which is under the scope of the second sub problem; "does the measurement and evaluation dimension of the physical education course of the new education program of primary schools show differences according to the seniority of the teachers?" was analyzed with statistical processes and a one way variance analysis (Anova). According to the test the following findings were gotten and shown in table 5:

**Table 5**  
**The differences of the views of teachers about the dimension of the measurement and evaluation program according to their seniority**

	The source of the variance	KT	sd	KO	f	P	Difference
Measurement and Evaluation	In groups	446.530	4	111.638	8.475	0.000	1-3
	inside groups	1383.122	105	13.173			2-3
	Total	1829.673	109				

\*1=1-5 Years, 2=6-10 Years, 3=11-15 Years

	Seniority	N	$\bar{X}$	S
Measurement and Evaluation	1. 1-5 Years	11	17.09	3.56
	2. 6-10 Years	58	16.33	3.95
	3. 11-15 Years	18	21.67	3.23
	4. 16-20 Years	7	20.00	3.83
	5. 21 and more	16	18.68	2.60
	Total	110	17.85	4.09

$p < .05$

In table 5 views of teachers about the dimension of the measurement and evaluation don't show a statistically meaningful difference according to their seniority.

## Results

1.a) The question which is under the scope of the first sub problem; "does the material dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?" was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 2:

Table:2, After analyzing the question in a .05 significance level with a t test, it was found that there isn't a meaningful difference between the material dimension and the gender variables ( $t = ,873$ ;  $p > .05$ ). If we look at the data that were gotten we see that the arithmetical average of the male teachers is  $\bar{x} = 13,17$  and that their standard variance is  $S = 3,54$ , whereas the

arithmetical average of the female teachers is  $\bar{x} = 12,58$  and their standard variance is  $S = 3,43$ . According to this result it is seen that the average and standard variance distribution values between the male and female teachers are comparable and despite the fact that the average of the male teachers is higher than the female teachers, the difference between these averages doesn't express statistically a meaningful difference.

b) The question which is under the scope of the first sub problem; "does the material dimension of the physical education course of the new education program of primary schools show differences according to the seniority of the teachers?" was analyzed with statistical processes and a one way variance analysis (Anova). Because the values [ $F_{(4-105)} = 1.831$ ,  $p > .05$ ] are at the level of .05, so a meaningful difference couldn't be found.

According to this result it can be said that the views of the physical education teachers about the material dimension of the physical education course of the new education program of first schools don't change according to their gender.

According to the study of Yaşar and his friends (2005) it is stated that the teachers need the following: Firstly they need to be educated about the education technologies and the material development dimension of the program, they definitely need education for efficiency, duty, work and the preparation of experiment documents, information documents and process documents; also for



preparation of overhead projector transparencies, preparation of slides, preparation of schemes-figures and graphics by hand, preparation of panels, posters and powerpoint presentations. According to the studies of Gözütok and his friends (2005) it is found that the teachers perceive themselves successful in many subjects, but the observation results showed that the teachers are actually not successful at a specific level they thought they would be. Also the following points were found out: despite the fact that teachers state that they find themselves adequate in the subject of configuration, they didn't respect the views of students; they didn't form a positive and democratic communication atmosphere in the class; they stated that they see themselves adequate in issues like preparing and using materials, forming efficiency and planning the teaching process according to the new program, but they didn't provide opportunities for the students to form meaningful relations between their pre-learning and their new learnings, they also didn't provide opportunities for the students to configure the new informations; despite they stated that they are adequate in forming activities, they didn't arrange appropriate activities according to the level of the students and the current activities are not appropriate for the gains of the program; they also claimed that they are adequate in preparing portfolios, but it was found out that they didn't know the modern/contemporary methods and techniques that are needed for the preparation of portfolios and that they didn't carry them out at the requested level.

According to the observation results, the subject in which the teachers are most inadequate is the development of materials. According to the study of Özşaker and Orhun (2005) the official schools are inadequate at a proportion of %45,8 in subjects like field foundations and the sufficiency of tools-devices and the views of the teachers show not much differences according to their seniorities. In another study of Özşaker (2001) in which the views of the teachers are given, it is stated that the most important reasons why the physical education course doesn't reach its goal in official schools is that the course hours are inadequate- % 46 percent- and there aren't sufficient tools and devices- % 23 percent. In the study of Köksal (1995) it was found out that the teachers don't use course tools and devices in an adequate level and that this problem stems from the inadequacy of materials.

2. a) The question which is under the scope of the second sub problem; "does the views of the teachers about the measurement and evaluation dimension of the physical education course of the new education program of primary schools show differences according to the gender of the teachers?" was analyzed with an independent t test. According to the test the following findings were gotten and shown in table 4.

After analyzing table 4 we see a t test that was made with a .05 significance level about the views of the teachers on the measurement and evaluation dimension of the new primary school physical education course program, it was found that there isn't a meaningful

difference between the measurement- evaluation dimension and the gender variable. This difference is in favour of the male teachers ( $t = 5,657$ ;  $p < .05$ ). If we look at the data that were gotten we see that the arithmetical average of male teachers is  $\bar{x} = 19,48$  and that the arithmetical average of female teachers is  $\bar{x} = 15,51$ . In other words the average proportion of male teachers is higher than the average of female teachers. According to this result it is seen that there is a meaningful difference in the averages in favor of the male teachers. Average and standard variance distribution values between the male and female teachers are comparable and despite the fact that the average of the male teachers is higher than the female teachers, the difference between these averages doesn't express statistically a meaningful difference. According to these data it can be said that the male teachers have fewer problems than the female teachers related with the measurement and evaluation dimension of the new first school physical education course program

b) The question which is under the scope of the second sub problem; "does the views of the teachers about the measurement and evaluation dimension of the physical education course of the new education program of first schools show differences according to the seniority of the teachers?" was analyzed with statistical processes and a one way variance analysis (Anova). According to the test the following findings were gotten and shown in table 5:

After analyzing table 5 in an Anova test that was made with a .05 significance level about views of the teachers about the measurement and evaluation dimension of the new primary school physical education course program, because of the formula [ $F_{(4-105)} = 8.475$ ,  $p < .05$ ] it is found that there isn't a meaningful difference between the measurement- evaluation dimension and the seniority variable. According to these results it can be said that the views of the physical education teachers about the material dimension of the physical education course of the new education program of primary schools and the difference between the seniorities of the teachers are significant.

The Scheffe - Dunnett C multiple comparison tests were made to see between which groups the meaningful differences are found. According to the test results the difference lies between 1-3 and 2-3. According to this result the points of the measurement and evaluation dimension of teachers with an experience of 1-5 years is ( $\bar{X} = 17.09$ ), the points of the measurement and evaluation dimension of teachers with an experience of 11-15 years is ( $\bar{X} = 21.67$ ), the points of the measurement and evaluation dimension of teachers with an experience of 6-10 years is ( $\bar{X} = 16.33$ ); so there is a meaningful difference between the views of teachers with an experience of 11-15 years ( $\bar{X} = 21.67$ ). According to other twosome comparisons meaningful differences weren't found. This leads to the conclusion that the



measurement and evaluation dimension of teachers who have an experience of 11-15 years is more positive than the dimension of teachers with experiences of 1–5 years and of 6–10 years.

According to the study of Yaşar and his friends (2005) teachers need to be educated about the measurement and evaluation dimension of the program and that they also definitely need to be educated in subjects like observation, work file, discussion, experiments, projects, study papers, students product file (portfolio) and performance evaluation which are all related with the dimension of the measurement and evaluation. According to the works of Gözütok and his friends (2005), teachers found themselves more inadequate in the subject of measurement and evaluation than in the other dimensions of the program. According to works of Yaşar and his friends (2005), it came out that the teachers need to be educated about the measurement and evaluation dimension of the program and that they also need to be educated in order to use the tools and devices for the measurement and evaluation dimension.

#### Suggestions

The student observation and measurement-evaluation forms should be arranged and their number should be less than before, the number of students in classes should be reduced, the assessment of homework and forms of students should be moved to an internet

environment and the application period of the physical education course should be increased.

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## OXYGEN AND ENERGY IN PHYSICAL EDUCATION

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#### Abstract

Aerobic training involves exercises that demands oxygen without producing an intolerable oxygen debt. As a result it can be continued for an extended period of time. Aerobic training activates the oxygen transport system which in turn brings about a series of physiological changes within the body called the “training effect”. The changes include greater heart and lung efficiency and better muscle function. In this study was to investigate and to compare of  $VO_2$ max between swimmers and athletes.

**Key words:** cardiac output, heart rate, stroke volume, diffusion, trained, untrained.

#### Introduction and research objective

A. Energy is required for all bodily processes. The body's energy sources and how the body produces energy from these sources will be discussed in another class. For the present, it is necessary for you to know that oxygen ( $O_2$ ) is important in the production of the high-energy compound, ATP. ATP is important in all bodily processes that require energy but it is also the only compound that can be used directly by the muscles as a source of fuel during exercise. We are much more efficient at producing ATP if oxygen is present. In fact, all energy production is ultimately linked to the use of oxygen. Thus, one's ability to take in and use or consume oxygen is critical to a person's aerobic

exercise performance. In general, the greater one's rate of oxygen consumption ( $VO_2$ ) during strenuous exercise, the greater is that person's capability to exercise aerobically. A person's maximum rate of oxygen consumption (maximum oxygen consumption) is referred to as that person's  $VO_2$ max, and it is considered to be the single, best indicator of a person's level of cardio respiratory or aerobic fitness. What determines a person's  $VO_2$ max and how can it be increased? To answer these questions, we will need to develop an understanding of several components of the oxygen transport system (OTS) and how they function.

To get  $O_2$  from the surrounding, atmospheric air to the individual muscle cells where it is used during exercise, the interaction of several physiologic systems



is required. The respiratory system is responsible for bringing the oxygen into the body. After the oxygen has entered the blood, the cardiovascular system is responsible for moving it in the blood through the blood vessels to the muscle cells. Thus, the ability of the blood to carry oxygen and the condition of the blood vessels are important. As the movement of blood through the blood vessels required a pump, the heart is also important and must function affectively if a person is to have a high  $VO_2$ max. Finally, the muscles, although they are not part of the OTS, must be able to extract and use the oxygen that is delivered to them. As a result, at rest and particularly during exercise, a series of interdependent physiologic systems are brought into action and must function correctly for the body as a whole to work properly. If any one of these systems is weak, it serves as the weak link in a chain and causes the whole system to function at less an optimum level. (B.M. Bass, 1998, A.Bejan, 2006, R. Owers, E. Fox, 1998)

### Components of the oxygen transport system

**A. Respiratory System.** One of the main function of the respiratory system is to move air into and out of the lungs. The air moves into the body through the nose and mouth. These structures, in addition to the pharynx, warm, moisten, and filter the air as it moves through the pharynx or throat. The pharynx is a common passageway for the movement of both food and air. The pharynx at its base into two tubes: the esophagus and the larynx. The esophagus serves as a passageway to move food to the stomach and the larynx houses the vocal cords. Air passing over the vocal cords causes them to vibrate and produce different sounds which we coordinate into speech. From there the air moves into the trachea, the first structure to deal solely with respiration. The trachea branches into two bronchi, one to each of the lungs. Within the lungs, the major bronchi branch many times into progressively smaller tubes called bronchioles. These terminate in tiny air sacs called alveoli.

#### 1. Breathing

a. The mechanical process by which air is moved into and out of the body is called breathing. It involves two separate phases: inspiration and expiration. The movement of air occurs by bulk flow from an area of higher pressure to an area of lower pressure. Thus, in order to get air to flow into or out of the body, the air pressure either inside or outside of the body, or both, must change. Since the outside pressure is the atmospheric pressure, which we cannot alter, the internal pressures must be changed to cause the movement of air. By changing the size of the thorax or chest, internal changes in pressure result. If, for example, the size of the thorax is increased, the pressure in the lungs decreases and air rushes in, and vice versa. Changes in the size of the chest cavity result from the contraction and relaxation of respiratory muscles, i.e., the diaphragm and the intercostals.

b. The diaphragm is a dome-shape muscle that transversally bisects the body. It serves as the lower border or floor of the thorax. When its muscle fibers contract the diaphragm, increasing the size of the chest cavity, and thereby lowering the pressure in the chest cavity. As a result, air move into the lungs. The intercostals muscles are located between the ribs. Construction of one setoff these muscles also assists in inspiration by causing an upward and cut ward movement of the ribs witch increases the size of the thorax.

c. Expiration is normally a passive process. In other wards, when the respiratory muscles relax and the chest returns to the original size, air is forced out without the further expenditure of energy.

d. Because of the tremendous capacity of the lungs and the muscle involved in respiration, in normal individuals who are free of disease, respiratory system is generally not the weak link in the OTS –oxygen transport system – or the limiting factor to one's performance during maximum exercise.

#### 2. Diffusion

a. Once inside the alveoli, the oxygen in the air must move across the lining of the alveoli and the surrounding capillaries into the blood so that it can be transported by the blood to the muscles and other tissue. This movement into the blood from the alveoli occurs by a process called diffusion. Diffusion occurs when a substance moves from an area of higher concentration to an area of lower concentration in an effort to equalize concentrations. It is also a passive process which does not directly require the expenditure of energy.

b. Diffusion can occur rapidly only over extremely short distances. There are several factors which affect the rate of diffusion:

- the surface area available for diffusion;
- the sickness of the membrane;
- the gradient for diffusion.

c. Aerobic exercise increases the rate of diffusion by affecting changes in the surface area and the thickness of the membrane. These changes are listed below:

- it opens up dormant capillaries thereby increasing the surface area through which oxygen can diffuse;
- it dilates capillaries already open thereby increasing the total surface area through which oxygen can diffuse;
- it stretches the alveolar membrane thereby increasing the surface area and decreasing the thickness of respiratory membrane

**B. The cardiovascular system.** The cardiovascular system consists of the blood, the blood vessels, and the hart. In the section, we will focus our attention on the blood and the hart, their role and some important facts about each. Oxygen after moving across the respiratory membrane, is transported in the blood to the cells. Thus, the blood is an important part of the cardiovascular system and, hence, the oxygen transport system. The

term hematocrit is used to express the percentage of the volume of blood which is occupied by blood cells. One's hematocrit may be determined by spinning down or centrifuging a blood sample and measuring the volume of cells and total blood. Physical training has not been observed to have a great effect on the blood. An increase in plasma volume, an increase in the amount of fluid in the blood, accurse as a result of regular, aerobic training. Thus, rested, training individuals will generally have a lower hematocrit than rested, untrained persons. This lower hematocrit has , unfortunately, been termed "sports anemia ". This condition, however, is a natural adaptation to aerobic training and the argument can be made that it represents more of an asset than a detriment to the trained individual as it theoretically increases the amount of blood the heart can pump minute during exercise and thereby increases the delivery of oxygen to the tissues. I n contrast to the above finding, an immediate or acute change which generally occurs during exercise is an increased hematocrit due to a decrease in plasma volume. This decreased plasma volume results from the loss of body fluids due to sweating and because blood fluids temporarily are displaced into the active muscles. During exercise, in order to produce more energy in the active muscles, the body must send more blood and oxygen in the active muscle tissue. Since there is only so much blood in a person's body, the active muscles relive more blood at the expense of the less active organs in the body. Some of the changes in blood flow during exercise are given below :

- increase the working muscles;

- decreases to non-working muscles;
- decreases to the gut or viscera;
- increases to the heart;
- increases to the lungs;
- can increase or decrease to the skin;
- remains about the same to the brain.

The changes in blood flow mentioned above enable the working muscles to obtain more blood and to produce more work aerobically and to help remove from the muscle by – products such as lactic acid.

**B. The Heart.** The heart is one of the most important components of the OTS. It is really two pumps in one, as it divides into right and left valves. The right side pumps blood in the lungs to pick up a load of oxygen and to get rid of carbon dioxide, produced in the cells. The oxygen-rich blood returns to the left side of the heart where the left ventricle pumps the oxygen out to the body and finally back to the right side of the heart. The cycle then repeats itself over and over again.

How well the heart functions as a pump is important, especially during exercise. The best measure or index of the heart's pumping capacity is the cardiac output which is defined as the volume of blood pumped by one ventricle each minute. The cardiac output can also be expressed mathematically as follows:

$$CO = HR \times SV$$

(CO stands for cardiac output, HR for heart rate, and SV for stroke volume).The stroke volume is the volume of blood pumped by one ventricle during one beat of the heart.

Listed in the table below are examples of values for a trained (students in 4 year of study in Naval Academy)

Condition/state	HRbeats\min.	X	SVml. blood\beat	=	COml.blood\min.
Untrained, rest	72	X	70	=	5,040 (5,04 l\min.)
Untrained, max.exercises	180	X	110	=	19,800 (19,8 l\min)
Trained, rest	60	X	85	=	5,040 (5,04 l\min.)
Trained, max. exercises	180	X	150	=	27000 (27,0 l\min)

### Materials and methods

In this study was to investigate and to compare of VO<sub>2</sub>max between swimmers and athletes. The comparison was pre and post training, and the period of experimental implementation was about 3 month. One experimental class (21 males from Naval Academy) have

received a fitness program of 12 lessons of swimming and the other 12 lessons of athletics and sports (volleyball, basketball, soccer). The tests applied was 800 m swimming and 3000 m run. There were no importance difference between groups in the man values.

### Physical and physiological measurements

#### Athletes

Nr. crt.	Parameter	X max.	X min.	X max.–X min	$\bar{X}$	± S	CV %
1	Heigh	193	163	30	178,48	6,62	3,78
2	Weight	93	65	28	82,1	6,33	7,72
3	Biacromial diameter	47	40	7	42,22	1,57	3,77

#### Swimmers

Nr. crt.	Parameter	X max.	X min.	X max.–X min	$\bar{X}$	± S	CV %
1	Heigh	189	161	28	175,17	6,60	3,77
2	Weight	92	62	30	77,66	6,90	8,88



3	Biacromial diameter	33	40	13	43,9	2,40	5,46
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### Athletes

Nr. crt.	Parameter	X max.	X min.	X max.-X min	$\bar{X}$	$\pm S$	CV %
1	Vital capacity	4900	3600	1300	4364	30,20	7,34
2	Heart rate	105	68	37	90.2	9,29	10,27
3	Apnee	30	12	18	21,88	3,96	18,09

### Swimmers

Nr. crt.	Parameter	X max.	X min.	X max.-X min	$\bar{X}$	$\pm S$	CV %
1	Vital capacity	4600	3600	1000	4322	2,38	5.35
2	Heart rate	108	72	36	86,7	9,67	11.15
3	Apnee	29	12	17	21,48	4,01	18,65

First step was to calculate  $VO_2$  both for the swimmers and athletes and then we calculate  $VO_{2max}$

$VO_2 = \text{Heart Rate} \times \text{Stroke Volume} \times a - VO_2$  difference

The above relationship reveals that if you know how much blood heart pumps each minute (cardiac output =  $HR \times SV$ ) and if you know how much oxygen is extracted and consumed from a given quantity of blood ( $a-VO_2$  difference), you can calculate how much oxygen is used totally by the body during that minute. An example is provided below on how  $VO_2$  can be calculated using the three factors mentioned above (HR, SV, and  $a-VO_2$  difference). In this example, a common resting value for  $a-VO_2$  difference, 6.5 ml  $O_2/100ml$  blood, is used. This simply means that each 100 milliliters of blood which the heart pumps out of its main artery (the aorta) to the body comes back to the heart through the veins with 6.5 ml less oxygen in that 100 ml of blood. Using average, resting values given earlier for HR and SV, the calculation to determine resting  $VO_2$  may be done as follows.

$VO_2 = 72 \text{ beats/min} \times 70 \text{ ml blood/beat} \times 6.5 \text{ ml } O_2/100 \text{ ml blood}$

We can now isolate numbers and units to help simplify the calculation.

$VO_2 = [(72 \times 70 \times 6.5)/100](\text{beat} \times \text{ml blood} \times \text{ml } O_2)/(\text{min} \times \text{beat} \times \text{ml blood})$

We can now multiply the numbers and cancel out any units that appear both above and below the line of division.

$VO_2 = (32.760/100)(\text{ml } O_2/\text{min})$

$VO_2 = 327.6 \text{ ml } O_2/\text{min}$  or after rounding off, 0.328 liters of  $O_2/\text{minute}$ .

An oxygen uptake at rest of 0.33 l/min is a reasonable value for males.

This equation is equally valid in calculating a person's  $VO_{2max}$ . Thus, under conditions of maximum exercise, a person's maximum HR, SV, and  $a-vo_2$  difference can be multiplied together to calculate their  $VO_{2max}$ . since this is true, the above equation means that a person's  $VO_{2max}$ , and to a large part, their ability to perform as an endurance athlete, is dependent on how well their heart functions as a pump (CO) and how well the muscles can use oxygen ( $a-vo_2$  difference). It should also be pointed out that in normal, healthy individuals

the ability to move air into and out of the lungs is not a limiting factor to endurance performance.

Maximum oxygen uptake ( $VO_{2max}$ ) is generally regarded by experts as the best, single index of a person's level of aerobic fitness. It can be determined in the laboratory or it can be predicted on the basis of a person's performance on a test such as the 2-mile run or some values for several groups of people. A person's  $VO_{2max}$  may be given as the number of liters of oxygen the individual consumed each minute during maximal exercise (ml  $O_2/kg \times \text{min}$ ). The latter method of expressing  $VO_2$  max allows one person's values to be compared to those of another in a meaningful manner. For that reason, the  $VO_2$  max values given are expressed in ml  $O_2/kg \times \text{min}$ .

The two equations below convert the 3000 m run times of males to maximum oxygen uptake values. The  $VO_{2max}$  values obtained are shown as the maximum amount of oxygen in students used per kilogram of the person's body weight in one minute during maximum aerobic exercise.  $VO_{2max}$  values are generally expressed more succinctly as ml  $O_2/kg \times \text{min}$ . For males, the following equation is used to calculate  $VO_{2max}$ :

$VO_{2max} = 99.7 - [3.35 \times (3000\text{m run time in decimal form})]$ .

The example below shows how to use the equation for males. The data is for a 21-year-old male whose all-out, 3000 m run time is 12 minutes and 36 seconds.

STEP 1. Express the 3000 m run time as a decimal, insert it into the equation. When 12 minutes 36 seconds is written as a decimal, it becomes 12.60 minutes. (To determine what fraction of a minute 36 seconds is, divide 36 seconds by the number of seconds in one minute, that is, 60 seconds. Thus,  $36/60 = 0.06$ . This fraction is added to the minute value to give 12.60 as the run time expressed as a decimal). After putting the decimal into the equation, the equation should resemble the one below.

$VO_{2max} = 99.7 - [3.35 \times (12.60)]$

STEP 2. Multiply the decimal from the 3000m run time by 3.35. In this case, we get  $[3.35 \times (12.60)]$ , which equals 42.21. at this point, the equation should resemble the one below.

$$VO_2\max = 99.7 - [42.21]$$

STEP 3. Subtract the product obtained in Step 2 from 99.7. For our example, we make the following subtraction :99.7-[42.21]. This gives a value of 57.49. Thus, the equation should look like the one below.

**Values of vo<sub>2</sub>max**

Nr. crt.	subjects	X max.	X min.	X max.-X min	$\bar{X}$	$\pm S$	CV %
1	athletes	92	37	55	48,2	2,67	4,87
2	swimmers	78	27	51	43,9	3,27	12,04

**This lets interested students compare their fitness level with others such as athletes and swimmers whose VO<sub>2</sub>max values are published in magazines or journals**

Aerobic training has been demonstrate to have an effect on the heart and its functions( decreased resting heart, increase stroke volume at rest and during exercises, increased cardiac output during maximum exercise, increase size of the heart, improved coronary circulation).

A re-examination of table above, shows that the increased SV and decreased HR in the trained, resting students still produces a CO equal to that of a comparably sized, untrained, resting person. Also, although the max heart rates of the two types of students are the same at maximum exercise( because the theoretical MHR is determinate by age alone), the trained individual has a higher CO because of his higher SV. I fall other things are equal, a person with a higher cardiac output should be able to exercise at a more intense workload than other individuals with a lower cardiac output

Although the muscular system is not part of the oxygen transport system, during exercise it receives more blood than do the other tissues of the body. As a result, in order to better understand the effects of **vo<sub>2</sub> difference for athletes and swimmers**

State of training	Arterial O <sub>2</sub>	-	Venous O <sub>2</sub>	a-VO <sub>2</sub>	difference
swimmers	19,5"	-	5,5	=	14
athletes	19,5"	-	4,0	=	15,5

Some of the changes that occur in the muscle as a result of regular, aerobic exercise which causes a larger a-vo<sub>2</sub> difference are:

- larger mitochondria in the trained muscle;
- more of the enzymes required for energy production in trained muscle;
- a greater number of capillaries in the trained muscle.

All of the above changes enable the aerobically-trained skeletal muscle to better utilize the oxygen delivered to it. This, in turn, allows the muscle to

**Effects of aerobic training on selected physiological functions**

Factor	At rest	During maximal exercises
Oxygen consumption	unchanged	increased
Heart rate	decreased	unchanged or reduced
Stroke volume	increased	increased
Cardiac output	unchanged	increased
a-vo <sub>2</sub> volume	unchanged	increased

$$VO_2\max = 57.49$$

This calculation reveals that a male whose all-out, 3000m run time is 12 minutes 36 seconds will have a VO<sub>2</sub>max of approximately 57.49 ml O<sub>2</sub>/kg x min.

exercise on the human body and the role played by the OTS, it is necessary to also study the muscular system and how it responds to both acute (short- term bouts of exercise ) and chronic exercise (long-term or regular exercise ).

When the blood, and oxygen it carries, arrives at the muscle, it does not matter how much oxygen is delivered if the muscle is not capable of using oxygen to produce energy. The best measure of a skeletal muscle's aerobic efficiency or its ability to use oxygen is it's a-vo<sub>2</sub> difference during maximal exercise. This is a measure of how much oxygen is actually taken up and used by the muscle to produce energy for muscular contraction. The a-vo<sub>2</sub> difference can be determined, as its name suggests, by subtracting the content of oxygen in the oxygen- poor venous blood from the content of oxygen in the oxygen- rich arterial blood. During exercise, more oxygen will be taken by the muscles from the incoming, arterial blood than at rest. Regular, aerobic training will increase the a-vo<sub>2</sub> difference of a muscle during maximal exercise by increasing its ability to use oxygen during maximum exercise.

produce more ATP and produce greater work outputs. To the runner, this will mean that he can run at a faster pace and possibly sustain that pace for a longer period of time. A good aerobic conditioning program can result in a 15-25% increased in the VO<sub>2</sub>max, primarily due to improvements in maximal cardiac output and a-vo<sub>2</sub> difference. Bellow, a summary appears of the commonly observed changes which occur as a result of training regularly in an aerobic exercise program.



### Discussions

Based on statistics, after the research which has been made to determine  $VO_2\max$ , it can be concluded that a significant difference between groups ( $p < 0,01$ )

The amount of energy required is related to swim intensity and the style used. The amount of energy is reduced by "ability" Swimmers. Monitoring oxygen consumption during work submaximale at a rate below that of the competition, we can make measurements on energy. Anyway, the performances in swimming depend more on the  $VO_2\max$  values than those in athletics. Swimming faster is a problem of increasing the propulsion while decreasing the forwarding endurance. In swimming the consumed energy maintains floatability in order to generate a horizontal move by using your arms and legs to

overcome the gravitational force. In comparison with the runner, the swimmer needs a quadrupled energy for the same distance

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## THE SPECIALIST IN PHYSICAL EDUCATION IN THE ROLE OF FACILITATOR FOR THE INSTITUTIONALIZED CHILDREN

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### Abstract

In the last years, there were not few researches which have shown the numerous negative influences which institutionalization has on children. Either we can speak of a retarded physical and intellectual development, or it is about the lack of attachment or social non-integration, all these are the result, as the specialists in the field of the child's protection show, of an unstimulating environment, in which the institutionalized children are deprived of the interaction opportunity with the uninstitutionalized environment.

Understanding the need of a specialized support, through activities complementary to the social assistance, we try, in this paper to highlight the role that the specialist in physical education and sport can play in facilitating some activities meant to positively influence the development and social integration process of the institutionalized child.

**Keywords:** socio-sporting facilitator, institutionalised child, socio-sporting facilitation, physical activities.

### The problematic situation of the institutionalized children

Generally, the institutionalized children and especially, the young people who are preparing for leaving the protection system have represented a permanent preoccupation for the social protection institutions both in our country and abroad. The most interesting issues debated by the specialists in this field especially aim the social inclusion and professional integration of these ones.

Not a few times we hear that "for young people who leave shelters, in most regions of the country various social and socio-professional services have been developed, offering their assistance and support in finding housing and employment, counselling, temporary housing, transit centres, centres for vocational training and vocational guidance, social apartments, protected flats for those with disabilities, assistance and support for those who are continuing their studies, other types of services "(M. Muga, coord., 2005, p. 174). Also with the help of internal or international funding, several programs and action

plans have been implemented for the support of this group of young people, aiming:

- Ensuring a minimum income and social services for their social integration;
- Assuming the status of adult responsible for his own life;
- Ensuring a job;
- The provision of housing.

However, they "often do not know how to practice a profession, have a poor education and low social capacity. .... **Poor aspects are mainly due to insufficient human resources in the field and lack of personnel with specialized training** (s.n), and poor development of the social services system for this category of people threatened by the social risks that can lead to marginalization and social exclusion (M. Muga, coord., 2005, p. 3).

Given these issues, specialists of child's protection institutions must also bear in mind that "in any society, conformity to models of socially acceptable behaviour is the basic condition of integration "(C. Bocancea, G. Neamtu, 1999, p. 29).

For this case, it is necessary that the institutionalized children take contact with the community. Facilitate opportunities to relate with members of the local community and to know widely accepted patterns of behaviour becomes a basic requirement for leading the institutions of children's protection. These social relationships, as V. Prelici shows (1980, p. 15) "should not be understood as external factors for growth, but as the essence of personality." Otherwise, we will be faced with an important category of social assistance clients, and after the period in which they should leave the centres of child's protection, when due to lack of opportunities and poor quality of the offered services, they can reach problematic situations, being marginalized or even deviated.

#### A. Socio - sporting facilitator - the solution offered to the institutions of child's protection by the specialists in physical education

It is clear that to avoid the situations presented above, it is necessary to focus the efforts of all specialists working in the field of child's protection, in order to diversify the opportunities offered to these ones to improve relations between the institutionalized children and those uninstitutionalized, in order to strengthen and improve group relations and in order to exercise relations in micro- and macro-groups. Briefly said: **providing opportunities for socializing and implicitly facilitating social integration.**

To raise healthy children in institutions, harmoniously developed intellectually and physically, but also prepared to integrate socially, the management of the protection institutions for the children in difficulty should give permanent attention to physical education and sport, adopting, corresponding to different periods of development, measures meant to contribute to exploiting the benefits offered by the practice of physical exercises. Also, to increase the number of institutionalized children practicing exercise and sport, developing enthusiasm and passion for the sport movement, a permanent desire for affirmation, it must search for and design a suitable organizational framework, near the physical education and sport.

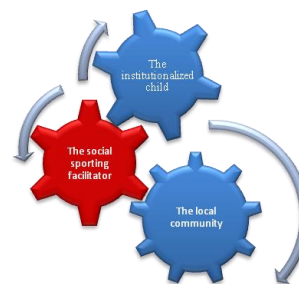
Given the fact that B.A. Panait, in the opening session of the International Conference on the Rights of the Child (2006), highlighted the need to diversify the services offered to children, even insisting on those concerning "leisure time" it is appropriate to show some of the opportunities that the specialist in physical education can provide, in his role of social sporting facilitator for the institutionalized children.

Currently, in the institutions of children's protection, the harmonious development of children and the formation of an active and healthy lifestyle are dealt by unqualified people, without too much experience, neither truly knowing their role nor the methods and means which could influence and lead the

performance of goals: the physical development and creating a harmonious sound foundation, which can shape the personality of the future member of society. Unfortunately, it would appear that we still do not realize that not everyone can handle the physical education of children, but we especially need trained personnel in order to practice sports activities.

When you refer to the integration of the physical education professor, the role of social sporting facilitator among the specialists of the individualized plan of specialized protection, we can **facilitate the access of children to daily exercise programs and their social interaction with children from outside the institutions, through access to different sport organizations and participation in various physical activities organized in partnership with the local community.**

In other words, its main task is the social-sporting facility. It will be a true media relations and communication in the service of institutions for the protection of children, a true bridge between the "opaque world" of institutionalization and the external social environment. Plastically speaking, the facilitator is the *link wheel* of the mechanism: the institutionalized child - the local community.

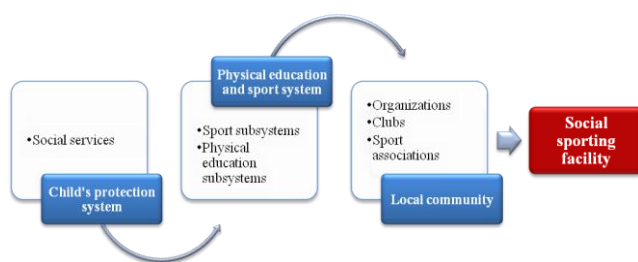


**Fig. 1.** The place of the social sporting facilitator in the relationship: institutionalized child - the local community

**The socio-sporting facility**, which, the specialist in physical education offers, is actually a much more complex system than it might seem at first. The network of relationships that is required to be conducted and coordinated by the social sporting facilitator, which has an important role in the development of the activity, consists of the Triad:

- the system and subsystems of physical education and sport;
- the protection of children in difficulty, through the offered services;
- through local community organizations, sports associations and existing clubs.

**Fig. 2.** The relational triad coordinated by the socio-sporting facilitator



What should not be out of sight, it is the fact that *in the centre of all taken actions*, as a result of the collaboration of the three triad factors, *the institutionalized child* is found.

The activities undertaken by the social sporting facilitator aim at voluntary changes in the action system of the specialized environment of the institutionalized children protection system, seeking the involvement of interference between the institutionalized environment and the local community. In other words, taking into account the formulation of the synthetic concept DEVCOM (community development) proposed by D. Sandu (2005, p. 15), we can say that the social sporting facilitation aim at voluntary changes in, through and for the community of the institutionalized children. However, given the conditions imposed by the above mentioned specialist (2005, p. 88) for an action to be DEVCOM type, it is appropriate to show the 3 necessary conditions for an action undergone by a specialist in physical education and sport to become social sporting facilitation:

1. Both members of the community system of child protection and local community members must be informed about opportunities to facilitate access to programs of physical exercise or sports activities. The action plans of these events are two-way shaped, either in child's protection institutions, or in the local community. In both cases, the ideal is represented by the communion that should be accomplished between members of two communities, one is represented by the children in institutions and the other one by the local community.

2. To develop awareness of the key institutions responsible for child protection, children in institutions and even local community regarding the desire to practice physical exercises, and more sports activities organized in collaboration by the two media, institutionalized and local community.

3. The presence of a specialist, in our case the social -sporting facilitator (the physical education and sports teacher) who should be able to integrate specific strategies for the practice of physical exercises at the community level in general and at the child's protection institutions level in particular.

**Socio-sporting facility** should be understood as a combination between *science* and *art*. *Science* because it combines methodological knowledge specific to the domain of sport and physical education, *art* because it values the experience, the creativity and the flexibility of the specialist in physical education.

Paraphrasing D. Sandu (2005, p. 100), we can say that the socio-sporting facility reinforces children's ability to act as members of the community they are part of, through programs, activities, groups, clubs or sports associations. It also strengthens the capacity of institutions of child protection to work more actively with local communities to develop the relational system of the institutionalized children with those from the community. On the other hand, one can say that, the socio-sporting facility plays an important role in the intentions of the institutions to increase the opportunity of contact between the two contrasting environments both at institutional and local community.

Through its efforts, the facilitator has the mission to build a new social and professional culture determined by the opening of new horizons of specialized activity in the institutions of child's protection. **Considerations regarding the activities proposed by the facilitator**

To better understand the role that the social sporting facilitator should play, it is necessary to specify what activities are required to be undertaken by him:

- to facilitate the ability of institutions to offer children programs of physical daily activities;
- to facilitate children's access to daily programs of practicing physical exercises;
- facilitate the participation of the institutionalized children in various sports events organized by local community;
- to facilitate the children's opportunity to enter different organizations, sports clubs or associations, depending on individual preferences;
- provide the methodological and organizational support necessary for the development of programs for sports, both at institutions and at community level;
- to facilitate the institutionalized children some opportunities to have relations with people from outside the institution;
- to facilitate the organization of tours, trips, camps;
- to facilitate the acquisition of sports values and norms that are in accordance to the requirements and moral values of society.

The programs developed by the social sporting facilitator should include all the children in institutions, regardless of sex, age or other characteristics of development. Unfortunately, not few times, the socio-cultural gender norms shall make their imprint on physical education and sport, influencing in this way the learning of certain behaviours, differentiated for boys and girls. Preconceived ideas like "boys are stronger", "boys are more resilient", "boys are braver," in antithesis with "girls are weaker" (by reference to their strength), "girls are more emotive" "girls are more craven", will be removed by the physical education specialists, constantly searching for both girls and boys to learn more behaviours than those imposed by certain socio-cultural norms. Therefore, both girls and boys should benefit from the effects of practicing physical

exercises, of course having in view the particularities of their age and physical possibilities of the moment.

When developing programs for sport, the facilitator must take into account the wide variety of factors, depending on which they will be planned, which can be structured in the following typology of socio-sporting facility:

**Table 1.** Typology of socio-sporting facility

Typology of socio-sporting facility
- By the age category that is addressed:
<ul style="list-style-type: none"> <li>• childhood period (up to 3 years);</li> <li>• pre-school period (3-6 years);</li> <li>• the primary school (6-11 years);</li> <li>• the secondary school (11-15 years);</li> <li>• the high school (15-19 years).</li> </ul>
- According to the nature of the activities proposed for implementation:
<ul style="list-style-type: none"> <li>• daily programs of physical activity;</li> <li>• sports competitions held at the Community level;</li> <li>• tours;</li> <li>• trips;</li> <li>• camps.</li> </ul>
- According to the psycho-physical characteristic of the children's development:
<ul style="list-style-type: none"> <li>• "normal" children</li> <li>• children with physical deficiencies.</li> </ul>
- After the training characteristic of the participants:
<ul style="list-style-type: none"> <li>• active participants;</li> <li>• passive participants.</li> </ul>
- According to the character of the proposed exercises:
<ul style="list-style-type: none"> <li>• recreative;</li> <li>• preventive;</li> <li>• corrective;</li> <li>• recuperator;</li> <li>• compensatory.</li> </ul>
- According to the place of the activity development:
<ul style="list-style-type: none"> <li>• in the institutions of child's protection</li> <li>• in community.</li> </ul>
- According to the nature of the exercised influences:
<ul style="list-style-type: none"> <li>• harmonious physical development;</li> <li>• educating positive features of character and of civilized behavior;</li> <li>• creation of favourable conditions for the development of intellectual activity;</li> <li>• forming inter-relations between the institutionalized children and people outside the social institutions.</li> </ul>

Also, the activities proposed by the facilitator should be in agreement with the European Charter for sport and sport ethics code, which requires:

- be accessible to all;
- be accessible to children and adolescents;
- to cover health and safety, loyalty and tolerance, based on high ethical values;
- to foster the flowering of personal at all levels;
- respect for the environment
- opposed to all forms of exploitation of athletes

To lead children to practice the exercise independently and to participate in sporting activities, the facilitator will need to motivate them. This requires that the activities are characterized by relaxation, mental wellness, while influencing the development of certain physical qualities.

When you insist on forming habits of independent practice exercise, we leave from the idea that this active life style is actually a certain kind of behaviour. To the extent that every behaviour is learnt, the practice of exercise can be learnt, too. For this, however, the child must understand what physical exercise means, what kind of activities are recommended for certain age stages, which are the advantages of practicing exercise. Knowing these things, in this way the chances increase so that, over time, the child develops positive attitudes and interest for the practice exercise.

In other words, "positive attitude towards physical activity is formed as a result of knowing the exercise benefits, of the exercise practice and knowledge of the immediate benefits (leisure, recreation, new social contacts, feedback from others). Positive attitude towards exercise promotes the practice of the latter" (A., Chiriac, coord., 2004, p.38).

On the other hand, to make children aware of the need and importance of practicing physical exercises, but also to determine how to engage more actively in the conduct of programs of activities, the facilitator must be able to attract them around him, forming together some working groups with specific tasks in organizing sports activities. Being aware of the fact that each plays a role in the group, the children will seek to fulfil the tasks assigned to them, mobilizing all the available energy.

These working groups should be composed differently, depending on age category, morpho-functional peculiarities, certain psycho-motor skills and not least, having in view the individual preferences of each child to practice a particular type of sporting activity.

To be more attractive, the sporting activities undertaken by the socio-sporting facilitator should take into account the characteristics highlighted by E. Vrăjmaş (2003, pp 50-55):

1. flexibility;
2. dynamism;
3. interaction and cooperation;
4. creativity;
5. efficiency.

*Flexibility* refers to the ability to change and adapt programs of physical activity according to individual requirements and needs of children. The facilitator (specialist in physical education and sport) must have the capacity to be able to change the initial programs, planned and structured on large groups of practitioners and to individualize them according to each participant's needs. If in a certain case, he notes that the participants are not attentive or that the earlier issue was not consolidated, the facilitator can renounce to the planned lesson and in a flexible manner to achieve those learning situations that children need. Also, planning should consider more possibilities because the reaction of children is not always the expected one. The effective facilitator is the one who does not mind that children did not understand a particular exercise, but he is looking for other ways to put them into practice.

*Efficiency* requires the specialists in physical education (facilitator) to develop programs of physical activity to operate direct and immediate results on the steps of learning and training the habit of independently practicing the exercise. It requires a flexible use of resources. Learning resources in the sport come both the facilitator and the children. Therefore, efficient use of time spent practicing physical activity, as time for learning and teaching at the same time, becomes a requirement. *Sports*

*programs effectiveness* is determined by the fact that through the practice of physical activity, you can influence the development of practitioners, increasing opportunities for interaction between the institutionalized children and children from outside the institution and transmitting the pleasure of daily independent practice of physical exercise.

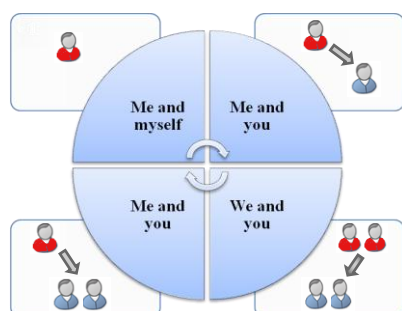
*The dynamics* of programs is determined by the need for change, seeking solutions and spontaneity in the work undertaken. The individual characteristics of each child, may change elements of the original intentions and improvisation tends to occupy the place of rigorous planning. This does not mean a lack of planning or renouncing to preparation, but it is the equivalent of preparing several alternative programs with physical activities. Although sports programs should be very concisely planned, however, planning requires more possibilities for action.

*Creativity* that characterizes the elaboration of sports programs, concerns the ability of the facilitator to exceed certain standards imposed by the methodology of physical education and sport. All the proposed activities must be characterized by dynamism, good humour, and thus, taking into account, at all times, the children's preferences, but without neglecting the children's needs. With the help of creativity and diversity, the facilitator will be able to avoid monotony in the activities undertaken, permanently capturing the attention and interest of children involved in his programs.

*Interaction and cooperation* which is proper for the comprehensive strategies, refer to the need of cultivating social relations, as a resource of socialization among children. In the various games or sports activities, the interactions between children are a rich resource for networking. Depends on how the facilitator identifies, orients and stimulates social relations in the groups of children, so they might become a factor facilitating socialization. Cooperation, negotiation of goals and solutions to solve problems arising during their activities, listening and accepting opinions, taking a couple of decisions, together are all active and effervescent moments to develop the spirit of collaboration and personal initiative.

All these are necessary in order to hope to fulfil the expected objectives.

Through the proposed activities, the facilitator gives the institutionalized children the possibility of relational multi-stages interactions:



**Fig. 3.** Stages of relational interaction offered by the practice of sport

Through information and knowledge acquired, the child can be helped to identify his/her own image, his/her representative body, as Jean Giradoux said: "Sport distinguishes our own body from the mass extremely vague of other bodies". Also, through the opportunities to relate with others, the institutionalized child develops his/her sociability, understands the possibility of achieving certain tasks both individually and in teams, meet some of the fundamental needs of the child: "security, belonging, communication, self-esteem and respect from the others." (Epuran M., 2008, p. 67). The more the programs of implemented activities will satisfy as many of these relational levels, the more they will be able to demonstrate the complexity and efficiency of implementation.

Understanding these issues, the socio-sports facilitator must be able *to transform* children from the present state to the future one:

- creating visions of potential opportunities for children in institutions;
- inducing children the wish to make changes in their lives (even just of the lifestyle, modelling them for an active style);
- developing a culture of practicing exercise both for children and for institutions and for local communities;
- developing strategies to mobilize and focus energy.

### Instead of conclusions

A fact is for sure: when the moment of leaving the institution must be a mirror which reflects the work of specialists throughout the institutionalization of the child, when all efforts undertaken should lead to the formation of an individual prepared to meet the requirements of society. Unfortunately, most specialists in the field of child's protection that consider that through the nature of the activities undertaken the protection institutions were, all the time, care institutions of and not educational ones, as they should have been. In this situation it is very hard to believe that the social skills needed for the integration in society could be acquired by the children.

Understanding the social role of the game or physical activities, sport programs, proposed by the social sporting facilitator helps the adaptation for social life, through the cultivation of basic psychosocial competences and cooperative relationships between children, regardless of their abilities and performances, valuing the positive side of each personality.

When we will achieve a symbiosis between the two domains, **social welfare - physical education and sport**, the institutions of child protection will be strengthened, it could create a climate more suitable for raising and educating them, aiming in this way the following results:



- providing for children in institutions, an organized, permanent, systematic framework and efficient for the practice of sports activities, both in the centres and the local community;

- increasing the quality of life for institutionalized children through habits of daily exercise and living in a healthy environment, educational by all the means of physical education and sport;

- increasing the responsibility of the specialized staff in the institutions of child's protection and of the local community for their common involvement in the organization and conduct in partnership of the sport activities for the two categories of children in institutions and outside them;

- developing a culture of practicing exercise and sport activities in the centres of child's protection and in the local community;

- increasing the number of practitioners of physical exercise among institutionalized children and even the staff of the centres of child's protection.

Therefore, the role of socio-sporting facilitator proposed for the specialist in physical education and his integration into the activities for institutionalized children, should be a concern for the leadership of institutions for child's protection, thus providing a new qualitative dimension to the offered interventionist services.

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## BULGARIAN SCHOOL PHYSICAL EDUCATION IN THE 80s AND 90s OF XX CENTURY AND AT THE BEGINNING OF XXI CENTURY

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#### Abstract

Physical education is the school subject most responsible for the physical and psychic health of young generation. So it has a worthy place in the curriculum. Critical analysis on its results and influence on pupils show some circumstances that hinder its satisfactory implementation.

The French socialist leader and democrat Jean Jaures (1859 – 1914) says that humanity is in a constant evolution to revolution. In education as revolutions we can concern the reforms that are done periodically. In the different school subjects they aim to overcome the negatives of the circumstances, on one hand, and to introduce some good practices, on the other hand.

This paper is an attempt for a critical review on the state and the reforms of school physical education in Bulgaria at the end of XX and at the beginning of XXI century. For betterment of the expected results of physical education at school, some recommendations are done.

**Key words:** educational content, motor activity, program, physical fitness, equipment.

#### Introduction

“The Law of transformation of quantity into quality defines a general mechanism of evolution.

Quantitative changes in a system take place continuously. When a certain limit of quantitative evolution is reached, a system experiences qualitative changes. New quality increases rate of growth. During





this process quantitative changes take place continuously whereas qualitative changes take place in discrete steps." Using this quotation of Vladimir Petrov (2002) as an introduction, we will try to follow its way of action in the Bulgarian system of school physical education during the last two-three decades.

Furthermore, we will base our presentation on some of the most distinct features of the World at the end of XX century. Without any pretence for priority, we can outline the following ones:

(a) Information technologies (especially the Internet), mass media, and telecommunications put the world's knowledge at the disposal of many people both in the industrialized societies and in some of the developing countries as well.

(b) Process of globalization is established in all social fields.

(c) XX century is the century of the human rights.

(d) XX century is determined also to be more century of the quantity than of the quality.

#### **Research Objectives**

We limited our attention only on some factors that are of main importance for the successful outcomes in physical education at schools. And they are:

- 1) Time allocation of PE in school schedule
- 2) Educational content of the school subject
- 3) Qualification of the teachers in PE
- 4) Place of the disabled or with unequal status pupils in school, respectively in the PE lessons

#### **Materials, Methods and Data Analysis Procedures**

With the intention to be (1) maximum all-embracing of the things that happen in school physical education in Bulgaria, (2) experience of many years, and (3) comparison with (a) the ideal model that can be built for the nowadays school PE or (b) good or rejected practices in other countries, we will construct our paper, having in mind the last two decades of XX century and the first decade of XXI century.

##### **Time Allocation of PE in School Schedule**

At the 80-ies and the 90-ies up to 1999 all classes had 3 PE lessons per week. The exception was with (a) the 7 years old pupils from 1<sup>st</sup> class who had 3 ½ lessons per week, situated 4 lessons during the first term (September – January) and 3 lessons during the second term (February – May), and (b) the 12 – 14 years old pupils from 6<sup>th</sup> and 7<sup>th</sup> class with 2 lessons per week. Nowadays nobody can do acceptable explanation is the fact in point (b) by a mere chance, the advancing puberty, or some other passing circumstance was the reason for it. Furthermore, an even distribution of the PE lessons during the week was considered at that time.

This position of the PE lessons in school schedule continued up to 1999. Ministry of Education's order of that time lessened the obligatory PE lessons to 2 per week for all classes from 1<sup>st</sup> to 12<sup>th</sup> class. The reason for this act of the ministry was the imposing of

computer education and information technologies, from one side, and foreign languages, from the other side, in school schedule. All opportunities at the end of the 90-ies already were used: if in the 60-ies and 70-ies older pupils had 5 lessons per day, at the beginning of the 80-ies the lessons increased to 6 and 7 per day, to come the moment of 8 lessons per day in the secondary schools on the background of the lessening of the physical education, music and art lessons at the end of the XX. Changes in the educational system occurred immediately at the beginning of the XXI century in two ways: (a) Lessons were lessened maximum to 7 per day (Saturdays and Sundays are free), and (b) PE lessons were increased to 3 per week.

The restored third PE lesson was named "Module lesson" and the initial intention was it to serve the motor activity of pupils but under the supervision of a teacher of other specialization (e. g. geography, philosophy, ethics, etc.) and very rarely by PE teacher. In the case we cannot speak about realization of a new educational content but about exercising in already known motor activities – games, tourism, fitness, etc. One school year was enough to be seen that this kind of organization was doomed to failure. PE teachers were given the opportunity to lead all three lessons of all pupils in all classes (See conclusion and recommendation 1).

#### **Educational Content of the School Subject**

Since 13 June 2000 are made public the National requirements (National Curriculums) concerning the educational content of the school subjects in Bulgaria. If in the USA with its 49 + 2 states the acceptance of the National Curriculums was more than necessity (serious differences in the educational content for the classes in the different states and unpredictable changes of the living place of many families with youngsters in them), in many other countries (in Bulgaria too) their acceptance can be considered more as acceptance of a new fashion in world's educational tendencies than necessity. Having a glance on other countries national curriculums one can see the great freedom they give to the different sports and other motor activities to find their place among children and adolescents at schools. A well known fact is that everyone sport and motor activity can be learnt at younger age but under advisable methods and instructions. So, in many National Curriculums we can find the presence of all sports, e. g. the mountain biking in the USA. In the National Curriculum of Great Britain (1996) in practice present all sports as well but gathered in seven groups of motor activities with a list of more of the belonging sports to them and always with completion on etcetera (etc.). So, in the PE curriculums we can find (1) the sports games, (2) gymnastics, (3) track-and field events, (4) dances, (5) Eastern martial arts and wrestling, (6) skiing, and (7) swimming.

Though the expected freedom in Bulgaria the educational content of physical education did not received any broadness in comparison with its state



during the last 3 – 4 decades. At the beginning of the 60-ies of XX century in the schools was introduced a well considered system for PE getting in it three main sports: (1) gymnastics, (2) track-and-field events, and (3) sports games. During the 70-ies in the secondary schools pupils could also learn wrestling (for the males) and rhythmical gymnastics (for the females) as sports with tradition and international successes for the teams from Bulgaria. At the beginning of the 80-ies obligatory swimming was introduced in the 3<sup>rd</sup> class with the engagement everyone schoolboy or schoolgirl to be able to swim 25 m at the end of the school year.

Political changes in Bulgaria in 1989 and globalization of many demands to social life (including education of young generation) at the end of XX century provoked some changes in the Bulgarian PE system but we can define them as not so much radical. When concerning the PE content, the same three main sports (gymnastics, track-and-field events, and sports games) stay at schools but now they are named as basic core content. There is introduced also additional core content with swimming, dances, tourism, aerobics, physical fitness, body-building, etc. in it. These really are some changes but we cannot define them as radical as they are in this attitude in some countries.

But let us return back to the Bulgarian PE national requirements. On their bases the programmes of the classes from I to XII are built but at the same time some given instructions by the PE inspectors in the Ministry of Education reduce this PE content: PE teacher can chose (according to his/her narrow specialty and the circumstances at the schools, sometimes the wishes of the pupils) educational content from two basic core sports and one additional core sport. But follows one additional instruction: from the two basic sports one always must be a sports game. In practice these sports games in enormous percent are basketball and volleyball. Or told with other words there stays the danger the educational content to be reduced in 2/3 to basketball and volleyball – a tendency that was registered in some Western countries in the 80-ies of XX century. At the same time apparatus gymnastics by and by got out of the gym halls without serious attempt to change it with basic gymnastics or aerobics to be done (Б. Пенева/B. Peneva, 2002, p. 31) (See conclusion and recommendation 2).

#### Qualification of the teachers in PE

Up to 1989 – 1992 in all classes from I to XII PE was given to the specialists but not to the generalists especially in I – IV class. All this reflected to the efficiency of work and the motor abilities of pupils to better. More economic were the reasons in the second half of the 90-ies the generalists in I – IV class to lead all school subjects in the list PE as well. In the case were registered two groups of teachers: the first one (usually the older teachers) who used only balls and some popular little games to fill their PE lessons, and the second one (usually the younger and the male teachers) who tried to diversify PE lessons with different motor activities but always chaotically given

as if this PE lesson was a stress for them. But in both occasions never can be spoken about motor skill learning. Generalists were not ready for this new for them mission.

Bulgarian experience does not mean that it is impossible the generalists in primary school to lead the PE lessons. In England it is a general practice the generalists to be also the teachers in PE but an organization is made that is in their help when they have some doubt in their teaching. Except vocational courses the generalist can go for consultation to his colleague specialist in PE in the upper course of study. Furthermore, about physical education teachers can draw information from Internet by a distributed system, e. g. the one of Dr. S.R. Lloyd, adviser and inspector in physical education and his consultative group in year 2000.

Though this positive foreign experience undoubtedly the PE specialists reach results easier and better than the generalists at primary school. Because of this reason in Bulgaria they were restored back to their working places only in a year or two. So, nowadays in all classes PE lessons are lead by specialists (See conclusion and recommendation 3). Place of the disabled or with unequal status pupils in school, respectively in the PE lessons

Globalization of information throughout the world with quick spreading of the good practices in all social spheres and increasing humanity during the last decades undoubtedly led to new attitude to the disabled people. The number of these people with extra problems constantly increases. In 2008 the World Health Organization (WHO) declares the living of about 650 million people with disabilities of various types on the globe. That means that 1/10 part of world's population has some disability. Told with other words this means that one man from 10 people is disabled and this fact makes the problem very serious.

Paying attention to younger generation and to the increasing number of the disabled children, in society grows new attitude to them. A new vision to them arises: now they must not be segregated from the other part of pupils in special schools as if they differ too much from the other “normal” children. As a result in all countries a process for their return back to the mainstream school is seen. This process is known as integration or inclusion.

The number of the special school decreases and in some countries they now lack at all. E. g. England needed 30 years to resolve this problem, Austria needed 28 years. Now in England there are not special schools anymore. The mainstream schools managed to get all children with disabilities. For children with multiple disabilities (total number around 760) there are organized daily centres and related services, visited by lots of specialists and physicians. Hungary closed all special schools too but only in a year had to open some of them. In such occasion for new functions of the special schools is spoken.



In the case of Bulgaria to the middle of the year 2007 around 4 000 pupils with special educational needs had left the special schools and had gone to the general mainstream school. At the middle of the year 2008 the total number of the children with disabilities is somewhere around 20 000. A rough calculation shows that one of every 5 children has returned back to the mainstream school and this tendency continues. Though this process at the beginning of school year 2008/2009 the number of the special schools in Bulgaria is 274.

Children need physical activity to be healthy and industrious. Disabled children need physical activity too. In the general class the PE teacher is the person to define the way the disabled pupils will participate in the work of the class. All this depends on the extent and the kind of disability. Sometimes disabled pupils do not differ in their motor abilities from their classmates. Sometimes and more often individual plans to them are offered. At the beginning and years ago, the PE teachers were slightly timid but step by step they become more and more self-confident in their work with the pupils with special educational needs and help them to find their place in the class (See conclusion and recommendation 4).

#### Conclusions and Recommendations

(1) Academic education at school that leads to mental overload because of memorizing of dry facts that early or late the pupils forget has to leave place to the developing method of their abilities. To the

presence of PE in school schedule nowadays we must look more from its physiological and health positions. The PE lessons have to serve as relax from mental overload and not only their educational functions to be observed. This is connected with radical changes in school subject's content and will be a great honour to educational systems that can manage to do these changes though the difficulties..

(2) Educational content of PE must be highly varied (there can find place all sports, sports disciplines and motor activities) and to give opportunity for choice. The training effect must be sought not in the late secondary school age but in early pre-school and primary school age. Special attention has to be given to the locomotor movements in the case to the right posture and gait as well. Otherwise there is a danger of "sportivization" of the PE educational content.

(3) The better way is specialists of PE to be the teachers but by good management and lacking of circumstances the generalists in primary school can try to give the best of them to cope with PE teaching. If necessary the system has to create opportunities this to happen .

(4) Integration of disabled pupils in mainstream schools has to be encouraged and PE teachers have to be more self-confident and at the same time to use tact when necessary by the work with them in the class. The individual plans and support not to be forgotten.

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## THE IMPORTANCE OF GAME IN THE PHYSICAL EDUCATION CLASS AT ELEMENTARY SCHOOL

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#### Abstract

Utilizing the movement games in physical training class, increases the participating grade of the subject, it develops attention and perspicacity of the students.

If the games are well structured throughout the year it can contribute to an increase of density of the physical training class.

By using movement games in physical training classes it will increase the efficiency of the educational process and an growth of the dynamic skills of the children will be recorded, leading to a better encompass of school teaching program. The games used in physical training class will make the lesson more attractive and the students will develop an larger interest for it.

**Key-words:** movement games, school physical education, educational valences

#### Introduction:

**WHAT IS GAME?** The majority of definitions relate that game is a specific activity to childhood or to



the formation and development process of a human being. Later was seen that, actually, man is a playful being (*homo ludens*) all his life. From childhood to being old, man permanently plays from interior (needs, impulses) and/or exterior (that push towards different actions) motifs.

Game is an important field of deciphering psychological capacities, including the intellectual ones and personality traits. After the way it is played, we can observe if a child is more inventive, more active in game, if he can or not find new solutions, ingenious, if he disposes of clarity of ideas, coherence in the role he assumed. (D.Colibaba-Evuleț, I. Bota, 1998)

Game is seen as the activity that forms, moulds intelligence but, on the other side, it permits to establish its characteristics. Activity related to game provides information concerning intelligence psycho-diagnosis.

Game offers the possibility of knowing the level of intellectual development to children at a certain point, fact that will allow applying certain pedagogical methods most favorable to each case. (E. Sabău, 2003)

Through this activity children acquire knowledge, varied mental actions are being formed, actions that influence the development of psychic processes, it is being made the passing from, in steps, practical actions, game materials to mental actions, in the representations plan. The game has a formative role and, by its intermediate, the child has the possibility to reconstruct, reproduce in an intuitive-active form a wide area from the objective reality. So, through game, children acting with different materials, through creativity and construction games, they actively reproduce people's activity, reflecting the social relations of different professions. (D.B.Elkonin, 1980)

Game favors imaginative skills development at children, of their capacity to create systems of generalized images about objects and phenomena, also to make different mental combinations with the respective images. Through game, the child acquires multiple and varied knowledge about the environment in which psychic processes of direct reflection and immediate of the reality are being developed: perceptions, representations, memory, imagination, thinking, language. Game reunites a series of valences educational-instructive that are fully rendered valuable in the learning process of the physical education. Its use solves objectives concerning physical, movement, intellectual, affective and social development of the child. So, game's valences can be synthesized in two main categories, and these are: motor capacity development and children personality development.

Movement game represents one of the basic means of the physical education, no matter the pupils' age that we work with. It occupies an important role at the pre-school age (3-6 years). The same important share is held by the movement game and at a young school age (6-10 years). Rules and motor tasks complexity rises in comparison with the previous age.

Children are capable of understanding and memorize more rules; that later they can apply at the games from their free time.

Defocusing over objects, improving motor repertoire, increasing communication capacity with others, permits the child, starting from 9-10 years, to participate at preparation games for learning sport games. Also, it is seen that the game's length (respectively effort's intensity) is modified from year to year, in an increasing manner, corresponding to children effort's capacity.

At a high school age (11-14 years) movement games share lowers in comparison with the previous learning cycle. Nevertheless, it remains an important mean at the 5<sup>th</sup> and 6<sup>th</sup> grades. With their help they solve homework from motor qualities, but also some motor skills and abilities. A higher share in the lesson will be held by the sport games. (A. Dragu, 2003)

#### **The research's purpose:**

The purpose of this paper is to demonstrate, that during the physical education classes from elementary school, the use of movement games is efficient to acquire instructive-educational valences fully rendered valuable, brings major contributions to the motor capacity of pupils, increases lessons' interest an implicit pupils' interest for the physical education.

#### **Research hypothesis:**

1. By using the physical education class from elementary school of movement games class' interest will increase and implicit children's interest for it.

2. By using the physical educational class from elementary school of movement games pupils will acquire socializing skills.

#### **Subjects and the place of the research:**

The experiment was held at the School with I-VIII grades Olari and at the School with I-VIII grades Gherghita, pupils of the I-IV grades being in the experiment.

It was takes in the period September 2007 - June 2008 and at the classes considered by the experiment (that means all classes I-IV of the School from Olari) in all the physical education links movement games were used to accomplish specific objectives to physical education and at the groups considered for control (all the classes I-IV of the School from Gherghita) the activity was held in the classic way specific to physical education classes.

For the development of the motor qualities I selected, after each case, the following movement games:

- for speed: colors, course water numbers, who's faster, all at once, running in pair, etc.

- for coordinative capacities development I used: stronghold attack, the ball is on fire, ball in the middle, etc.

- for strength development I used: hale and hearty, roosters fight and who jumps the cord faster, etc.

- for resistance: commuters, the chase (by 2,3,4 or 5 children), who finishes first, the train, etc.



- for gymnastics: the passing of the train through the tunnel, stone bridge, the living goat, different relay race, etc.

- for sport games: the race by numbers with the ball, watch out of two balls, moving the balls from a circle into another one, etc.

- for basic motor skills: the bouquets, who gets to the end (walking on the gymnastic bench), aim the circle, ball in shuttle, who throws further, the jumping chicks, etc.

- for utilitarian-applicative skills: searching in the nests, who gets first in the top, who touches the ceiling, etc.

**Processing and interpreting the obtained data:**

#### Speeding on a 30 m distance, with standing start

EXPERIMENT GROUPS	MA	DS	CV
Ti	7,60	0,20	6,80
Tf	7,00	0,14	3,55

CONTROL GROUPS	MA	DS	CV
Ti	7,50	0,50	11,80
Tf	7,30	0,34	8,55

#### Jumping in length from standing position

EXPERIMENT GROUPS	MA	DS	CV
Ti	134	1,5	13,44
Tf	154	1,00	8,53

CONTROL GROUPS	MA	DS	CV
Ti	136	1,5	16,48
Tf	154	1,00	12,53

#### Resistance task

EXPERIMENT GROUPS	MA	DS	CV
Ti	2`26`^`	0,35	2,72%
Tf	2`06`^`	0,18	0,73%

CONTROL GROUPS	MA	DS	CV
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<b>Ti</b>	<b>2`47`</b>	<b>0,19</b>	<b>2,81%</b>
<b>Tf</b>	<b>2`44`</b>	<b>0,11</b>	<b>1,04 %</b>

At sport games, I followed the capacity to work in a team, to respect certain rules, to respect their school mates and adversaries and to encourage.

### Conclusions and actions

After the experiment and the obtained results it was proven the hypotheses' validity that using movement games the class of physical education's interest, the efficiency of the instructive-educational process will increase and the requirements of the program will be realized in a higher percentage. Using movement games in the physical education class increases the effective and affective participation level, develops attention and perspicacity level at pupils.

If competitions under the form of movement games are used along an entire school year after the conditions presents above, you will have the pleasure to see from pupils a faster understanding of what you desire to transmit them and a more attractive crossing of the school program and without many of them on sick leave.

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## SPORT GAMES - SPORT DISCIPLINES TRYING TO DEVELOP THE COMBINED MOTION QUALITIES

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### Abstract

Considering the games' characteristics and implications, especially sport games, concerning the formation and development of the human being, and also the increasing number of students who choose to practice those games we have chosen in our work to refer to the most solicited sport games within physical training courses accomplished in the Petroleum-Gas University of Ploiesti, that is: basketball, football and handball.

**Key words:** sport games, students, combined motion qualities, test.

### Introduction

Sport games have a rich motion content and a big variety of movements through the system of motion qualities combines harmoniously with the basic and specific motion skills. Sport games, through the influences they have about students, constitute an efficient modality for coming true the objectives of the physical education activity and sportive through their components (physical, technical and tactical preparation). They develop intensely the willing processes:

- Courage-quality of volition necessary game actions with a high degree of risk;
- Decision-quality of volition necessary for the application of the game actions;
- Perseverance-continuation of an action already started

➤ Composure-aspect of passive volition with inhibitor character about emotions and other feelings that might externalize.( Bompă, O. T., 2003)

Physical education and sport activities constitute a direct stimulus, almost exclusive, of morpho-functional developing and their lack might lead to harmful situations of health which dimension are hardly to anticipate( Colibaba-Evuleț, D. and Bota, I., 1998).

Motion represents the central element for themes that concern instructive content of any program of physical education. In students' physical education and sport activity from faculties of another profile than sport, we are interested in solicited effort which, through its parameters (intensity, volume, complexity), obliges their organism to react intensely and generalized (I.G.Ghițescu and A.D.Moață, 2005).

Sports games are characterized by the complex manifestation of all the abilities of motilitate, under the



form of complex motilitate qualities and during the training session the main focus is on the development of the abilities of motilitate the way they are established by the particular features of the competition: high speed actions accompanied by a fruitful co-operation with, the team members under the conditions of both direct adversity (with a very active opposition of the defenders) and large diversity of field and environment. A. Nicu, 2002)

#### Research objective

Our research objective consists in the evidence of some sportive disciplines efficiency, in our case sportive games, over the evolution of conditional capacities in special those mixed during the Physical Education classes with the students from Petroleum-Gas University of Ploiesti. Through this measure, it was aimed at the identification of the effects obtained after the application of the instruction programmes and operational structures proposed for research, dedicated especially to the combined motion qualities development.

#### Hypothesis

The students' motion capacity improvement should be better realized using the sportive games methods in the Physical and Sportive Education classes.

#### TASKS

- Ample informational documentation and multidisciplinary with a view of the afferent theme theoretical bases and methods settlement;
- The work pattern settlement with a view of the operational didactic project experimentation;
- The subjects' level of the combined motion qualities development settlement (initial test);
- The achievement of the experiment;
- The subjects' combined motion qualities development level establishment (final test);
- The obtained data processing and the conclusion of the experiment.

#### Methods of research

- The analytical method study of document;
- Descriptive method - the observation;
- Experimental method;
- Evaluation and measuring methods;
- Interpretation and processing methods: graphic, statistic, logical method.

#### THE CONTENT OF THE EXPERIMENT

- The experiment took place during the Physical Education classes with the students from Petroleum-Gas University of Ploiesti in the university year 2007-2008;
- The experimental group was made up by students who chose the following disciplines: basketball, football and handball, and the control group made up by students who chose classic lessons of Physical Education (classes of general preparation);
- The subjects were obedient to the measuring of many motion tests specific to the combined motion qualities between force and speed, and in this paper, we will present only the results of 2

tests: pentasalt with start from standing and landing in the sand pit and throwing of the medicinal ball of 2 kilograms head back over.

#### Obtained results

From the data interpretation of the two tests pentasalt and throwing of the medicinal ball head back over, we can affirm (Deacu, M., 2008):

#### For pentasalt:

The experimental basketball group, at the final test, records the increase of 6,87% (0,79 m) in contrast with the initial test.

The experimental football group, at the final test, records the increase of 9,29% (105 cm) in contrast with the initial test.

The experimental handball group, at the final test, records the increase of 9,76% (1,13 m) in contrast with the initial test.

The control group, at the final test, records the increase of 3,59% (0,39 m) in contrast with the initial test.

From the point of view of the variability coefficient, all the groups present a big homogeneity both at the initial test and the final test.

Applying the dependent test t for the two tests, at each group, for verification of the null hypothesis, it results that the differences between averages of the two tests ( $p < 0,05$ ) are statistically significant for the experimental groups and insignificant for the control group. (Thomas, J.R. and Nelson, J.K. 1996)

From the statistical calculation and the data analysis through the dispersonal method of analysis ANOVA, simple for comparing the results at the final test between the control group and those experimental groups, it results that there is a statistical significant difference between the control group and the other experimental groups, the value of the calculated F is bigger than critical F  $p < 0,05$ .

#### For throwing the medicinal ball head back over:

The experimental basketball group, at the final test, records the increase of 13,79% (1,9 m) in contrast with the initial test.

The experimental football group, at the final test, records the increase of 19,36% (2,45 cm) in contrast with the initial test.

The experimental handball group, at the final test, records the increase of 21,25% (2,95 m) in contrast with the initial test.

The control group, at the final test, records the increase of 9,96% (1,29 m) in contrast with the initial test.

From the point of view of the variability coefficient, the football and basketball groups present a big homogeneity both at the initial test and the final test, and the handball and football groups present a moderate homogeneity both at the initial test and the final test for this test.

Applying the dependent test t for the two tests, at each group, for verification of the null hypothesis, it results that the differences between averages of the two tests ( $p < 0,05$ ) are statistically significant for the

experimental groups and insignificant for the control group.

From the statistical calculation and the data analysis through the dispersive method of analysis ANOVA, simple for comparing the results at the final test between the control group and those experimental groups, it results that there is a statistical significant difference between the control group and the basketball, football and handball experimental groups, the value of the calculated F is bigger than critical F  $p < 0,05$ .

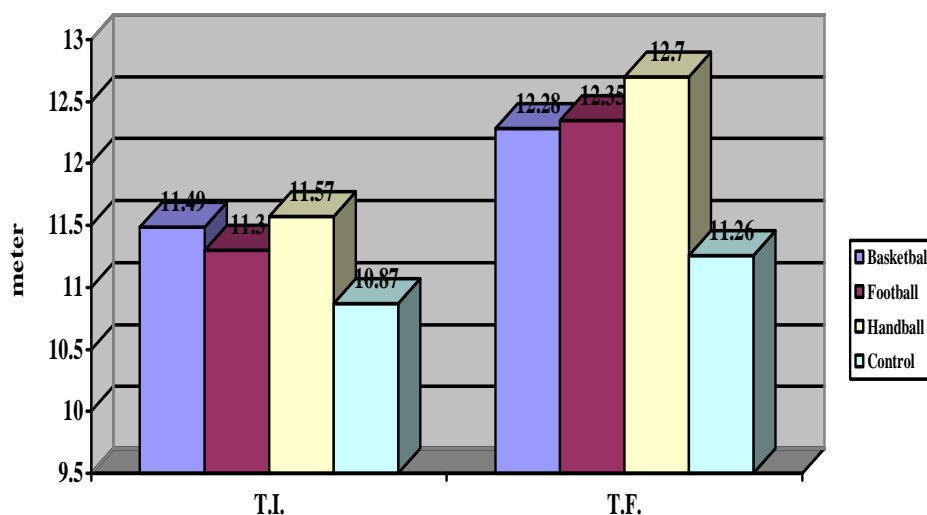
### Conclusions

- After the statistical processing of the results, it was established that at all the applied tests, the experimental groups were superior to the control group, the differences between averages at the final test being significant;
- The preparation program applied to the experimental groups has proved to be effective in correlation with the particularities of motion qualities development, at the age of the subjects of the experiment who cannot improve spectacularly the values anymore on the fond of a volume limited by hours allocated to the practicing and to the exceeding of the critical periods of intervention;
- The ways of sportive games can contribute to the improvement of manifestation index of conditional capacities in the Physical and Sportive Education classes.

**Table 1.** The calculating statistics parameters - PENTASALT

Statistic parameters	Basketball		Football		Handball		Control	
	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
Average	11,49	12,28	11,30	12,35	11,57	12,7	10,87	11,26
Standard deviation	1,055	1,067	0,70	0,80	0,96	1,02	1,06	1,11
Median line	11,45	12,4	11,3	12,4	11,7	12,85	11,15	11,5
Minimal	8,6	9,2	10	11	9,7	10,8	8	8,5
Maximal	13,1	13,8	12,6	13,7	13,7	15	12,7	13,4
Amplitude	4,5	4,6	2,6	2,7	4	4,2	4,7	4,9
The first quartile	10,95	11,8	10,83	11,7	10,96	12,02	10,3	10,57
The third quartile	12,35	13	11,8	13	12,15	13,32	11,42	12
Variability coefficient	9,18	8,69	6,21	6,54	8,34	8,10	9,79	9,93
Standard error	0,23	0,23	0,15	0,18	0,21	0,23	0,16	0,17
Dispersion	1,11	1,14	0,49	0,65	0,93	1,06	1,13	1,25
Trust level (95%)	0,49	0,49	0,32	0,37	0,45	0,48	3,40	3,57

**Fig. 1.** The value of the arithmetical mean of the results – PENTASALT





**Tabel 2.** Each group progress – PENTASALT

Groups	T.I.	T.F.	D = T.F. - T.I.	D <sub>T.F. - T.I.</sub> (%)
Basketball	11,49	12,28	0,79	6,87
Football	11,30	12,35	1,05	9,29
Handball	11,57	12,7	1,13	9,76
Control	10,87	11,26	0,39	3,59

**Tabel 3. Test t – Pentasalt**

Statistics parameters	Basketball T.I. -T.F	Football T.I. -T.F	Handball T.I. -T.F	Control T.I. -T.F
Fixed threshold of trust	$\alpha=0,05$	$\alpha=0,05$	$\alpha=0,05$	$\alpha=0,05$
Null hypothesis H <sub>0</sub> (the average difference=0)	$m_1-m_2=0$	$m_1-m_2=0$	$m_1-m_2=0$	$m_1-m_2=0$
Alternative hypothesis H <sub>A</sub>	$m_1-m_2\neq 0$	$m_1-m_2\neq 0$	$m_1-m_2\neq 0$	$m_1-m_2\neq 0$
Liberty degree (n-1)	19	19	19	39
Pearson correlation	0,98	0,92	0,99	0,96
T calculated statistic	16,619	14,740	39,014	-1,197
T bilateral critical test (values from table)	2,093	2,093	2,093	2,021

Groups	Subjects	Average Cv			
CONTROL	40	10,87	9,79		
BASKETBALL	20	12,28	8,69		
Variation source	SS	df	MS	F	F critic
Intergrup	13,83	1	13,83	11,37	4,01
Intragrup	70,55	58	1,21		

**Table 4. Pentasalt simple dispersional analyse ANOVA**

Groups	Subjects	Average Cv			
CONTROL	40	10,87	9,79		
FOOTBALL	20	12,35	6,54		
Variation source	SS	df	MS	F	F critic
Intergrup	15,80	1	15,80	14,95	4,01
Intragrup	61,30	58	1,056		
TOTAL	77,10	59			

**Tabel 5.** Pentasalt simple dispersional analyse ANOVA

Groups	Subjects	Average Cv			
CONTROL	40	10,87	9,79		
HANDBALL	20	12,70	8,10		
Variation source	SS	df	MS	F	F critic
Intergrup	27,40	1	27,40	23,02	4,01
Intragrup	69,03	58	1,19		
TOTAL	96,44	59			

**Tabel 6.** Pentasalt simple dispersional analyse ANOVA

Groups	Subjects	Average Cv			
CONTROL	40	13,25	15,11		
BASKETBALL	20	15,67	10,27		
Variation source	SS	df	MS	F	F critic
Intergrup	77,84	1	77,84	21,94	4,01
Intragrup	205,71	58	3,54		
TOTAL	84,39	59			

**Table 7.** The calculating statistics parameters – (MMCÎ)

Statistic parameters	Basketball		Football		Handball		Control	
	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
Average	13,77	15,67	12,65	15,10	13,88	16,83	12,05	13,25
Standard deviation	1,55	1,60	1,95	1,84	2,00	1,54	1,88	2,00
Median line	14	15,85	12,37	15,25	13,5	16,4	11,95	13
Minimal	11,5	12,9	9	12,1	11,3	14,3	8,7	9,9
Maximal	16,8	17,9	15,8	18,2	18,6	20	17	17
Amplitude	5,3	5	6,8	6,1	7,3	5,7	8,3	7,1
The first quartile	12,5	14,83	11,52	13,5	12,27	16	10,9	11,57
The third quartile	14,65	17,02	14,32	16,37	15,37	17,85	13,72	14,78
Variability coefficient	11,28	10,27	15,47	12,18	14,40	9,19	15,60	15,11
Standard error	0,34	0,35	0,43	0,41	0,44	0,34	0,29	0,31
Dispersion	2,41	2,59	3,83	3,38	4,00	2,39	3,53	4,01
Trust level (95%)	0,72	0,75	0,91	0,86	0,93	0,72	6,01	6,40

Groups	T.I.	T.F.	D = T.F. - T.I.	D <sub>T.F. - T.I.</sub> (%)
Basketball	13,77	15,67	1,9	13,79
Football	12,65	15,10	2,45	19,36
Handball	13,88	16,83	2,95	21,25
Control	12,05	13,25	1,29	9,96

**Table 8.** Each group progress – MMCÎ

Groups	Subjects	Average Cv			
CONTROL	40	13,25	15,11		
BASKETBALL	20	15,67	10,27		
Variation source	SS	df	MS	F	F critic
Intergrup	77,84	1	77,84	21,94	4,01
Intragrup	205,71	58	3,54		
TOTAL	84,39	59			

**Table.9.**

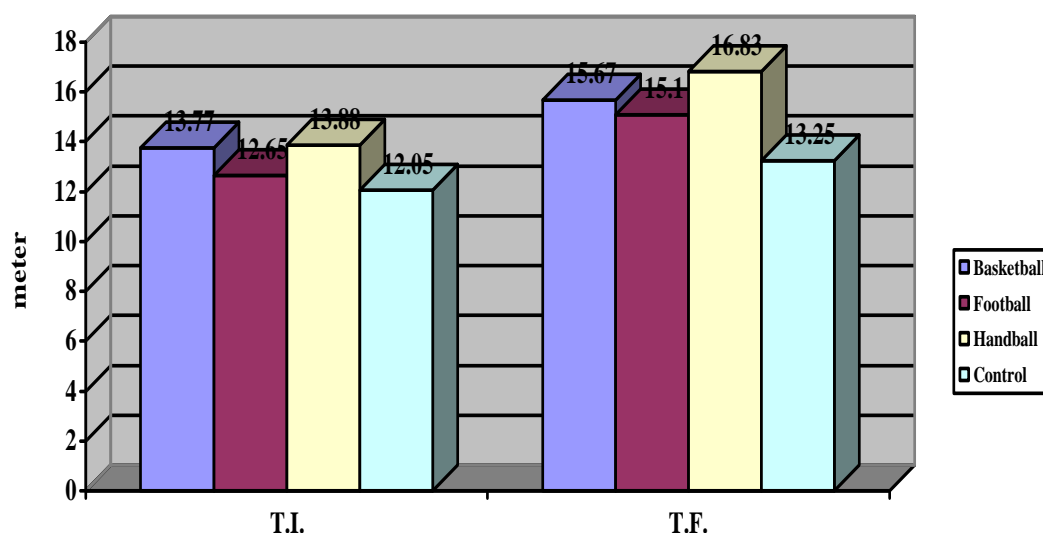
**Table.10**

Groups	Subjects	Average Cv	
CONTROL	40	13,25	15,11

FOOTBALL	20	15,10	12,18		
<b>Variation source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>F critic</b>
Intergrup	45,57	1	45,57	11,96	4,01
Intragrup	220,82	58	3,80		
TOTAL	266,39	59			

**Table. No.11**

Groups	Subjects	Average	Cv		
CONTROL	40	13,25	15,11		
BASKETBALL	20	15,67	10,27		
<b>Variation source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>F critic</b>
Intergrup	77,84	1	77,84	21,94	4,01
Intragrup	205,71	58	3,54		
TOTAL	84,39	59			



**Fig.2.** The value of the arithmetical mean of the results – MMC

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## DIFFICULTIES OF SOCIO – PROFESSIONAL INTEGRATION OF BEGINNING TEACHERS

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### Abstract

The paper presents the results of a research that points out more categories and sub-categories of difficulties that beginning teachers encounter at work. The paper is focused on the following objectives: identifying the categories and subcategories of difficulties that beginning teachers encounter during first years of activity; establishing the weight for categories of difficulties by referring to teacher's main roles; suggesting possible practices and strategies of initial training for didactical career. The research was unrolling during school year 2009, on a sample of 60 teachers, with an experience of 1 to 3 years of teaching. The research methodology included the elaboration and the application of an interview guide focused on identifying the main categories and subcategories of difficulties that beginning teachers encounter during educational activities. The content analysis of data shows that these categories of difficulties are associated with the main professional roles undertaken by teachers: projecting the didactical activity, accomplishing the teaching activity, evaluation of pupils results, class management.

The researches presented in this paper are part of the project MODECOMP – Operational model of developing professional competences at beginning teachers, financed by UEFISCSU, cod 496, during 2009 - 2011.

**Key words:** categories of difficulties, beginning teachers, socio – professional integration, training for teaching career.

### Studies regarding the socio-professional insertion of beginning teachers

*„When beginning teachers don't succeed, everybody loses” (Brock and Grady).*

The topic of socio-professional integration of beginning teachers is of present interest in the context of Bologna Process, of genuine professionalization of systems for initial and continuous training of teachers.

Redefining the finalities of training programmes, restructuring the curriculum, focusing the trainers on building professional competences according with the functions and roles of teacher represent essential coordinates of the professionalization process for didactical career.

Educational experience and studies from different spaces of research (Europe, United States of America) underline the difficulties that beginning teachers encounter at work. Few of them are generated by deficiencies of their professional training, by the inadequacy of initial training programs with reality from schools and classrooms, by the absence of a mentor who could supervise the professional insertion of the debutant. Others are due to high expectations of school directors, such as solid training in the field, pedagogic skills and professional attitude, a good class management, ability of efficient communication, suitable teaching methods, and professional dedication).

Present empirical studies prove that this apparently simple transition is a complex and multi-sided phenomenon, with significant implications on teacher's professional development and on the quality of pupils training.

Brock and Grady characterize the first year of beginning teachers as producing three major changes:

in self definition, after experimenting the unknown and in the interpersonal network of support.

Among the strategies of facilitating the integration of beginning teachers, we mention methodical guides, curricular guides, mentors and orientation teams. “Successful beginning teachers, helped by efficient mentors, are more willing to remain at school teacher's desk and they will become potential mentors for the following new teachers” (L. Gagen and S. Bowie, 2005).

A significant aspect, said Brock and Grady, is to assure the efficiency of implemented strategies for facilitating the beginning teachers adaptation to the new environment. They argue these recommendations on the basis of extended references, including relevant research studies, reports from organizations and educational agencies, academic papers and dissertations published in educational journals/ revues (*apud* Urzua, 1999, p. 231).

In general, many beginning teachers experiment feelings of isolation, discrepancy and low self-image (Kuzmic, 1994).

In Romania, the preoccupations for this phase of professional career have been remarkable. For example, the project “START – for professional development of probationer teacher” had as main goal the elaboration and experimental implementation of an assistance strategy during probation, adapted for Romanian educational field” (R. Iucu, 2007, p. 62). The project signals the problems that occur and it also offers solutions for optimization. The document, having a pronounced methodological character, is conceived as a set of bench-marks for assistance during probation and for certification of educators, school masters and teachers.



## 2. Research Design

### Objectives

1. identifying the categories and subcategories of difficulties that beginning teachers encounter during first years of activity;
2. establishing the weight for categories of difficulties by referring to teacher's main roles;
3. suggesting possible practices and strategies of initial training for didactical career.

### Hypothesis

*The categories of difficulties, which beginning teachers encounter, record different weight in accordance with their professional roles.*

### Participants

The research was unrolling during school year 2009, on a sample of 60 teachers, with an experience of 1 to 3 years of teaching. The structure of the sample was: 48 women and 12 men; 36 are working in schools from rural environment and 24 - in the cities; 44 are aged between 23 – 33 years, 12 have between 34 – 43 years and 4 of them are aged between 44 and 50 years.

### Methodology

The research methodology included the elaboration and the application of an interview guide focused on identifying the main categories and subcategories of difficulties that beginning teachers encounter during educational activities. The interview guide has 18 questions regarding: welcoming young teachers in school (*Which were your first impressions in school? Which aspects made a pleasant impression on you? And unpleasant?*), relationship with pupils (*How did you feel among pupils from the beginning? Describe your first encounters with them*), with teachers (*Do you have a good relationship with other teachers? More with the youngest? How is the atmosphere during breaks in the teachers' room?*), relationship with the school management (*Do you get along with school's directors? Do you feel that you are listed when you have problems or when you have a proposition for school activities?*). Other questions regard beginners' opinion concerning the volume and the complexity of professional tasks (*Before being hired as teacher, did you expect to have the present professional tasks? Which of them do you find easier and which are harder to accomplish? Why do you think is this way?*), elaboration of lesson plans (*Is it difficult for you to elaborate lesson plans? Where exactly do you encounter difficulties?*), self- safety and trust during didactical activities (*Which steps do you take, usually, in class's organisation and in making pupils attentive? You feel you are in control during the lesson or are you afraid of imposing? In case you are afraid, why do you think this happens and what can you do to overcome it?*), the competence to evaluate the results and progress among pupils, the partnership with their families, accomplishing extracurricular activities and so on. The interview guide was applied within certain workshops that we organized for beginners. We

collected valuable data regarding the domains where beginners have difficulties and real problems during different professional tasks.

### Results interpretation

We used the content analysis on the collected data. On the basis of frequencies analysis, we dropped out some low frequency categories (for example, the formal welcoming made by the headmaster in the first day of work, certain tendentious discussions of older teachers) or we summarized some very alike problems within the same categories of difficulties. For example, the difficulties regarding communication, relationships with pupils, preserving discipline and a favorable climate were included in the category regarding class management.

We identified several categories and subcategories of difficulties that beginning teachers encounter during first years of activity: projecting the didactical activity, accomplishing the teaching activity, evaluation of pupils results, class management.

Within the first category, we identified the following subcategories and frequencies: difficulties in using lesson types (35), difficulties in preparing didactical means (30), in independent elaboration of plans (40), in making accessible the contents (50), overloaded syllabus and manuals (54), in differentiated projection of activities (40).

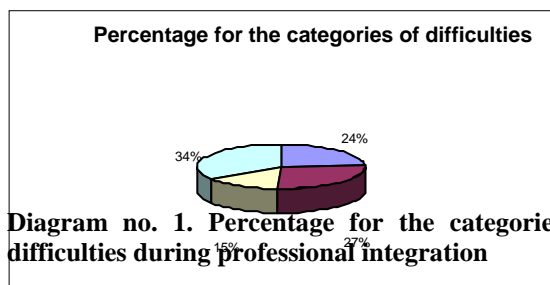
As for the second category, we identified these subcategories of difficulties and their frequencies: Certain presentation of new information (35); Combining traditional and modern methods (41); Relating the frontal activity with group and individual activities (40); Applying active methods and techniques (43); Using modern didactical means (46), Differentiated organization of activity (42), Adaptation of objectives, contents (30).

The third category of difficulties focuses on evaluation of pupils results and includes the following subcategories and frequencies: difficulties in application of oral, written and practical tests (42), evaluation of pupils in accordance with their evolution (28), mentioning the evaluation criteria (25), using alternative methods of evaluation (32), adopting certain decisions for improving pupils results (26).

The last category of difficulties refers to class management and includes these subcategories: reaction towards the lack of interest among pupils (45), organization and caption of attention of the pupils (39), efficient communication with pupils, encouragement of positive relations (42), reaction towards the challenging attitude of pupils (47), preventing and solving conflicts (33), order and discipline inside classroom (41), difficulties in establishing an efficient partnership with the pupil's family (40), involvement in educational projects (45), organizing extra-curricular activities (25).

Establishing the percentage for the categories of difficulties by referring to the main roles of a teacher underlines the following hierarchy (diagram no. 1): 1.

class management (34%); 2. accomplishing the teaching-learning activities (27%); 3. projecting the didactical activity (24%); 4. evaluation of pupils results (15%).



Although the majority of beginners is talking about a good welcoming in school, some of them have experienced feelings of doubt in their own potential, of isolation, of fear that they won't be compatible with so many professional tasks. A more efficient collaboration with teachers of the same specialty, establishing a valid partnership between University-Inspectorate-School, and the need for mentors which can help them through the university-school transition, represent the propositions-solutions of beginning teachers for solving many problems.

#### Conclusions

The data collected with the interview guide underline many categories and subcategories of difficulties which beginning teachers encounter during professional integration. The percentage of categories differs from others, in accordance with the complexity of the achieved professional roles, and this confirms the research's hypothesis.

The most difficulties point toward class management, many beginners admitting that they don't have the necessary psychosocial competence in solving the problems. Other categories of difficulties refer to accomplishing the teaching activity, projecting the didactical activity and evaluation of pupils results.

We suggest several possible practices and strategies that have a role in improving the teachers training program and their professional integration:

- Raising the weight of teaching practice within the program of initial training for future teachers and multiplying the achievement forms;
- Applying the tutoring as a tutor for 2 or 3 fresh students;
- Introducing mentoring for the first 2 years of probation;
- A serious selection of the mentors which monitor the teaching practice, keeping account of professionalism and internal motivation for this activity;
- Diversification of training's devices: videotraining, verbalization, interviewing, taking into account of the personal experience, mutual observation, metacognition with students, reflexive diary, simulation and role playing, portfolio.

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## THE DYNAMIC OF RESISTANCE DEVELOPMENT IN POWER REGIME DURING THE PHYSICAL EDUCATION CLASS ON THE BASIS OF MEANS SPECIFIC TO ATHLETICS

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**Abstract:** Background: Through the specific objectives of the physical education class, besides the improvement and health maintenance, obtaining some high indexes of an harmonious physical development, the education of some positive character traits and reaching a optimum physical condition, there is also the training, education and development of some movement skills specific to athleticism.



**Methods:** The research was based on the proper investigation methods – the experimental method and processing, analysis and interpretation of the data obtained through research – the mathematic method, statistic method and the graphic one.

**Results:** The mean value (X) computed, after the application of the program, presents higher values than those computed in the initial testing; for the test of lifting the trunk at the vertical ( $90^\circ$ ), from the dorsal horizontal position of the body (abdomen) through which the power regime of the abdominal musculature was tested the mean is higher with 1.82 repetitions; for the test of uplifting the trunk from horizontal ventral position through which the endurance of the power regime of the back musculature was tested mean registered a growth of 1.11 repetitions; for the pull-ups at fixed bar from hanging position test through which it the resistance of the power regime of the scapulo-humeral the progress of the mean value was very small, of 0.16 repetitions was tested.

**Conclusions:** The use during the physical education class, in a higher percentage, of the means specific to athleticism for a short period of time contributes to the obvious growth of the resistance of the power regime of the abdominal musculature (from X = 42.19 repetitions to X = 44.02 repetitions.) and of the back (from X = 44.74 repetitions to X = 45.58 repetitions) and less of the flexors musculature and scapulo-humeral extensors.

**Key words:** dynamics, force regime resistance, physical education class, athleticism.

### The introduction and the objectives of the research

The learning process is a complex process in the realization of which a number of factors contribute through multiple and diverse forms. Among them an important place is that of the lesson. After the way that this is conceived, prepared and realized will depend, in a certain way, the result of the common work: professor – student.

The physical education and sport class offers institutionalized framework for the education/forming and improvement of the movement capacities of young students.

The projection and planning of movement activities throughout the university year allows the faculty to follow in time the evolution of the movement progress of each student component of the professional study group which is obliged to attend the physical education and sport class.

The physical exercises specific to the branch of sports – athleticism, used systematically and continuously in the class of physical education and sport, and not only, form in those that practice it aside the elegance of movement also a well - known athletic appearance.

Amongst the specific objectives of physical education, next to the improvement and maintaining a healthy condition, the obtaining of heightened indices of harmonious physical development, the education of positive character traits and the attaining of optimum

### The procedures and methods of the research

The research has been done during physical education classes, university year 2007-2008, The Petroleum and Gas Engineering Faculty of the Petroleum and Gas University from Ploiesti, classes part of the schedule for the professional group majoring in “Petroleum and Deposit Geology”, from the first year of study, made of 25 male students.

From a number of 28 modules of physical education representing 56 conventional hours, the

physical condition, is the forming, education and development of movement skills specific to athleticism [G. Cârstea, 1999].

### The hypothesis

In the development of this research we have started from the following hypothesis:

- Athletic means represent the basic exercise of the physical education and sport class
- Throwing and the means used for improving the resistance in power regime, have a special part in developing the movement of man.
- Athletic events, as component parts of athleticism, do not present conditioning bounds, each having its own rule system and organization.

**The objectives of experimental research** are to determine if:

- In the physical education and sport class this program on the basis of the means specific to athleticism can be applied;
- Winning in the manifestation of resistance in the power regime, measured after this program, can be associated to the use of mainly the means specific to athleticism.
- The collection, the insertion in tables, the processing and the interpretation of the recorded data on the basis of the mean values computed;
- Drawing up the conclusions that arise from the interpretation of the static computed indicators.

attendance in class was 90%, which represents a very good percentage in comparison with the attendance of the other groups of students in the first year.

The use of physical exercises for the development of this movement skill in the regime of another movement skill, resistance in power regime (with main accent on the power component), impose the abiding of requirements of the methodological order [T. Ardelean, 1979]:



- The physical exercises for developing the resistance of power regime to be done at a higher level than in competition or with taking the examinations.

- The physical exercises for developing the resistance in power regime will be made as main theme at the end of the fundamental part of the physical education and sport class;

- The physical exercises for developing the resistance in power regime used in lessons to match the parts or global execution of athletic tests [C. Barbu, M. Stoica, 2000];

- The muscular system involved in the executions of the different acts and actions common to the athletic events must perform overcoming contractions (movement work), as well as yielding contractions and setting ones.

The development of resistance in power regime has been made on the basis of the means of physical training of the athletes on the level of the superior train and it was made up of athletic physical exercises by the use of the *method of athletic exercises with aggravation* (L. Baroga, 1985) which resides from the execution of these exercises in aggravated conditions, throwing exercises – throwing with heavier objects (50-100%) than the ones in competition; the number of repetitions is 2 - 4 repetitions, in 2-4 series, the sub-maximal to maximal intensity (anaerobic effort capacity).

We present a few athletic exercises selected to be used in the lesson [M. Finichiu, 2007]:

**F<sub>1</sub>** – throwing the weight (4, 5, 6 kg) at a distance, with two hands from the chest, legs slightly apart and bent, pushing with both hands towards forward simultaneously with legs extension; lines of 4 students, face to face, 2 – 3 x 8 - 10 repetitions, pause returning at the throwing line.

**F<sub>2</sub>** – throwing at a distance, with two hands from above the head, towards forward/backward of the weight (2,3,4 kg), legs slightly apart, the throwing begins by a extension/flexion of the trunk simultaneous with the extension/flexion and pushing in the legs; lines of 4 students at the distance of 20 meters, 2-3x8-10 repetitions, pause returning at the throwing line.

**F<sub>3</sub>** – throwing with two hands from above the head, forward/backward of the medicinal ball weighing 2-4 kg; lines of 6 students face to face, 4-6x6-8 repetitions, pause returning at the throwing line.

**F<sub>4</sub>** – throwing with one hand from above the shoulder (flung) form standing position of the oina ball, with the handy arm; lines of 6-8 students face to face at

the distance of 40-60 m, 2-4x8-10 repetitions, pause returning at throwing point [D. Gîrleanu, 1983].

**F<sub>5</sub>** – pull-ups on the fixed bar, from hanging 2-4x4-6 repetitions, pause returning to the fixed bar.

**F<sub>6</sub>** – from standing with support on palms and the tip toes, the elbow bending until touching the floor with the chest, quick return in the position of extended elbow (push-ups), lines of 4 students, 2-4x15-18 push-ups, pause of 45 seconds – 1 minute.

**F<sub>7</sub>** – from laying on the back on the mattress, sit-ups with the switch of the trunk so that the elbow reaches the opposite knee, hands at the backhead, the feet underneath the first plank of the fixed ladder, 2-4x15-20 repetitions, pause returning to the mattress.

**F<sub>8</sub>** – from laying face down on the mattress, hands on the back side of the head, elbows apart, feet together held by a partner, trunk extensions until the chin reaches the level of the gymnastic bench; lines of 10 students, 2-4x20-25 repetitions, pause returning to the mattress.

**F<sub>9</sub>** – bell bar exercises: for the arms and shoulders musculature (pushing in different angles from sitting position and laying on the back, throwing, flections of the forearms on the arms, stroking); for the trunk musculature (ripped – from the front and lateral – pulled to the chest, trunk pivoting with the bar on the shoulders, bending and straightening of the trunk with the bar on the shoulders).

For the determination of the dynamics of the development of the resistance in power regime of the musculature [C. Basco et al., 1992] of the superior train it has been used a battery of 4 tests through which there were tested: the resistance in power regime of the abdominal musculature through the test of raising the trunk to vertical (90°), from dorsal horizontal position (decubit) (abdomen); resistance in power regime of the back musculature by the test of raising the trunk from ventral horizontal position (back – passing the chin over the level of the gymnastic bench); the resistance in power regime of the scapulo-humeral flexors through the event of pull-ups on a fixed bar from hanging (pull-ups – passing the chin over the fixed bar); the resistance in power regime of the scapulo-humeral extensors through push-ups (touching with the chest a plate position at 2 cm from the ground); [V. Tudor., 2005]; there were not numbered the exercises that did not uphold the anterior requests. The students were put through an initial testing in October 2007 and a final testing in May 2008, the following static indicators [M. Epuran, 1999] being recorded through statistic-mathematical processing (table 1 and table 2).

**Table 1.** Calculated statistic indicators - Initial testing - October 2007

Statistic Indicators	Tests	Abdomen	Back	Pull – ups	Push – ups
X		42,19	44,74	5,68	28,02



S	5,83	8,24	3,41	3,27
Cv%	15,77	18,43	59,85	15,22

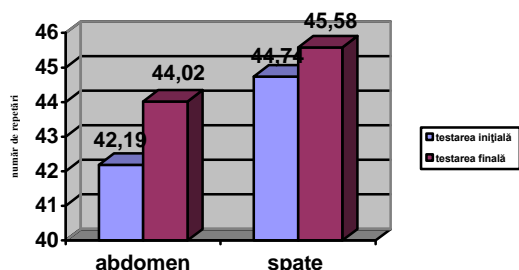
**Table 2.** Calculated statistic indicators - Final testing - May 2008

Statistic Indicators	Tests	Abdomen	Back	Pull – ups	Push – ups
X		44,02	45,58	5,84	28,36
S		6,32	7,52	3,06	6,34
Cv%		14,37	16,47	52,51	22,37

The static calculated indices present us the next situation for the group of investigated students:

- The arithmetical mean value (X) calculated, after application of the program, presents higher values than the ones computed after the initial testing; for the event of lifting the trunk at vertical (90°), form dorsal horizontal position (abdomen) through which it was tested the resistance in power regime of the abdominal musculature the mean is greater with 1.82 repetitions (figure 1); for the event of raising the trunk from ventral horizontal position (back – passing the chin

Figura 1 Valorile mediilor aritmetice



- The standard abnormality (S) calculated (table 1) presents a normal distribution of the individual values.

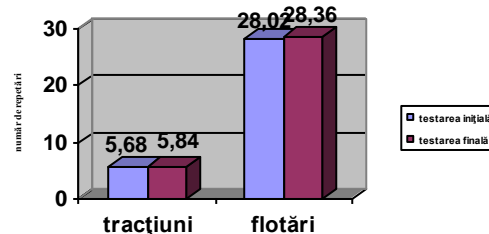
- The homogeneity of the individual values computed on the basis of the statistic indicator  $C_v\%$  (table 1 – coefficient of variability) presents the following situation: Initial testing – on the level of the events through which it has been tested the resistance in power regime of the abdominal musculature, the resistance in power regime of the back musculature and the resistance in power regime of the scapulo-humeral extensors,  $C_v$  calculated shows an medium homogeneity of the individual values and lack of

### Conclusions

- The physical education and sports class assures the continuity of the training, through setting a

over the level of the gymnastics bench) through which it was tested the resistance in power regime of the scapulo-humeral flexors the progress of the arithmetical mean is very small of 0.16 repetitions (figure 2), fact that indicates that improving this movement capacity combined at the level of the scapulo-humeral belt requires a greater period of time, same thing for the event of push-ups through which it was tested the resistance in power regime of the scapulo-humeral extensors where there has been computed a mean higher by 0.34 repetitions (figure 2).

Figura 2 Valorile mediilor aritmetice



homogeneity at the level of the individual values through which there was tested the resistance in power regime of the scapulo-humeral extensors and the resistance in power regime of the scapulo-humeral flexors.

The research has been realized on the basis of the said method of investigation – the experimental method and the processing, analysis and interpretation methods of the data gathered through research and - the mathematical method, statistic method and graphic method.

optimum report between individual physical condition and the acquirement of the movement skills specific to athleticism, but also a step by step graduation of effort.



• The physical exercise specific to athleticism (throwing), as a mean of physical and sporting education, realized under different shapes, assures a large field of manifestation of the imagination and creative thinking, on the basis of which the subject can prefigure in advance new solutions, sometimes unusual in its professional activity.

• The management of the physical education and sports class on the means specific to athleticism, creates favorable conditions for promoting an adequate mentality to understanding the necessity of continuous and systematic physical activity in view of maintaining the health and improving the level of manifestation of the resistance in power regime.

• Taking-up decisions that are in accordance with the social importance of the national system of physical education and sports in view of the realization of analytical programs structured on the models of training in athleticism that require the use of motivational reserves and accessing of the self bettering concerns of the own movement levels.

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## THE IMPROVEMENT OF RELATIVE INSTANTANEOUS MUSCLE POWER THROUGH THE USE OF SPECIFIC MEANS TO ATHLETICS DURING THE PHYSICAL AND SPORT CLASS

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#### Abstract

**Background:** The research represents a part of the methods and means that can be used in the physical education class that aims at the accomplishment of a good physical condition of the future engineers from the petroleum processing branch.

**Methods:** The methods and means specific to athleticism do not substitute and exclude forward use of methods and means specific to other sport branches as action means during the physical class.

**Results:** The calculus of relative instantaneous muscular power shows us a significant growth of the value of this indices after the use during the physical education and sports class of a high number of means specific to athleticism.

**Conclusions:** The indices of the relative instantaneous muscular power has made a significant growth in a relatively short time pointing out the efficiency of the means specific to athleticism for the combined movement capacity development strength-speed and individual speed-strength

**Key words:** Relative instantaneous muscle power, means, physical education class

#### Introduction and objectives of the research

Valuing the genetic potential of each individual, depending on the elements offered by the respective surroundings allows us to assert the specific differences between the individuals of a collectivity, manifested through a multitude of factors: adaptability, speed of movement reactions, the complexity and promptitude of intellectual processes so necessary in

the establishment of individual equilibrium. The learning process is a complex process, which takes place and evolves through the concurring of multiple factors of different forms and types, amongst which an important factor is the physical education lesson. Depending on the manner in which this lesson is conceived, prepared and realized, the results of the work of the academic staff will vary for the better or



worse. The performance in the physical education and sports class must be appreciated, mainly, by the quality and quantity of effort made by the individual during the entire duration of the lesson itself.

The pedagogical craftsmanship of the academic staff in the specialized field of physical education and sport consists of the selection and continuous programming of the most efficient methods and specific means optimum for obtaining a top physical condition in concordance with the movement requirements of the future profession of the students [A. Dragnea, et al., 2006].

Research represents a part of the methods and means which can be utilized during the physical education and sport lesson, which aspires to attain a good physical condition of the future engineers in the petroleum processing field. The methods and means specific to athletics do not substitute for or exclude the future utilizing of methods and means specific of other sports branches as means of activity in the physical education class [C. Barbu, M. Stoica, 2000].

**The objectives of the research** consist of:

- Determining the realization of a model of physical instruction based on means specific to

#### **Research methods and procedures**

The research was based upon the investigatory method itself – the experimental method and the processing methods, analysis and interpretation of the data collected through research- the mathematical method, the statistical method and the graphic method; it was conducted during the physical education and sports classes in the 2007-2008 academic year, Petroleum and Gas Engineering Faculty of Ploiesti, a part of the professional group's "Transport, storage and distribution of petroleum" schedule, which is comprised of 26 students.

The physical exercises which are utilized for the imbuing of the instantaneous muscular strength, through the development of the combined moving capacity force-speed and speed-force at heightened values of the anaerobic effort capacity, are characterized by maximum efforts of short duration (6-8 seconds to approximately 1 minute) and which draw their energy from the consumption of reserves of the organism lacking O<sub>2</sub> (the O<sub>2</sub> deficit is restored after the conclusion of the effort through the start of the anaerobic metabolic processes).

As in the case of the practitioners of physical exercises which train the aerobic metabolism and those who subject themselves to anaerobic efforts present a series of characteristics of the anaerobic metabolism [L. Baroga, M. Baroga, 1989]:

- The increase in the ATP-PC system activity in the skeletal muscles;
- The increase in the lactic acid quantity in the muscles;
- Glycol enzymes are much more active;
- Hypertrophy of the white muscular fibers.

athletics, conditioned by movement, psychic and social characteristics of the future profession;

- Organizing and conducting the physical education class based on instruction models;
- Collecting, summarizing, processing and interpreting registered data based on calculated arithmetical means;
- Typing down the conclusions which can be drawn from interpreting the static indices previously calculated;

#### **The hypotheses**

Research took place based on the following hypotheses:

- Jumps and throws, as means utilized for the imbuing of instantaneous muscular power through the development of combined movement force-speed speed-force capacity, have a special role in the movement development of the individual;
- The reference objectives that seek the imbuing of the combined moving capacity force-speed and speed-force, they will be better and more diversely realized based on applying the instruction methods in athleticism.

As it has previously been stated, the development of the anaerobic capacity implies executing exercises with maximum effort, or short duration while utilizing: *jumps, throws and various weight-lifting exercises*. The use of exercises for the development of the combined movement force-speed and speed-force capacity in the physical education and sport class implies respecting certain demands [T. Ardelean, 1979]:

- It will be executed as a main theme in the beginning of the fundamental part of the physical education and sport lesson;
- The utilized physical exercises will be known thoroughly and learned in order to execute them with great or maximal efficiency;
- The duration of the execution is shorter, so that the exercises for the development of the combined movement force-speed speed-force capacity will take place at the same intensity level;
- The duration between repetition is established so that it will assure a complete return of the great functions of the organism;
- the exercises for the development of the combined movement force-speed speed-force capacity, under conditions of increased difficulty will not be technically difficult to execute;

The development of the combined movement force-speed speed-force capacity at the lower train level and upper train level is realized during the physical education and sport class through the use of the weighted, athletic exercises method and the medium efforts method.

Using the *method of athletic exercises with aggravation* consists of executing these exercises in difficult conditions:



➤for jumps – jumping over groups of two, three or four steps at once, on one or both legs, jumping on two legs, in a slope, jumping over small fences of varying heights, jumping from different apparatus, cushioned landing, continued with a new jump on another object, jumping on one or both feet with sandbags tied to each foot or in the lumbar area;

➤for throwing – throwing with heavier objects (50%-100%) than the ones in the competition; the number or repetitions is: 2-4 repetitions, in 2-4 series, the intensity is submaximal towards maximal (the anaerobic effort capacity).

*The medium efforts method* [L. Baroga, 1993] for the development of force-speed and/or speed-force: load of 30-40% of the maximum possibilities (the anaerobic effort capacity); - load of 50-80% of the maximum possibilities (the anaerobic effort capacity over 80% of the maximum possibilities), with a number of 3 - 5 repetitions in 4 -5 series.

The university physical education and sport classes seek to develop movement capacity combined with force-speed and speed-force by exercising every muscular chain, every muscular group, without inducing any disequilibrium in the development of the muscular groups and segments; they are programmed and planned during period when outdoors exercising cannot be executed.

These speed-force and force-speed exercises [M. Finichiu, 2008] do not have to deteriorate the elasticity and mobility of the joints, thus the workout with small and medium sized weights will be executed with maximum amplitude.

**F<sub>1</sub>** – free jumping in the same spot and with forward, backward and lateral movements, with detachment from the ground and landing on both feet, lines of one each, 3-8 repetitions, pause for 20-30 seconds;

**F<sub>2</sub>** – Jumping in the same spot and moving forward, backward, detachment from the ground on one foot and landing on both, two lines, 3-8 repetitions, pause for 15-25;

**F<sub>3</sub>** – forward jumping over obstacles (30-40 cm high, the distance between obstacles must allow the execution of the jump), with detachment from the ground and landing on both feet, lines of four students, 5-10 repetitions, pause for 20-30 seconds;

**F<sub>4</sub>** – jumping on both feet, in the same initial spot and landing in a crouched support position, then with the knees bent, two lines, 6-8 repetitions, the cushioning of the landing phase is being monitored, pause for 15-20 seconds;

**F<sub>5</sub>** – successive jumps on both legs each two steps, the distance 12-16 steps, 2-4 series of 5-8 repetitions, pause, return to the first step;4

**F<sub>6</sub>** – successive jumps on both feet each third step, the distance 12-16 steps, 2-4 series of 4-6 repetitions, pause and then return to the first step;

**F<sub>7</sub>** – successive jumps on one foot each two steps, using the left and right foot alternatively, the

distance 12-16 steps, 2+2-4 series of 4-6 repetitions, pause, return to the first step;

**F<sub>8</sub>** – successive jumps on both feet in the sand hole (frog-leaps), distance 6 meters, 2-4 series of 8-10 repetitions, pause, return to the starting line;

**F<sub>9</sub>** – successive jumps on each foot in the sand hole, using the left/right foot alternatively, distance of 6 meters, 2+2-4 series of 8-10 repetitions, pause, return to the starting line;

**F<sub>10</sub>** – hopping from both feet with the highest possible touching of the basketball panel, individually, 3-5 series of 4-8 repetitions, pause between series 30-40 seconds;

**F<sub>11</sub>** – jumping from one foot to the other, in the same spot, lines of 4 students, distance 25-35 meters, 4-6 repetitions, pause, return to the starting line;

**F<sub>12</sub>** – jumping from one foot to the other, in the same spot, over areas traced on the ground, lines of 4 students, distance 25-45 meters, 4-6 repetitions, pause, return to starting line;

**F<sub>13</sub>** – successive jumps, on both feet, over the gymnastics bench, 4 students at a bench, working simultaneously at 6-8 benches, duration 30 seconds,- 1 minute, 4-6 repetitions pause 30 seconds-1 minute;

**F<sub>14</sub>** – jumping in hops, over different obstacles (25-35 cm), distance 20 meters, lines of 3-4 students, pause, returning to starting line;

**F<sub>15</sub>** – triple-jumping, penta-jumping, and decasalt over the jumping in length sector, with landing in the sand hole, individually, 4-6 repetitions in 2-4 series, pause between series 30 seconds- 2 minutes;

**F<sub>16</sub>** – bounded jumps in length from a standing position, over a 30 meter distance, lines of 4 students, pause 30-50 seconds;

**F<sub>17</sub>** – jumping in length from a standing position, individually, control test;

During all the physical exercises in which we utilize jumping, their difficulty can be increased by using vests with pockets filled with sand, of sandbags (which are tied to the inferior limbs or carried in one's hands) or by performing the jumps in a slope.

**F<sub>1</sub>** – distance throwing, with both hands overhead, in a forward direction of the specific weight (four kilograms), legs slightly spread, the throw begins through an extension of the main body simultaneous with the extension and the pushing of the legs, lines of four students each at a distance of twenty meters, two or three by eight to ten repetitions, pause and then a comeback at the throwing line;

**F<sub>2</sub>** – distance throwing, with both hands overhead, in a backwards direction of the weight (four kilograms), legs spread and bended, the throw begins by bringing the arms with the weight down in front of the body, the simultaneous extension of the body with the extension and the pushing of the legs, the weight is released when the arms reach overhead, lines of four students each at a distance of twenty meters, two or three by eight to ten repetitions, pause and then a comeback at the throwing line;



**F<sub>3</sub>** – throwing with both hands overhead, forward/backwards, of the medicinal ball weighing 4-6 kilograms, lines of six students face to face, 6 x 6-8 repetitions, pause and then a comeback at the throwing line;

**F<sub>4</sub>** – throwing with a hand above the shoulder (flinging) from a standing position of the oina ball, with the handy arm, lines of 6-8 students face to face, at a distance of 40-60 meters, 2-4 x 8-10 repetitions , pause and then a comeback at the throwing line;

**F<sub>5</sub>** - throwing with a hand above the shoulder (flinging) of the oina ball with a three step running start, with the handy arm, lines of 6-8 students face to face, at a distance of 50-70 meters, 2-4 x 8-10 repetitions, pause and then a comeback at the throwing line;

**F<sub>6</sub>** – with a hand above the shoulder (flinging) with a running start, 3 repetitions, the best result is registered;

The evaluation of the improvement of the muscular relative and instantaneous power was realized by utilizing a battery of movement tests which saw to

the determining of: the explosive force of the inferior members vertically by measuring the vertical hang-time from a standing position; the explosive force of the inferior members horizontally by measuring the jump in length from a standing position; the explosive force of the superior members by measuring the distance from: 1. throwing of the medicinal, 2 kg ball forward, with both hands overhead and 2. throwing of the medicinal, 2 kg ball backwards with two hands overhead and the explosive force of the throwing arm by measuring the distance at which the oina ball is thrown using the preferred arm, from a standing position.

The students were subjected to an initial test in the month of October 2007 and a final test in the month of May 2008 and the following statistical indices were registered, by means of statistical and mathematical processing (table 1 and 2) and the vale of the arithmetic mean of the bodily weight [M. Epuran, M. Marolicaru, 2003].

**Table 1.** Calculated statistic indicators - Initial testing - October 2007

Statistic Indicators	Tests	Jumping vertical from standing position	Jumping in length from standing position	Throwing of the med ball 2 with overhead	Throwing of the med ball 2 with backwards	Throwing of the med ball from standing point
Aritmetic mean		43,42	226,92	9,59	11,37	43,16
Body weight	Aritmetic mean = 68,43					

**Table 2.** Calculated statistic indicators - Final testing - May 2008

Statistic Indicators	Tests	Jumping vertical from standing position	Jumping in length from standing position	Throwing of the med ball 2 with overhead	Throwing of the med ball 2 with backwards	Throwing of the med ball from standing point
Aritmetic mean		44,89	228,94	9,89	11,87	44,92
Body weight	Aritmetic mean = 68,80					

Calculating the index of the relative muscular power (RMP) [Hidi, J.L., 2007] is done through the rapport between the instantaneous muscular power (the instantaneous muscular power is the movement action executed in a maximum of 0.5 seconds) and the bodily weight (example: the arithmetic mean for the jumping in length with a standing start test = 226,92 cm and the arithmetic mean of the bodily weight = 68,43, where

$$\langle \Rightarrow \rangle RMP = \frac{226,92}{68,43} \approx 3,31).$$

In our research, the index for the instantaneous relative power represents the rapport between the physical units of the movement performance realized in the events through which the explosive force of the inferior members is tested, vertically and horizontally, the explosive force of the superior members, the explosive force of the throwing arm and bodily weigh.

**Table 3.** The value of the index for instantaneous relative power (RMP) - Initial testing

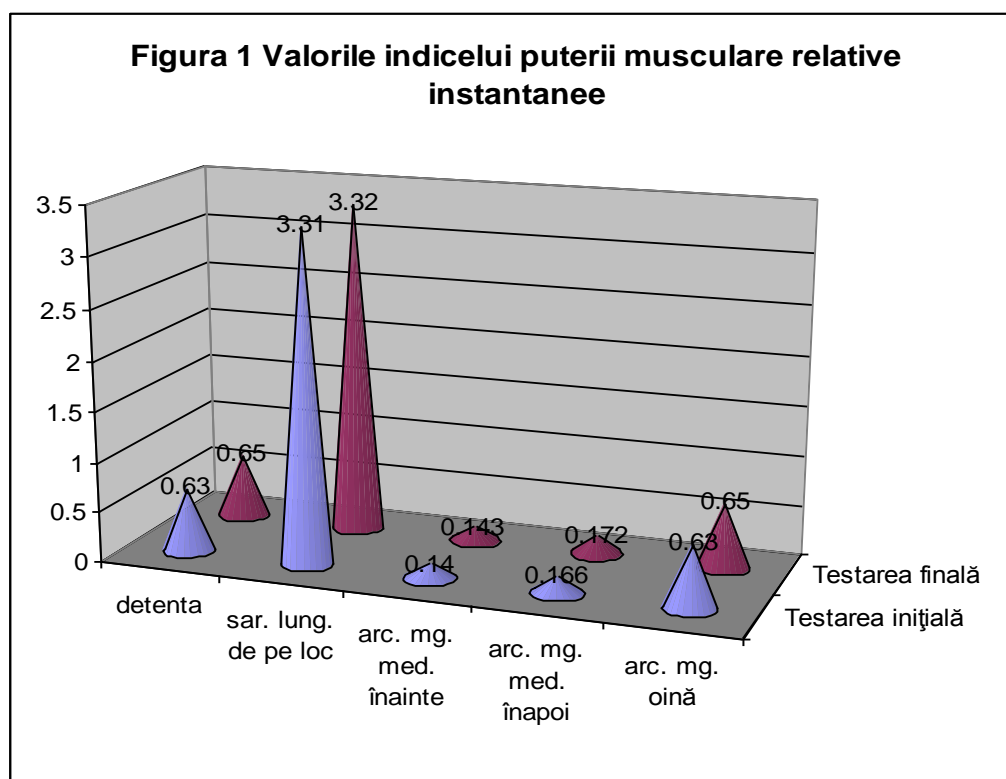
Movement tests	Explosive power of the inferior limbs on the vertical/hang time	Explosive power of the inferior limbs on horizontal/long jump f.e.	Explosive power of the superior limbs by throwing forward	Explosive power of the superior limbs by throwing backwards	Explosive power of the throwing arm/throwing the oina ball
<b>RMP</b>	<b>0,63</b>	<b>3,31</b>	<b>0,140</b>	<b>0,166</b>	<b>0,63</b>

**Table 4.** The value of the index for instantaneous relative power (RMP) - Final testing

Movement tests	Explosive power of the inferior limbs on the vertical/hang time	Explosive power of the inferior limbs on horizontal/long jump f.e.	Explosive power of the superior limbs by throwing forward	Explosive power of the superior limbs by throwing backwards	Explosive power of the throwing arm/throwing the oina ball
<b>RMP</b>	<b>0,65</b>	<b>3,32</b>	<b>0,143</b>	<b>0,172</b>	<b>0,65</b>

The calculus of the instantaneous relative muscular power shows us a significant increase in the value of this index after utilizing in the physical education and sports class

of an increased number of means specific to athleticism. (table 3, table 4 and figure 1).



### Conclusions

1. The complexity of the physical education and sports domain, the high number of related connections, continuously impose the selection and picking of the

most adequate and efficient methods and means used in the university physical education and sports class, concerning the growth of the level of manifestation of movement capabilities.



2. The coherent approach to the learning process makes the realization of the educational objectives easier by completing and modifying, as many times as needed, of the analytic program specific to the physical education and sport domain.

3. The necessity of executing physical activity for at least an hour a day, especially by the young.

4. The general beneficence of physical activity is represented by the amelioration of the health condition and the possibility of realizing certain activities, with an acceptable performance for longer period of time.

5. The index of the instantaneous relative muscular power has developed a significant increase in a relatively short time showing off the efficiency of the athleticism-specific means for the development of the combined movement capacity force-speed and speed-force individually.

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## OPTIMIZING THE PHYSICAL PREPARATION OF STUDENTS FROM HIGH SCHOOL THROUGH ATHLETICS

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### Abstract

**Aim:** The present research is a study on physical optimization preparation of high school girls by means of athletics in the conditions in which subjects have only one hour of education per week. The main theoretical research is to develop rationale and operational model for preparing secondary cycle students in the educational content with multilateral training effect. Results of scientific research can help to complement the theoretical base of school physical education by directing the process of preparing the conditions existing gymnasium. The main practice paper shows that research results may be useful to specialists in the field in making and applying the most effective means and methods in achieving multilateral training to pupils in secondary cycle. (OM nr. 3252/13.02.2006, nr.5398/17.10.2006)

**Methods:** The research involved 28 girls (from 11<sup>th</sup> and 12<sup>th</sup> class, from the Pedagogical College *Constantin Bratescu* in Constanta formed the control and experiment group from a total of 494 girls, 17,3/17,5 age specific 11<sup>th</sup> and 12<sup>th</sup> class. The age of subjects was calculated on the basis of age fulfilled in January 2007, 14 of them in the experimental group and 14 in the control group. The study was implemented within the teaching activity carried out throughout the 14 lectures of the course delivered in the first semester of the academic year 2007-2008.

**Results:** Have obtained significant differences between the two subjects experiment groups, there had of the curriculum one hour per week for physical education; the results are in favor group who worked during the lesson of physical education topics exercises for general physical preparation. (experiment group: initial/final tests: 50mp 8,65±0,71/8,33±0,56, 800m 4,29±0,30/4,05±0,25, Long jump on place 158,19±14,05/169,30±13,85, Push-ups 7±2/8±, Abdominal strength 24±3/20±3, Strength back (rep.) 31±4/29±4, Applicative obstacle Agility Test (s) 109,42±14,23/120,80±18,64 and for control group existed significant differences in all event by calculating the independent “t” student test.

**Conclusions:** Hypothesis was not fully confirmed, because for developing explosive leg power be brought more specific exercises. Physical training exclusively by main of athletics for a period (14 weeks) leading to the best results across the curriculum requirements for good performances.

**Key words:** efficiency, physical preparation, high school, professional training.

## Introduction

General tendency to obtain sport increasingly good evidence for all athletic events in the curriculum, has led to grant a greater focus of training at the age of adolescence. Generally, this trend can be justified and assessed as positive. During the growth and training new skills himself more easily, are training and improving the adjustment functions of the body, creating the foundation for the training of driving skills. Motivating this research is driven by fear and desire for knowledge augmentation of natural ability high school students, and those classes IX - XII has, through their participation in a lesson of physical education and sport per week, where content in the curriculum are minimal and mandatory. his generation is evaluated by the new curricula, the naturalness of the year adjusted physiological requirements of the sport to prepare middle school ages, should be implemented in practice, modernism's not being given the novelty of the method, as its efficiency. The impact of the positive effects on student research remains to be seen at the end of the experiment.

## Hypothesis

We believe that the level of physical preparation at school students aged 17-18 years increased significantly if the operating system in which resources are used exclusively in athletics (main

exercises for running, jumping and throwing) in an hour curriculum per week for each group of experiment. (no longer in the program other exercises from other sport branches.

## Methods

Research subjects are students of the Pedagogical College Bratescu Constantin in Constanta and the number of 28 girls, formed the control group and experiment from a total of 494 students, students age specific classes of XI - XII - the school. Average of subjects age was calculated on the basis of age fulfilled in January 2007. The experiment began on 2 October 2006, the date on which the original test subjects of both groups of subjects. Conditions were favorable to achieve some results as good, ambient temperature was 180C, moderate winds, clear skies. Running surface was bitumen, location is a sports ground of the College Pedagogical Bratescu Constantin in Constanta. Conduct experimental protocol had a duration of 14 weeks in the form of physical education lessons. Evidence of the initial tests were 50mp, 800m, Long jump from place, Abdominal muscle strength, muscle strength back, Push-ups, Applicative obstacles Agility Test (s). Every week, the lesson of physical education was conducted over 50 minutes which had only theme from physic preparation. (exp group). Control group met curriculum from 11th and 12th level classes.

## Results

**Tab.1. Descriptive Characteristics of Girls (Experiment and Control Group)**

	Age (years)		Body Height (cm)		Body Weight (kg)	
	Exp 14girls	Control 14girls	Exp 14girls	Control 14girls	Exp 14girls	Control 14girls
$\bar{X} \pm SD$	17,3±0,6	17,5±0,5	164±9,77	165±11.72	55,3±6,0 1	54,94±7, 31
Cv %	3,46	2,85	5,95	7,10	10,86	13,30



50m		800m	Long jump from place	Push-ups	Abdominal strength (rep.)	Strength back (rep.)	Applicative obstacles Agility Test (s)
IT	t=0,41	t=0,187	t=1,83	t=0	t=1,90	t=1,80	t=1,53
	p>0,05*	p<0,05**	p<0,05**	p>0,05*	p<0,05**	p<0,05**	p>0,05*
IF	t=1,76	t=1,95	t=9,84	t=2,55	t=5,78	t=7,21	t=13,21
	p<0,05**	p<0,05**	p<0,0005**	p<0,01**	p<0,0005**	p<0,0005**	p<0,0005**

Tab.2.Descriptive characteristics (Experiment and Control Group) for initials and finals tests

			50mp. (s)	800m (min.)	Long jump from place	Push-ups
experiment	$\bar{X} \pm SD$	FT	8.33±0,56	4,05±0,25	169,30±13,85	8±2
		IT	<b>8,65±0,71</b>	<b>4,29±0,30</b>	<b>158,19±14,05</b>	<b>7±2</b>
	Cv %	IT	8,30	6,99	8,88	28,57
		IF	<b>6,73</b>	<b>6,17</b>	<b>8,20</b>	<b>25</b>
control	$\bar{X} \pm SD$	FT	8,55±0,83	4,26±0,37	156,20±16,50	7±2
		IT	<b>8,65±0,30</b>	<b>4,28±0,11</b>	<b>158,20±19,20</b>	<b>7±2</b>
	Cv %	IT	9,70	8,68	10,56	28,57
		IF	<b>3,46</b>	<b>2,57</b>	<b>12,13</b>	<b>28,57</b>

Tab.3. Descriptive characteristics (Experiment and Control Group) for initials and finals tests

			Abdominal strength (rep.)	Strength back (rep.)	Applicative obstacle Agility Test (s)
experiment	$\bar{X} \pm SD$	TI	20±3	29±4	120,80±18,64
		TF	<b>24±3</b>	<b>31±4</b>	<b>109,42±14,23</b>
	Cv %	TI	15	13,79	15,43
		TF	<b>12,5</b>	<b>12,90</b>	<b>13,01</b>
control	$\bar{X} \pm SD$	TI	21±4	28±4	122,70±21,44
		TF	<b>21±4</b>	<b>27±4</b>	<b>124,40±19,20</b>
	Cv %	TI	19	14,28	17,47
		TF	<b>19</b>	<b>14,81</b>	<b>15,43</b>

Table. No.4

\* different insignificant \*\* different significant

### Discussions

Preparing the control group of subjects was made after curriculum specific 11th level class and 12th level class. On the evidence of the uniformity values recorded were located at the scale of "good" idea that detaches fluctuation is small. High fluctuation of values Cv% in samples 50m and 800 m from the control group subjects between initial testing and final lead to the conclusion that subsidizing these volitional subjects was small, compared with participants in the experiment, which were imposed through pedagogical intervention seriousness and responsibility, while the idea that reconsidered trained exclusively by physical means in athletics for a period (14 weeks) leading to the best results across the curriculum requirements in performance plan, having an important role and psychological objectives in the plan. (for 800m resistance running  $4,32 \pm 0,06$  for 800m, C.Diaconu, 2005, where is normal curriculum for one our for physical education and  $3,81 \pm 0,65$  M. Dumitru, 2006, where was two hours for physical education). Group of subjects experiment to test the initial indicators of dispersion (SD) and Cv% fluctuations are small, ranging in scale from very good homogeneity in race speed 50m, race resistance 800m and Long jump from place. (tab. 2,3) ( $1,89 \pm 0,06$ , M. Dumitru, 2006, where was two hours for physical education). Homogeneous good evidence of force abdominal and back, come applicative, while uniformity is weak evidence of push-ups. (tab. 2, 3) At final testing, the differences between the two groups expressed by "t" independently found to be statistically significant at

some threshold of  $p < 0.05$  in event of 50m, 800m, push-ups at a  $p < 0.01$  and at other 4 samples, long jump in place and abdominal muscle strength and back to find a course applicative  $p < 0.0005$  (table 4.). In this respect, it was necessary that the experiment protocol has been introduced more efficiency means higher power for the development of the power legs .

**Estimating the importance of a cause ( $\omega^2$ ).** In the final test case, this applied to all events, there were significant differences in each of them:

-50m run speed-3,90%=specific preparation is this event, the rest up to 100% representing other factors;

-800m - 5,10% = specific preparation is this event, the rest up to 100% representing other factors;

-Long jump from place-64,80%= specific preparation is this event, the rest up to 100% representing other factors;

- Bending arms in support of the elbow in 90 degrees on the ground-9,60%= specific preparation is this event, the rest up to 100% representing other factors;

-Abdominal strength (rep.) - 38,4%- 38,4%= specific preparation is this event, the rest up to 100% representing other factors;

-Strength back (rep.) - 49,5%= specific preparation is this event, the rest up to 100% representing other factors;

- Applicative Obstacle Agility Test (s)- - 76,90%= specific preparation is this event, the rest up to 100% representing other factors;

**Tab. 5. The values of omega ( $\omega^2$ )**

Tests	50m	800m	Long jump from place(m)	Push-ups	Abdominal strength (rep.)	Strength back (rep.)	Applicative obstacle Agility Test (s)
I.	*	1,90	4,30	*	4,80	4,10	*
F.	3,90	5.10	64,80	9,60	38,40	49,50	76,90
Dif. (F-I)	3,90	3.20	60,50	9,60	33,60	45,40	76,90

\* Insignificant, I - initial testing, the F- final test.

### Conclusions

Hypothesis was not fully confirmed, because for developing explosive leg power be brought more specific exercises. Physical training exclusively by means of athletics for a period (14 weeks) leading to the best results across the curriculum requirements for good performances. There was a significant difference between results obtained by students in lessons conducted by one hour per week and for those who have two hours a week.**References**

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*technological route of progressive qualification through the school of arts and handicrafts and year of completion, since the school year 2006-2007)-Note corrected by no. 28594/09.03.2006.*

## **STUDY ON THE RELATIONSHIP BETWEEN THE LAUNCH ANGLE AND THE ANGLE OF ENTRY OF THE BALL IN THE BASKET IN THE CASE OF THE SET SHOT**

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### **Abstract**

In the case of the teaching-learning process, the teacher, in order to transmit knowledge from which the student can develop effectively temporary new links and to strengthen the previously formed, has to have information as complete as possible about the driving gesture that needs to be assumed.

In carrying out the work we started from the premise that research of technical processes in the basketball game in terms of mathematics and physics contributes to the enrichment of knowledge and perspectives from other perspectives, this gives the teacher the opportunity to optimize the teaching-learning and assessment processes.

The paper studies on the basis of a theoretical model in which it were not taken into account air resistance on the ball and the rotation printed on it, the relationship between launch angle and angle of entry of the ball in the basket when set shooting.

**Key words:** basketball, set shot, launching angle and angle of entry of the ball in the basket.

### **Introduction**

**The importance of the basketball game has determined the specialists in the field to go on with the initiative to develop the research.**

It is under these circumstances that the present study analyzes the most important technical element in the basketball game, namely the set shot. This element has been studied before more from the point of view of the basketball specialist. Thus there has been obtained a large range of theoretical and practical knowledge which has contributed to the progress in the field..

In this work we propose an interdisciplinary analysis where the specific contributions of the physical education intermix with those of Mathematics, Physics, Methodology, Information Technology and Statistics.

Taking into account the present day level of knowledge we think that in order to best understand, deepen and solve certain problems, even those specific to the basketball game, we should approach the research from a new perspective. Considering both present and future time, the progress of basketball also depends on a change in point of view upon researching and applying the results in the newly mentioned perspectives.

**Presentation of the level of knowledge in the specific field**

Most works study the throwing to the basket from the point of view of the technical execution and of the teaching/learning methodology. The works about

the biomechanics of the execution, about the elements which influence the trajectory, the precision of the throwing to the basket are quite few, especially in the Romanian language: E. Budescu, 2005 – elements which help succeed to throw to the basket – S. Maroti and Flora, 1976 - the influence of distance and direction of execution upon the precision of the throwing to the basket – V. Cucer, 2009 – working out of a mathematical pattern of the throwing to the basket. In the foreign literature we meet more works which cover this theme: J. Pader, 1981 and M. Mondoni, 2002 – trajectory of the ball – I. Smirnov (1973) – the dependence of the throwing precision on the procedure used, direction and execution distance – J.G. Hay, 1980, the relation between the approach angle and the free entrance surface of the ball into the basket – Pavlovic and R. Zeravica, 1983 – factors which influence the trajectory and precision of the throwing

### **Work Hypothesis**

This study starts with the hypothesis that there is a direct connection between the launching angle and the angle of entry of the ball in the basket, connection which can be mathematically demonstrated.

**Demonstration of the connection between the launching angle and the angle of entry of the ball in the basket**

The study of the specific technical procedures of the basketball game by means of mathematics supposes, firstly, the knowledge of certain theoretical

notions and secondly the settlement of the application fiel.

In analyzing the throwing to the basket from a stationary position we start from the pre-requisites that from the point of view of Physics the move of the ball in space is a plane movement in a constant gravitational field. In order to study this kind of movement we can apply two mathematical methods: the algebraic calculus one and the one referring to the graphic representation of the possible trajectories. In order to deepen the study the two methods can be compared with the experimental results, thus obtaining

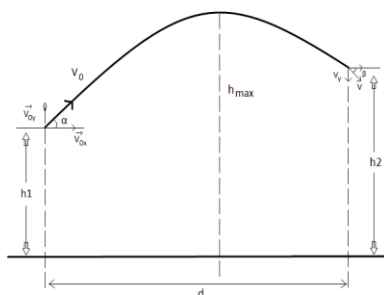


Fig. nr. 1 – Trajectory of the ball following the throw of the ball to the basket from a stationary position

The movement in uniform gravitational field can be decomposed in two linear movements: a uniform one on horizontal line and a uniform varied one on the vertical. By applying the laws of physics about the mechanic movement in uniform gravitational field we can obtain a connection between the difference in level between the launching point and the entry point of the ball in the basket (relation 1)

$$h_2 - h_1 = d \tan \beta - d \tan \alpha - \frac{g d^2}{2 v_0^2 \cos^2 \alpha}$$

The connection between the launching angle and the angle of entry of the ball in the basket can be obtained through the compose laws of speed in a uniform gravitational field (relation 2)

$$v_0 \cos \alpha = v_1 \cos \beta$$

a pattern which can render the movement of the ball towards the basket as precisely as possible.

The demonstration was made through the algebraic calculus in which the ball is launched at an initial speed which varies between 6 and 9 m/s, with a height between 1,5 – 2,5m, from a distance from the basket d having values of 3m, 4m, 6,25m.

Following the calculation where we took into account the above mentioned values, the trajectory of the ball as consequence of throwing from a stationary position has the form of a parabola (fig. nr. 1)

By working out relations 1 and 2 we can obtain the dependence relation between the launching angle and the angle of entry of the ball in the basket (relation 3).

$$\cos \beta = \frac{g d}{v_0^2 \cos^2 \alpha}$$

In the theoretical analysis of this dependence we took into account the following:

- $V_0 = 5,9$  și  $9\text{m/s}$ , the initial launching speed of the ball;
- $g = 9,81 \text{ m/s}^2$ , average gravitational acceleration;
- $h_1$  between  $1,50\text{m}$  and  $2,50\text{m}$ , the height from where the ball is launched
- $h_2$  has a value of  $3,05\text{m}$ , the height of the ring from the ground
- $d$  between  $3,00\text{m}$  and  $6,25\text{m}$ , the distance from which the ball is thrown to the basket
- $\beta$  between  $30^\circ$  and  $60^\circ$ , angle of entry of the ball in the basket

d(m)	h2(m)	h1(m)	$\alpha^\circ$	$\beta^\circ$	Trajectory of the ball
3	3,05	1,50	66,26	44	
		1,75	55,46	50	
		2,00	47,42	50	
		2,25	52,14	60	

		2,50	49,75	60	
4	3,05	1,50	53,27	60	
		1,75	45,51	50	
		2,00	53,44	60	
		2,25	54,51	40	
		2,50	52,30	50	
5	3,05	1,50	47,34	33	
		1,75	55,17	50	
		2,00	53,46	50	
		2,25	51,87	60	
		2,50	51,26	60	
6,25	3,05	1,50	56,86	50	
		1,75	63,60	60	
		2,00	44,54	40	
		2,25	47,19	33	
		2,50	53,35	50	

### Conclusions

By working out an analysis of the launching to the basket based on algebraic calculi we take the necessary steps to enrich the knowledge in this field helping the sportsmen and the trainers to better evaluate the executions and performance. Thus the study can be useful for both the trainers and the sportsmen.

The launching angle of the ball is one of the factors that can determine the approach angle of the ball towards the ring, thus influencing the precision of throwing to the basket. By means of algebraic calculus there was demonstrated the direct connection between the launching angle of the ball and its angle of entry in the basket.

The data can provide the trainers and the sportsmen information on the basis of which they can organize better the teaching/learning process and the

correction of certain mistakes in executing the throwing to the basket.

This work is a part of a larger research concerning the throwing to the basket. In order to deepen the knowledge we propose to continue the research both from the point of view of different aspects concerning the factors contributing to the throwing to the basket, enhancing its precision and from the expanding of the research upon other procedures too.

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## THE DYNAMICS OF COMMUNICATION AND THE DETERMINATION IN THE SPORTS LESSON

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### Abstract

**The necessity for increasing** communication brings up the efficiency of the instructive-educational process of the matter *sports*. Lack of communication, of a common language rules out the determination of individuals to participate at motion. Studies concerning the enhancement of this process by applying to a methodology with orientation towards communication and motivation will have sum-cumulative in the sports lesson.

**Methodos:** Knowing all this we made a questionnaire to obtain answers to some of the aspects presented. For this reason, we applied the questionnaire below on a group of 50 students.

**Resultas:** Communication is present in everything that we undertake, defining itself as a transfer of information from an issuer (remitter) to an receiver (addressee), within the conditions of the achievement of the same meaning of the content of the message towards the subjects and the realisation of feedback.

**Discussion and conclusions:** The success of a communication within the framework of P.E. lesson depends on the ability to communicate of the one who manages the lesson, communication assuring the shift of information between the members of an organization in the purpose of counteracting the doubt of the environment, being a deployment of verbal contact and a social interaction through the message.

**Key words:** dynamics, communication, motivation, sports lesson.

### Introduction

Communication for experts of our field-physical education and sports- represent a shift of information which is realized through speech, influenced by situations, interest or needs of interlocutors. When the common understanding of the message is present, communication is effective. Curricular, schools, faculties, in general systems of shaping, training and improving teachers set an especial accent on the development and filing of abilities, crafts of communication. (National Curriculum, Curricula for the primary school, Ministry of National Education, National Council for Curriculum, 1998.)

One of the most famous American managers, Lee Iacocca, 1984 in his work „An Autobiography”, claims that „ The most important thing which we learned in school was how to

communicate „Communication being considered by the American psychologists „lubricant of the mechanism of enhancement of efficiency and dynamics of the P.E. lesson, the information, the communication’s object, receives in our minds the sense of a message loaded with meaning. „For the transmission of the information, the support is represented by the language, seen as an assembly of symbols (specific to each type of speech) which acts like a code specialized in each field of activity. From the very beginning, we must make the distinction between communication involved in the process of managing the educational system and didactic communication, involved in the process of teaching-learning-evaluating (Sorin Șerbănoiu, 2008). Communication and its dynamic, in the P.E. lessons, can be approached from the managerial perspective or from the didactic view. ( P.E.-new markers, necessary mutations., 2004.)



Communication from the managerial perspective is based on interpersonal relations teacher-student from the view of transmitting information, about actions, situations, participations solving, adapting to situations, etc., concerning organization, deployment and the adjustment of the activity.

In this context, communication must be: clear, concise, complete, intelligible and must take in consideration the characteristics of the one who receives the message.

Communication from the didactic perspective in physical education favours the transmission of knowledge through the classic process of teaching, learning, based on the psycho-social component of the teacher-student relations. Methods of transmitting the information in the P.E. lesson are verbal, intuitive and practical. In the P.E. lesson, communication is realised verbal and nonverbal. (National Agency for Sport: „Anuarul Sportului 2003)

Verbal communication holds a prop for the message which has to be sent in a form of command, persuasion, suggestion or simple communication.

Specific to the P.E. activity as a way of communication is the command through promptness and accuracy to which we can appreciate the level of reception of the message and it depends a great deal on the concrete way in which language is used on its characteristics as a paraverbal.

Nonverbal Communication-Communication by gesture, by actions and behaviour are two ways of nonverbal expression present throughout the entire P.E. lesson, used by alternation, by means of „the role, played by the teacher through demonstration, sounding, motion signals and by the student through exercise. Motivation for movement-Physical education, sports, games means effort, tiredness and waive convenience. Reasons for conducting a physical activity are complex expressing the individuals need for affirmation, for compensation, the desire to win, the need to express some complex emotions, to live their own emotions. Is important to have communication in everything we undertake.

### **Material and Method**

#### **Subjects**

Knowing all this we made a questionnaire to obtain answers to some of the aspects presented.

For this reason, we applied the questionnaire below on a group of 50 students.

#### **Results:**

#### **The hypothesis of research:**

The present research has started from the supposition that the need to increase communication brings up efficiency of the instructive-educative process; the lack of communication, of a common language rules out the individuals' motivation to participate at motion.

Studies regarding the intensification of this process through applying a methodology with orientation toward communication and motivation will give cumulative effects in the P.E. lessons.

#### **Content research:**

Dynamics of communication motivation in physical education lesson on a scale of 1-5 and the score recorded in the application of the questionnaire. The questions from the questionnaire: 1. Through attitude, do the teacher's clothes succeed to communicate to you a label which you would choose during the P.E. lesson?; 2. Is the transmission of the themes and objectives of the P.E. lesson clear, concise, complete and takes in consideration the characteristics of the one who receives the message by offering a dynamics of the lesson?; 3. Through the professional language, does the teacher make accessible the content of teaching?; 4. Are explanation and demonstration present in the teaching?; 5. Does

P.E. promote methods active-participative focused on the student?; 6. Does a dynamics of communication during the teaching exist to motivate you to participate active in the lesson?; 7. Does verbal communication have a support for the message that must be transmitted in a form of command, persuasion, suggestion, motivating the involvement of the students in the lesson?; 8. Does the teacher treat the students equal with respect and consideration motivating them to participate in the movement with pleasure?; 9. Is communication from the managerial-scientific perspective based on interpersonal relations student-professor, professor-student?; 10. Concerning the criteria and ways of evaluating the activity and your results, do they reflect the reality and your feeling?; 11. Are the student taught and encouraged to evaluate their own performances and equally the ones of their colleagues?; 12. Would you like to study another subject with this teacher?

Knowing all this we made a questionnaire to obtain answers to some of the aspects presented.

The questions from the questionnaire -Dynamics of communication-motivation in physical education lesson:

Nr. crt	The questions from the questionnaire	Dynamics of communication-motivation in physical education lesson on a scale of 1-5 and the score recorded in the application of the questionnaire					The Total of answers %
		1	2	3	4	5	
		Very weak	Weak	Satisfactory	Good	Very good	
1.	Through attitude,do the teacher's clothes succeed to communicate to you a label which you would choose during the P.E. lesson?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="3"/> 6%	<input type="checkbox" value="47"/> 94%	50
2.	Is the transmission of the themes and objectives of the P.E. lesson clear,concise,complete and takes in consideration the characteristics of the one who receives the message by offering a dynamics of the lesson?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="10"/> 20%	<input type="checkbox" value="40"/> 80%	50
3.	Through the professional language,does the teacher make accessible the content of teaching?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="4"/> 8%	<input type="checkbox" value="46"/> 92%	50
4.	Are explanation and demonstration present in the teaching?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="8"/> 16%	<input type="checkbox" value="42"/> 84%	50
5.	Does P.E. promote methods active-participative focused on the student?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="10"/> 20%	<input type="checkbox" value="40"/> 40%	50
6.	Does a dynamics of communication during the teaching exist to motive you to participate active in the lesson?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="2"/> 4%	<input type="checkbox" value="5"/> 10%	<input type="checkbox" value="43"/> 86%	50
7.	Does verbal communication have a support for the message that must be transmitted in a form of command,persuasion,suggestion,motivating the involvement of the students in the lesson?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="7"/> 14%	<input type="checkbox" value="43"/> 86%	50
8.	Does the teacher treat the students equal with respect and consideration motivating them to participate in the movement with pleasure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="1"/> 2%	<input type="checkbox" value="49"/> 98%	50
9.	Is communication from the managerial-scientific perspective based on interpersonal relations student – professor, professor-student?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="1"/> 2%	<input type="checkbox" value="4"/> 8%	<input type="checkbox" value="45"/> 90%	50
10.	Concerning the criteria and ways of evaluating the activity and your results,do they reflect the reality and your fettle?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="2"/> 4%	<input type="checkbox" value="48"/> 96%	50
11.	Are the student taught and encouraged to evaluate their own performances and equally the ones of their colleagues?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="1"/> 2%	<input type="checkbox" value="2"/> 4%	<input type="checkbox" value="47"/> 94%	50
12.	Would you like to study another subject with this teacher?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox" value="1"/> Nu2%	<input type="checkbox" value="49"/> Da.98%	50

### Discussions:

At young population is important to develop a positive attitude to the movement and this can be implemented by the motivation to move through the dynamics of communication, communication by driving through the physical skills and emotional issues. This triad of positive experiences will lead with a high probability of continuing the active lifestyle that

will contribute to maintaining health, increasing the capacity for work and a mental high quality. The presence of motivational factors defines communication present in everything we undertake, this defining a transfer of information from an issuer (sender) to a receiver (destination) for the interest of sport, needs to move, affirmation, compensation, domination, the frustration reaction have the order assigned to me at the start of research, considered the





ideal expression of a clever maneuver by the use of communication in the physical education lesson. Evolution of motivational factors was different evidence that attitudes are changing by the independent desire of the faculty; it is important that the amendment to be positive.

### Conclusions

1. Communication provides information exchange between members of an organization in order to counteract environmental uncertainty as a form of social interaction through the message.

2. Communication specialists to our area - physical education is an exchange of information that is achieved through language.

3. When there is a common understanding of the message communication is effective.

4. Reasons for conducting a physical activity expressing affirmation of the individual need of compensation, the desire to win.

5. Increasing need of communication increases the effectiveness of the physical education discipline.

6. Lack of communication, a common language excludes individuals motivation to participate in the movement.

7. Reasons for conducting a physical activity are complex expressing diversity of each individual.

8. Studies on the application of a methodology oriented towards dynamic communication and Șerbănoiu, S., *The methodology of P.E.*, Printing House Cartea Universitară, Bucharest, 2004.

motivation will have a cumulative-summative effect in physical education lessons.

9. Evolution of motivational factors among preference was different from one individual to another.

10. Attitudes are changing independently of the faculty desire and provides a dynamic communication and motivation for movement.

11. The motivational factors defines communication present in everything we undertake, thus defining a transfer of information positively confirming the hypothesis.

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## DETERMINATION OF SMOKING HABITS OF PHYSICAL EDUCATION AND SPORTS STUDENTS WHO ARE ACTIVELY DOING SPORTS

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### ABSTRACT

For example, in Turkey 133 ( % 50.9 ) of individuals for the first time at the age of 11 and , %13.6 in the previous years at the age of 12 meet to smoke (Yazıcı and Ak, 2006).

#### Objective

The aim of this study is to determinate the smoking habits of physical education and sports students who are actively doing sports.

#### Research methods and procedures

Smoking habit is very common in our country. The work group of study which is an identifying species consisted of 112 university students who play football actively and study at the department of Physical Education and Sports Academy at Karamanoğlu Mehmetbey University.

#### Results

It has been determined that students' smoking starting age average is  $17.53 \pm 2.04$ , and has been smoking for  $4.68 \pm 1.63$  in this study. It has been determined that % 58 of students who participate in the study have the smoking story and %60 of the students is still smoking actively.

#### Discussion and conclusions

It is known that many sports men start smoking in early ages. young people should be prevented from accessing to tobacco, protected from advertising and promotion and these people need to be supported about struggling to give up smoking habits and need to be acquainted about bad habits about smoking.

**Key words:** University Students, Cigarette Data Level, Doing Sports Actively.



## Introduction

Throughout history, people have used harmful substances to enjoy and get clear of distress, excitement, pain and sorrow. These substances have made a person habit and addictive in times. Impaired physical and psychological health of people, important social problems emerged. People have to protect themselves and their environment from these substances. Cigarette habit of society is an important public health issue that concerns all of the people (Herken ve ark., 2000).

According to world health organization data, it is known that in 1990 early, each year 3 million people died because of the smoking, but today all over the world, each year 1.5 million in developing countries, totally 4.5 million people and in Turkey 70-100 thousand people lose their life because of connected to the smoke reasons. According to estimates, it has been reported that in 2030, each year 7 million people (70%) in developing countries, totally 10 million people will lose their lives because of reasons depending on the cigarettes (Karatay an Kubilay, 2004).

Nowadays, cigarettes are in the first place among used addictive substances in the world. Cigarette habit often starts in the adolescent period. 300 million young people in the world is dependent on cigarettes, and one of every five cigarette users is between the ages of 13-15 (Taşçı et al., 2005). In general, in the period of adolescence, age of the beginning to this habit declines until the age of the childhood period. For example, in Turkey 133 ( % 50.9 ) of individuals for the first time at the age of 11 and , %13.6 in the previous years at the age of 12 meet to smoke. (Yazıcı and Ak, 2006).

Smoking habit is very common in our country. According to a research made in 1988 and representing the whole country, 15 years and over 62.8% of men, 24.3% of women, and 43.6% of all population smoke cigarettes.(Taşçı et al., 2005). In this study , smoking habits as a measure "to carry the cigarette package" has been taken; but according to the DSÖ assessment, the smoker to be considered "regular smokers per day to 1" is sufficient (Printer and Ak, 2006) .

Therefore, probably the habit of smoking is even higher than the assets. (Goldberg et al, 1993). Young people towards smoking the risk factors; they are specified as smoking, drinking close friends, parents, siblings or teachers to have a low socioeconomic level, more attractive and modern look for the mistake, depression and anxiety to resolve the path, low school achievement and male gender (Kutlu & Çivi , 2006).

Our country for cigarette consumption is in the third ranked among European countries, is in the seventh ranked among the world countries (Ministry of Health Research). In 1988, the smoking prevalence in men 62.8%, women 24.3%, 43.6% in the population over age 35 in the piar survey carried out on a sample

group which will represent all Turkey have been identified (PIAR).

Risk factors for youth to head smoking: are indicated as parents, siblings or teachers ,best friends who smoke, to have a low socioeconomic level, misconceptions of appearing more attractive and modern, depression and anxiety reduction path, low school performance and male gender (Kutlu and Çivi, 2006). The aim of the study in light of all this information; is to determinate the smoking habits of physical education and sports students who are actively doing sports.

## Methodology

**Type and location of the survey:** Working group of survey which is descriptive type has been made in the Physical Education and Sports School at Karamanoğlu Mehmetbey University in 2008-2009 academic year in the spring semester.

**Working group of the study:** The basis of the study has formed 112 university students who agree to participate in the study, are doing sports actively and are studying in the 1st, 2nd, 3rd and 4th in the Physical Education and Sports School at Karamanoğlu Mehmetbey University.

**Data collection methods and tools:** Datas 2008-2009 academic year spring - term were gathered by with survey method including students' socio-demographic features and smoking cigarette cases and by based on self-report in classroom environment. In sociodemographic characteristics; such as age, where the family lives, which class he or she is studying, parental educational status, father's occupation, family income level and number of siblings questions were asked , in the form which is questioning smoking cases ; such as anyone's smoking status in the family, smoking status, if smoking, starting age to smoke, how long he/she has been smoking, what the reason of starting smoking is, how many cigarettes he/she smokes in a day, what the reason of stil smoking is, and whether or not he/she gives up smoking of questions were asked. Verilerin Analizi: Verilerin analizinde sayı yüzde dağılımları ve t testi kullanılmıştır. Verilerin değerlendirilmesinde SPSS 13.0 programından yararlanılmıştır.

## Limitation of the study

1. Karamanoğlu Mehmet Bey University, physical education and sports college students are limited.

2. It is limited with students doing sport actively.

## Findings

Students' age average who participate in the study is  $22.16 \pm 1.49$ , %6.3 of the students in the 1st class, %24.1 of the students in the 2st class, %42.4 of the students in the 3st class and %26.8 of the students in the 4rt class are studying .%8 of students lives in the village, %20.5 of students lives in the town and %71.4 of students lives in the city .students' family income avarage is  $1490.63 \pm 62.27$ , % 45.6 of their mothers literate / primary school graduates and % 54.4 the



secondary school graduates and above , % 28.6 of their fathers literate / primary school graduates, and also % 71.4 of their fathers secondary school graduates have been found. It has been determined that students' smoking starting age average is  $17.53 \pm 2.04$ , and has been smoking for  $4.68 \pm 1.63$  in this study.

Number	%
<b>Properties smoking in the family</b>	
Yes	65
58.0	

No	47
42.0	
<b>Smoking</b>	
Yes	60
53.6	
No	52
46.4	

It has been determined that % 58 of students who participate in the study have the smoking story and % 60 of the students is still smoking actively (Table 1).

The students' starting to smoke age average who smoke cigarettes is  $17.53 \pm 2.04$ , it has been identified that they have been smoking for  $4.68 \pm 1.63$  years.

Start Smoking Reasons	n	%
Curiosity	6	10.0
Affectation	5	8.3
Sadness, stres	16	26.7
Friends environmental impact	25	41.7
Family environmental impact	8	13.3
To look more mature	-	-
<b>Continue to smoke</b>		
To disperse distress	23	38.3
Not to be alone	-	-
Not putting on weigh	3	5.0
To prove independence	-	-
Recreational effects	34	56.7
To increase attention	-	-

The students daily smoking number has been identified as average  $14 \pm 4$ . While % 14.3 of students who are smoking because of harmful for our health and % 2.7 of students because of being afraid of being ill indicate to think of giving up smoking, % 16.1 of students to get over stres, % 12.5 of students to love smoking and % 8 of students not to see any harmful side of smoking indicated not to think of giving up smoking. who smoke cigarettes expressed that it was dangerous for their healthy while % 2.7 of students are not thinking of determining to give up smoking because of scare of being ill in the future , (n=41) % 16.1 of them

#### Discussion and results

Among sudden deaths in sport in the first ranges are illness depending on smoking. Intensive training and smoking can bring up vital results. (Boraita, 2002).

Ages of starting smoking between 15-19 year-old were found in studies making Yıldırım's in Manisa, Kutlu's and Nail's in Konya, Altıntaş's in Ankara (Altıntaş et al 2006; Kutlu and Çivi 2006; Yıldırım et al 2004). It was found that people had largely started to smoke between 16 and 20 years old in also Bilir's, Ogel's and Demirel's studies (Bilir et al 1997; Demirel et al, 2004). The average age of starting smoking was found to be  $19.63 \pm 4.25$  in Önsöz and his friends' running the studies with smokers who were admitted to Marmara University aculty hospital of Medicine for any reason (Onsoz et al, 2009). It has been determined that students' smoking starting age average



is  $17.53 \pm 2.04$ , and has been smoking for  $4.68 \pm 1.63$  in this study. Age of starting smoking in our study is similar to the literature. Adolescence is a period of increased risk behavior. Smoking during this period is one of common risk behaviors (Feijó and Oliveira 2001).

It has been determined that 58% of students who participated in the study have smoking experinced and %60 of students is still smoking cigarettes actively. The age of smoking is getting smaller In many developed countries. Because of that, the risk of development of various diseases increases depending on smoking on the early years (Goldberg et al 1993; Icle and et al 1992). This means that youngs who develop illness depending on smoking continuously will need to get treatment for a long time and will increase the cost of smoking related diseases (Haustein, 2006). Again it has been determined that 58% of students who have smoking people in their family and %60 of students is still smoking cigarettes actively. It has been determined that friends environment is among starting smoking reasons in the first range (41.7), sadness/stres is in the second range (%26.7), family environment is in the third range(%13.3) and curiosity is in the last period (%10.0). Students should be very careful to choose friends in high school and university, if parents are more sensitive and careful for this subject ,they may prevent from getting bad habits. Students should be required to be taught about the negatives effects of smoking. even if people who are especially models for young people in society (such as artists, athletes ...) smoke cigarettes, they should not smoke in front of society encouranging young people. Even if parents smoke cigarette, they absolutely must not use tobacco next to the children in the house . It has been found that people should need to be given information smoking and harmful effects.

It is known that many sports men start smoking in early ages. young people should be prevented from accessing to tobacco, protected from advertising and promotion and these people need to be supported about struggling to give up smoking habits and need to be acquainted about bad habits about smoking.

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## THE DETERMINATION OF THE PHYSICAL EDUCATION AND SPORTS ACADEMY STUDENTS' INFORMATION, OPINIONS AND THOUGHTS ABOUT USING DOPING WHO ARE INTERESTED IN FOOTBALL AND SPORTS DIVISION

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### ABSTRACT

Doping is defined as Sportsmen during the competitions with the aim of increasing physical and mental performance prohibited by "International Olympic Committee (IOC) or used substances or methods by sportsman consciously or unconsciously.

### Objective

This study is planned for the aim of determining of the physical education and sports academy students' information, opinions and thoughts about using doping who are interested in football and sports division.

### Research methods and procedures

The identification study was made at Karamanoğlu Mehmetbey University at fall term in 2008-2009 education-training year 100 university students who agree to participate in study, are interested in football and sports division and study in 1st, 2nd, 3rd and 4th class of Physical Education And Sports Academy at Karamanoğlu Mehmetbey University and Selçuk University, composed the creation of study.

### Results

% 18 of the students is girls and % 82 of the students is boys having participated in the study. Students' age average is  $21.83 \pm 1.62$ , and % 67 of the students study at Karamanoğlu Mehmetbey University and % 33 of the students study at Selçuk University and the department of physical education and sports.

### Discussion and conclusions

When students' opinions and ideas are examined about using of doping of students in football industry, it was found 19 % of students have no enough information about doping. 23 % of the students have expressed the most stimulating substances used in the sports. While 85 % of the students express that doping means that a substance hazardous to health when, % 49 narcotic analgesic is used most in sports, and % 21 the most in sports is used to express Anabolic steroids have androgenic. It should be noted that the easy and healthy way to improve performance, and regular and proper training, adequate rest, proper motivated violence, adequate and balanced diet and sports activity is the scientific approach in all stages.

**Key words:** Football, University Students, Doping.

### Introduction

Sports which is a communication and information age today, is an activity for people to have a good time and to maintain a healthy life, and also it is an activity for some people to make it profession by taking time and to get the financial earnings. It is inevitable for sports that has a broad audience and makes financial gain by adding (Karahan 2002). Therefore, sportsmen beyond win the performances with the training, have directed to use some matters, materials and some applications which affect the result of the game in sports competitions which are major goals to win (Kurdak, 1996).

Doping is defined as Sportsmen during the competitions with the aim of increasing physical and mental performance prohibited by "International Olympic Committee (IOC) or used substances or methods by sportsman consciously or unconsciously.

Doping both prepares ground for unfair competition, and discomposes health of sportsmen as a short and long term and even is against sports ethics due to the cause of the possible risk of death. For these reasons, WADA doping prohibited by the international sports organizations such as International Olympic Committee (IOC), FIFA, UEFA, Fiba, IAAF (WADA, 2002).

Almost all of doping substances cause short or long term side effects in the body. It is known that especially like male sex hormone substances which are mostly used by sportsmen cause such as the heart of the crisis, the good and bad-tempered tumor formation, liver dysfunction, infertility illnesses. Some of the athletes who use these substances are known to have died during the sport of life or after leaving the sport because of the use of these substances because of diseases (DiCecco, 2002; Strauss, 1987). Many athletes



can try to improve their performance to achieve more than get from their own efforts (Steben and Bourdeux, 1972).

Therefore, dietary contributions which improve work performance and ergojenik supports or making a research for materials are as old as sport itself (Straus, 1985; Williams, 1992). It has been known for BC 500-400 years Such as deer liver and the lion heart, some parts were consumed by athletes and warriors in the hope of the courage, speed or giving the energy (Straus, 1985; Williams, 1992). It is accepted that emerging negativeness depending on using doping is known by athletes (Farnaz 1998).

However, Insisted on using doping is thought to be the irresistible charm, attraction of the records and victories, getting trade of sports more and more and increasing a tight relationship between doping and professionalism step by step. Interest and motivation against doping emerge as one another factor caused by social and economic rewards, increasing of the sport every day and not comparable with nothing. while footballers' team level and uniform of love are making them successful in sports, their lack of knowledge and laziness of training or preparing for a competition, going into the quest for variety to achieve success of athletes more quickly cause increasing the interest of the doping (Hincal & Dalkara 1991). This study is planed for the aim of determining of the physical education and sports academy students' information, opinions and thoughts about using doping who are interested in football and sports division.

### Methodology

**Type and location of the survey:** The identification study was made at Karamanoğlu

Mehmetbey University at fall term in 2008-2009 education-training year.

**Working group of the study:** 100 university students who agree to participate in study, are interested in football and sports divition and study in 1st, 2nd, 3rd and 4th class of Physical Education And Sports Academy at Karamanoğlu Mehmetbey University and Selcuk University, composed the creation of study.

**Data collection methods and tools:** Study data was gathered by survey method that leant against self-declaration of participants. In the survey form some questions which are specific to interrogation of socio-demographic features;\_age, sex, studying university, how many years they do sports, who effectively directs them to do the sports a knowledge form which is leant against measuring knowledge level about doping were asked about using doping and questions to the students.

**Data Analysis:** The number percentage distribution and t-test were used in the data analysis. Evaluation of data was made use of SPSS 13.0 programme.

### Limitation of the study

1. Karamanoğlu Mehmetbey University, physical education and sports college students are limited.
2. With people doing sports actively is limited.
3. With students being interested in branch of football is limited.

### Findings

University students' socio-demographic properties who are doing actively sports and are interested in branch of football sports are researched below. **Table 1. Students' socio demographic properties' distribution**

Properties	AV./SD	
Age	21.83±1.62	
	n	%
<b>Sex</b>		
Girl	19	19
Boy	81	81
<b>University</b>		
Karamanoğlu Mehmetbey University	67	67
Selcuk University	33	33
<b>Sports doing status</b>		
1-3 year	27	27
4-7 year	35	35
8-11 year	15	15
12-15 year	23	23
<b>The reason of ling.dative</b>		
With his or her own wish	62	62
With his or her friend	13	13
Media	7	7
Phsical Education Teacher or trainer	18	18



% 18 of the students are girls and % 82 of the students are boys having participated in the study. Students' age average is  $21.83 \pm 1.62$ , and % 67 of the students study at Karamanoğlu Mehmetbey University and % 33 of the students study at Selcuk University and the department of physical education and sports. It has found that % 27 of the students has done sport for

1-3 years, % 35 of them for 4-7 years, % 15 of them for 7-11 years and % 23 of them for 12-15 years. And they have indicated that students' tends to the sport is via % 62 by own attention, % 13 intervention of family and friends, % 7 media and % 18 the physical education teacher and trainer (Table 1).

**Table 2. The distribution of Students' knowledge, opinions and ideas about using the doping.**

QUESTIONS	Yes		Partially		No		Overall
	n	%	n	%	n	%	
Do you have enough information about doping?	19	19	24	24	57	57	100
The stimulative things are mostly used.	23	23	27	27	50	50	100
Is Doping harmful to health?	85	85	12	12	3	3	100
Narcotic analgesics are mostly used in sports.	49	49	28	28	23	23	100
Anabolic androgenic steroids are mostly used in sports	21	21	65	65	14	14	100

When students' opinions and ideas are examined about using of doping of students in football industry, it was found 19 % of students have no enough information about doping. 23 % of the students have expressed the most stimulating substances used in the sport. While 85 % of the students express that doping means that a substance hazardous to health when, % 49 narcotic analgesic is used most in sports, and % 21 the most in sports is used to express Anabolic steroids have androgenic (Table 2).

#### Discussion and results

When our research results are explored, while the proportion of students who are interested in branch of football and are doing sports, saying that we have enough knowledge about using doping was found % 19, the proportion of students saying that we don't have enough knowledge about doping was found % 57. While the proportion of students saying that it is the most using stimulants at sports was found %23, the proportion of students saying that it is not the most using stimulants at sports was found %50. While the proportion of students thinking that doping is harmful was found % 85, the proportion of students thinking that doping is not harmful was found % 3. While the proportion of students saying that it is the most using narcotic analgesics was found % 49, the proportion of students saying that it is not the most using narcotic analgesics was found % 23. While the proportion of students saying that it is the most using anabolic androgenic steroids at sports was found % 21, the proportion of students saying that it is not the most using narcotic analgesics at sports was found % 14.

It was determined that students, who are interested in branch of football and are doing sports actively, have no enough knowledge about doping in our research. % 83 of the students who participated in the

research saying that doping is insanitary is a positive result. Stimulants are used to increase the performance at sports. Increases % 0.6-1.2 at swimmers and % 1.5 at runners, increasing % 3-4 performance with the using of amphetamine (stimulant) at footballers in a study done were taken notes (Ariens 1965). Trainers, physical education teachers, sports managers and federational athletes should be absolutely informed about doping, observed the athletes' performance changes well and should be prevented from getting in the habit and neediness. Yıldırım (2001) compared with doping using inclinations between amateur and professional footballers. It was found that using doping was not common inclination and not becoming different between amateur and professional footballers meaningfully in his study. Consequently, he found that footballers' doping using levels were not enough.

It should be noted that the easy and healthy way to improve performance, and regular and proper training, adequate rest, proper motivated violence, adequate and balanced diet and sports activity is the scientific approach in all stages.

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## RESEARCH ON THE BIOMOTRIC POTENTIAL OF FIRST YEAR STUDENTS – HAVING AS SPECIALIZATION THE KINETOTHERAPY AND SPECIAL MOTRICITY

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### Abstract

The research has as aim to evaluate the biomotric potential of female students admitted in the 1<sup>st</sup> Year to the specialization of kinetotherapy and special motricity. It will be a sound database allowing to analyse during a long period various aspects related with the evolution of the biomotric potential, to examine tendencies in this student category and to intervene, by proper means, to ameliorate what was noticed. In the anthropometric area there were registered two measurements and in the motric area, 7 tests. This transversal confirming research started in 2007- 2008 university year, so we got yet, after two tests, a partial evaluation of the results.

**Key words:** biomotric potential, transversal research, examined tendency.

### Introduction

To know the biomotric potential represents a necessity for the teaching staff working with the research subjects. The age of our candidates goes from the precocious maturity, between 18 - 30 years to the medium maturity, between 30 – 50 years. For a no trained grown person from the first category, it's a period in which the motor performance capacity has a relative conservation, but it's possible to find some regression, specially in the speed quality and for a trained athlete it's the period of the best performances in most sports. The second age category has as characteristic feature a progressive decrease of the performance in the areas of coordination, speed and resistance while the strength is better conserved. Must be mentioned the admittance into our Faculty requires also a medical certificate specifying „able for physical efforts”.

### Methodology used in the research

The **aim** of the research was to evaluate the biomotric potential of female students of the first year, in the speciality of Kinetotherapy and special motricity.

**Subjects:** in all 216 female students (99 admitted in 2007-2008 university year and 117 in 2008 - 2009).

**Research methods:** study of specialized literature, statistical and mathematical analysis, confirming study, graphic representation.

#### Evaluation tests:

In the **anthropometric area:** measurements of height and mass

In the **motor area:** have been used 7 tests:

a. Speed: - shuttle, 2 x 20 m.

b. Endurance strength:

- arms strength – push-ups and tractions, in hanging position on a fixed scale.

- abdominal strength - lifting the trunk in supine position, 30 s.

- back muscles strength - lifting the trunk in prone position, 30 s.

c. explosive strength - upper legs detent - vertical impulseless jump

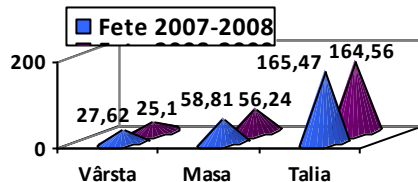


d. general co-ordination - Matorin test.

## Research data and results

### 1. Comparative analysis of ages, mass and heights

Table 1 Comparative representation of the students medium age, body weight and heights (fete = girls; varsta = age; masa = mass; talia = height)

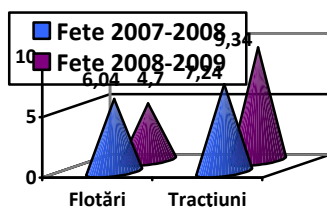


The medium age of females students was 27 years in 2007 and 25 years in 2008. it means they interrupted their studies, probably to find a job allowing to follow high schools. Concerning the height and body weight the figurers are approximately equal to the national statistics data, but we can see the 2008 - 2009 group has less body weight (56.24 kg) than the previous group (58.61 kg).

### 2. Comparative analysis of push-up and tractions average

#### Table 2 Comparative representation of average push-up and tractions

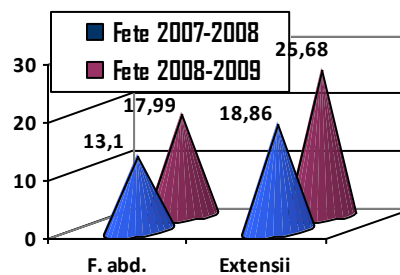
(Fete = girls; flotari = push-ups; tractiuni = tractions)



Regarding the arms muscular strength, data show a better tendency among 2007 female girls (6) than 2008 group (4), but generally speaking it is a weak one. In the case of tractions, the 2008 female students has a better evolution than 2007 group. Traction were made hanging on a fixed stair.

#### 1. Comparative analysis of average abdominal strength and back strength .

Table 3. Comparative representation of average abdominal strength and back strength

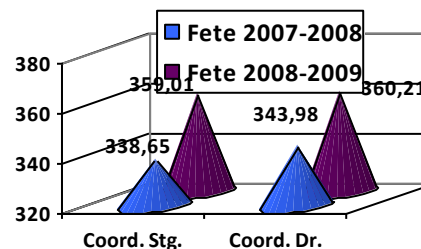


When tested the abdominal and back muscular strength, the differences between the two groups were bigger and in favor of the younger female students (2008 group). So, the number of repetitions, at abdominal strength, was 18, in the 2008 group and 13 in the 2007 group and the trunk liftings, from supine position, were 18 against 13, in favour of the same 2008 group.

#### 2. Comparative analysis of the average general co-ordination

Table 4 Comparative representation of the average general co-ordination

(fete = girls; coord.st. = left co-ordination; coord.dr. = right co-ordination)



As concerns the co-ordination the values show a better tendency among the female students tested in 2008, which are 2 years younger than the 2007 female students, but the values are small ones as the co-ordination has a hereditary ground and it is significantly affected by the lack of training. We could see, in the left co-ordination, the 2008 group had 359 degrees, instead of 338 in 2007 group and in the right co-ordination the figure were 360 degrees for 2008 group and 343 for 2007 group.

#### 3. Comparative analysis for average detent and shuttle

Table 5. Comparative representation of average detent and shuttle.

Tests of detent show a small difference between the two groups of female students (24 cm. for the students tested in 2007 and 31 cm. for the tested in 2008). The data are better for the younger students and in the tests on the speed, in the shuttle event, the values were almost equal, but in any case they show a lack of training for all students.

## Conclusions

The data we got during the research made evident the present situation of the biometric potential of female student having as speciality Kinetotherapy and Special Motricity, proving the lack of physical exercises for many years. Such test also allows us to select the working groups. In any case, it would not be possible to rectify during the practical lessons the registered deficiencies. Knowing the biometric potential of students it will allow to reorganize the means for every sport discipline, so the students could be evaluated preponderantly in the methodical area and less in the performance area.

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### KINETOTHERAPY FEMALE STUDENTS, FIRST YEAR, 2008-2009 CENTRALIZING TABLE with STATISTIC INDICATORS by TESTS

Statistic indicators/tests	Age (years)	Mass (kg)	Stature (cm)	Trunk liftings (repetitions)	Trunk extensions (repetitions)	Tractions (repetitions)	Push-ups (repetitions)	Detent (cm)	Coord. left (°)	Coord. right (°)	Shuttle (s)
N	99	99	99	99	99	99	99	99	99	99	99
N.max.	53	80	180	38	39	23	19	45	470	470	7,49
N.min.	18	38	150	2	5	0	0	0	180	180	4,98
Amplitude	35	42	30	36	34	23	19	45	290	290	2,51
Average	27,62	58,81	165,47	13,10	18,86	7,24	6,04	24,71	338,65	343,98	5,94
Standard deviation	10,04	8,13	5,90	5,94	9,27	5,94	5,26	9,017	36,85	37,71	0,75
Variability coefficient	36,35	13,83	3,56	45,40	49,18	82,12	87,15	36,48	10,88	10,96	12,70

### KINETOTHERAPY FEMALE STUDENTS, FIRST YEAR, 2007-2008 CENTRALIZING TABLE with STATISTIC INDICATORS by TESTS

Statistic indicators/tests	Age (years)	Mass (kg)	Stature (cm)	Trunk liftings (repetitions)	Trunk extensions (repetitions)	Tractions (repetitions)	Push-ups (repetitions)	Detent (cm)	Coord. left (°)	Coord. right (°)	Shuttle (s)
N	117	117	117	117	117	117	117	117	117	117	117
N.max.	48	86	183	30	38	20	20	55	540	450	7,35
N.min.	18	40	150	0	0	1	0	15	270	270	3,29
Amplitude	30	46	33	30	38	19	20	40	270	180	4,06
Average	25,10	56,24	164,56	17,99	25,68	9,34	4,70	31,21	359,01	360,21	6,04
Standard deviation	7,73	8,45	6,17	4,94	6,21	4,47	3,86	7,06	33,23	26,50	0,46
Variability coefficient	30,81	15,03	3,75	27,49	24,19	47,91	82,28	22,64	9,25	7,35	7,69



## STUDY REGARDING QUALITY OF LIFE CHANGES AT YOUNG OBESES AFTER A PHYSICAL TRAINING INDIVIDUALIZED PROGRAMME AND NUTRITION COUNSELLING

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### Abstract

Our main **objective** in this study is to increase the life quality of young obese subjects by improving their physical appearance and psychic comfort consecutive to lowering body weight.

### Materials and Methods

The study group was formed by 35 students. The including criteria are: age between 18 and 25 years ( $19,3 \pm 2,1$  years), body mass index over 30 ( $32,5 \pm 2,1 \text{ kg/m}^2$ ) and absence of any pathology that prohibits the physical effort.

The evaluation protocol consist in: somatometric examination, ergospirometric analysis, quality of life evaluation (with MOS SF-12 scale, the World Health Organization Quality of Life Scale - WHOQOL and Beck Depression Inventory - BDI; we established the particularities of an individualized physical training programme based on ergospirometric analysis, therefore the physical effort was done mostly in the corresponding area for maximum consumption of lipids (preponderent we used an intervals training programme). Also, the subjects benefits of nutrition counseling. The re-evaluation was made after 6 months.

### Results

After 4 months, we obtained the decrease of body weight with  $10,4 \pm 3,6 \text{ kg}$  ( $p < 0,05$ ), decrease of BMI with  $5,2 \pm 2,7 \text{ kg/m}^2$  ( $p < 0,05$ ), increase of quality of life with  $20,6 \pm 4,7$  ( $p < 0,001$ ) for MOS SF-12 scale,  $16,2 \pm 5,2$  ( $p < 0,001$ ) for WHOQOL scale and, by BDI evaluation, we obtained an important change from moderat and mild depression signs ( $16,5 \pm 4,7$ ), to minimal or inexistent depression signs ( $7,2 \pm 2,9$ ) meaning a very significant change ( $p < 0,01$ ).

### Discussion and conclusion

The goal of this study - the reduction of the selected subjects' body weight at levels closer to the optimum correlated with the improvement of the eating and physical activity and an important impact on their quality of life was reached till this point of the study.

**Key words:** obese, individualized physical training programme, quality of life.

### Background

Recent years have witnessed a dramatic rise in the prevalence of obesity worldwide, stimulating interest in the health and quality of life consequences of this phenomenon. It is clear that obesity confers negative consequences on both the physical and psychosocial aspects of quality of life, especially among the severely obesese. The effects of weight loss appear to be favorable, although few studies have examined non-surgical interventions. Numerous studies have demonstrated that obese persons experience significant impairments in quality of life as a result of their obesity, with greater impairments associated with greater degrees of obesity. Until recently, there has been little standardization of quality of life measures in obesity (J. Haomiao, E. Lubetkin, 2005), (R.L. Koloitkin, K.Meter, G.R. Williams, 2008).

### Aim

Our main objective in this study is to increase and to assess and to increase life quality of young obese subjects by improving their physical appearance and psychic comfort consecutive to lowering body weight and body mass index.

### Research materials and methods

The study group was formed by 35 subjects selected among the students of West University of Timișoara. The including criteria are: age between 18 and 25 years ( $19,3 \pm 2,1$  years), body mass index over 30 ( $38,45 \pm 5,1 \text{ kg/m}^2$ ) and absence of any pathology that prohibits the physical effort.

The evaluation protocol has meaned: somatometric examination (consisting in measurement of weight, height, limbs and trunk perimeters), ergospirometric analysis, quality of life evaluation (with the World Health Organization Quality of Life Scale – WHOQOL100 and Beck Depression Inventory – BDI);

After a baseline complete assessment, we established the particularities of an individualized physical training programme based on ergospirometric analysis, therefore the physical effort was done mostly in the corresponding area for maximum consumption of lipids (preponderent we used an intervals training programme). Also, the subjects benefits of nutrition counseling. The re-evaluation was made after 6 months.

The World Health Organization Quality of Life Scale (WHOQOL-100) is a generic, patient-completed

measure of health-related quality of life. It is focused around the definition of quality of life advocated by the World Health Organization, which includes the culture and context which influence an individual's perception of health; includes 100 question about: overall quality of life and general health, physical health, psychological health, level of independence, social relation, environment and spiritual/religion and personal beliefs (McDowell I., 2006). Beck Depression Inventory (BDI) is a 21-question multiple-choice self-report inventory, one of the most widely used instruments for measuring the severity of depression, which is a relative common problem associated to morbid obesity (Beck A. T., D. Guthy D., Steer R. A. and Ball R., 1984), (Beck A. T., Steer R. A., Garbin G. M. 1988).

### Results and discussions

After 6 months, we obtained the decrease of body weight with an average of 10,4 kg (figure 1), from a baseline average value of  $93.54 \pm 7.2$  kg to an average value of  $83.14 \pm 5.3$  kg after 6 months ( $p < 0.05$ ) and a similar decrease of BMI with  $5.2$  kg/m<sup>2</sup> (figure 2), from  $38.45 \pm 4.6$  kg/m<sup>2</sup> to  $32.86 \pm 5.23$  kg/m<sup>2</sup> ( $p < 0.05$ ); quality of life improvement was pointed out with an increase of 90 points for WHOQOL-100 scale (figure 3), from a baseline mean score of 365 points to a final evaluation mean score of 455 points ( $p < 0.001$ ); considering this score, the most relevant changes were regarding the domains of overall quality of life and general health, psychological health, social relations and environment ( $p < 0.001$ ); also, the physical health was improved significantly ( $p < 0.01$ ); the level of independence and spirituality or personal beliefs was unsignificantly changed because these domains are not specifically affected at young obeses of this group (figure 4).

By BDI evaluation (figure 5), we obtained a very significant change ( $p < 0.01$ ), from baseline BDI mean score  $16.5 \pm 4.7$  to  $7.2 \pm 2.9$  after 6 months.

The statistical analysis was made by applying paired t test and Pearson coefficient evaluation, using Microsoft Office Excel 2003 software; the results are presented in tables 1 and 2. There are found reverse and strong correlations between decreased body mass and, especially, body mass index and WHOQOL-100; we find also direct and strong correlations between decreased body mass and, especially, body mass index and BDI scores.

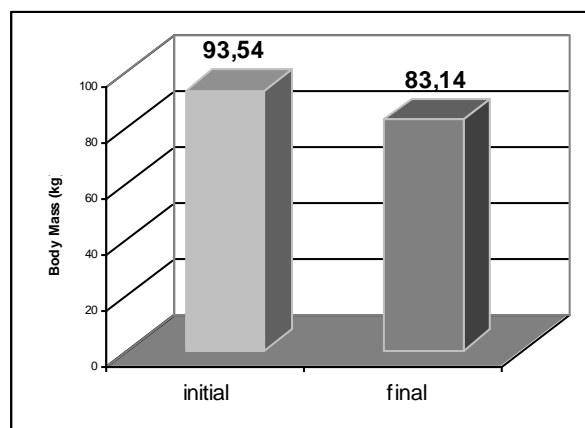


Figure 1. Body mass evolution at study group

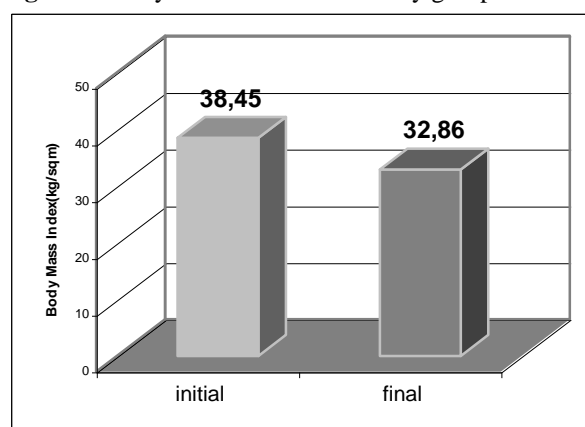


Figure 2. Body Mass Index evolution at study group

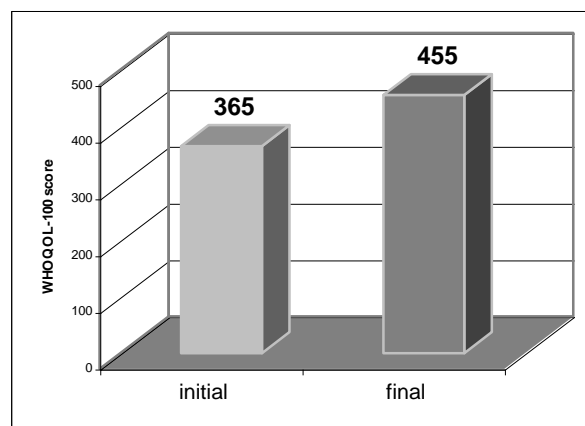


Figure 3. WHOQOL-100 score evolution at study group

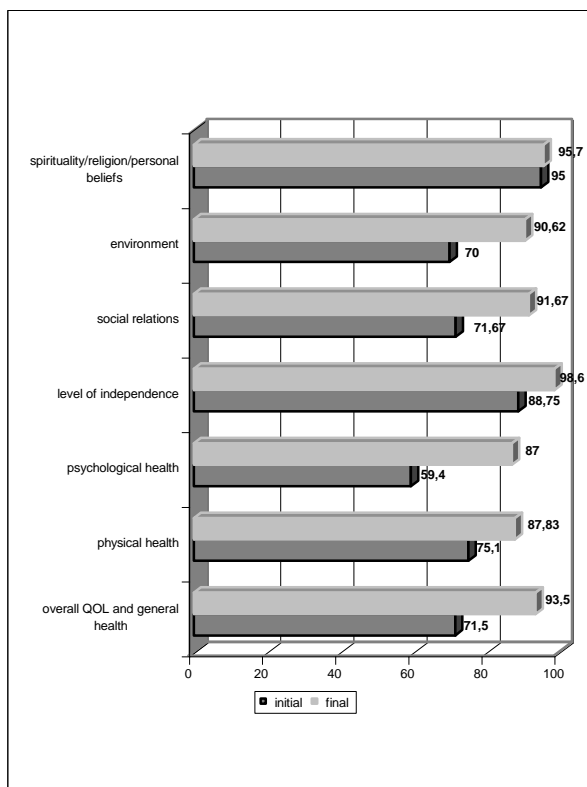


Figure 4. WHOQOL-100 score by domains at study group

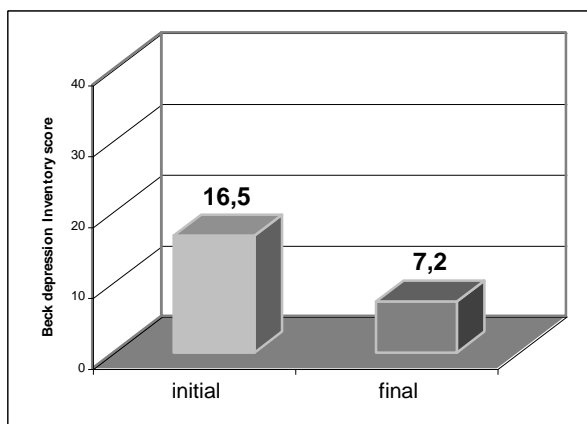


Figure 5. BDI score evolution at study group

Table 1. Statistical analysis of the study results – paired t test

Variables	Baseline	After 6 months	Change	p
Body Mass (kg)	93.54 ± 10.7	83.14 ± 6.6	↓ 10.4	<0.05
BMI (kg/m <sup>2</sup> )	38.45 ± 4.6	32.86 ± 5.23	↓ 5.2	<0.05
WHOQOL score	365 ± 24	455 ± 32	↑ 90	<0.001
BDI score	16.5 ± 4.7	7.2 ± 2.9	↓ 9.3	<0.01

Table 2. Statistical analysis of the study results –

Variables	Pearson coefficient	
	WHOQOL-100 score	BDI score
Body Mass	r=-0,78	r=0,75
Body Mass Index	r=-0,83	r=0,86

### Conclusions

The goal of this study - the reduction of the selected subjects' body weight at levels closer to the optimum correlated with the improvement of the eating and physical activity followed by an important impact on their quality of life was reached till this point of the study.

The body mass and body mass index of the study group was significantly lower after 6 month of physical training programme and diet comparing to the baseline values of these parameters.

Quality of life assessed with WHOQOL-100 questionnaire was significantly improved reported to baseline values.

BDI scores calculated for our subjects shows moderat and mild depression signs (frequently present at this kind of people); we noticed a very important progress regarding depression signs which are minimal or inexistent after 6 months.

We conclude that the quality of life of obese individuals is an important issue that should be included in weight management treatment and research.

Future studies would be enhanced by assessing a variety of approaches to weight loss by using both general and obesity-specific measures of quality of life and conducting follow-up studies to assess the effects of weight regain on quality of life.

### Acknowledgements

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## CRITERIA, WAYS AND TESTS FOR SELECTING THE STUDENTS FOR THE REPRESENTATIVE HANDBALL TEAM, IN THE NON-SPORTIVE FACULTIES

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### Abstract

The initiation of students in the practice of handball has in view to equip them with skills that are useful for organizing an independent activity, necessary for keeping and improving the health condition, which is one of the main objectives of physical education, as well as their selection for the faculty or university team.

**Keywords:** selection, tests, students.

### Introduction:

The present day high level sportive performance imposes an optimization of the present selection system, especially its applicative component. (Alexe N., 1999). In order to have a guarantee of obtaining certain sportive successes, we need to precisely identify the gifted individuals as early as primary school, using scientific methods with an interdisciplinary character. (Colibaba D., Bota I., 1998)

### Research hypotheses

Starting from the clear analysis of the recorded data and from the study of specialized materials, this research sets to find viable arguments regarding the necessity of university representative handball teams.

These ideas lead me to this research, considered to be of a particular importance, being able to contribute to the improvement and increasing performances in university handball, nationally and even internationally.

Thus, conducting this research, I have established the following working hypotheses:

- Spotting of students that can be selected for the non-sportive faculties' representative teams and the way in which they can be selected;
- The selection of university representative handball teams is a necessity for academic and competitive sports.

In order to find out what are the real problems the non-sportive faculties' handball teams confront with, I have conceived a series of tests that are specific to the handball game, for a better selection.

Together with other selection criteria, I have managed to approach this problematic in much clearer way.

The students that were subjected to these tests were previously selected, remaining only the ones with true aptitudes for this discipline and for sports in general.

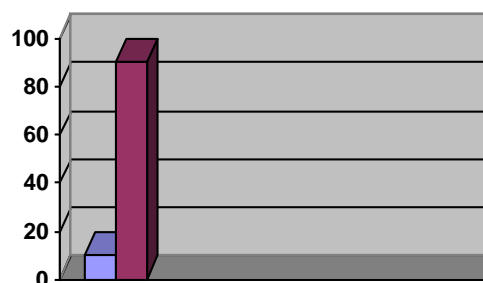
This series of tests was applied to several groups of students attending non-sportive faculties, thus I could observe their ability of being rightly selected or not for a representative handball team.

1.	10x30	4,0s
2.	Pole dribbling (30 m)	5,9s
3.	Triangle movement	15,2s
4.	Distance shooting	61m
5.	Cooper test	3100 m
6.	Deca jump	30m

This next table presents the percentage of the students that have succeeded to meet the criteria for obtaining good results at the tests they participated.

Number	Test	Yes	No
1.	10x30	10	90
2.	Pole dribbling (30 m)	5	95
3.	Triangle movement	8	92
4.	Distance shooting	15	85
5.	Cooper Test	9	91
6.	Deca jump	7	93

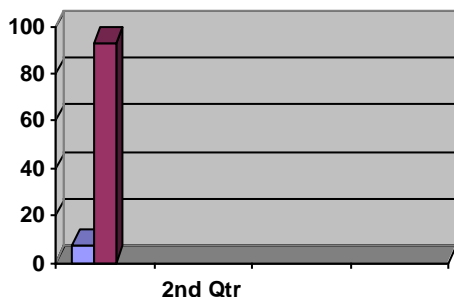
At test no. 1 the students who realized a good score had a proportion of 10%, the rest not being able to fit the standards.



Test number 1: 10x30 m

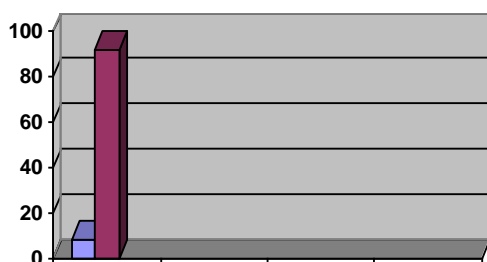
Nu mb er	Test	Time / Dista nce
1.	10x30	4,0s
2.	Pole dribbling (30 m)	5,9s
3.	Triangle movement	15,2s
4.	Distance shooting	61m
5.	Cooper test	3100 m
6.	Deca jump	30m

At test no. 2 the students who realized a good score had a proportion of 5%, the rest of 95% not being able to fit the standards.



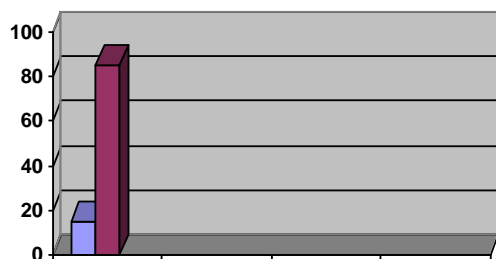
Test number 2: Pole dribbling (30 m)

At test no. 3 the students who realized a good score had a proportion of 8%, the rest of 92% not being able to fit the standards.



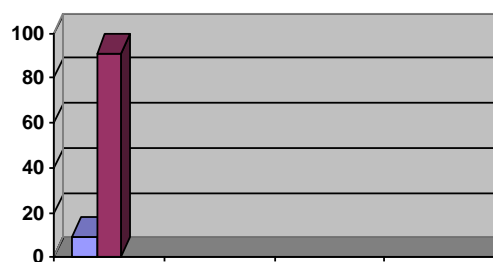
Test number 3: Triangle movement

At test no. 4 the students who realized a good score had a proportion of 15%, the rest of 85% not being able to fit the standards.



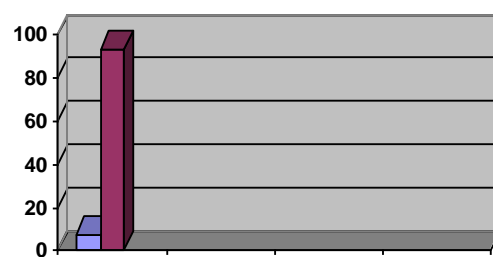
Test number 4: Distance shooting

At test no. 5 the students who realized a good score had a proportion of 9%, the rest of 91% not being able to fit the standards.



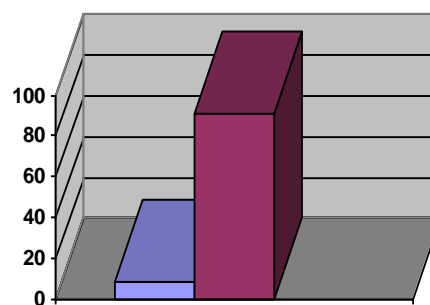
Test number 5: Cooper Test

At test no. 6 the students who realized a good score had a proportion of 7%, the rest of 93% not being able to fit the standards.



Test number 6: Deca jump

For a better representation of the students who have passed the tests, I have made a statistical analysis that shows their percentage.



We can clearly see through the chart method that the number of students that have passed these tests is 9% of the total students subjected to these drills.

### Conclusions

After collecting the information, their analysis confirms the initial hypothesis, the spotting of students that can be selected for the non-sportive faculties' representative teams and the way in which they can be selected;

We can say that during a selection, at non-sportive faculties, we can find certain individuals that meet the criteria for practicing this sport and, thus, they can be selected for the representative team of the faculty.

Also, the small number of students with clear aptitudes for this sport indicates the fact that the



students with real skills are already oriented towards the competitive sport and have a career trajectory that is oriented towards it, because they are physical education and sports students. We cannot neglect the fact that among the non-sportive faculties' students there are some with real skills, and are professional athletes, but have chosen a career other than competitive sport.

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## ABOUT QUALITY IN HIGHER EDUCATION

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#### Abstract:

A quality service is one which fulfils a set of demands and rules according to a standard and especially according to the internal and external client's expectations. Reaching these goals implies also a new relationship between the service provider and the beneficiary. As a consequence, in educational system is expected also a change regarding the improvement of the educational offer, the educational context, the quality of the human resources and the relationship between teacher and student. We might know if the educational service we provide is a corresponding one through measurements, statistics and objective data. This allows comparisons and classifications among the educational institutions and they prove the evolution in time also. The progress must be the main criteria for all the decisions, actions and process involved in higher education teaching.

#### Methods:

Willing to collect information related to the student's satisfaction, I did work out a 10 items questionnaire. It was applied to 142 students in all 10 faculties of our university, and covers all kind of physical education and sports activities. The questions are related with a large range of teaching aspects: planning, teaching relationship and environment, effects, results, or student's preferences.

#### Results:

The subjects of our research had the possibility to chose the most correspondent answer with there opinion from 4 possibilities: 2 of them with positive and 2 with negative sense. Then we calculated the balance in percentage between the appreciative and the non appreciative answers and underlined this balance in a graphic form. The procentaje of positiv answers is situated between 75% and 97%.

#### Discussions and conclusions:

Considering this high scores, we conclude that our Physical Education and Sports Department activity aim to fulfil the students needs and to respect there preferences and particularities. Discussing about which problem, separately, our team will can focus on those aspects that are not yet in the highest level of our students apreciation. In the same time this data prove that the QSM requests, related to the client satisfaction, are accomplished.

**Key words:** Quality, management, physical education, higher education.

#### Introduction

The competition in higher education is more interesting in this economical crisis when all universities, public and private institutions, are struggling for resources. The competitive environment sanctions a quality low level through decreasing the student's number, clients, sponsors and the resources which they bring.

A quality service is one which fulfils a set of demands and rules according to a standard. Reaching these standards implies also a new relationship

between the service provider and the beneficiary. As a consequence, in educational system is expected also a change regarding the improvement of the educational offer, the educational context, the quality of the human resources and the relationship between teacher and student. The educational, medical or social service quality can be appreciated only of the beneficiary of this service, not of the provider.

Quoting Prof. Dr. N. Drăgulănescu (2000) in Romania the obstacles against Communitarian Aquis apply is coming from the cultural area: mentalities,





prejudices, attitudes and counterproductive behaviors. All this can generate a massive reluctance to change.

The continuously improvement must be a permanent task in quality domain. The organizational experience helps them to prevent the mistakes instead to found solutions after the problems appear.

The manager is formally responsible about quality, but at the same time it is the responsibility of all those involved in the educational process. The attention for recruiting educated and valuable teachers is a condition for evolving and creating also a valuable working force for society. The fact is just a few valuable elements are really motivated to teach in the Rumanian educational system.

### Content

How do we know if the service we provide is a corresponding one? Through measurements, statistics and objective data; this allows comparisons and classifications among the educational institutions. This kind of data can be shown in graphics and offers a clear image of the performances evolution. The progress must be the main criteria for all the decisions, actions and process.

The team is the most important quality manager. This idea replaces concepts like professional autonomy and collegiality with team work and working in a common purpose: the quality of educational offer. Considering the tradition and the organizational culture solidity of our schools, this concept will be, in my opinion, difficult to root soon.

Applying the quality management system (QMS) has the purpose to win the public's confidence in the university's capacity to supply exclusively quality services. These services include vocational education, instruction, training, research, project design, consulting, and so on. Wining the trust in these immaterial products, which include knowledge and competences, has targeted two categories of customers:

-I – internal customers of the university represented by the students, who provide, together with the teaching staff, technical-administrative staff and managers, the internal quality;

-II – external customers (business entrepreneurs - the future employers of the graduates) and other partners interested in the university activity (the state, the community and the local administration, the national and international academic authorities, stock holders, the purveyors, and so on) who provide the external quality.

The universities partner's interests must be known and satisfied on long term, as much as possible. As a part of a society which is quickly developing, the university has to adjust to the changes of the labor market and the demands of the European Union integration, so that its services can satisfy the needs, the demands and expectations of the customers and partners in the rhythm that those evolve. The QMS is oriented towards the performances and the maximization of the performances of an organization,

which involves a ceaseless improvement of this system. One of the characteristics of the QMS is that it can't be maintained long time at the same level, it either improves either losses from its efficiency and effectiveness.

Beside the ceaseless improvement, the growth of the institution's credibility on the market can be obtained through:

- I – comparative testing of the supplied services and publishing the results or the classification issued in this way. Publishing the list with the first 500 universities in the world, by the performance criterion, in which none of the Romanian superior study institutions could be included, is a real and painful example at the same time. The classification of the international sport forums are a credible source of data regarding the rank in which a sportsman, a national or club team is in a certain moment. The classification in the top of these hierarchies give credibility and prestige to the national schools, the coaches, sportsmen and so on, but rarely represent the measurement of the institution's quality in which these performances are produced. The Romanian sport, as a general effect, is more of a "court of miracles", than an example of orientation towards the quality of the involved processes. The insufficiency of the material and sometimes informational resources is replaced by the quality of the human resources (sportsmen and coaches) whose intensive usage has irreversible repercussions.

- II – the certification of the services or quality management systems by a certified authority (a third party). Obtaining the quality certification is for the partners of an organization a guarantee that the services provided fulfill the demands stipulated in the standards. For the sports ground and the health centers, an additional certification of the functional environment management system (ISO 14001: 2005) brings more safety for the health of the sportsmen, pupils, students, patients. I'm referring to the quality of the air, water, illumination, safety in the use of the installations and materials and in general in all the aspects that can assure the comfort and prevention in the wounding of the users.

The system of reference for the quality management and assurance is included in the international standards of quality in the series SR EN ISO 9001: 2001. The audit has the purpose to evaluate the degree of conformability of the developed activity in the university on the line of quality with the requests of this system of reference, but also with the laws for higher education.

The first principle that the QMS states, is the focalization on the needs of the client. The public and mostly the private educational institutions, but also the clubs, are conditioned by the number of the clients (students and sportsmen) which they succeed to attract and maintain. The ways that can be followed for this purpose are:

- understanding the present needs of the clients and the anticipation of the direction in which these can evolve in the future;
- The accomplishment of these requests and
- Through the improvement of the services, exceeding the expectations of the clients.

The measurement of the quality of the educational process is given by the level of the products supplied. At the student level, academic quality means on a short term:

- Positive results in evaluations;

### Subjects and methods

Willing to collect information related to the student's satisfaction, I did work out a 10 items questionnaire. It was applied to 142 students in 10 faculties of our university, and covers all kind of physical education and sports activities. The questions are related with a large range of teaching aspects:

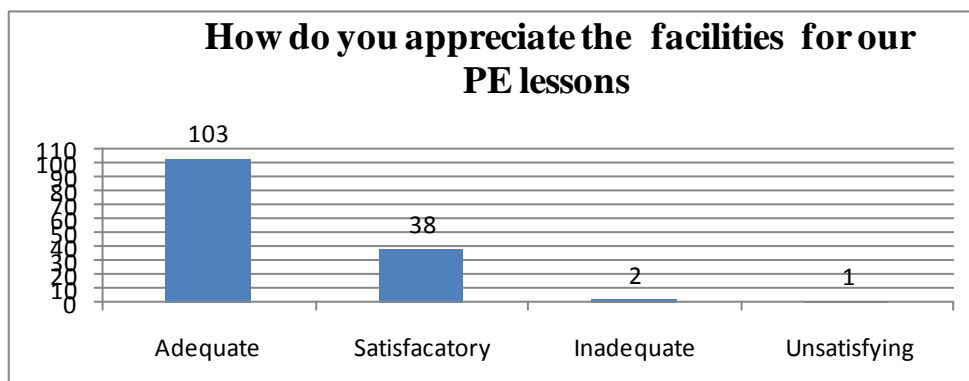
- Progress in the knowledge, skills and abilities volume;
- Continuity (opposed to abandonment) of studies;

And on a long term:

- Access on the labor market according to the obtained level of preparation;
- Continuity of the education through master studies and the contributions to the development of the studied domain and connected science domains;
- Success in the domain of competence.

planning, teaching relationship and environment, effects, results, or student's preferences.

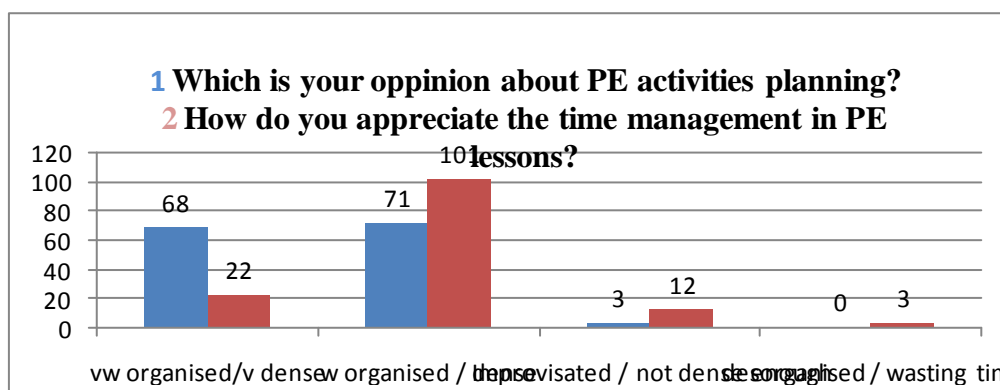
First item is about material environment (space, equipments, devices, materials) which is considered being appropriate by 98% of our students. This significant positive percentage means that our department educational offer and our efforts gained our students appreciation.



The items related to planning, how the practical lessons take place and implicitly, related to teaching, received answers as follow:

- The PE lesson planning is appreciated in a percentage of 98% as being very well and well organised.

- Regarding the time management, 89% of the students have the opinion that the lessons are dense or very dense.

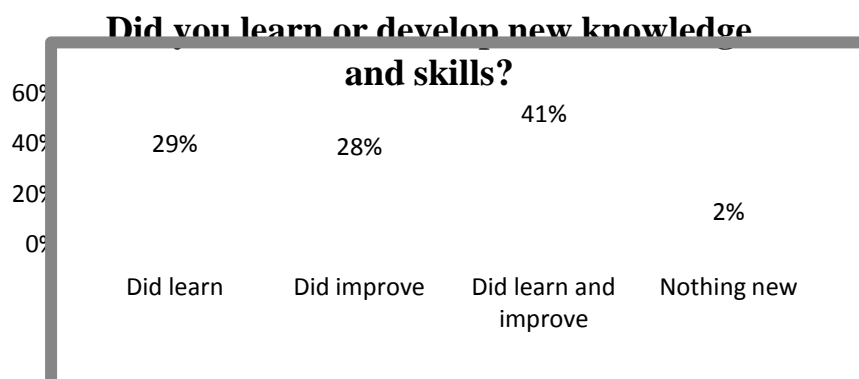


- The effort level during our lessons is appreciated like reasonable or challenging by 95% of

students. The rest of 5% considers the effort being at a low level. First two answers are also the most

favorable, indicating an optimal effort volume, intensity and density for the majority of the students.

The next question set is in connection with the student's perception of their own results after investing efforts during the PE lessons.



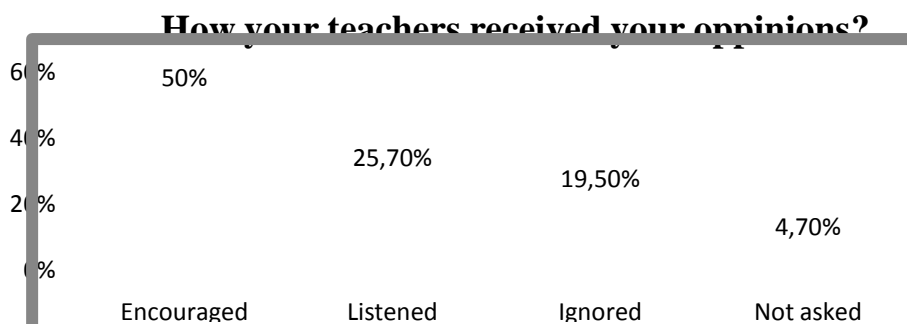
To the item: „Did you learn or develop new knowledge and skills in our lessons?” from 140 answers, just 3 meaning 2% said they didn't learn anything new. 41% reply that they achieve new knowledge and skills, 28% improve their skills and 29% learn and improve as well. We consider these results as a confirmation for our special attention to adapt the educational offer to our students' possibilities, needs and preferences.

- The significant percentage of those who are convinced and positive to continue physical exercise independently reveals a good effect of our work in the PE classes. The data shows that less than a percent (actually just in one case from 142) the possibility of a future physical activity is completely excluded, 15,7% consider it possible, 40,7% are sure and 42,8% answer positively. Din prelucrarea rezultatelor chestionarului aplicat reiese că mai puțin de un procent, (într-un singur caz, de fapt) este exclusă posibilitatea continuării unei forme de activitate fizică, 15,7% acceptă ca posibil, 40,7% sunt siguri, iar 42,8% răspund pozitiv.

- Physical exercise is considered by the majority (89,2%) of our students to be a pleasant and useful activity. Just a small percentage (10,8) feels that PE lessons like a compulsory activity and no one like an unuseful one. The understanding of physical exercise benefits, in the beginning of higher education, and the appreciation of our students is an objective parameter of their satisfaction measurements.

- To practice a sport is considered being helpful for the future profession by 76% of the students, 24% considered that it helps a little or not at all.

The question: „How your opinion have been received of your teachers?” shows us different opinions: half of students -50% were listened, 25,7% were encouraged to express them, 19,5% consider that their opinion were ignored, and 4,7% answer that nobody request their opinion about PE activities.



The positive answers represent 75,7%, but to the rest of the students (24,3%) we might give more attention aiming to improve communication between teachers and students during our common activities.

The last request in this questionnaire is to order the sport preferences. Aerobics, fitness and swimming are in top, followed by team sports: volleyball and basketball. This order is strongly marked of the gender majority in our university, which is feminine.



### Conclusion

Through the questionnaire we received a positive feed-back to all points we search. The procentaje of positiv answers is between 75% and 97%. Considering this high scores, we conclude that our Phisical Education and Sports Department activity aim to fulfil the students needs and to respect there preferences and particularities. In the same time this data prove that the QSM requests related to the client satisfaction are accomplished.

The new Romanian Agency for the Assurance of Quality in Higher Education is the forum which is

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aiming to increase the relevance, the effectiveness and the efficiency of the study programs and universities. The evaluation criteria, methodology and procedures imposed by RAAQHE imply not only a reasonable level of the infrastructure, but also the performance's increase of the teaching staff and the graduates. The success of the graduates on the labor market, demonstrated by employment according to the preparation certified by university diploma, the pursuit and keeping count of these data, is only one of the quality request that stand in front of the Romanian universities.

QUALITY AND EFFECTIVENESS IN HIGHER EDUCATION – www.rug.nl/QEHE.

## LECTURE AND ASSESSMENT – TWO EFFECTIVE METHODS IN THE PROFESSIONAL TRAINING

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**Abstract:** The present paper is an observational experimental study carried out on the students in Physical Education and Sport, and focused on the efficiency of using the assessment of information assimilation during the students' theoretical training.

**Subjects, methods and procedures:** The research involved 24 students, 12 of them in the experimental group and 12 in the control group. The study was implemented within the teaching activity carried out throughout the 14 lectures of the course in Didactics of Physical Education and Sport, delivered in the first semester of the academic year 2008-2009. In order to transmit the information, "the lecture and the current assessment based on questionnaire" were used for the experimental group, and "the lecture" for the control group.

**Results:** The research pointed out an improvement of 2.36 points between the averages of the experimental group and the control group at the assessment tests.

**Conclusions:** The hypothesis according to which the use of assessment at the end and during the lectures can lead to better information assimilation was confirmed. The student must deal with the situation in which he or she must answer appealing to the information stored in his or her memory. The arithmetic means ranged between 6.67 and 8.67 in the experimental group, and between 5.00 and 6.00 in the control group. It can be emphasized that the higher values obtain by the experimental group are the result of the assessment carried out during and at the end of lectures.

**Key words:** professional training, efficiency, lecture, assessment

### I. Introduction

In order to create positive changes in students' conscience, it is necessary to apply an additional task load of psychic effort. The adaptation to the information retention appears even when the task consists in an explanation given by the students concerning the acquisitions after the lecture. During the

information transmission there are two possibilities of retention. One of them is to write down on paper (in this case the same type of effort is used for information retention and information transcription), the other one is to reproduce the information (through verbal presentation of the answers to current assessment

questions or through giving opinions about the topics of the lecture). If a student attends the classes and writes down mechanically the information, without any additional effort, his/her level of thinking remains the same, and without an additional stimulation, he or she displays apathy and lack of interest; the curve of progress having insignificant ascending shape (Figure 1 a)

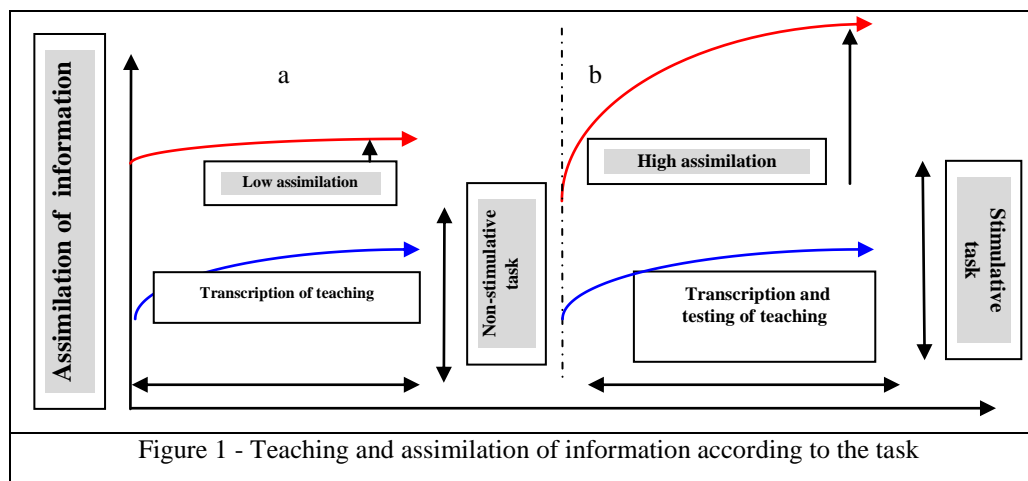


Figure 1 - Teaching and assimilation of information according to the task

Conversely, if at the end of each lecture student's knowledge is tested, the levels of thinking change, a psychic excitation occurs and determines the student to make an effort for correlating the information and making judgments. In this case, the retention task is at high level and the interest in retention and reproduction of information appears (Figure 1 b). Even in the best students many immediate acquisitions are lost on short or long-term, if the repetitions don't appear. If students are permanently asked/interrogated about the information received during or at the end of the class, their participation in lesson will no longer be a "simulated" one but an "implied" one.

The process of learning is "an evolution of a student/sportsman's ability from the stage of lack of control to the stage of full control" materialized into a progress achieved "by intermediary steps between what is aimed and what is obtained" or as "a process of knowledge/confrontation/accumulation of a final product, achieved in an individual's environment". It is represented by the intermediary acquisitions which can

Starting from the premise that the immediate verification of knowledge can contribute to the understanding and retention of information, we assume that there are differences in information acquisition. These differences are linked to the recapitulation of information at the end of the lecture. The assessment of the immediate acquisitions can determine an augmentation of attention during the lectures.

#### Tasks of research

The following tasks were established in order to carry out the present research: study of the reference

be used in various contexts and have consequences on each person's evolution (Gloria Rață, 2008)

Learning is like rowing against the current, the moment you stop doing this, the water drops you back. When learning ceases, our mind relaxes and doesn't progress.

The professional training of young generation, involving the information acquisition, is a complex process which implies the information accumulation, on one hand, and the information use during the didactic process of the young professional's training, on the other hand. The clarity and durability of accumulations and acquisitions during the instructive-educational process must take into account the modality of retention, of memory stimulation and understanding, the modality of training the ability to present the acquired information. In this respect, we introduced an assessment of the accumulated information at the end of each lecture.

The necessity of the present study starts from the fact that the process of learning must be considered as "the relatively permanent modification of the behaviour as a result of the exercise" (Atkinson & Hilgard, 2005.)

#### Hypothesis

The starting hypothesis of this research is the fact that the permanent control during or at the end of the lecture can contribute to better information assimilation because the student is confronted with the situation of giving answers based on his or her memory and judgment.

literature and elaboration of the bibliography cards, establishing the subjects of research; establishing the



didactic strategies for the two groups of subjects; determining the duration of study; selecting and

**Subjects, methods of research**

**Subjects.** The present research is an observational experimental study which involved 12 first-year students in the control group and 12 first-year students in the experimental group

**Methods.** The following methods were used: the bibliographic documentation, the experiment, the observation, the testing method, the survey method, the statistical-mathematical method and the graph method. The results were registered, put into tables and then processed, analyzed and interpreted.

**Experimental intervention**

**The applicative intervention** concerned the program of theoretical teaching based on lectures in Didactics of Physical Education and Sport (2 hours of course and 2 hours of seminar per week). Due to the fact that students' attention is selective and sometimes they write down mechanically the information, the "working" memory retains only the selected issues. At the end of each lecture, an oral questionnaire was

**Results of research**

The results registered after filling in the 12 seminar questionnaires and their processing are presented in Table 1.

**Analysis and processing of results for the experimental group**

The data presented in the Table 2 and the Graph 1 show the following aspects:

- ✓ The arithmetic mean has increased from the first seminar assessment to the twelfth seminar assessment. During the first two seminars, the mean of students' answers was 6.67 and 6.83 respectively. At the next four seminars the values ranged between 7.00 and 7.67, and at the last six seminars between 8.00 and 8.67. It can be

applying the assessment tests; analysis and interpretation of results; elaborating the conclusions.

**Evaluation trials** were focused on the assimilation of information and used the questionnaires. A questionnaire concerning the theoretical assimilation of the taught information was elaborated for each lecture. The study was carried out at the Faculty of Movement, Sports and Health Sciences of the University of Bacau during the first semester of the academic year 2008-2009.

administered to the experimental group (15 minutes) for assessing the taught knowledge. The questionnaire was not administered to the control group.

At the beginning of the next seminar class, the same questionnaire was administered in written to both groups of students. In order to understand the modality of assimilation, an analysis of all students' results throughout the twelve seminar classes was carried out. The average of the twelve students' marks per each seminar was computed for each group, the maximum and the minimum values were extracted and the average grade for each student was computed.

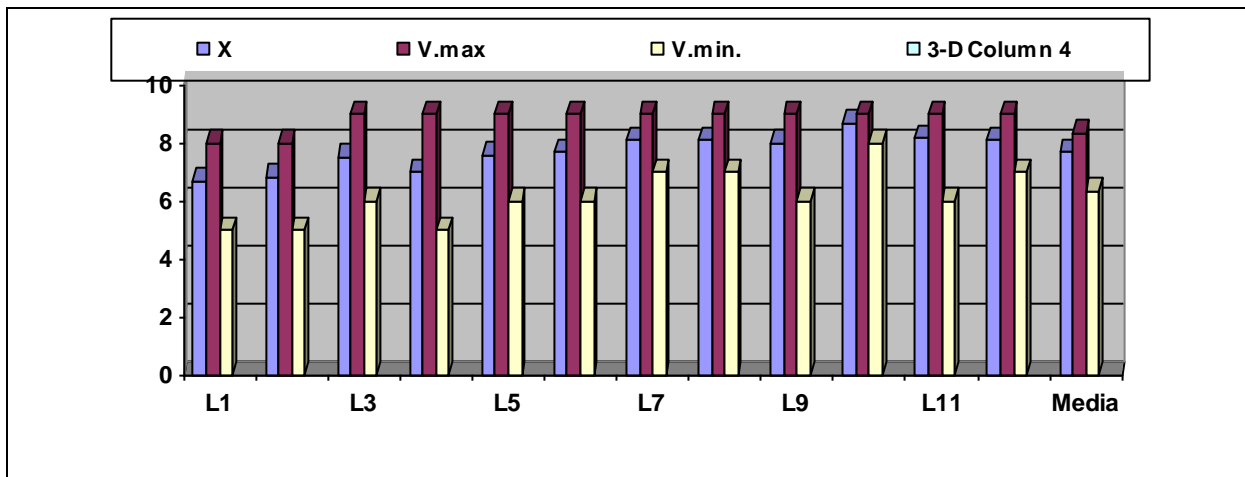
emphasized that the students succeeded to assimilate more and more information despite the fact that the curve didn't have a constantly ascending shape;

- ✓ The students' averages ranged between 6.33 and 8.33, this meaning that they retain the taught information;
- ✓ The maximum values ranged from 8 to 9, and the minimum values from 5 to 8; there are also improvements of these values during the last seminar testing.

**Table 2 – Averages, maximum and minimum values in the experimental group**

Gr.	Indices	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	Average
Experiment		6,67	6,83	7,50	7,00	7,58	7,67	8,08	8,08	8,00	8,67	8,17	8,08	<b>7,69</b>
	Maximum	8	8	9	9	9	9	9	9	9	9	9	9	<b>8,33</b>
	Minimum	5	5	6	5	6	6	7	7	6	8	6	7	<b>6,33</b>

**Graph 1 – Graphical representation of averages, maximum and minimum values of experimental group**



**Analysis and processing of results for the control group**

After processing the control group's marks, the results which are presented in Table 3 and illustrated in Graph 2 show that:

✓ the arithmetic mean ranged between 5.00 and 6.00. The means are fluctuant and don't suggest an improvement of the ability of retention. From all 12 means, only five have values over 5.50 and other seven means ranged from 5.00 to 5.17;

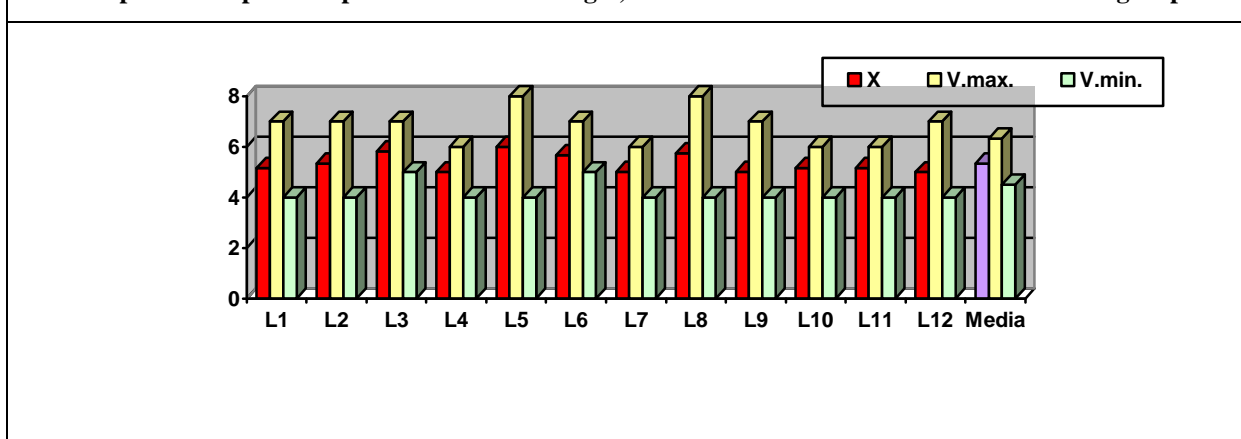
✓ students' average values ranged between 5.33 and 6.33, showing that they don't retain the taught information;

✓ It can be mentioned that during the twelve seminars these students didn't accumulate a big amount of information. The maximum value ranged between 6.00 and 8.00, and the minimum between 4 and 5. There are no improvements of these three indices throughout the seminar assessments and students' performance is low.

**Table 3 – Averages, maximum and minimum values in the control group**

Gr.	Indices	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	Average
Control	Average	5,17	5,33	5,83	5,00	6,00	5,67	5,02	5,75	5,02	5,17	5,17	5,00	<b>5,33</b>
	Maximum	7	7	7	6	8	7	6	8	7	6	6	7	<b>6,33</b>
	Minimum	4	4	5	4	4	5	4	4	4	4	4	4	<b>4,50</b>

**Graph 2 – Graphical representation of averages, maximum and minimum values of control group**



**Comparative analysis of results for the experimental group and the control group**

The results presented in Table 4 and illustrated in Graph 3 point out the following aspects:

✓ comparing the two groups, the arithmetic mean has higher values in the experimental group which received the oral questionnaire during and at the end of the lecture;

✓ the differences between the average values in the experimental group and the control group are quite significant (ranged between 1.50 and 3.08);

✓ the differences increase from the beginning to the end of research;

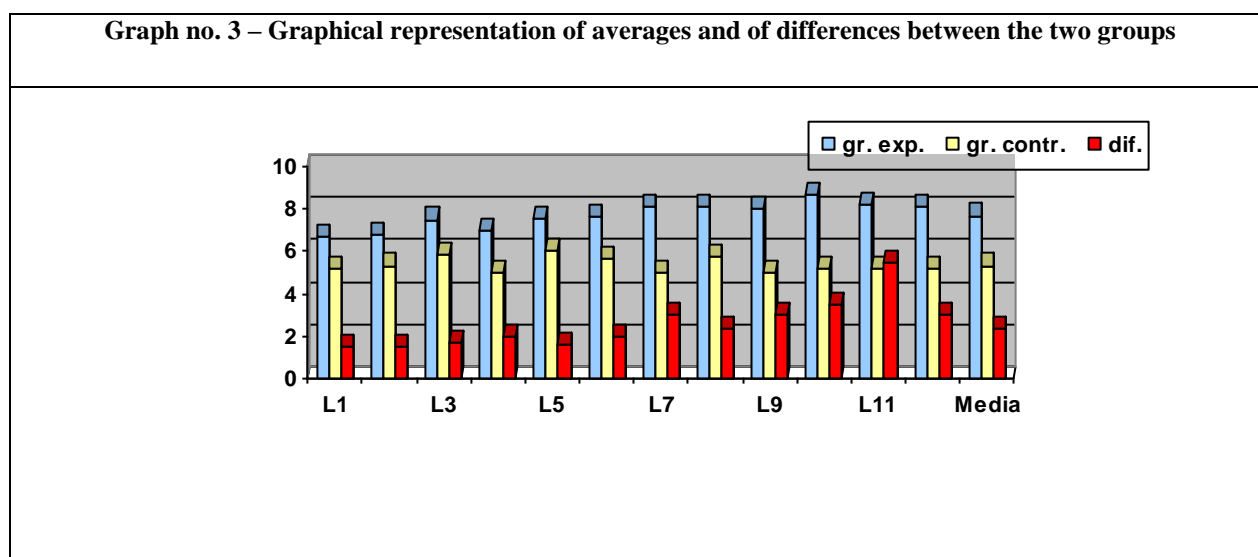
✓ the differences are small for the first three seminars (1.50 to 1.67) and for the 5<sup>th</sup> seminar (1.58); have medium values for 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> seminars (2.00 – 2.33); and important for the rest of seminar assessments (2.98 – 3.50);

✓ as a possible conclusion, the current testing of information assimilation and understanding is a method ✓.

for augmenting the formative efficiency of the teaching process

**Table 4 – Differences of averages between the experimental and the control groups**

Indices	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	Average
X experiment.gr.	6,67	6,83	7,50	7,00	7,58	7,67	8,08	8,08	8,00	8,67	8,17	8,08	<b>7,69</b>
X.control gr.	5,17	5,33	5,83	5,00	6,00	5,67	5,02	5,75	5,02	5,17	5,17	5,00	<b>5,33</b>
Difference	1,50	1,50	1,67	2,00	1,58	2,00	3,06	2,33	2,98	3,50	3,00	3,08	<b>2,36</b>



### Conclusions

The data analysis of the registered results highlights the following conclusions:

1. the starting hypothesis which states that “the permanent control during or at the end of the lecture can contribute to better information assimilation because the student is confronted with the situation of giving answers based on his or her memory and judgment” was confirmed;
2. the arithmetic means ranged between 6.67 and 8.67 for the experimental group, and between 5.00 and 6.00 for the control group. It can be emphasized that the higher values of the experimental group are a consequence of the assessment carried out during and at the end of the lectures;
3. the significant differences between the two groups during the twelve seminar classes are the result of

the fact that the students of the experimental group must pay active attention to the questions and answer appealing to the information and knowledge stored in their memory;

4. due to the fact that the students of the experimental group were continuously tested, their attention and participation in lecture classes were higher, and as a direct consequence their average grades are better (ranged between 6.33 and 8.33) than the ones of the control group;
5. due to the fact that the students of the control group were not tested at the end of the lectures, their performances at the seminar assessments are poor (arithmetic means between 5.33 and 6.33);
6. the maximum and minimum values of the experimental group are definitely superior to the control group. The students of the experimental group have higher levels of attention and memory.

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ANEXE

**Table 1 – Results of the questionnaire assessment in the experimental and control groups**

Gr.	Student	Assessment at seminars												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
Experimental group	1	6	7	6	7	7	8	8	9	6	9	8	7	7,67
	2	5	5	6	5	6	7	7	7	7	8	6	7	6,33
	3	5	6	6	7	8	8	7	8	8	9	8	8	7,33
	4	8	7	9	7	6	9	9	7	7	9	9	7	7,83
	5	8	7	8	8	7	7	8	7	8	8	8	8	7,67
	6	7	8	7	5	8	7	8	9	9	9	9	9	7,92
	7	6	6	7	7	7	6	8	9	8	8	9	8	7,42
	8	7	7	8	6	8	8	9	9	8	9	9	8	8,00
	9	7	7	8	8	9	8	8	8	9	9	9	9	8,25
	10	8	8	9	9	7	9	9	8	8	9	8	8	8,33
	11	6	7	8	7	9	6	8	8	9	9	8	9	7,83
	12	7	7	8	8	9	9	8	8	9	8	7	9	8,08
	<b>Average</b>	6,67	6,83	7,50	7,00	7,58	7,67	8,08	8,08	8,00	8,67	8,17	8,08	<b>7,69</b>
	<b>Maximum</b>	8	8	9	9	9	9	9	9	9	9	9	9	<b>8,33</b>
<b>Minimum</b>	5	5	6	5	6	6	7	7	6	8	6	7	<b>6,33</b>	
Control group	1	5	4	5	6	7	6	4	4	5	4	5	6	5,35
	2	6	5	5	4	7	5	4	5	4	6	5	4	5,00
	3	5	7	6	5	8	6	6	7	5	5	5	5	5,83
	4	4	4	5	5	4	5	5	6	4	4	4	4	4,50
	5	6	6	7	5	6	7	5	8	7	6	6	7	6,33
	6	4	5	6	5	6	5	4	5	4	5	6	4	4,92
	7	7	5	5	5	7	5	5	5	4	6	5	4	5,25
	8	5	7	6	6	6	6	6	5	5	5	5	5	5,58
	9	4	4	5	4	4	5	5	6	5	5	4	5	4,67
	10	6	6	7	5	6	7	5	8	7	6	6	7	6,33
	11	5	5	6	5	6	5	6	5	4	4	6	4	5,08
	12	5	6	7	5	5	6	4	5	5	6	5	5	5,33
	<b>Average</b>	5,17	5,33	5,83	5,00	6,00	5,67	4,92	5,75	4,92	5,17	5,17	5,00	<b>5,33</b>
	<b>Maximum</b>	7	7	7	6	8	7	6	8	7	6	6	7	<b>6,33</b>
<b>Minimum</b>	4	4	5	4	4	5	4	4	4	4	4	4	<b>4,50</b>	

**IMITATION INTO HANDBALL THROUGH DYNAMIC GAMES WITH SPECIFIC ELEMENTS HANDBALL, THE CLASS II-A**

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**Abstract:**

Handball is today one of the most popular sports games in the country they our country. Handball was especially loved by children, being particularly dynamic and spectacular, because using technical-tactical elements of basic, simple, easy to learn.

Satisfaction to play handball with almost all the rules since the first lessons, and especially the opportunity to register goals with relative ease, he pointed in particular.

One of the primary purpose of education refers to basic sports skills. Are skills with simple structures, are in close touch with the basic driving skills, which are samples and branches of sports available to pupils in primary education.

**Key words:** handball, initiation, dynamic games.

**Introduction**

Physical Education is a component of general education, along with education intellectual, aesthetic,

moral and technical training as an instructional and educational process which aims to "increase", "training", "nurturing" people's physical abilities.



School, specialized institution, holds a central place in the constellation of factors that compete to prepare students for work and life.

Physical education in school has special tasks to other objects of comparative education in the sense that it addresses, in equal measure physical and intellect. As is known, physical activity has a significant share in harmonious development child. Exercise not only stimulates physical breath and blood circulation, strengthens not only the circular and bone, but he is also the bridge connecting between thinking and action.

#### **Problematic movements**

Learning framework is included in general learning issues, addressed multidisciplinary, cataloged, classified and debated in order to explain its process and fenomenologie.

Due to its complexity, learning and implicit learning motive, has led the points most different from the definition, and finally to explain the methodology of achieving.

In the last analysis they can be divided into two groups, compared with two points of view: pedagogical and psychological defines learning as psychology psycho-behavioral phenomenon, which is why he feels the need to explain the mechanisms which characterize, legititate and general and specific to them. Psychological approach is complex and offers many possibilities. (M. EPURAN, 1986).

Human learning is characterized by the fact that it is intended behavior change through individual experience, social experience and recovery (social-historical practice).

Behavior change through the theoretical and practical elements, combined rational, organized and systematized, reasons for learning in general is a process of great complexity, progressive and creative, selective and decisions in depending variety of situations in which the individual is at.

A topic may address several tasks like driving, so note that differential, and more common. For this reason, it is the beginning of a teaching program with general characteristics that motor it self, which can adapt to each specific situations in depending of different parameters: distance, weight, terrain profile, such as difficulty parameters and the program will be selected by these conditions (T. Ardelean, 1982).

Schmidt considered the main parameters of a general motor program are: - total duration of movement:

- the force required to make the movement - the direction in which this is done - the magnitude of movement; operations that made a topic in a time of movement are rmatoarele

- pregnancy and assess the situation in which it must be realized, and the decision on the general program - making initial estimates (away from the target weight of objects, body position) and direction on specific parameters for the program to be implemented.

- trigger movement on the basis of parameters selected. Application parameters lead to the development (training) rules of parametrizare relevant, valid for all situations. This instrument identifies the solution which is found driving a motor problem imposed. Parametrizarea consider that are based on 4 types of information on the subject to remember when making a motion (Schmidt 1921)

- movement parameters (duration, strength, direction)

- the result of movement and its influence on the environment - sensations that acknowledge the subject (she) and charge movement - the movement prior to the initial (the positions of the segments of body weight, shape, etc.) At each iteration, the matter settles a series of relationships between information, developing its own rules leading to the purchase of default experience in the form of general rules that keep a long time.

#### **Influence on children games**

Games exercise influence on the multilateral and complex personalities of your children. Games of movement exercise this influence primarily on motricitatii children which are expanding and the intellect, esteticului on moral issues.(CERCEL, 1975)

Among physiological influences must look primarily positive effects that they have made moves in the games fundamental nervous processes especially the processes of internal inhibition and conditioned.

On this basis the possibility of the formation, consolidation and improvement stereotypical dynamic driving, thus the physiological base of skills in ever changing conditions.

These skills eg walking, running, bounce, throwing, climbing, balance, light weight items on gym equipment, during the game should be adapted in depending shaped by the demands of the concrete situation. This makes the child to observe, to compare, to think, to judge, and asking this way developing nervous system plasticity.

This plasticity stay at the possibilities of transfer of skills in driving skill of movement, the formation and strengthening of other movements in May complex, higher quality.

#### **Content provided handball game in curriculum**

Objectives:

- to correct errors arising from technical features learned;

- obisnuirea students with the rules of the game in consciously;

- strengthening of the elements learned;

- technical elements binding known structure according to the game;

- starting in simplified handball game;

Means:

- preparatory games;

- relay race in which the technical content related according to structure the game;



- the game of handball simplified to the maximum;

Indications methodical:

- is the stage where the technical processes by strengthening the preparation games;

- games preparation can be used in case of technical processes to be repeated himself are correct, when the mechanism is strengthened;

**Conclusions:**

- Conducted experimental work to validate the hypothesis that the use in the training of dynamic games and preparation for handball helped acquire faster, in terms of competition, the strife of the elements (catching, throwing the gate) of the technique handball game;

**Proposals:**

- using dynamic and game preparation as the main means of training this age;

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## ❖VARIA

### THE EFFECT OF EIGHT-WEEK PROPRIOCEPTION TRAINING PROGRAM ON DYNAMIC POSTURAL CONTROL IN TAEKWONDO ATHLETES

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#### ABSTRACT

**Objective:** The purpose of this study was to examine the effects of 8-week training proprioception program on dynamic postural control in active taekwondo athletes.

**Procedures and Methods:** In this study, training group consisted of 13 male and 13 female taekwondo athletes whereas control group consisted of 8 male and 8 female taekwondo athletes, 42 taekwondo athletes in all. The subjects of dynamic postural control performances were analyzed by Biodex marked device (Biodex, Inc., Shirley, and NewYork 950-302). The measurements were taken twice as before and after proprioception training program applied three times in a week and per week of 8. Package program SPSS for Windows 15.0 was used in the evaluation of data statistically. The results were evaluated at the significance level of 0,05.

**Results:** At the end of training program, while female taekwondo athletes of experimental group were observed to have more performance in dominant, non-dominant leg dynamic postural control test ( $p < 0.05$ ), no difference was determined in double-leg ( $p > 0.05$ ).

It was seen that there was no performance difference in post-test double leg, dominant and non-dominant leg dynamic postural control scores of female taekwondo athletes of control group ( $p > 0.05$ ). Whereas a significant difference was observed in double-leg, dominant and non-dominant leg dynamic postural control scores gotten at the end of training program applied to the experimental group of male taekwondo athletes ( $p < 0.05$ ), no significant difference was found in dynamic postural control test scores of control group ( $p > 0.05$ ).

**Conclusion:** In conclusion, it was thought that proprioception training program improves of female and male taekwondo athletes dynamic postural control performances.

**Key Words:** Proprioception, Dynamic Postural Control, Taekwondo.

#### INTRODUCTION

Two aims of postural control including the control of body position in space are accommodation and balance. Postural accommodation is described as the ability of maintain the suitable relation between body and body parts, the conditions in special tasks (DA. Winter, et al., 1998). Balance is a general term expressing to the dynamic preventing falling into place of body mass (T. Aydın, et al., 2002). It means individuals' continuing their body positions in stable and different conditions related to the environment. In rest and activity times, It is the postural accommodation for displacement in the centre of gravity affecting body (K.N. Clark, 2004).

In sports, balance requires a complicated accommodation of inner and exterior inputs. Generally balance is controlled by sensory inputs, central process, neuromuscular answers, vestibular, visual and proprioceptive system (E. Aydog, et al., 2006). Each of the sports techniques includes balance in some way. Balance plays an important role in keeping body

composition that is necessary for the successful performance in sports (M.A. Sandrey, 2006).

Postural control and proprioception are two dependent variables examined under balance training. It has been determined that postural control and proprioception are often developed through neuromuscular and proprioceptive training programs (A.S. Kemerley, 2001). The aim of proprioceptive training is to improve neuromuscular system for complicated activities. While static and dynamic activities are being applied, nervous system enables body to keep its balanced position and makes information from periferal reseptors through efferent ways possible (S.G.T. Balter et al., 2004, J.L. Huston, et al., 2005, S.S. Salaj, D. Milanovic And I. Jukic, 2007).

Taekwondo is a movement sports and the balance which is important for athletes is the dynamic balance. Dynamic balance is required for giving a kick. Here, body is exposed to an exterior load, the centre of gravity always changes and generally increases. The

feet are used as the most important factor in keeping balance (Kemerley A.S., 2001, Stefanek, K.,1998).

Stefanek says that dynamic postural control and balance are quite important for a taekwondo athlete and effective factors in applying techniques. He claims that the athlete should stand on support leg still in order to apply an effective technique to the target area. He also points out that many taekwondo techniques are rather difficult and they potentially include both flexion and extension and dynamic postural control has an important role to apply true kick techniques in taekwondo sports (K. Stefanek, 1998).

The aim of this study is to examine the effect of eight-week proprioception training on dynamic postural control in active taekwondo athletes.

## MATERIAL AND METHOD

### Subjects

21 males and 21 females actively doing sports, 42 healthy athletes in all, participated in the study. The training group consisted of 13 male and 13 female taekwondo athletes and the control group consisted of 8 male and 8 female taekwondo athletes.

The subjects were chosen from the athletes who didn't have neurological, vestibular-visual illness in last one year and a serious lower extremity injury in last 6 months. Before application, subjects were told about the tests in the study and they were made to sign a document showing their volunteering. Ethical committee approval no 2009/186 was taken from Seljuk University Meram Medicine Faculty.

### Postural control measurements

Biodex marked postural control system (Biodex, Inc., Shirley, New York 950-302) was used for dynamic postural control measurements. The measurements were done twice as before and after proprioception training program applied three times in a week and for 8 weeks. Subjects participated with suitable sports clothes for balance tests and as barefoot. Subjects were allowed to do enough practises to minimize the effect of learning before test.

The foot coordinates of subjects were determined and the same coordinates were used in all tests. Subjects applied the test as the knees were in a slight flexion 45°, on dominant and non-dominant leg, the other leg was in 90° flexion from knee and arms were crossed on chest. During the test, the screen was closed and the subjects were told to look at a fixed point at eye level and one meter away. Dynamic control test was applied as at 3rd level, with open eyes and on double leg, dominant and non-dominant leg. 3 repetitions for 20 seconds were done for each balance parameter. Breaks for 30 seconds were given between tests.



**Figure 1: Biodex Postural Control System**

### Proprioception Training Program

The proprioception training program used in this study was adapted from exercise programs used in studies through literature scanning (Bert R. M. et al., 2005, Chong R.K. et al., 2001, Kemerley A.S. 2001, Lephart, S.M., et al., 1997, Paterno M. V. Et al. 2004, Söderman K. et al., 2000, Verhagen E., 2004).

8-week process consisted of 5-minute warming up, 20-minute proprioception training program and 5-minute cooling parts and was for 30 minutes in all and applied 3 times in a week. Training sets were started with 10 seconds, 6 repetitions and 10-second breaks between sets. After second week, repetitions numbers were slightly decreased, the time of standing on wobble board and break-time were increased 5 seconds and in last week, the subjects applied each exercise on wobble board with 35 seconds, 1 repetition and 35-second break. The subjects applied training in first 4 weeks as open-eyed and closed-eyed on smooth surface and wobble board. After 5th week, subjects went on the training only on wobble board.



Double Leg

Unilateral Leg

**Figure 2: The sample from Proprioception Training**

### Statistical analysis

SPSS for Windows packet program was used in evaluating and calculating the acquired data. The measured variables were summarised by giving the average and standard deviation. The normality distribution of measured parameters was determined through Shapiro-Wilks test. Since data didn't have normal distribution, non-parametric tests were preferred in comparisons between groups. In pre-exercise and post-exercise, Mann-Whitney U test was used in comparison between experimental and control groups and Wilcoxon test was used for the comparison of differences between pre-test and post-test. In this study, the significance level was taken as 0.05.

### FINDINGS

The demographic features of athletes participated in the study are shown in Table 1.

The pre-test and post-test comparison about dynamic postural control scores of all taekwondo



athletes is seen in Table 2. At the end of statistical analysis, whereas no significant difference has been found in pre-test values, significant difference has been determined in post-test dynamic postural control scores ( $p < 0.05$ ).

In Table 3, the comparison of pre-test, post-test dynamic postural control scores of female taekwondo athletes is seen. It has been found that double-leg, dominant leg, non-dominant leg dynamic postural control scores between experimental and control group have no significant difference ( $p > 0.05$ ).

The comparison of dynamic postural control scores before and after training program of experimental and control group of female taekwondo athletes is seen in Table 4. Whereas no significant difference is seen in double-leg dynamic postural control scores ( $p > 0.05$ ), a significant difference has been found between dominant and non-dominant leg pre-test and post-test dynamic postural control scores ( $p < 0.05$ ).

In table 5, the comparison of pre-test, post-test dynamic postural control scores of experimental and control group of male taekwondo athletes is seen. No significant difference has been found in double-leg and dominant leg pre-test dynamic postural control scores between experimental and control group ( $p > 0.05$ ). As for post-test dynamic postural control scores, whereas a significant difference has been found in double-leg and dominant leg between experimental and control group ( $p < 0.05$ ), no significant difference has been determined in non-dominant leg dynamic postural control scores ( $p > 0.05$ ).

In table 6, the comparison of before and after training program dynamic postural control scores of experimental and control groups of male taekwondo athletes is seen. Whereas a significant difference is seen in all dynamic postural scores of experimental group ( $p < 0.05$ ), no significant difference has been found in control group ( $p > 0.05$ ).

## DISCUSSION and CONCLUSION

In this study, examining the effects of 8-week proprioception training program on dynamic postural control in active taekwondo athletes has been aimed.

Postural control and balance are described as the ability of making adaptations to keep body's gravity centre on support surface or maintain these adaptations (M.A. Hoffman, V.G. Payne, 1995, A.S. Kemerley, 2001). These adaptations happen through ankle, knee and hip's movements and may be destroyed when gravity centre and support surface are damaged (Kean C.O., 2006). In researches, postural control was examined with the aim of applying various training programs in individual and team sports, preventing its effect and injuries (R. M. Bert, et al., 2005, R.K. Chong et al., 2001, M. V. Paterno, Et al. 2004, K. Söderman, et al., 2000, E. Verhagen, 2004). In these studies, it was reported that at the end of balance trainings carried out, force improved and muscular

imbalance decreased (J.A. Balogun, et al. 1992, H.C. Heitkamp, et al. 2001).

In this study, when the dynamic postural control scores measured after training program were examined, it has been found that experimental group taekwondo athletes have higher dynamic postural control performance than control group and they are statistically significant. Although taekwondo naturally requires basic posture and techniques improving dynamic postural control. it has been determined that the proprioception training program applied to the experimental group improves taekwondo athletes' dynamic postural control performances.

In their studies where they investigated the effect of proprioception training program on healthy people, Hoffman and Payne (1995) applied a training program being for 10 weeks and 3 days in a week to the experimental group. Pre-test, post-test dynamic postural control results of the subjects were gotten through Kistler Force Platform. They found that dominant leg dynamic postural control scores of experimental group significantly improved when compared to the control group. Also, they reported that proprioception training program increased the dynamic postural controls of subjects and could be useful for person movement (Hoffman and Payne, 1995).

In their studies on figure skaters, Kovacs and his friends researched the effect of neuromuscular training program on postural control. In the research, whereas experimental group ( $n=22$ ) applied neuromuscular program for 4 weeks and 4 days in a week, the control group ( $n=22$ ) applied basic training program only for figure skating. Before and after training, the subjects' postural controls were measured on a force platform and in the light of the acquired results; experimental group was found to have rather improved their dynamic postural control performances when compared to the control group (E.J. Kovacs, et al. 2004). Beside these findings show parallelism with the acquired results, they also support proprioception training program in addition to the athletes' training programs that are peculiar to their own branches.

Whereas experimental group female taekwondo athletes were found to have higher performance in dominant, non-dominant leg dynamic postural control test after training program, no difference was found in double-leg.

In their studies, Paterno and his friends (2004) examined the effect of 6-week neuromuscular training program on female handballers' postural controls. 41 female handballers studying in high school participated in research and a 6-week and 20-minute proprioception training program was applied to the athletes 3 days in a week. The postural controls of all athletes were measured by Biodex Stability System. After training program, they found that there were important improvements statistically about handballers' double-leg, dominant and non-dominant leg postural controls. Also, they described balance

training as the exercises that could be included in planned and various trainings that were focussed on maintain the balance without change on support surface and postural awareness(M.V. Paterno, et all., 2004).

In a research carried out by Holm and his friends (2004), 35 Elite female handballers participated and proprioception training program was applied to the players. The handballers' dynamic postural controls were measured by KAT (Kinesthetic Ability Trainer) 2000 device before and after the training. At the end of pre-test, post-test comparison, they reported that the applied training program improved female handballers' dynamic postural controls and prevented possible injuries (I. Holm et all. 2004). These results of the research show parallelism with the findings of our study.

Lephart and his friends (1997) reported that regular training increased the development in neuro-sensory and motor ways and decreased the risk of injury by affecting proprioception sense positively (S.M. Lephart, et all., 1997).

A significant difference was found in double-leg, dominant and non-dominant leg dynamic postural control scores acquired at the end of the training program applied to the experimental group of male taekwondo athletes. Also, whereas a significant difference was found in double-leg and dominant leg in the comparison of post-test dynamic postural control scores of experimental and control groups, no difference was seen in non-dominant leg. In taekwondo trainings, generally dominant leg and fists are effectively used. Whereas dominant leg techniques are hard and effective, non-dominant leg techniques are weaker and away from necessary technical level. In our study, at the end of comparison of experimental and control groups' dynamic postural control scores after proprioception training program; the reason why no significant difference was found in non-dominant leg dynamic postural control scores is thought to result from athletes' using their bodies unilaterally.

Gioftsidou and his friends (2006) examined the effect of balance program on footballers. 39 footballers participated in the research. While control group (n=13) continued only the football trainings ,one of the other experimental groups (n=13) applied the balance program before football training and other experimental group(n=13) applied after football training. Balance program was applied for 12 weeks,3 days in a week and 20 minutes in a day. The balance skills of athletes were evaluated by Biodex Stability System. At the end of comparisons of pre-test,post-test,

significant differences were determined in both of the experimental groups' balance skills (Gioftsidou A. et all.,2006).

A similar research was carried out by Malliou and his friends (2008). In their sutides where they examined the effect of balance program applied before and after the regular tennis training on upper-level tennis players, while control group only applied tennis training, one of the experimental groups appliedbalance program before tennis training and other applied after tennis program. The balance performances of all tennis players participated in the study were measured by Biodex Stability System and players participated in balance program for 12 weeks, 3 days in a week and 16 minutes. At the end of 12 weeks, whereas no significant difference was found in control group, they reported an important development in dynamic balance performances of experimental group (V.J. Malliou, et all. 2008).

In a research where the effect of proprioception training program was examined on dynamic postural control, while proprioception training program was being applied to the football experimental group 2 days in a week and for 20 minutes during the competition season, the control group only continued the football training.Also, dynamic postural control tests of footballers were measured by Biodex Stability System. At the end of the research,it was determined that proprioception training program improved footballers' dynamic postural control performances and the rate of injury decreased (C. Hrysmallis, 2008). It is seen that the results of the research show parallelism with our study and support the findings of our study.

The limitedness of this research is that the athletes did the training in two different halls and with two diffeent trainers although training surfaces and weekly training numbers were the same. It is thought that taekwondo athletes' were being trained by only one trainer in later studies will reflect the possible changes on postural control performance beter.

To conclude, It has been observed that proprioception training program improves the dynamic postural controls of male and female taekwondo athletes. Giving place to the studies that can improve proprioceptive features in Taekwondo trainings may help the athletes increase their postural controls to the maximum level. As a result of this, it is thought that the performances about technical applications of taekwondo athletes in trainings and competitions may increase and possible disabilities may be prevented.

**Table 1: Female and Male of Taekwondo Athletes Demographic Characteristics (Mean ± SD)**

<i>Variables</i>	<i>Groups</i>	<i>N</i>	<i>Female</i>	<i>Male</i>
<b>Age (Year)</b>	<b>Experiment</b>	13	20,92 ± 1,55	20,23 ± 2,80
	<b>Control</b>	8	20,75 ± 1,66	19,87 ± 2,29
	<b>Total</b>	21	20,85 ± 1,56	20,09 ± 2,56
<b>Height (cm)</b>	<b>Experiment</b>	13	166,77 ± 8,36	174,85 ± 6,97

	<b>Control</b>	8	165,62 ± 7,59	173,75 ± 5,06
	<b>Total</b>	21	166,33 ± 7,90	174,43 ± 6,20
	<b>Experiment</b>	13	56,69 ± 6,89	62,80 ± 4,95
<b>Weight (kg)</b>	<b>Control</b>	8	61,50 ± 7,27	70,50 ± 14,55
	<b>Total</b>	21	58,52 ± 7,26	65,74 ± 10,17
	<b>Experiment</b>	13	20,36 ± 1,72	20,58 ± 1,94
<b>BMI (kg/m<sup>2</sup>)</b>	<b>Control</b>	8	22,41 ± 2,40	23,27 ± 4,17
	<b>Total</b>	21	21,14 ± 2,20	21,61 ± 3,18
	<b>Experiment</b>	13	9,23 ± 2,31	8,62 ± 2,56
<b>Sports Age (Year)</b>	<b>Control</b>	8	6,00 ± 1,07	6,23 ± 1,36
	<b>Total</b>	21	8,00 ± 2,49	7,14 ± 2,19

**Table 2: All of Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores**

Dynamic Postural Control		Groups	Female	Male	U	p
<b>Pre-Test</b>	<b>Double Leg</b>	<b>Experiment</b>	1,91 ± 0,56	1,98 ± 0,31	175,50	0,398
		<b>Control</b>	1,85 ± 0,50	2,34 ± 0,54		
	<b>Dominant Leg</b>	<b>Experiment</b>	2,20 ± 0,56	2,57 ± 0,58	129,50	0,058
		<b>Control</b>	2,45 ± 0,48	3,06 ± 0,58		
	<b>NondominantLeg</b>	<b>Experiment</b>	2,37 ± 0,89	2,83 ± 1,10	144,00	0,097
		<b>Control</b>	2,86 ± 0,82	3,22 ± 0,93		
<b>Post-Test</b>	<b>Double Leg</b>	<b>Experiment</b>	1,65 ± 0,55	1,69 ± 0,34	107,00	0,009*
		<b>Control</b>	1,92 ± 0,71	2,46 ± 0,42		
	<b>Dominant Leg</b>	<b>Experiment</b>	1,90 ± 0,66	1,90 ± 0,48	60,00	0,000*
		<b>Control</b>	2,45 ± 0,74	3,33 ± 0,95		
	<b>NondominantLeg</b>	<b>Experiment</b>	1,88 ± 0,70	1,90 ± 0,54	110,00	0,011*
		<b>Control</b>	2,30 ± 0,49	2,55 ± 0,72		

\*\* P<0.01 \* P<0.05

**Table 3: Experiment and Control Group of Female Taekwondo Athletes Dynamic Postural Control Scores Comparison of pretest-posttest Values**

Dynamic Postural Control		Groups	Means	U	p
<b>Pre-Test</b>	<b>Double Leg</b>	<b>Experiment</b>	1,91 ± 0,56	49,00	0,828
		<b>Control</b>	1,85 ± 0,50		
	<b>Dominant Leg</b>	<b>Experiment</b>	2,20 ± 0,56	38,00	0,309
		<b>Control</b>	2,45 ± 0,48		
	<b>Nondominant Leg</b>	<b>Experiment</b>	2,37 ± 0,89	37,00	0,276
		<b>Control</b>	2,86 ± 0,82		
<b>Post-Test</b>	<b>Double Leg</b>	<b>Experiment</b>	1,65 ± 0,55	39,50	0,364
		<b>Control</b>	1,92 ± 0,71		
	<b>Dominant Leg</b>	<b>Experiment</b>	1,90 ± 0,66	26,00	0,059
		<b>Control</b>	2,45 ± 0,74		
	<b>Nondominant Leg</b>	<b>Experiment</b>	1,88 ± 0,70	31,50	0,137
		<b>Control</b>	2,30 ± 0,49		

**Table 4: Experiment and Control Group of Female Taekwondo Athletes Dynamic Postural Control Scores Comparison of pretest-posttest Values**

Variables		Z	p
<b>Experiment Groups</b>	<b>Double Leg</b>	-1,170	0,242
	<b>Dominant Leg</b>	-1,992	0,046*
	<b>NondominantLeg</b>	-2,503	0,012*



Control Groups	Double Leg	-0,509	0,611
	Dominant Leg	-0,105	0,917
	NondominantLeg	-1,542	0,123

\*P<0.05

**Table 5: Experiment and Control Group of Male Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores**

Dynamic Postural Control		Groups	Mean	U	p	
Pre-Test	Double Leg	Experiment	1,98 ± 0,31	28,500	0,089	
		Control	2,34 ± 0,54			
	Dominant Leg	Experiment	2,57 ± 0,58			
		Control	3,06 ± 0,58			
	NondominantLeg	Experiment	2,83 ± 1,10			
		Control	3,22 ± 0,93			34,000
Post-Test	Double Leg	Experiment	1,69 ± 0,34	5,00	0,001**	
		Control	2,46 ± 0,42			
	Dominant Leg	Experiment	1,90 ± 0,48			
		Control	3,33 ± 0,95			2,50
	NondominantLeg	Experiment	1,90 ± 0,54			
		Control	2,55 ± 0,72			26,00

\*\* P<0.01

**Table 6: Experiment and Control Group of Male Taekwondo Athletes Comparison Pre-Test And Post-Test of Dynamic Postural Control Scores**

Variables		Z	p
Experiment Groups	Double Leg	-2,251	0,024*
	Dominant Leg	-2,719	0,007*
	NondominantLeg	-3,102	0,002*
Control Groups	Double Leg	-0,562	0,574
	Dominant Leg	-1,051	0,293
	NondominantLeg	-1,549	0,121

BERT R. M., HOLLY

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## FOOTBALL PERSONALITIES FROM ORADEA DURING THE INTERWAR PERIOD

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### Abstract

After the First World War, Oradea represented one of the reference football centers in the country. The best football teams, ACO (Athletic Club Oradea), Crişana or Stăruinţa, had football players of high value. Some of them were members of the representative team, present at the most important international competitions: The Olympic Games and The World Cup.

This work presents the most important players from that period with performances achieved at club teams and at the national team.

**Key words:** interwar period, football player, national team.



## Introduction

The interwar period designates the interval between the two World Wars (1918-1939) when, in spite of the apparent peace, the conflicts continued latently. It was then when the two opposing ideologies which changed the world appeared: fascism and communism, on a background of the European democrats' general apathy. The interwar period was one of cultural emancipation, bringing a change in morals and fashion. The cinema, theatre and radio were developed, playing an important propagandistic role.

During the interwar period, Romania was a medially developed country in which the main domain was agriculture and industry was rising. Romania's progresses during that period were due to the formation of Great Romania national state, fact which increased the country's human and material potential. A consequence of industrial development was also the consolidation of the Romanian working class. The workers were to be found mostly in big areas and industrial towns: Prahova Valley, Jiu Valley, Bucharest, Brasov. During the interwar period, the society went through a modernization process, a process of integration in the values of the European civilization.

Regarding the football activity, since the autumn of 1921, the first national championship could be organized, all the teams from entire Great Romania having access to it.

During 1921 and 1932, the championship was held in two phases: a regional and a final one. The regional phase took place on districts and the winners met in an elimination system to decide the champion.

On the 16<sup>th</sup> of February, 1930, the Romanian Football Federation Association (R.F.F.A.) was founded with dr. Aurel Leucutia as president and Octav Luchide as secretary. In its organization it was possible that, starting in 1932, the National Division performed at first with two series of seven teams each.

The national football team, which in 1922 had its international debut, would have a rich activity during that period. The main actions were the participation to the 1924 Olympic Games, winning the Balkan Cup (1931 and 1933) and the participation to the final tours of the World Cup (1930, 1934, 1938).

## Personalities

A presentation of the most representative football personalities from Oradea can only begin with Nicolae Kovacs, the only football player from that period who participated to all three World Cup editions (1930, 1934, 1938), performance equalled only in the 90's by Hagi and Gheorghe Popescu. International level football player, endowed with remarkable technical-tactical qualities, he was *selected 37 times in the first representative of Romania* and once in that of Hungary.

**Nicolae Kovacs** was born on the 29<sup>th</sup> of December, 1911 at Plugova (Caraş Severin). He started playing football at the Chinaman's Dwarfs in

Timisoara in 1924. In 1928 he moved to Banatul Timișoara and in 1930 he transferred himself to Ripensia.

From 1931 till 1935, he was part of A.C.O.'s (Athletic Club Oradea) attack.

In 1935/1936 he played for Valenciennes (France) and in 1936/1937 he came back to A.C.O.

Between 1938 and 1940, he played for Ploiesti at Tricolor C.F.P.V., together with which he was promoted twice in the first division in 1938 and 1940.

Between 1940 and 1943 he went back to A.C.O. and then, for two years, 1943-1945, he went to Gamma Budapest.

In 1945-1946, he played at Silitorul Oradea.

After that, he worked as a coach, winning with ICO Oradea the National Championship, 1948/1949 edition. Since 1951, he trained with intermittences Politehnica Timișoara team, promoting it in division A in 1952.

He died on the 7<sup>th</sup> of July, 1977 (M. Ionescu, M. Tudoran, 1984).

## Barátki Iuliu

He was born on the 14<sup>th</sup> of May, 1910 in Oradea. He started playing football at the age of 8 in the workers' neighbourhood team in Oradea, OSK. In 1922 he moved to "Stăruința" Oradea. When he was 14, he was in Oradea's selected juniors' team and in 1926, at the age of 16, he made his debut in "Stăruința" seniors' team as a center forward. In 1928 he was transferred to A.C.O. from where he left, in 1930, for Hungaria, Budapest, team in which he activated until 1934 when he returned to Oradea. Between 1934 and 1936 he was a member of Crișana team and then, between 1936 and 1944, he was part of F.C. Rapid team's attack.

He played 155 games in Romania's national championship (he scored 100 goals), starting with the 10<sup>th</sup> of September, 1933 (Venus Buchaest - Crișana Oradea 0-1). He won 4 Romania's Cups in 1937, 1939, 1940 and 1941, all with Rapid Bucharest.

The stories about his technical abilities are still sources of pride for the Rapid's supporters. Many Romanians have read *The final is played today* or *The Voice of the train's wheels*, written by Ioan Chirila. These books have Barátki as the main character.

Being a very gifted player, also named "the blond miracle", he performed in all football posts. He started as a forward and then moved in the center compartment – being considered the best right half in Europe in 1930. He played as a fullback and even as a goal-keeper as it was the case in 1933 when he defended the goal of the Hungarian national team in the match against Spain after the goal-keeper had been injured. He was a high-class executant of free kicks.

He was *selected 20 times in Romania's national team*, scoring during those games 14 goals. He participated in the 1938 World Championship in France.



He performed 8 times in Hungary's representative (M. Ionescu, M. Tudoran, 1984).

Barátki's participation in the national team's match in Berna in 1933 (Switzerland – Romania, 2 – 2, from the W.C.'s preliminaries) made Romania lose the game. FIFA homologated the match with 3 – 0 score for Switzerland because Barátki had played before in Hungary's national team and the time interval established by rules to play in another national team had not passed yet.

#### **Bodola Iuliu**

He was born on the 26<sup>th</sup> of February, 1912 in Brasov. He started his football activity at Braşovia Braşov in 1922 from where, in 1931, he came to Oradea, to the A.C.O., team in which he performed until 1937 when he was transferred to Venus Bucharest. There, he played until 1940, winning twice consecutively (1938/1939 and 1939/1940) the national champion title. Between 1940 and 1944, he went back to Oradea and played again for the A.C.O., team which in 1943 won the title of Hungary's champion. Between 1945 and 1946, he played for Ferar Cluj and after that, settling for good in Hungary (1947), became one of the basic components of Vasas and M. T. K. Budapest. He was a Goal getter for Romania in 1939 and 1940 and for Hungary in 1944.

As a player, he was one of the greatest talents of our football between the two World Wars. Attacker with a strong kick and sense of the goal (114 goals in division A), he achieved two exceptional records for those times:

- *number of selections in the national team (48)*, record held until 1974, beaten then by Mircea Lucescu;

- number of goals scored for the national team – 30, record beaten only by Hagi with 35 goals in 125 games.

He participated together with Romania's team to two editions of the W.C., in Italy in 1934 and in France in 1938.

He was a member of Hungary's national team for 13 times (M. Ionescu, M. Tudoran, 1984).

King Carol II arena, as it was named during the interwar period the stadium on which the games of division A teams Crisana and ACO were played, presently the Municipal stadium, since November 2008, bears the name **Iuliu Bodola**.

#### **Juhasz Augustin**

He was born on the 19<sup>th</sup> of December, 1911 in Timisoara. He started playing football at Chinezul Timişoara in 1924 from where, in 1930, moved to RGMT. Between 1932 and 1938 he activated at the ACO, being a center half. Between 1939 and 1940, playing for Venus Bucharest, wore the national champion shirt and after that, back to Oradea, activated again at the ACO (1940-1945), winner of the title of Hungary's champion in 1943.

He had **21 selections in the national team**, being a technical, spectacular and efficient player.

#### **David Mircea**

He was born on the 16<sup>th</sup> of October, 1914 in Sinaia. He started by defending the goal-post of "Emanuil Gojdu" high school's team from Oradea in a traditional match with "Comerţul". At the age of 17, he took over the shirt n°1 from Czinczer who had broken his arm, becoming a full player in the large team of the ACO. He played there since 1929 until 1938 when he was transferred to Venus Bucharest, team with which he won twice the national title (1938/1939 and 1939/1940).

*He was selected 12 times in the representative team.* Almost a legendary name in our football, he became famous especially after the match with the world champion, Italy, at Rome (1 – 2, in 1940), when the mass-media named him "il dio" (M. Ionescu, M. Tudoran, 1984).

Agile, with the reflexes of a feline, in spite of not being very tall for a goal-keeper, 1.75 m, David was a goal-keeper at the national team for a few years.

#### **Kocsis Elemer**

He was born on the 26<sup>th</sup> of February, 1910 in Salonta. He started playing football in 1924 at NSC Salonta. In 1928 he moved to the ACO. **He was an A international for 12 times**, scored 5 goals and was a component of the famous offensive quintet in the years of glory of the ACO - Glanczmann, N. Kovacs, Ronnay, Bodola, Kocsis. He was especially noticed for the strength of his kick to the goal (M. Ionescu, M. Tudoran, 1984).

#### **Ronnay Francisc**

He was born in Arad on the 29<sup>th</sup> of April, 1900. He started his football activity at A.M.E.F.A. at the age of 12 and since 1920 till 1937 he was a component of the famous ACO. A complete footballer, mainly attacker, remarkable through clearness and efficacy, he was "the brain" of the team's offensive quintet. **He was selected for 12 times in the national team**, scored 3 goals; between 1922 and 1932 he was **the player who scored the first goal from Romania's international record** on the 8<sup>th</sup> of June, 1922, against Yugoslavia at Belgrade (1 – 2). He was part of the national team's lot which participated at the 1924 Olympic Games from Paris (M. Ionescu, M. Tudoran, 1984).

Later he was a coach at Steaua Bucharest and, under his leadership, the team won the first title of champion in 1951.

#### **Spielmann Sarvari Francisc**

He was born on the 10<sup>th</sup> of July, 1916 in Oradea. He started his football activity at "Stăruinţa" in 1926 and in 1934 he moved to the ACO where he activated until 1944 with an interruption of one year (1939/1940) during which he played at UDR Reşiţa.

Complete footballer, with great vision of the game and high level technique, he successfully fulfilled the role of the creative inter, being at the same time an excellent accomplisher. He played **in Romania's first representative for 11 times**, scoring 4 goals, and 6 times in that of Hungary's. He died in Oradea on the



21<sup>st</sup> of November, 1974 (M. Ionescu, M. Tudoran, 1984).

### Stróck Adalbert (II)

Born on the 12<sup>th</sup> of February, 1912 in Oradea, he started his football activity at the age of 10 at "Stăruința" Oradea. After the junior years, he moved to the ACO. Vigorous and, at the same time, technical attacker, playing just as well as a wing, inter and center forward, he played for many years in teams abroad, at Ujpest Budapest and F. C. Berna. He wore *the shirt of Romania's first representative for 8 times*, scored 2 goals, participated to the 1924 Olympic Games in Paris and for 13 times he played in Hungary's national team. He died in 1971 (M. Ionescu, M. Tudoran, 1984).

### Stróck Ștefan (I)

He was born on the 11<sup>th</sup> of February, 1901 in Oradea. He started playing football in 1915 at "Stăruința" Oradea from where, after the First World War, he moved to the ACO where he activated as a player until 1939, with a short stop at A.C.F.R. Brașov (1934 - 1938). Gifted with special footballer's qualities, he played on all posts of a team, starting with that of a goal-keeper (*3 times in the country's first representative*, also participating at the 1924 Olympic Games in Paris) and ending with that of a left wing.

A certain celebrity was created around his name because he used to do a series of unusual things in football. For example, many times he used to play one half as a goal-keeper, and defended remarkably, and in the other half, he would play as a center forward and scored the goals necessary for his team's victory. As a goal-keeper he used to do a series of exhibitions for the public's delight. For instance, guessing, in the case of certain kicks, that the ball would go into the cross bar, he would turn his back to the field, facing the goal-post, waiting for the ball to return from the cross bar and catching it (M. Ionescu, M. Tudoran, 1984).

### Conclusions

During the interwar period, the two teams from Oradea, the ACO (Athletic Club Oradea) and Crișana, were amongst the best from Romania and permanently had players in the representative team. The political situation back then caused many of them to play in Hungary's national team as well. The best known of them, Barátki, Bodola, David activated then in teams from Bucharest: F.C.Rapid and Venus, contributing to their performances (winning the Cup of Romania or the national championship).

The trio Kovacs, Barátki, Bodola would constantly be present in the national team's attack until the 40's.

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## PHILOSOPHICAL CONCEPTS OF SOME OF THE MODERN SUMMER OLYMPIC SYMBOLS

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### Abstract

The Olympic Games is extremely serious, this is not the product of coincidence, as they deserve to study scientific study of not less than the specialized areas of analytical studies, such as religious sects or political, economic or natural phenomena and psychological symptoms. That any group is holding humanity so much and take them all this time and care, investment and deserves debate and understand that we understand its causes and characteristics in order to understand ourselves and the way human nature is deeper. Greek Olympics for example docked with the senses and values were not just a sport practiced even docked Palmtheologia \* ancient Greek. The Olympic movement work is rare in human society because they reflect the multiple functions of the movement beyond the power of sports and influential within the framework of the sport, and led to a series of significant impacts in the political, economic, philosophical, educational, cultural, artistic and media and many other areas. Because the Olympic movement did not constitute the cultural landscape of sports in modern society and you will be happy people of their own cultural, but also



drive people to progress continuously humanitarian spirit. True that the first session of the modern Olympic Games were held in Athens in 1896... But also true that these games known as the culmination of years of evolution over the twentieth century, and decrees adopted by the flame and the Olympic flag into the opening and closing ceremonies large and impressive even turning to organized competition between States and boasted of the area between the cities, became the summer Olympic games biggest sporting event in Earth, but the biggest humanitarian activity in the history of mankind, has become a major festival which mixes art and sport technology, and product mix is impressive. In spite of the twentieth century was the century of wars and ideologies and major conflicts, but it was also the century of technical revolution, a century sport, which reached its practice and take care of it, and major events of the Olympics and world cups to the peak. Hence the importance of research to identify some of the concepts of symbols Olympic Games of the modern summer.

### Methods

Curriculum research: the historical approach was used to dictate the nature of the current study. "Interested in this method to collect facts and information through the study of documents, records and effects, and is used in the study of phenomena, events and attitudes which has a long or short time. And the sense that this method of research is to study the past, events And thus can not control the variables as is the case in empirical research. Frenkle & Wallen: 1993, 316))

### Results:

Whatever the symbol takes place in contemporary studies of cash, and almost did not find the philosophical study does not include a chapter or more on the symbols. The reason for that is - primarily due to increased Dalai symbols, language and objectives of the modern era. And privileged to attend it. In order to determine the significance of the terminology code (signal a banner) we say: Symbol word, or phrase, or image, or personal, or the name of the place contains within more than one sign, including the polar linking major. The first is the apparent dimension of the symbol, which is received directly from the senses, is the second dimension subcontractors or dimension beyond understanding exegesis only through symbol. There is a strong relationship between the visible symbol and the subsoil. Linked to levels of use of the symbol, and deal with him, as well as to suggest strength and representation, the development of creative awareness, and its ability to abstract. The allegation that the symbol in its infancy did not refer to anything beyond (what), whether expressed by suggesting or sound or movement or any other form. These first attempts to shed some light on the world of Olympic symbols and sports also shown us will see in parts of this research, new indications regarding the nature of the world of symbols and thus human nature itself. King human being symbolic of the stock to cover the enormous human nature.

#### 1 - Philosophical concepts of the Olympic flag:

The choice of flags and symbols Spars are striking for all, a unique combination of elegance and strength and simplicity. And because human beings dwell in venerating these symbols, the flags and Spars focused mostly in the most beautiful locations where the sight of the largest possible number of people.

"I saw first, regardless of the color of cloth and endured images, symbols and slogans, they serve as an umbrella symbol revolves around his friends, who are often the owners of one case in particular in the battle" (Thames & Hudson; 1972,19). The five rings of different colors reflects the continents of the planet is composed of expression in workshops or services without other geometric shapes, perhaps for connections first, then the depth of expression and potential written diverse. It is for the Chamber geometric form that knows no end, because everything else with the angles The sharp angles or sharp ridges end. Revolving if the best expression of continuity, survival and longevity, completeness and containment, without bias to a point on the ocean, or in the dimension of the Centre from any side of the Pacific is the symbol of Kony to get the words reflect the synchronization and harmony and unity College, and supplements And advice and eternal Interminableness.

#### 2 - The philosophical concepts of the Olympic opening:

Olympic life seeking to exchange and integrate different cultures, and the fact that the Olympic Games and the Olympics both Festival activity aimed at achieving the exchange and integration of cultures in the world of sports At the same time is suitable joint benchmark for real dialogue and exchange between different nations of the world. Inaugural manufactured succeeding generations in every city In a world cultural heritage bears the personal stamp of their city, which show the effects of belief, culture, customs and traditions, whether such a purely intellectual heritage bid; literature, philosophy and other humanities, or tender material produced by science and action; such as architecture, appliances and machinery, tools and means of livelihood war, and So.

#### 3 - Philosophical concepts of the Olympic postage stamps:

Olympic stamps that tell how civilized development witnessed in the Olympics, and these stamps - Telling the era of Olympic history, and really reflect on the sense of cultural and literary enjoyed by the perpetrators of such idea, and telling about the history of the Olympic Games. The researcher believed that the wealth of Olympic stamps deserve great civilization preserved and documented in specialized centers, as recorded Olympic history, and explains a lot of shifts and changes undergone by the Olympic Games in the march of peoples lives.

The importance of postage stamps is that they link between peoples of different countries, therefore, whatever helped distances, including the means of communication with them has become easier through providing postal services between these countries and less expensive than other means of communication available.



### **-Discussion / Conclusion:**

1 - invested Olympic Games uses modern technology in communications, economic, political and cultural between the peoples of the world significantly.

2 - The Olympic Games are not a major festival for athletes but also for volunteers and volunteer corps of vital activity, competence and qualifications of the conditions of the success of hosting the Olympics.

3 - Achieved a global philosophy of the Olympic Games and circulated in full dimensions did not object to it one has been questioned by anyone. And former world governments and peoples wish to enter the Olympic Games in its entirety without modification suits local nature.

**Key words:** economic, Olympic Games, political, religious.

### **Introducere1 - Definition research:**

#### **1-1 provided and the importance of research:**

The Olympic Games is extremely serious, this is not the product of coincidence, as they deserve to study scientific study of not less than the specialized areas of analytical studies, such as religious sects or political, economic or natural phenomena and psychological symptoms. That any group is holding humanity so much and take them all this time and care, investment and deserves debate and understand that we understand its causes and characteristics in order to understand ourselves and the way human nature is deeper.

Greek Olympics for example docked with the senses and values were not just a sport practiced even docked Palmtheologia \* ancient Greek.

The Olympic movement work is rare in human society because they reflect the multiple functions of the movement beyond the power of sports and influential within the framework of the sport, and led to a series of significant impacts in the political, economic, philosophical, educational, cultural, artistic and media and many other areas. Because the Olympic movement did not constitute the cultural landscape of sports in modern society and you will be happy people of their own cultural, but also drive people to progress continuously humanitarian spirit. True that the first session of the modern Olympic Games were held in Athens in 1896.. But also true that these games known as the culmination of years of evolution over the twentieth century, and decrees adopted by the flame and the Olympic flag into the opening and closing ceremonies large and impressive even turning to organized competition between States and boasted of the area between the cities, became the summer Olympic games biggest sporting event in Earth, but the biggest humanitarian activity in the history of mankind, has become a major festival which mixes art and sport technology, and product mix is impressive. In spite of the twentieth century was the century of wars and ideologies and major conflicts, but it was also the century of technical revolution, a century sport, which reached its practice and take care of it, and major events of the Olympics and world cups to the peak. Hence the importance of research to identify some of the concepts of symbols Of the modern summer Olympic Games.

#### **1-2 research problem:**

Themes of philosophy evolved through successive historical periods, this is not the result today, because the word philosophy calls often are popular to refer to any form of knowledge absorption, it may also refer to a personal perspective on life. As for the historical philosophical concepts, which aim to provide the rights to enable it to understand the meaning of the events of present or future in the light of past experience? And the meaning of the Olympic symbols and what are aimed symbols that have evolved significantly in the courses of modern summer Olympic Games. Given the variety of phenomena, things have diversified mutual ties and their implications are diverse in turn, all that is of the utmost importance from the perspective of scientific analysis revealed that the concrete reality of these linkages and their effect is to detect the substantive laws of the world as a binding condition for the activity of people's practical and scientific. So we say that the task of science is certainly Knowledge of laws and armaments in the application, which makes us inclined to question the future, what are the philosophical concepts of the modern summer Olympic symbols? To answer this question we must highlight the dimensions of the concepts and philosophies of modern summer Olympic and study and analyses in depth.

#### **1-3 objective research:**

##### **Research aims to identify:**

1-3-1 philosophical concepts of some of the symbols of the modern summer Olympic Games.

##### **1-4 frontiers of research:**

1-4-1 temporal: in 1896 until in 2004.

1-4-2 spatial: College of Physical Education / University of Mosul.

##### **1-5 define terms:**

1-5-1 concepts: the meanings of ideas is not the meanings of words, the link between words and ideas is that the meanings of words came to the delivery of those meanings. The concepts actually consists of linking information or to link information from reality, it means that much reality in the arena and not merely an explanation of things which imposes mere existence of reason, human beings could put his finger on what meanings. (Network of Arab horsemen / <http://www.forsan.net/index.htm>) and procedurally researcher agrees with this definition. Abdul Salaam Mesdoua. Linguistics and cognitive foundations (Tunisia:



Tunisian House Publishing, 1986) p. 11 20  
1-5-1 philosophical concepts: the meanings that have realized our reality in our minds whether or tangible reality for granted and otherwise of the meanings of words and strings are called concept but merely information, consisting of philosophical concepts linking the reality of linking information or information Reality, and perceptions have meant that much reality in the arena and not merely an explanation of things which imposes reason mere existence, and man can put his finger to it. (The definition of a procedural)

1-5-2 philosophy and big eye defined as "a tool consciences and machine thoughts and the outcome of the mind and a tool to learn races and the elements and informed the symptoms and gems and ills of people and different ethics and character, qualities and instincts. (Gabri, 1985: 26) and the researcher agrees with the definition of big eye procedural.  
1-5-2 Olympic symbols: the signs and symbols and abbreviations used in multiple Olympic Games to refer to the attributes and relationships and symbols of the host country for the Olympics, aimed at facilitating the country's definition, because the Olympic symbols were still since time immemorial reflect on the history of the country (sports, and economic, And political and many others. And write or paint or symbols are printed in full or referred to by abbreviations symbolism.

## 2 - Theoretical studies and previous studies:

### 2-1 theoretical studies:

#### 2-1-1 Elements of the modern Olympic Games

2-1-1 Olympic anthem: The first pay tribute delivered at the first Olympic "the Athens in 1896", to quote a song from the old Greek sports, inaugurated the first Olympic Games of the modern era. The poet wrote "Costas Tamas \*" What a genius foot rule, the father of right and good and beautiful, down to the ground and under the sky, a witness to Your glory, Anna radiation. "The French Baron" Coubertin "think that accompany sporting competitions, the dumping of poetic couplets in Unifying vision of human potential. The International Olympic Committee Olympic anthem at its No. (55) in the city of Tokyo in 1958, and deposited the music of this anthem at the headquarters of the International Olympic Committee.

2-1-2 Olympic section: In 1906, a French Baron "Coubertin," the official part played by athletes. And introduced formally to take part the Olympics in 1920, in the "Anfrs" Belgium. The one section of athletes on behalf of his colleagues, and it must be costing the sports section Olympic hurled at the opening of the Olympic athletes. The first section of the delivered in 1920, the player is "Victor Point", who have won several gold medals, silver, bronze, in the arms competitions, water polo, and reportedly in Section player raising his right hand and catching his left hand Olympic flag carried by another athlete: "On behalf of all Competitors, I swear that share these Olympics, and we respect and abide all the laws that govern these

games, and pledge to practice sport clean building on the requirements of true sportsmanship and to preserve the glory of sport and respect for the reputation Frguena." (Reaih and forward, 1987: 44) In (the Sydney Olympics in 2000), included a new section for the first time in the history of the Olympics says: "We pledge not to the world athlete of fraud", and also included another paragraph says: "We pledge to exercise a clean sport free of stimulants." And dropped this section of the Australian hockey player, "Rachel Hawks (ranked first world hockey for five years)" on behalf of all athletes participating in the session. (<http://ar.wikipedia.org/> 2004) The Department of rulers who shall rule (from the host State), on behalf of all the rulers echoing Section rulers. On behalf of all athletes, referees and officials swear that we arbitration games in this Olympic Games the most neutral and respect all laws and regulations governing these games governors on sportsmanship exclusive there. (Winds and forward, 1987: 44)

2-1-3 Olympic Charter "Action is the Constitution of the Olympic movement, organizing the Olympics, which combined provisions and laws, approved by the International Olympic Committee. In the case of a dispute or disagreement over the interpretation or application of these resolutions, which are separated by the Executive Office of the International Olympic Committee? In some cases through arbitration before the sports tribunal which was established in 1993, consists of twenty Court judge, is a supreme body independent of the International Olympic Committee.

2-1-4 Language "The official languages of the International Olympic Committee is French and English ... We must provide all the meetings of the International Olympic Committee simultaneous interpretation equipment to conduct meetings in Spanish, Russian, German and Arabic with the exception of extraordinary meetings, when a dispute erupted between French and English text taken... Meaning the French text." (Badawi, 1996, 154)

2-1-5 Olympic motto: "Citius Altius Fortius" These words have been translated into several languages and meanings.

A. Translated by the order in the sense: speed, the lifting force.

B. Translated by the order meaning: foot, nobility, strength.

C. Translated by the order in the sense: "Be prepared", "Be quick," "Be High." Following a Greek, tongues were covered in Utopia. It is intended to express the aspirations of the Olympic sports, has emerged this logo for the first time in a "cycle Anfrs" in 1920, in Belgium and formulated this logo is a Dominican priest "Father Byron" for university students. This was a monk friend Baron de Coubertin. (Abdul-Hamid and others, 2001: 96)<http://www2.lhric.org/pocantico/olympics/olympics.htm/2006/p6> ]





2-1-6 Olympic symbol: "Is to design a coherent, which overlaps the Olympic five episodes, with another element; must provide all Olympic symbol, to the Executive Office of the International Olympic Committee, for adoption.

2-1-7 slogan formal session: We must take every Olympics slogan distinguishes them from other courses, and printed publications each session, and the means of propaganda for the session. The difference between the Olympic symbols, the Olympic motto, is the five rings, the Olympic symbol to be there when the five rings, either emblem private courses, the city the right to merge these seminars with other elements or dispensed with."(<http://www.britannica.com/eb/article-9108519/Olympic-Games>)

2-1-8 Olympic flag: "Olympic flag is a flag without the edges are made of white silk, and five workshops in their overlapping, three workshops in the first level also comes colors: blue for a first and be near the force, and the color symbolizes the continent of Europe, the blackness of a second and symbolizes the continent of Africa, And red for a third symbol for the Americas. The second level, the first link is close to the force, and the yellow color symbolizes the continent of Asia, and the second and final color green symbolizes the continent of Australia. The idea of the Olympic flag at the International Conference for the Olympics in 1910, and established a special committee to prepare him. The Olympic flag created in 1913, when it began Coubertin, is thinking of making a special flag for the Olympic courses. Baron wrote in the "Olympic Magazine", published in August 1913, saying: "These five rings represent the five continents in the world, starting from this moment, and reflect the five rings on the acceptance of fruitful and constructive competition, as well as the six colors, including the Ground white, representing the colors of all nations without exception. The "Coubertin," always connect between the old and modern, linking between the "sacred truce" at the Olympics old, who was a symbol of peace in the past, and the flag of the white flag; symbol of peace in the present, and five rings, which codified the Convention on the sacred truce, making them A symbol of solidarity and brotherhood five continents between peoples. The Olympic flag appeared for the first time officially in 1914, in the cities "Paris" French and the City "Alexandria" the Egyptian; in the same time celebrate the twentieth anniversary of the Olympic courses. The flag was raised in Alexandria, within the African Games in the fifth of April. When the Greek deliberately "Angelo Bolannaki" resident in Egypt, the first representative of the International Olympic Committee in Egypt and the Arab world, the call to contribute in building sports stadium in Alexandria. And by Baron to the International Olympic Committee in 1914 at Sorbonne University in Paris, where it was ratified in 1914. The flag was raised in 1915, in San Francisco, and decides a shelf in the course of science in 1916 for the first time in Berlin, however, by World

War I prevented that. The lift in the Swiss city of Lausanne permanent headquarters of the International Olympic Committee in 1919. In 1920, the Belgian government informed the design of Olympic great, and dedicated the Belgian government of the Belgian Olympic Committee, which in turn donated to the President of the International Olympic Committee "Coubertin," he agreed it was lifted at the seventh "cycle Anfrs" Belgium. Since that session, this has become the Olympic flag is the flag even in 1984 In in 1984, the city "Seoul" South Korea's new Olympia note of the International Olympic Committee, raising the flag this time in the first session of Seoul in 1988, and there is informed by another Olympic city "Oslo" Norwegian in 1952, was used at the Olympics Winter. Article No. (24) of the basic principles of the Olympic movement, to raise the Olympic flag in the Olympic Village, beside the other flags of teams participating, whether in the stadium opening, or in the surrounding areas, with the flags of States participating in the session. They should fly the flag at the Olympic large force installed in a prominent place stadium, and begins lifting the Olympic flag, with the announcement of the opening of the Olympic record, and get them when officially declared the conclusion of the Olympics, and after that recognizes the official city held by the next session. Linux and the Olympic flag during the session, for reasons it deems the International Olympic Committee. The Olympic flag in the housing cycle "Sydney 2000", when the death of wife, "Samaranch," the International Olympic Committee President then. (Copyright © Jelsoft Enterprises Limited 2000

2-1-9 modern Olympic flame: "IGAD is a moment of the Olympic flame, raising moments at the ceremony, the Olympic Games start immediately after the IGAD, and the origin of this tradition, as the German researcher says" No ", is" the urgent need for new lighting and illuminator sacred, "and the torch in the past sent a symbol of , And power dynamics and vitality of the universe, and then became a slogan for the permanency of the spirit gods, and in the modern era Olympic torch become a symbol of peace and appeal to the world that departs from the war and join hands and fraternity. The president said the fifth of the International Olympic Committee "EVERY Brandeg," When I got the torch from Olympia to Munich (1972 m), "The torch carried the message to Munich from Olympia, a message of equal opportunities for all and non-discrimination, friendship and international cooperation." And fuelled the torch for the first time officially in a "cycle Berlin in 1936" after the Germans made a request to the International Olympic Committee, to formally introduce the tradition of the torch at the Olympics, and transfer to the city of Olympia "Berlin", the German proposal in the "Oslo" in 1935. He succeeded Dr. "Carl Daym" in organizing the first flight of the torch from Olympia to Berlin, and the hostile campaign of all States that have passed the torch, the first of her pregnancy from



Olympia Greek hostility "Constantine Bondesson" remained the torch burning for days in session until the closing ceremony extinguishing. (Winds and forward, 1987: 45)

It means IGAD flame in Olympia, and then transferred to the city hosting the session, Olympia waived its right to establish the Olympic Games, the city's hosting of the session. The Olympic flame fired at the foot of Mount "Alaolmbos" in Greece, from the sun with concave Women Runners then carried out sequentially, until you reach the venue for each session and hostility of those special Shaalan, fuelled by his colleague from the torch, which was preceded by the enemy, so they reach the city, That will be raised by the session, one day before the start of the session, other national runner stoking the flame alive remain standing for the duration of the session and Runners representing Greece and the countries located between Greece and the host city, and in some cases involving ships and aircraft to carry the torch across the sea and mountains. The torch shall be material combustion does not emit smoke which pollute the environment, in order to preserve the environment, exclude the cities with a high rate of environmental pollution from candidature to organize the Olympics. In the "Sydney 2000", passed the torch underwater in northern Australia, for the first time in modern Olympic history courses. And Olympic officials said: "The torch was passing through the area of tropical coral reefs are rubbish, and used a special chemical for a period of two minutes and 40 seconds, before the "Wendy Craig," a Marine, a pick-up were still burning. " Olympic officials said: "The resurgence of the flame of the torch underwater three meters was strong to the extent that prevented the entry of water into the tube and extinguish the flame. In in 2004 Olympic course was held in the city of Athens, Greek, the Greeks identify torch march from Greece to all countries of the world, then returned again to Greece, before the start of the session. So as not to be shorter march of the Olympic torch. " (Copyright © Jelsoft Enterprises Limited 2000)

2-1-10 Olympic stamps: Founded the International Federation Olympic, for philatelists Olympics in 1982, at the suggestion of the Marquis Spanish "Juan Antonio Samaranch," the President of the International Olympic Committee then (1981 - 2001 m), a philatelic. In the "Athens in 1896", contributed sales of commemorative stamps, the expenses of preparing the session, with proceeds 400,000 thousand Greek drachmas. Many of the athletes and leaders of the international Olympic Movement immortalized stamps. In the session "Anfrs in 1920," Belgium has issued stamps Olympic group, after it was exclusive to Greece. In issued in 1937 Greece Group of historical stamps Greek Olympic sport; to honor the "Diajuras," the island "Rhodes." The nature of the first Olympic carrying the image of the founder "Coubertin," published in "Haiti" in 1939 two years after his death. And Iraq issued a series where the image of Olympic

stamps quarters of the deceased (Abdul Wahid Aziz) marking the winning bronze in weightlifting tournament in light-weight at the Rome Olympics in 1960 . On the Tokyo in 1964, Egypt issued the first set of Olympic stamps, as well as in the two sessions of "Los Angeles in 1984" and "Mexico in 1986." At the Munich Games in 1972, the Principality of "details" and accessories, a group of Olympic stamps. As the Principality "Umm Al Quwain" set stamps on the Olympic history, the Olympic posters. In the "Sydney 2000", the Australian Department of Post, on its image printing any Australian player, win the gold medal in 24 hours made for the gold medal.

2-1-10Olympic commemorative currencies:

Knew his first Olympics in 480 BC. M, and was category four drachmas, struck by order of Governor of the territory of Sicily "Anakzilus" Anxious. Commemoration of victory in a race war wagons. In the modern era of the Olympic Games, Olympics and his first emerged in the "Helsinki in 1952" in Finland, and in Moscow in 1980 and Seoul in 1988 and in the "Atlanta" in 1996, the interest minting of America, in support of the U.S. Olympic Committee, sports teams and the capacity of 21.3 million dollars "Proceeds from the sale of Olympic commemorative currency. Recalled that Finland was the first issued currencies Olympic commemorative precious metal when it hosted the Olympic Games-15 in

2-1 - 12 Olympic medals: In the modern age of Olympic cycles, the medals were awarded prizes for the winners, medals and witnessed great development during the long journey that began in 1896, were awarded to winners in each race only at the beginning, and was crowned the first winner of the silver medal castings crowned of olive branches, either It was the second winner will be coronation medal and bronze wreaths of Laurel. With the passing of days, the number three medals, one gold, and grant the first place, and the second silver granted to the second place, third and the bronze awarded to the third place, sometimes the number of medals in the competition one more than three medals when players are equal to what the outcome. The Olympic medal is thinner than (3 mg and weighing nearly 135 kilograms, and the gold medal, made of silver, including at least 925 carats, painting, including at least 6 grams of pure gold, while the silver medal, made of pure silver, 925 carats, the bronze medal, made of metal alloy. The Olympic medal for several designs at the outset, was conceived Mythology themes, and some symbols of the Olympic sports, and olive wreaths, and then slogans nobility of the city hosting the session. In the "cycle of Amsterdam" in the Netherlands in 1928, was a decree on one side of the Olympic medal, "Nike" a victory when the Greeks, a Rafie "olive wreaths" his right hand, in the lower part details "Alkoliziom" in ancient Rome, has written on the Edge Higher No session of the Olympic medal, and place the language of the city, the design of the Italian artist "Joesp Cazioli," The design of this show on my face even medal in 1968.



In the course of Rome in 1960, decided to suspend medal in the Sash or series. Beginning in 1968, it became the right of the Organizing Committee for the Olympic cycle, the design of the back of the medal, after approval by the International Olympic Committee in the design cycle Atlanta in 1996, the design of the centennial medals includes the same elements that were in the previous medals (a woman wearing ministries and put a wreath Of olive branches over her head, her hands and carrying a bundle of twigs, and there is a cart pulled horses and the image of an ancient Greek Olympic Stadium, as well as seminars Olympic year history of carrying the Olympic and No. "cent". On the flip side there was a mix of Olympic Games logo with 31 planning Symbolizes every one of a certain Olympic event. In the "Sydney 2000", broke out a broad argument in Australia; mistaken for the design of Olympic medals, because it contains "Alkoliziom" (included Roman) instead of the Greek temple, said the newspaper "Okosmos" published in Greek in Australia medal design "that involves Ignorance is applied." He said: "George Hadjiyvasily" chief editor of the newspaper: "Alkoleezoyom" or "on the Romanian" spilled blood on its walls, a far cry from the Olympic ideals of peace and brotherhood. "Organizers gave the session, the blame at the International Olympic Committee, saying:" They objected to a plan to design the Opera House in Sydney on medals, and ordered instead to develop the design "of Coliseum year." As the backdrop for Olympic medals. (<http://www2.lhric.org/pocantico/olympics/olympics.htm>)

#### 2-1-13 Olympic Arts and Literature:

"The objective of mixing sport with the arts in the Olympics; was to review the excellence and superiority among human beings, as well as to take advantage of the meeting of minds and muscles and Greeks had the slogan" Healthy Mind, Healthy Body. "Hence the comparison between Plato in the Republic of art and literature on one hand and between sport And physical education from the other hand, in the first path to beauty spirit, and in the other the means to beauty body. Defines rights and the Olympic ideal as a template to track the evolution of human personality, mind and spirit. We note that Greek art has manifested in the construction industry temples and the beautiful statues, is the statue of "Zeus" great Olympic gods of the seven wonders of the world, and my Greeks sports arena, briefed columns suitable for sporting purposes, and sanitary conditions, and added that the columns on sports arenas elegance, and reflected glory In Rehab particularly in the spread of the sun. Olympia has not been earmarked for sports, but was like a market where Arabs Oaks, which held sessions on the sidelines of various types of arts such as poetry and rhetoric and industry statues and succession. The approach geniuses of thought and Greek art, and there is the story of the heroic "Pitas" clarify some of the arts and literature, which was held on the sidelines of the Olympic festival, has asked the Friends of Olympic champion "Pitas"

poet famous song")(Pindar," to organize a poem of the hero "Pitas" On the occasion His victory and asked them to " Pindar " sum of money, grandest his Friends of the star, they said we can evaluate him a statue of copper less than this, but after consultation and found that the poem is better than the statue, paid for a poet Pindar amount requested, systems them first was a poem: You do not Statues makers not only seen as focus .. But I notice organized fly in prospects.. The flies with reputation "Pitas" successful corona nail. Whitney from the foregoing that the Greeks who appreciate poetry and poets; poet and built for the Olympics " (Pindar (520 BC. M 440 BC. M), a statue is still alive, is the most important poem, " Pindar," a poem XIII Olympiad Provided to Olympic champion "Akznobon." When rebelled good judgement \*\* Alexander the Great (336 BC. M 323 BC. M), destroyed the tale did not leave the house only a poet and Bhandare temple. In modern times Coubertin thought that accompany sports competitions, the dumping of poetic couplets, the unifying vision of human energies, and in 1906, Coubertin proposed that includes the Olympic program at various competitions in the arts. In 1912, held the first contest for the arts, and in 1952 turned into performances only, and my head of the Olympic Committee "EVRY )(Pindar " (1952 1972 m), fine arts in the Olympic program. The protocol contains the Olympics organizing a core programmer of arts, include Article X It contests for the arts. Olympic Committee has been notified of the Arts in 1992 and based in Paris. " ([http://en.wikipedia.org/wiki/History\\_of\\_the\\_Modern\\_Olympics](http://en.wikipedia.org/wiki/History_of_the_Modern_Olympics))

2-1-14 decrees ceremonial and include the following:

A. Opening ceremony: Begins Olympic opening ceremony of the session, the arrival of head of state often or sometimes on behalf of the Olympic stadium. It would be received at the entrance to the Olympic stadium, President of the International Olympic Committee, and Chairman of the Organizing Committee for the session. The Head of State is heading to the podium of honor with him and his entourage. The music playing the national anthem, after the anthem, flying the flags of participating States at the gates of the stadium, and starts a column display of the States participating in the session, each team is uniformed and file each team a banner bearing the name of the state, and national flag and the state of Greece came to the fore in her honor, when the Is another session would be organized teams and moving the rest of the States participating in the Olympics behind Greece depending on the arrangement mill epidemic of the State Organization and the State Organization comes in the back row presentation, and all the flags of States participating in the Olympics, when in front of the podium with President degeneration tribute to the officials - except "Saudi flag" No Linux; because it bears the slogan unification "No God but Allah Muhammad Messenger of God."



After each team to complete the stadium in its stand in line behind the sign holder and holder of the flag in front pad head of state, like Chairman of the Organizing Committee, accompanied by Chairman of the International Olympic Committee set up to the podium in front of exclusive honor. The Chairman of the Organizing Committee President of the International Olympic Committee a few words, asking him to submit to the Head of State or rotate it, please open the session. And then ascends the International Olympic Committee President to the podium after a brief welcome speech, calling the Head of State to the Olympic opening of the session. At that moment, the Olympic flag rise slowly even if the summit arrived in force, launched a squadron of the carrier pigeon, and in every way bar pigeon Olympic flag. And then playing music and cannons fired three shots, and climb the mayor of the city and its vicinity head the International Olympic Committee, comes delegate city that organized the previous session, and provides science tiles "Sato music", the President of the International Olympic Committee, which in turn submit it to the governor and preserves this science in the building Municipal to the next session. There are tow flags one of the summer Olympic cycle, and the other for the Olympic Games. Comes another player or player or two with us carrying the Olympic flame, just around the Olympic stadium, and then moving towards the torch has been permanent, and remains not extinguished the flame alive only in the closing ceremony, and make a joyful media campaign in the form of half circle, and during the passage of information campaign Podium in front of the President, they must Gorge media, and then went after the same order in which teams entered, and leave the Head of State position . And thus ends the opening ceremony.

B. Crowning the winners: Players who take the three places on the first rank, uniformed sports over a runway, which was developed exclusively against honor, standing in the first place in the degree rise slightly in the middle class by the second position and be at the right of first place wins, and take the third place on the left His first place.

C. Closing ceremony: Closing ceremony will be held at the Olympic stadium, following the end of the last competition, namely "marathon", and moving information campaign teams participating in the stadium behind their own banners holders, and take the order on the opening day itself, in midfield and go all the athletes in one column and collectively, rather than Each mission is single nation without universal adherence to sexually melted in a row, and this was the idea of Chinese boy "John Ian Wing," which was at the age of seventeen years, he was working carpenter trainees in Chinatown in Melbourne, Australia, when he sent a letter to "Wilfred I Hughes "Chairman of the Organizing Committee of the Melbourne in 1956, suggesting by this idea, and implemented the idea immediately, and called the session" Olympics friendship." The meeting ends on the platform of honor

in front of athletes, raising the Olympic flag to force the Yemeni used in the opening ceremony, and raises the flag of a State Organizing Committee for the Games to force Central at the same time as it plays the national anthem and raising the flag state that will be established by the next session to force the left with The national anthem was played. Then climb the International Olympic Committee President to the podium and announce the conclusion of the Olympics. At the end of the ceremony extinguished the Olympic flame and the Olympic reluctant peace, at the same time get the Olympic flag bit of force, and holding it horizontally group of eight people wearing a uniform, five guns and fired shots, and then singing, choir, and leave the stadium leaders, and media campaign, and athletes to the music Music. [tp://www.instructorweb.com/lesson/olympics.asp](http://www.instructorweb.com/lesson/olympics.asp)

### 3 - Action research:

#### 3-1 Curriculum research:

the historical approach was used to dictate the nature of the current study. "Interested in this method to collect facts and information through the study of documents, records and effects, and is used in the study of phenomena, events and attitudes which has a long or short time. And the sense that this method of research is Studying the past, events and thus could not control the variables as is the case in empirical research. Frenkle & Wallen: 1993, 316)

3-2 Research tools: Analysis method was used to the sources of scientific content analysis and content "is a distinctive research methods to provide quantitative indicators and objective guidance on the values and standards and the advantage of adopting the field study, documents and official statistics and various media to reach the actual attitudes or opinions of people interested in this way or that without any Personal bias or interference by the researcher, used this approach in research, policy and media personality, anthropology, sociology and management science. "(Obeidat: 1999, 49)

### 4 - Presentation and discussion of the results:

#### 4-1 philosophy of the Olympic symbols:

Whatever the symbol takes place in contemporary studies of cash, and almost did not find the philosophical study does not include a chapter or more on the symbols. The reason for that is - primarily due to increased indicative symbols, language and objectives of the modern era. And privileged to attend it. In order to determine the significance of the terminology code (signal a banner) we say: Symbol word, or phrase, or image, or personal, or the name of the place contains within more than one sign, including the polar linking major. The first is the apparent dimension of the symbol, which is received directly from the senses, is the second dimension subcontractors or dimension beyond understanding exegesis only through symbol. There is a strong relationship between the visible symbol and the subsoil.

Linked to levels of use of the symbol, and deal with him, as well as to suggest strength and



representation, the development of creative awareness, and its ability to abstract. The allegation that the symbol in its infancy did not refer to anything beyond (what), whether expressed by suggesting or sound or movement or any other form.

These first attempts to shed some light on the world of Olympic symbols and sports also shown us will see in parts of this research, new indications regarding the nature of the world of symbols and thus human nature itself. King human being symbolic of the stock to cover the enormous human nature. This means that the world of symbols and functions are not confined to the limited functions offered by these symbols of the Olympic athletes in certain courses. But beyond the functions of nature is absolutely not abide by the limits of time and place advantage. Human thought, for example, writes him immortality is certainly of this kind. The study of these aspects of the hidden world of symbols remained marginalized in some of Humanities and Social Sciences, which is expected not surprising in it.

1 - Philosophical concepts of the Olympic flag: The choice of flags and symbols Spars are striking for all, a unique combination of elegance and strength and simplicity. And because human beings dwell in venerating these symbols, the flags and Spars focused mostly in the most beautiful locations where the sight of the largest possible number of people.

"I saw first, regardless of the color of cloth and endured images, symbols and slogans, they serve as an umbrella symbol revolves around his friends, who are often the owners of one case in particular in the battle" (Thames & Hudson; 1972, 19). The five rings of different colors reflects the continents of the planet is composed of expression in workshops or services without other geometric shapes, perhaps for connections first, then the depth of expression and potential written diverse. It is for the Chamber geometric form that knows no end, because everything else with the angles the sharp angles or sharp ridges end. Revolving if the best expression of continuity, survival and longevity, completeness and containment, without bias to a point on the ocean, or in the dimension of the Centre from any side of the Pacific is the symbol of god to get the words reflect the synchronization and harmony and unity College, and supplements And advice and eternal Interminableness.

2 - The philosophical concepts of the Olympic opening: Olympic life seeking to exchange and integrate different cultures, and the fact that the Olympic Games and the Olympics both Festival activity aimed at achieving the exchange and integration of cultures in the world of sports At the same time is suitable joint benchmark for real dialogue and exchange between different nations of the world. Inaugural manufactured succeeding generations in every city In a world cultural heritage bears the personal stamp of their city, which show the effects of belief, culture, customs and traditions, whether such a purely intellectual heritage bid; literature, philosophy

and other humanities, or tender material produced by science and action; such as architecture, appliances and machinery, tools and means of livelihood war, and So. To the extent that generations in this city active and vital are a rich and diverse heritage, as far as the interweaving relationships with others, their experiences are wide, and accused the bid significantly. Researcher believes that during the successive eras of life lately performed in various cities around the world; Greece, Rome and Carthage, Alexandria, Mesopotamia And other cities in the ancient world, where generations manufactured during the period of glory shine keepers have history, and each city of those cities in the glory that discriminate created, and the specificity of the heritage left by, as though the glory of Greece in poetry, theatre, philosophy and the Olympic Games and was the glory of Rome Military firm and the luxurious necessities of life, and the glory of Alexandria in vaginal luxury intellectual and philosophy schools, sports grounds and Ruffian in writing, and many others.

3 - philosophical concepts of the Olympic postage stamps: Olympic stamps that tell how civilized development witnessed in the Olympics, and these stamps - Telling the era of Olympic history, and really reflect on the sense of cultural and literary enjoyed by the perpetrators of such idea, and telling about the history of the Olympic Games. The researcher believed that the wealth of Olympic stamps deserve great civilization preserved and documented in specialized centers, as recorded Olympic history, and explains a lot of shifts and changes undergone by the Olympic Games in the march of peoples lives.

The importance of postage stamps is that they link between peoples of different countries, therefore, whatever helped distances, including the means of communication with them has become easier through providing postal services between these countries and less expensive than other means of communication available. Through the presentation of the philosophical concepts of some symbols Olympic researcher believes that the issue of Olympic symbols civilized basically they arise and evolve in the city cultural integration of society Urbanite, and that is the essence of any thinking and what the Olympic symbols is to discuss strength and nature of social, philosophical, aesthetic and Vinominologer also apparent .. Despite the link Palmtheologia Greek Olympics and religious rituals of various ancient communities, but it was still reflect on the visual perceptions and the intellectual, philosophical and social problems for the people. Before the emergence of philosophy, a myth that was capable of interpreting the world and the universe, the philosophical foundations of the civilizations of Greece and the Mediterranean civilizations, the Nile Valley and Mesopotamia and other civilizations possess yards cities and temples, primitive ritual and religious texts legendary tragic. And through that we can discover a lot of philosophical concepts, religious and aesthetic



that combined social life and then having its supply and its implications in our modern, dynamic, which confirms the ability of totalitarian excesses of the troublemaker of a man's mind ancient civilizations, which was adopted question method for interpreting phenomena. The question of knowledge leading to the start of accumulated knowledge and civilization, eyebrows broke the dimension of this art legend But why is critical and that led to the evolution of the Olympic symbols is what happened in terms of Greek social life created democratic practice in the old ethnic community internally developed enormously. Since then became the celebrations which were held in Greece, one of the expressions of distinct ethnic democracy, and enriched its evolution.

#### 5 - Conclusions and Recommendations:

##### 5-1 conclusions:

1 - invested Olympic Games uses modern technology in communications, economic, political and cultural between the peoples of the world significantly.

2 - The Olympic Games are not a major festival for athletes but also for volunteers and volunteer corps of vital activity, competence and qualifications of the conditions of the success of hosting the Olympics.

3 - Olympic Games contribute to the development and growth of young people by instilling the following concepts:

First: "The concept of responsibility." Voluntary Service through its objectives of the successful host city in the Olympics, strengthens their sense of mission and responsibility, and promotes the national spirit and the spirit of honesty and self-reliance. And a broader II: "The concept of self-confidence." The hosting of any city of the Olympic Games evidence of long-term evolution of the country gives young people the opportunity to directly sense the great achievements that are a source of pride by highlighting civilization and ancient traditions and ethics. Third: "The concept of learning." For the provision of quality services, we must know everything that is the Olympics of culture and knowledge of the city, learning techniques and services. Fourth: "The concept of openness to the outside." Olympic Games as a means of cultural exchange and develop competitive sports Chime open heart, openness and the ability to exchange equal and awareness of fair competition. V: "The concept of cooperation." They can learn through exercises and work realism special services volunteer to cooperate with others and learn teamwork achievement.

##### 5-2 recommendations:

1 - establishing the principles of the Olympics moral, intellectual and philosophical.

2 - the contributions of diverse cultures in establishing the Olympic Games, is must not only Greek cultures, the domination of European cultures and this must introduce Islamic cultures, Indian, Chinese and many others because they have all cultures by providing them with the Olympics.

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## THE ROLE OF PHYSICAL EXERCISE IN REDUCING AND COMBATING SEA SICKNESS

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### Abstract

The work's aim is to contribute to the weak number of researches made in this field about diminishing and controlling sea sickness by conscious and constant training under many aspects.

The need for this research came from personal observations made through the years, during lessons and physical education activities with students on the ship in school voyages.

From these observations I noticed that the students and the crew that continuously and systematically practiced physical exercises easily endured the symptoms produced by sea-sickness.

**Key words:** seasickness, physical exercises, navigator, motion simulator.

### Introduction

Motion sickness (sea-sickness) is being defined as a neuro-vegetative syndrome with a reflex origin, especially vagotonic that has the source in the vestibular apparatus. The equilibrium is a complex mechanism, which results after the central integration of the signals received from the vestibular system, eyes, peripheral and proprioceptor perceptions.

Pathology could affect one or more members of this sensory system, from this resulting the instability perception and the decay of the testers; due to this complex mechanism, the equilibrium control is hard to define, even harder to control it.

The physical preparation covers a whole system (set) of measures, that ensure a functional ability of the human body, by a high level of basic metrical qualities specific to navigators, a basic metrical qualities being necessary, with accent on arm force, speed, resistance, skillfulness, equilibrium and general metric coordination.

### Research hypothesis

1. We take into consideration the fact that a continuous and systematic practice of physical exercises made by navigators and the sea-going personnel leads to an improvement of the physical abilities, and a balanced development of the body.

2. We consider the fact that by a constant, systematic and conscious practice of physical exercises by navigators and the sea-going personnel, the sea sickness will be diminished and controlled.

### Research objectives and tasks

- establishing and organizing the research samples.
- making the algorithm systems specific for the physical preparation on board.
- introducing a detailed schedule in the research.
- analyzing the situation registered by the subjects from the two groups during the research.
- adaptation and approach for the results of the research.

### Research organization

The experiment took place not only on the ship, but also on the "Installation for tracking down and studying sea-sickness" simulator.

Students of the Constatza Maritime University attended, aged between 21 and 30 years. I want to mention the fact that not only the students from the experimental group, but also the ones from the witness group accomplished at least one school-voyage on ships and they had severe manifestations of sea sickness.

The working schedule of the witness and experimental groups was a normal one, and it ran its course on ship, as follows:

- specialty classes (navigation, mechanics, electricians), English and Physical Education
- point programme (two carts of 4 hours during 24 hours)
- individual study programme
- administrative activities developed on the ship

The experiment took place in the gymnasium, on the ship, and on the "Installation for tracking down and studying sea-sickness" simulator, scheduled three times a week, each session having 75-90 minutes, for six months.

The experimental group had individual and general physical education programmes, specific for their navigator statute, and the witness group agreed to do only the programme on the ship, mentioned above, without any other physical activities.

For a better observation and analysis of the results, a series of metrical tests were established, functional and specific to navigators. These are as follows: long jump, abdominal muscles resistance, arm pull, 3 meters lateral movement, developing loin muscles, tests upon the "Installation for tracking down and studying sea-sickness" simulator – subjects are tested for 30 minutes, during vicious weather, equivalent to a VI-VII grade storm, with reeling, pitch and combined.

**Methods and techniques used in research:** the bibliographical information method, the educational observation method, tests and records method, experiment, the mathematical and statistic method, diagram and chart method.

The training methods used during the research – are the elements by which means are influenced and



safely accomplished the educational objectives of training process, and are those didactic means and instruments which help in training the subjects (Colibaba Evulet D.,1996). The means used in the experiment are: for speed (10-20-30m sprints, lateral movement), for force (exercises against one's own weight, exercises for the abdomen, back arms and legs, climbing on a rope, climbing on a storm ladder), for resistance (running on different courses, on sand, repeated and uniform running, 200-400m running in 2/4 rhythm), for general metric coordination and equilibrium (specific exercises for the development of the vestibular and chineesthetic coordinate, specific exercises for equilibrium, training on the motion simulator that produces effects upon subjects, a very interesting thing that can be followed is the reaction and interaction of the members of one group during their training session; the occurrence of changing the amplitude of movements appears, many types of movements being simulated, likewise the ship in bad weather conditions (IIIrd to VIIIth grade storms, the installation being used as following: the students come on the platform, and then, for the next 30 minutes reeling, pitch and combined movements are produced, checking on the behavior of the subjects, and in each one's personal record is marked the timing for each symptom – after how many minutes the motion sickness syndrome appears, and at which movement the semeiology is more pronounced). (V.L. Ionescu, ,2008).

For a better development of the preparation I created a global educational project for navigators, that may have sea-sickness, programme that is functional for each subject and operational structure.

#### **Analysis of the results of research**

##### **The experimental group:**

- **long jump from place** - at T.i. the arithmetic mean is 220.4 cm, and at T.f. the arithmetic mean of the results is equal to 230cm; an improvement of the arithmetic mean of the results at T.f. is remarked, in comparison with T.i. with 9,6 cm; the standard deviation at T.i. is 11,35 cm , showing small leakage, and at T.f. is 11.01 cm, also showing small leakage, tending to become medium leakage; Cv is at T.i. 5,14%, and at T.f. it equals 4,77% which indicates a great group homogeneity.

- **abdominal flexion** - at T.i. the arithmetic mean equals 26,30 repetitions, and at T.f. it is 26,80 repetitions; an average improvement is remarked with 3,20 repetitions; the standard deviation at T.i. is 2,29, and at T.f. is 1,82, the leakage being small in comparison with the average; Cv is at T.i. 9,70% and at T.f. 6,79% showing a very good homogeneity;

- **arm traction** - at T.i. the arithmetic mean is 6, 66 tractions, and at T.f. is 9, 26 tractions, showing a notable improvement of the average, with 2, 60 tractions; the standard deviation at T.i. is 1, 79 tractions, and at T.f. is 2,18 tractions; Cv at T.i. is 26,87%, and at T.f. is 23,54%, showing a big leakage of individual results at T.i. and a medium one at T.f.;

- **lateral movement**- at T.i. the arithmetic mean is 10,86 repetitions, and at T.f. is 11,60 repetitions, noticing a small rise, with 0,74 repetitions; the standard deviation is at T.i. 1,40 repetitions, and at T.f. 1,29 repetitions, showing a small leakage; Cv is at T.i. 12,89%, and at T.f. 11,12%, showing a great group homogeneity;

- **back extension**- at T.i. the arithmetic mean is 12,06 repetitions, and at T.f. is 13,66 repetitions, noticing a small improvement, of 1,60 repetitions; the standard deviation at T.i. is of 27,46 minutes, at T.f. it is of 1,17 repetitions; Cv is at T.i. 12,27 %, and at T.f. 8,56%, improving and showing a big homogeneity on both tests.

- **tests on the simulator**- at T.i. the arithmetic mean is 16, 26 minutes, and T.f. is 27, 46 minutes, showing a notable rise of the mean with 11, 20 minutes, taking into consideration the fact that 9 subjects resisted on the simulator more than 30 minutes; the standard deviation at T.i. is 4, 04 minutes, and at T.f. is 3, 96 minutes; Cv at T.i. is 24,84%, showing a moderate to big leakage, and at T.f. is 14,42%, noticing a remarkable improvement.

##### **The witness group:**

- **long jump from place** - at T.i. the arithmetic mean is 200,16 cm , and T.f. the arithmetic mean is 200,15 cm, noticing a minor decrease, with 0,01 cm; the standard deviation at T.i. is 8,08 cm ,and at T.f. 8,18 cm; Cv at T.i. is 3,70%, and at T.f. is 3,79%;

- **abdominal flexion** - at T.i. the arithmetic mean is 23,33 repetitions, and at T.f. 22,26 repetitions, noticing a decrease of 1,07 repetitions; the standard deviation at T.i. is 2,41 repetitions, and at T.f. is 2,89 repetitions; Cv at T.i. is 43,58 %, and at T.f. is 42,10%, proving a redundant leakage on both tests;

- **lateral movement** - at T.i. the arithmetic mean is 10,20 repetitions, and at T.f. is 10,13 repetitions, noticing an insignificant decrease of 0,07 repetitions; the standard deviation is at T.i. 1,47 repetitions, and at T.f. 0,99 repetitions; Cv is at T.i. 14,41%, and at T.f. 9,77%;

- **back extension** - at T.i. the arithmetic means is 11,00 repetitions, and at T.f. is 10,46 repetitions, noticing a decrease with 10,54 repetitions; the standard deviation at T.i. is 1,46 repetitions, and at T.f. is 1,30 repetitions; Cv is at T.i. 13,27%, and at T.f. 12,42%;

- **tests on the simulator** - at T.i. the arithmetic means is 15,13 minutes, and at T.f. is 16,53 minutes, noticing a small increase of the average with 1,40 minutes, fact that can be explained by accommodation with weather conditions in time; the standard deviation at T.i. is 4,25 minutes, and at T.f. is 6,16 minutes; Cv at T.i. is 28,08%, and at T.f. is 37,26%, noticing a decrease of group homogeneity.

#### **Discussion and conclusions**

- **long jump from place** - the arithmetic mean at T.f. on the experimental group is 230 cm, and on witness group is 215 cm, the difference between these





two is 15 cm, noticing a remarkable progress of the experimental group;

- **abdominal flexion** - the arithmetic mean at T.f. on the experimental group is 26,80 repetitions, and at the witness group is 22,26 repetitions; the average of the results of the experimental group is larger with 4,54 repetitions than the witness group, the experimental group proving a remarkable progress;

- **lateral movement** - the arithmetic mean at T.f. at experimental group is 11,60 repetitions, and at witness group is 10,13 repetitions, the difference is 1,47 repetitions significant for the experimental group;

- **arm traction** - the arithmetic mean at T.f. at experimental group is 9,26 tractions, and at witness group is 5,13 tractions, noticing a 4,13 tractions difference for the experimental group;

- **back extension** - the arithmetic mean at T.f. for the experimental group is 13,66 repetitions, and for the witness group is 10,46 repetitions, the difference being 3,20 repetitions, significant for the experimental group;

- **test on the simulator** - the arithmetic mean at T.f. for the experimental group is 27, 46 minutes, and for the witness group is 16,53 minutes, the difference being 10,93 minutes; during these tests on the simulator a notable progress for the experimental group was noticed, 9 of 15 subjects resisting over 30 minutes to reeling, pitch and combined movements;

During the development of the metrical abilities process, there is an interaction between these, due to the fact that these two react one against each other, and, as a conclusion a positive or negative force. There is not only one quality, but more combined into a system.

Choosing and applying physical exercises in a proper way in training navigators lead to the rise of the functional potential and improving the activities on the ship.

The obtained results after this experiment prove all the assumptions that say that the navigators or any other persons that constantly make physical exercises after a schedule easily endure the semeiology of sea-sickness, improving their physical abilities. I noticed that many subjects tested in the experimental group improved their activity on the ship in bad weather conditions.

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## THE DISABLED CHILDREN'S INTEGRATION INTO LEISURE TIME RECREATIONAL PROGRAMS

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### Abstract

Community sports and recreational programs are an important part of children's development. An important goal of any physical education program is to help normal pupils acquire the skills and behaviors they need to be successful in community sports and recreational programs. But the disabled pupils often need some extra support to successfully participate in community sports. They are almost never given the chance to get involved in and to enjoy their benefits. This paper presents a modality of helping the pupils with disabilities take part in community sports and in recreational programs.

**Key-words:** *disabilities, special educative requirements, inclusion, recreational programs*

### Introduction

Most of the disabled children love movement and would like to practice a sport. For some of them, a group recreational activity is more appropriate than the school physical education classes. Experimental studies (Schleien, Ray, Green, 1997), emphasized some reasons for which the children with disabilities should participate in extra-school recreational activities:

- the involvement into leisure time activities is closely related to the development of abilities in other curricular areas. Problems such as: ability development, social behavior, movement skills, even lecture or

mathematical operations, are improved when pupils participate in agreeable physical activities;

- an increased number of games determines a decrease of the undesirable behaviors. It is more and more obvious that the unorganized (*dead*) leisure time leads to boredom, which, in its turn, may determine overfeeding, excessive gestural expressions, self-hurting etc. The constructive use of leisure time results in a reduced number of negative behaviors, especially when this is part of a work meant to support positive behaviors;



- parents don't agree the way their child uses his leisure time when he lives far from them. By teaching the disabled pupils how to fill their leisure time with proper activities, we offer them an optimistic perspective on their role within the community, which annuls the need of watching them;

- a set of agreeable leisure time activities is essential for the life quality. For many people, the most expected moment of the day is that destined to relaxation (including training, tennis, walking and trips). In the absence of such concerns, they risk solitude and depression.

- Unfortunately, the disabled pupils have little chance to participate in common recreational programs. Causes:

- they lack the motor or cognitive qualities necessary to get involved into a normal sport program (during a football match, for instance, it is difficult to handle the wheelchair on the grass);

- communities provide opportunities for the gifted athletes and programs for the disabled persons; there is no a way between, allowing the less equipped subjects to participate in such activities. If somebody is not able to play high performance basketball and if he doesn't want either to be a member of the team made up of wheelchair players, he has no other possibility to practice his favorite sport;

- the most popular recreational activities among the disabled older pupils (card games, movie watching) don't favor the movement;

- physical education programs (particularly those for secondary and high schools) are mainly interested in sports games (football, handball, basketball), which require a high level of motor skills and qualities. These sports are not easy to approach by the disabled, but some others would be beneficial: bowling, tennis, golf, trips, weight training;

- most of the teachers don't feel at ease when trying to familiarize the disabled pupils with the skills required by games, for instance, and, consequently, they will organize such actions only if they are good in one of these activities;

- participation in sports recreational programs is hindered (Davis, Sherrill, 2004) by the raised costs (transportation, equipment) and by the absence of a support group (tutors-pairs, parents, colleagues).

#### **Modalities to implement the recreational programs for persons with disabilities**

It is prescribed to equip each sports complex with one or two football fields for persons with locomotor disabilities<sup>2</sup>. Constructions must be accessible to the disabled and, in this sense, a series of regulations are imposed by ADA:

- removing the barriers and installing the platforms;
- eliminating the right angles;

- repositioning the shelves;
- rearranging the tables;
- repositioning the phones;
- adding Braille signals on doors, on lifts and at the entrances;
- allotting some special parking places.

#### ***Movement (transportation) modalities***

Public or private programs for the large public have to facilitate the disabled persons' (movement) transportation. The vehicles with more than 16 places should be accessible to this category of persons and the simplest way would be to use a lift-bus for those moving in the wheelchair, instead of making expensive modifications of the transportation means (used by a restraint recreation program).

Starting from the physical education program for the disabled children, Wagner and coll. (1994) created another one, for the leisure time passing (Fried, 2005) in 9 steps:

#### **1. The initial contact**

The first step in the identification of pupils'/pupils' parents recreational and assisting activities is represented by the enrollment into the program. Wagner and coll. recommend, as a first component of this step, to identify the interest points of the pupils from different communities. The easiest modality to detect the pupils' interests, as for the recreational programs, is to directly ask their opinion, whenever possible. For instance, pupils may express their interest in activities such as basketball, trips, weight lifting or roller skating.

If a child can't express his option, a solution would be to provide him some variants of programs, by observing his reactions and by noticing what he was interested in. For instance, a teacher tries to identify the interest in a recreational activity of an autistic pupil, who is in his first high school year. The physical education teacher finds out from his colleague in the previous educational cycle and from the other colleagues making part of the inclusion team (parents included) that the pupil doesn't like to be in crowded and noisy places, but he (Modell and Imwold, 1998)

likes the routine activities which involve a high degree of repetitiveness. However, even if they possess this knowledge, the team members don't know what activities are in course or what recreational activities would be preferred by the pupil. That is why the high school physical education teacher decides, in the first part of the first semester, to test some recreational activities. This includes the pupil's movement on the tennis court, where he tries to perform simple tennis hits, on the playing field, where he tries to throw at the basket (the pupil may do it together with a colleague), in the strength gym, where he tries to use the fixed bike and to lift weights, on trips in the school neighborhood. Initially, some activities were ignored, because of the pupil's unique characteristics. They included bowling (a too noisy environment) and team sports (basketball, football, volleyball), practiced by too many participants.



## 2. Identification of the parents' interest points

The identification of the pupils' interest in a recreational activity is doubled by that of the parents. Parents have the greatest influence upon their children's options for separated recreational activities or for mixed recreation programs<sup>3</sup>. They may plead or not for the continuation of these activity types. Pupils' and parents' interest points must coincide with the recreational activities approachable within the community and with those practiced by the normal pupils of the same age. For instance, it is nonsense for a child to learn to play bowling or to practice roller skating if his parents, brothers and colleagues are not interested in these activities.

It is also important to have in view that an activity practiced by the community could be incompatible with certain pupils. For example, although football is a popular sport within the community, it might exceed the abilities of a child suffering from acute cerebral palsy. If the team decides that this sport is too expensive for the allotted budget or if the paralyzed pupil is not able to play football, he should be given the opportunity of kicking the ball, being supported by his friends or his parents, after the school program. The team has to creatively approach the pupil's modalities (Scheilen, Mayer, Heiyne, Brandt 1995) of getting involved into his favorite activity.

## 2. Identification of a proper recreational program

Once identified the recreational activity, the next step is represented by the identification of compatible programs within the community. The solution to establish a recreational program is given by:

- the identification of the pupil's abilities and of his level of interest in getting involved into a combined or special program;
- the program flexibility, in the sense of accepting or modifying it, in order to allow a disabled person's inclusion;
- costs;

transportation and distance (Scheilen, Mayer, Heiyne, Brandt, 1995)

In the great communities, it is easier to establish recreational programs. Most of them should provide a variety of programs organized on different levels, starting with the recreational associations where the participants practice an entertainment sport, and ending with the top performance teams that compete at the national level.

In such communities, the integration of pupils with any kind of disability is much facilitated.

## 3. Data collecting

It refers to the pupil's and his parents' instruction, for their participation in the program. This step involves discussions with the pupils and their

families, a chance for all of them to get answers about the program.

## 4. Adaptation

It is focused on the specific modifications necessary to the disabled pupils' successful and secure participation in the community programs.

## 5. The staff's training

This is a critical, but not necessarily a difficult step, the last one before the pupil's inclusion into the community recreational program. The staff who accompanies the pupil must possess the following information: aims of the program, pupil's particular abilities/ needs, medical and behavioral aspects, where from and how to ask for help. This training should be a team effort.

## 6. Integration into the program

After these steps are completed, the pupil is ready to be included, to have a nice experience within the program. But not always the success comes from the very beginning; generally, pupils are anxious, they fear the facilities, the new people or the expectancy level. All these will be solved by means of the inclusion team. Financial and transportation reasons could render difficult the program attendance for more than one week. Despite this, in order to help the disabled pupil, the teacher should create an artificial environment within the school: a green grass space, a bowling mini-gym and/ or a health club.

## 7. Keeping to the program

This is facilitated by the previous steps. But the team who has implemented the program has to watch the pupil, in order to check if his integration is successful. A phone call, an e-mail or a meeting can solve this aspect.

## 8. Evaluation

It is made by the end of the program, it is informal and will allow the staff to emphasize the weak points.

## Conclusions

There is a more and more stressed tendency to eliminate the demarcation line between the general physical education and the inclusive education. This aspect is also valuable as for the disabled children's participation in recreational programs. With modest costs, recreational programs can contribute to the development of any kind of abilities and skills, to the improvement of social behavior and, generally, to the increase of life quality in these innocent children born in a country with so many problems.

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## MUSCULAR STRENGTH AND BODY WEIGHT DYNAMICS IN MASS FITNESS PRACTICE

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### Abstract

This work presents the muscular strength and body weight dynamics at different age categories in the mass fitness. We have considered that a correct use of the methodology in the systematic application of the fitness exercises at different age categories shall point out the muscular strength and body weight dynamics.

**Methods of research** that were utilized:

- The bibliographic study was meant to provide the theoretical documentation and the methodical preparation of the work.
- The observation method was performed all along the period of the research carrying out, aiming to the dynamics of the muscular strength development in conformity with the body weight.
- The method of the pedagogic experiment was applied by means of case study exemplifications.
- Graphical and statistical-mathematical method.

With that end in view we have conducted a research within „Tonik Fitness Club” of Bucharest, with the help of 4 subjects (26, 34, 38 and 46 years old) with a low training level.

### Anthropometrical measurements and control events:

*I. Anthropometrical measurements:* Weight (kg); Height (cm); Diameter of right arm and left arm (cm); Diameter of right hip and left hip (cm); thoracic perimeter at expiration (cm).

*II. Physical events:* Chest muscles strength, Back muscles strength, Lower limbs muscles strength.

The research was conducted over a period of 9 months (June 2008 to February 2009) and included 100 training sessions (3 sessions every week). The training sessions lasted from 90 to 120 minutes, using 2-3 muscular groups per training session, 2-4 series at each exercise of 8-12 repetitions, even up to 90 repetitions sometimes.

**Conclusions:** The results of the research point out that a systematical practice of the physical exercises and a correct application of the training methodology lead to an increase of the muscular strength in accordance with the body weight. An analysis of the muscular strength dynamics in conformity with the body weight emphasizes an increase of the muscular mass, of the studied muscular groups perimeters and a diminution of the body weight.

**Key words:** Body weight, fitness, muscular strength, training, performance.

### Introduction

The fitness is a relatively new sportive branch, with a large applicability both in the sportive training and mass sport, which contributes to the training and performance improvement in different sportive branches, having in the same time a role in the

recovery and rehabilitation of the organism after the sportive fine fettle or in the case of accidents suffered during the training sessions. At mass level, the fitness plays a role in the multilateral and harmonious development of the body at different categories of age, in the correction of posture physical deficiencies, etc.

(Muscle & Fitness, 2006; Muscular Development, 2006, Pro muscle magazin, 2007).

*The purpose of the study* is to point out the dynamics of the muscular strength and of the body weight at different categories of age in the mass fitness.

#### **Hypotheses of the study:**

- we consider that by a systematic practice of the fitness exercises for different categories of age we shall emphasize the muscular strength and the body weight efficiency;

- the correct use of the methods of physical exercises application during the fitness training sessions will lead to an increase of the muscular strength in accordance with the body weight.

#### **Research methods** used:

1. *Bibliographic study* – meant to a theoretical documentation and to the methodical preparation of the work.

2. *Method of observation* – it was applied all along the period of the research carrying out; it was meant to monitor the dynamics of the muscular strength development in conformity with the body weight.

3. *Pedagogic experiment* – it was made by exemplifications of studies of case.

4. *Statistico-mathematical method and graphical representation method.*

#### **Anthropometric measurements and control trials:**

##### *I. Anthropometric measurements:*

1. Weight (kg);
2. Height(cm);
3. Diameter of right and left arm (cm);
4. Diameter of right and left hip(cm);
5. Thoracic perimeter in exhalation

(cm).

##### *II. Physical trials:*

1. Strength of the pectoral musculature, evaluated by pushing with the bar in horizontal plane, executing a single repetition with a maximum weight, assisted by a partner;

2. Strength of back musculature, evaluated by pull-ups at the chin-bar, executing a maximum number of correct repetitions, using the own body weight;



**Fig.1.** Pushing to the chest from sitting down position at the machine (C.A.)

#### **Study organization and carrying out**

In order to point out the muscular strength and the body weight dynamics we have organized a study within the Sports Club „Tonik Fitness Club” of Bucharest for a period of 9 months (from June 2008 to February 2009), by means of a group of 4 subjects of 27 to 46 years old who have a low training level.

##### *Stages of the study carrying out:*

1. 1<sup>st</sup> stage (17-20.VI.2008) initial testing of the control trials.

2. 2<sup>nd</sup> stage (21.VI-20.II.2009) – fundamental – application of the training program.

3. 3<sup>rd</sup> stage (21-25.II.2009) – final testing of the control trials.

3. Strength of lower limbs musculature, evaluated by genuflexions with the bar, executing a single repetition with a maximum weight, assisted by a partner behind.

#### **Contents of the training program means**

The research was conducted along a period of 9 months, including 110 training sessions, 9 training mezzo-cycles (monthly), each one including 3 training sessions a week. The duration of the training sessions varied from 90 to 120 minutes, using 2-3 muscular groups per training session, 2-5 series at each exercise of 8-12 repetitions for strength.

After the analysis of the contents of the training programs attended by the subjects of our study, we introduce hereby the contents of a training micro-cycle and mention the aspects as follows:

**Training session no.1:** PECTORAL + BICEPS, pause between series 1'-2'

1. Exercises for the development of the pectoral musculature:

- bar push-ups on horizontal or inclined plane; dumb bell flying on horizontal or inclined plane; hammer pushing (Better-Flay).

2. Exercises for the development of the biceps musculature:

- Flexions with the „Z” bar from standing up position, flexions with the dumb bells from sitting down position, flexions at „SCOTT” machine.

**Training session no.2:** LEGS + ABDOMEN, pause between series 1'-2'

1. Exercises for the development of the lower limbs musculature (legs):

- Genuflexions with bar, press at 45°, press at 90°, Extensions at the machine for legs at the „Roman Chair”, flexions-extensions at the bench for femoral, raise on tiptoes at the machine.

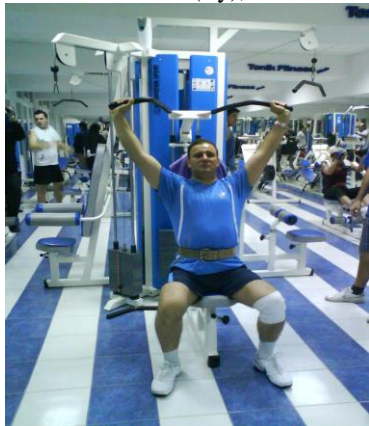
2. Exercises for the abdominal musculature development:

- Raises of trunk in inclined plane, legs raise at rib stall (bar), flexions-extensions of the trunk at a machine for abdomen.

**Training session no.3: SHOULDERS + TRICEPS**, pause between series 1'-2'

1. Exercises for the development of the shoulders musculature:

- Pushing from backhead with the bar, dumb bells lateral raise (fly), forwards raise of dumb bells



**Fig. 3.** Extensions of forearms with grip in supine position with „Z” bar (B.B.)

**Training session no.4: BACK + TRAPEZIUS+LUMBAR** muscles, pause between series 1'-2'

1. Exercises for back musculature development

- Pull-ups at the bar, forwards tractions at the cable machine, backwards tractions at the cable machine, sitting row (pull) at the cable machine,
- Hyper extensions at the machine for lumbar muscles.

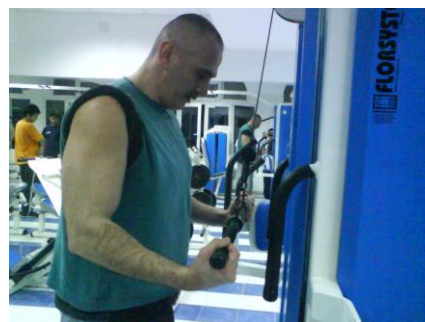


**Fig.4.**Tractions at handles cable machine )

2. Exercises for the development of the triceps musculature:

- Flexions-extensions of the arms at the cable machine, pushing from supine position with closed grip, flexions-extensions with a dumbbell over the head.

**Fig.2.** Pushing at machine over the shoulders (shoulder) (D.I.);



hammer row with large grip: supination and pronation, hammer upside row, grip, supination and pronation.

2. Exercises for the trapezius muscle development:

- Raise of the shoulders with the bar bell and/or the dumb bells.

3. Exercises for the development of the lumbar muscles:



bar with closed grip (with help) (D.I.) (N.M)

**Fig.5.**Pull-ups at the chin-

**Results of the study:**

Table no.1. Results of the anthropometric measurements

No.	Age, years NP	Weight (kg)		Height (cm)	Arms (cm)				Thoracic perimeter, cm		Hips (cm)			
		I	F		right		left		initial	final	right		left	
					I	F	I	F			I	F	I	F
1	C.A.- 26yrs	95	80	182	37	40	38	41	104	110	59	61	59	61
2	.M-34 yrs	78	75	178	36	40	35	39,5	104	109	51	53	51	53

3	.I.-38 yrs	110	95	182	39	43	38	42	116	120	66	66	65	65
4	.B.-46 yrs	110	107	194	42	45	42	45	121	125	60	62	60	62
Statistic Ind	<b>X</b>	98,25	89,25	184,0	38,5	42,0	38,25	41,88	111,2	116,0	59,0	60,5	58,75	60,25
	<b>Am</b>	11,7	11,7	5,0	2,0	2,0	1,88	1,63	7,25	6,5	4,0	3,75	3,88	3,63
	<b>S</b>	13,2	12,6	6,0	2,29	2,12	2,49	2,01	7,46	6,75	5,34	4,72	5,02	4,44
	<b>Cv%</b>	13,43	14,14	3,26	5,95	5,05	6,50	4,80	6,71	5,81	9,05	7,80	8,54	7,36
	<b>R</b> <b>t</b>	0,95	4,30		0,95	4,30	0,95	4,30	0,95	4,30	0,99	21,65	0,99	26,45

Table no.2. Results of the physical trials

No.	Full name	Pectoral muscles, kg		Back muscles, max. nr. rep.		Lower limbs, kg	
		initial	final	initial	final	initial	final
1	C.A.	50	90	5	15	80	120
2	N.M.	50	100	0	6	80	120
3	D.I.	40	110	0	6	***	***
4	B.B.	80	110	0	6	***	***
Statistic Ind	<b>X</b>	55,0	102,5	5,0	8,25	80,0	120,0
	<b>Am</b>	12,5	7,5	0,0	3,38	0,0	0,0
	<b>S</b>	15,0	8,29	0,0	3,90	0,0	0,0
	<b>Cv%</b>	27,27	8,09	0,0	47,24	0,0	0,0
	<b>R</b> <b>t</b>	0,11	0,14	0,99	21,62	0,99	20,35

Legend: \*\*\* **B.B.**- lack of results (spinal cord hernia of S<sub>4,5</sub> disc)  
\*\*\* **D.I.** – lack of results (crossed ligaments and meniscus)



Fig. 6. Gym (Tonik Fitness Club)

In table no.1. and graph no.1 are listed the results of the anthropometric measurements at the initial and final test. The weight presents a diminution by 9 kg in the average, an increase of the arms perimeters (right one by 3,5cm and left one by 3,63cm), an increase of the thoracic perimeter by 4,8cm and an increase of the hips perimeter (right one by 1,5cm and left one by 1,5cm).

In table no.2. are pointed out the control trials for the initial and final test, regarding the development

Following up the specific exercises practice, an increase by 40kg of the pectoral musculature takes place, representing a progress of **44,4%** from the initial testing until the final one; an increase by 10 repetitions of the back musculature, representing an increase of **33,3%** from the initial testing until the final one, and the lower limbs musculature strength – an increase by 40 kg, representing a progress of **66,6%** from the initial testing until the final one.

of the muscular strength of the researched subjects. These ones show an increase of the average value by 47,5kg as for the pectoral musculature, an increase by 3,25 repetitions of the back musculature strength and an increase by 40kg of the lower limbs strength (legs).

As for the individual results of the subjects, the following modifications can be pointed out:

- *Subject no.1*, (C.A.) aged 26, is 182cm tall; he shows a diminution of the weight by 15kg, what represents a difference of **15,7%** between the initial and final test

The analysis of the muscular strength relation dynamics in accordance with the body weight makes evident an increase of the muscular mass by the increase of the upper limbs and lower limbs muscles perimeters and by the increase of the thoracic perimeter.

The efficiency of the physical exercises practice lead to the increase of the muscular strength, an increase of the perimeters of the studied muscular

groups and to a harmonious physical development, an increase of the effort capacity implicitly.

- *Subject no.2*, (N.M.) aged 34, is 178cm tall and he proves a weight diminution by **3,8%** from the initial testing until the final one (he was operated for a fracture at the right arm).

As a result of the practice of the physical exercises specific to the training program, an increase of the pectoral musculature strength by 50kg is visible, representing a progress of **50%** from the initial testing up to the final one; he had „o” repetitions at the initial testing and an increase of the number of repetitions by **6 units**(tractions) at the final testing; the lower limbs musculature strength recorded an increase by 40 kg, representing a progress of **66.6%** between the initial and the final testing.

The analysis of the muscular strength relation dynamics in accordance with the body weight points out an increase of the perimeters of the large and small muscular groups.

The efficiency of the physical exercises practice lead to the diminution of the body weight, what determined an increase of the muscular strength, with the purpose to grow the muscular mass.

*Subject no.3* (D.I.) of 38 years old, he is 172cm tall and has a weight diminution of 15kg, that

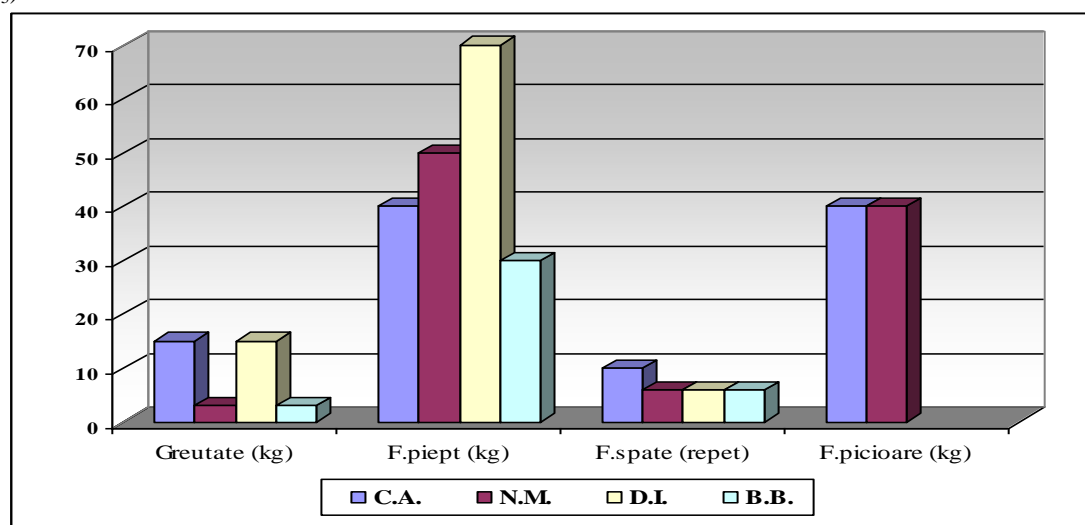
means a decrease by **13,6%** from the initial testing until the final one.

As a result of the practice of the physical exercises specific to the training program, an increase of the pectoral musculature strength by 70kg is evident, representing a difference of **175%** between the tests; the back musculature strength proves a progress of 6 repetitions at the final test, while at the initial test there were „o” repetitions; the strength of the lower limbs was not evaluated because the subject had pains at the articulation of the knee (accidents at the knees crossed ligaments and meniscus).

*Subject no.4* (B.B.) aged 46 is 194cm tall; he has a weight diminution of 3kg, representing a difference of **2.73%** between the initial and the final testing.

As a result of the practice of the physical exercises specific to the training program, there is an increase of the pectoral musculature strength by 30kg, representing a difference of **37,5%** between the tests; the back musculature strength indicates a progress of 6 repetitions at the final test, while at the initial test there were „o” repetitions; the strength of the lower limbs was not evaluated because the subject had pains at the spinal column (sacral disc hernia, S<sub>4</sub>.

s).



Graph no.1. Dynamics of the muscular strength relation in accordance with the body weight

By analyzing the dynamics of the muscular strength relation in accordance with the body weight, a loss of weight and an increase of the muscular strength can be pointed out by means of the increase of the studied muscular groups perimeters (graph no.1).

#### Conclusions:

Our study shows that the efficiency of the muscular strength dynamics relation with the body weight can be proved by a systematic practice of fitness exercises at different categories of age. And by a correct utilization of the methodology in the application of the exercises during the fitness training

sessions, the muscular strength increases in different way at all the subjects, depending on the particularities of age, diet and training level.

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## STRATEGIES OF IMPROVING THE EFFORT CAPACITY AT INSTITUTIONALIZED OF ELDERLY PEOPLE

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### Abstract

**Introduction:** The present study proposes itself to underline the importance of practicing physical exercise under various shapes with a view to bettering the effort capacity even in the case of institutionalized elderly people, for whom the range of daily activities is rather limited.

### The research objectives:

- **Maintaining a functional capacity which corresponds to an independent life;**
- Maintaining and bettering the effort capacity;
- Reducing the risk of appearance of some diseases (atherosclerosis, HTA, osteoporosis, diabetes etc);
- Increasing the aerobic functional capacity or the maximum oxygen consumption (VO<sub>2</sub>max);
- A more economical use of the heart and vessels (reduced heart rhythm);
- Diminishing the energetic cost for the same type of effort made;

### Materials

- The ergometric bicycle;
- Rowing simulator, stepper
- Rolling carpet.

**Subjects:** the aged institutionalized (64 and 72 years)

**Evaluation methods:** One mile tests, cardiac frequency

**Kineto-profilactic treatment methods:** cardio training.

### The research results:

- The decrease of the heart rhythm when resting; the difference between the two groups was major in the final testing stage, being statistically significant for a  $p=0,01$  ( $z = -2,090$ ,  $p = 0,037$ ) – a fact underlined by the use of the non-parametrical Mann-Whitney test for two independent sample groups.
- The decrease of the effort heart rhythm, the difference between the two groups being statistically significant ( $z = -2,542$ ,  $p = 0,011$ ).
- The increase of the maximum oxygen used in the case of the experimental group and in between the two experimental stages, in comparison with the subjects of the whitness lot, the difference between the two groups being statistically significant in the final test stage ( $z = -5,248$ ,  $p < 0,001$ ).

### Conclusions:

- In the case of the aged ones, the physical rehabilitation represents the cvasi-requisite condition for the partial recovery of the effort capacity, which is to allow them an active life, even if it shall be limited to self-care measures, house work, as well as the ability to move with no need of exterior help.
- The final results obtained in the effort test confirm the fact that the various kinetherapy programs selected for improving the effort ability of the subjects under study did have the targeted finality, the aged people managing to properly adapt to numerous solicitations, thus leading to an improvement in the quality of life through resistance increase and implicitly to an improvement of their abilities to take care of themselves in all the happenings of their current life, without coming upon great difficulties when passing through them.

**Key words:** elderly people, ergometric bicycle, rowing simulator.

### Introduction

Growing old must be seen as a physiological process determining transformations at the level of the apparatus and systems of the human organism (cardio-vascular, respiratory, locomotive, digestive apparatus, nervous system), the aspects of decreased individual resistance and implicitly withdrawal from the socio-professional life creating a feeling of addiction, inutility and isolation (Bălăceanu - Stolnici C., 2004).

Fighting isolation and conservation of the old person's dignity presupposes the promotion of physical activity by use of the kinetic means as a solution of

reaching the objective of active longevity (Buchner, D., 1997).

Inside this concept it is necessary to cultivate the habit of systematically practicing physical exercises in an organized manner both in the case of the institutionalized old people, as in the case of those outside such an institution (Sbenghe T., 1981).

The present study proposes itself to underline the importance of practicing physical exercise under various shapes with a view to bettering the effort capacity even in the case of institutionalized elderly people, for whom the range of daily activities is rather limited.

With a view to reaching the proposed objectives, 3 models of cardio training programs were elaborated and applied 3 times a week for a 6 months period **The research objectives**

- Maintaining a functional capacity which corresponds to an independent life;
- Maintaining and bettering the effort capacity;
- Reducing the risk of appearance of some diseases (atherosclerosis, HTA, osteoporosis, diabetes etc);
- Increasing the aerobae functional capacity or the maximum oxigen consumption (VO2max);
- A more economical use of the heart and vessels (reduced heart rhythm );
- Diminishing the energetic cost for the same type of effort made;

**Materials**

The ergometric bicycle;

- Rowing simulator, stepper
- Rolling carpet.

**Subjects:** The research included a number of 40 subjects aged between 64 and 72, divided into two groups: the experimental sample group (n=20) for which a kinetotherapy program was put into practice, and the witness sample (n=20), that followed their usual daily program all throughout the study.

**Evaluation methods:** One mile tests, cardiac frequency

**Kineto-profilactic treatment methods:** cardio training.

**The research results:**

- The decrease of the heart rhythm when resting; the difference between the two groups was major in the final testing stage, being statistically significant for a  $p=0,01(z = -2,090, p = 0,037)$  – a fact underlined by the use of the non-parametrical Mann- Whitney test for two independent sample groups.
- The decrease of the effort heart rythm, the difference between the two groups being statistically significant( $z = -2,542, p = 0,011$ ).
- The increase of the maximum oxigen used in the case of the experimental group and in between the two experimental stages, in comparison with the subjects of the whitness lot, the differenece between the two groups being statistically significant in the final test stage ( $z = -5,248, p < 0,001$ ).

**Cardio-training program-model I** (According to the National Heart, Lung, and Blood Institute and the American Heart Association)

We ek	Warm-up	Obtaini ng the right pulse –	Come-back	Total time	Ap pa rat us
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		<b>70 % of FCM</b>			<b>us ed</b>
<b>1</b>	Normal walk for 5 minutes	Quick walk for 5 minutes	Normal walk for 5 minutes	15 minute s	<b>Rolling carpet – inclination of 0°</b>
<b>2</b>	Normal walk for 5 minutes	Quick walk for 7 minutes	Normal walk for 5 minutes	17 minute s	
<b>3</b>	Normal walk for 5 minutes	Quick walk for 9 minutes	Normal walk for 5 minutes	19 minute s	
<b>4</b>	Normal walk for 5 minutes	Quick walk for 11 minutes	Normal walk for 5 minutes	21 minute s	
<b>5</b>	Normal walk for 5 minutes	Quick walk for 13 minutes	Normal walk for 5 minutes	23 minute s	
<b>6</b>	Normal walk for 5 minutes	Quick walk for 15 minutes	Normal walk for 5 minutes	25 minute s	
<b>7</b>	Normal walk for 5 minutes	Quick walk for 17 minutes	Normal walk for 5 minutes	27 minute s	
<b>8</b>	Normal walk for 5 minutes	Quick walk for 19 minutes	Normal walk for 5 minutes	29 minute s	

**Cardio-training program-model 2** (adapted after the multistratified testing protocol for the ergometric bicycle – the American College of Sports Medicine)

Perio d	Traini ng stages	Trainin g type	Dosage	F C M
<b>2 Weeks</b>	5 minute s warm-up period	Pedal in g the ergomet ric bicycle	• stage 1, with a charge of 25 W – 5 min.	75% of FCM

	-15 min period of proper aerobic training	Pedaling the ergometric bicycle	<ul style="list-style-type: none"> <li>• 3 min. for the second stage, with a charge of 50W;</li> <li>• 4 min. for the third stage, with a charge of 75W;</li> <li>• 3 min for the fourth stage, with a charge of 90 W;</li> </ul>
	- 5 min-effort recovery period	Pedaling the ergometric bicycle	<ul style="list-style-type: none"> <li>• 5 minutes at the first stage, with a charge of 25 W.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Intermediary evaluation 2 – the one mile test</b></li> <li>• <b>The effort bench– 13 – 14 on the Borg scale</b></li> </ul>			

### Cardio-training program-model 3

Period	Training stages	Training type	Dosage	FCM
Weeks 17 - 24	5 minutes warm-up period	Pedaling the ergometric bicycle	<ul style="list-style-type: none"> <li>• stage 1, with a charge of 25 W – 5 min.</li> </ul>	75% of FCM
	20 min.-period of proper aerobic training	Stepper Rowing stimulator Pedaling the ergometric bicycle	<ul style="list-style-type: none"> <li>• 3 min. for the first stage</li> <li>• 3 min. with an average charge</li> <li>• 3 min. pause</li> <li>• 11 minutes for the third stage, with a 75 W charge</li> </ul>	
	5 min. Effort recovery period	Pedaling the ergometric bicycle	<ul style="list-style-type: none"> <li>• 5 minutes for the first stage and 25 W charge</li> </ul>	

<ul style="list-style-type: none"> <li>• <b>Final evaluation - The one mile test</b></li> <li>• <b>The effort bench - 15-16 on the Borg scale</b></li> </ul>
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### Conclusions:

- In the case of the aged ones, the physical rehabilitation represents the quasi-requisite condition for the partial recovery of the effort capacity, which is to allow them an active life, even if it shall be limited to self-care measures, house work, as well as the ability to move with no need of exterior help.
- The final results obtained in the effort test confirm the fact that the various kinetotherapy programs selected for improving the effort ability of the subjects under study did have the targeted finality, the aged people managing to properly adapt to numerous solicitations, thus leading to an improvement in the quality of life through resistance increase and implicitly to an improvement of their abilities to take care of themselves in all the happenings of their current life, without coming upon great difficulties when passing through them.
- The active and conscious participation of the old in the kinetic programs organized by the assistance and social care centers depends not only on the old ones' will to adhere to these programs, but also on the tact of the kinetotherapeutic responsible, on the way he or she knows how to select and combine the kinetic means in order to put together complex and attractive activities which are to improve as many health parameters as possible.

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## THE FITNESS SEMANTICS AND PERSPECTIVE IN COMBATING OBESITY

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### Abstract

Fitness is, dynamic multidimensional physical condition, which has the goal of a state health positive, is seen by many as a physical activity with many meanings, but it certainly has become a fundamental component of physical culture universal.

An increasingly visible, physical activity of recreational sport, practiced by more and more people, becomes the defining factor in improving and maintaining optimal health.

Social phenomenon, the fitness, requires that health of body and spirit, sense of balance these conditions and optimizing the functioning of all morph functional parameters of body.

As ideological aspect, fitness can be interpreted in several criteria but, more important than semantics terminology is revaluation this activity in favor of practicans and in particular those which require immediate improvement of physical condition. In this context, specialists in the field of sport science, needs to focus from perfection the sports programs both those in physical education classes and hours of sports practiced during free by devotees "sport for all".

**Key words:** fitness, obesity, sports for all, health.

### Introduction

Motivation and self confidence are not synonymous but are in a direct relationship (Marius, C., 2005) and more factors become important for practitioners of sport activities in unleashing their desire to improve physical condition, by constant practice and commitment to fitness activities. Obtaining body knowledge and skills useful for developing a positive image about itself and applying the self-psycho-behavioral mechanisms in life is much more necessary than cultivating the physically-active skill, this way you eliminate the key factors of health disturbances.

Sedentariness factor in favor of premature aging accelerates the deterioration of the vital systems and often becomes an irreversible process. Overweight people or those with certain forms of obesity caused by excessive sedentariness and nutrition, should adopt a physically active lifestyle, a healthy lifestyle. Often they give up the fight against kilo in addition, returning to old habits (sedentariness, much food ) which favors the occurrence of pathological disorders. From simple form of depression, anxiety and panic, to serious conditions as diabetes, stroke and cancer. All these diseases may be associated with lack of physical activity and recreational sports and inefficient management of the negative stress.

In our country, the statistics of 2008 shows that the rate of obesity, the main cause of mortality is over 25% and 50% of the population are overweight (www.sanatatea.com). Not negligible aspect is that these percentages are constantly growing and more serious is that, more and more of those affected are children! Subject of meditation and analysis for professionals in the field of physical sciences, these

indicators should constitute an alarm signal for everyone to rebalance their way of life, passing through an active life by practicing fitness and adopting healthy diets. (Rus, V., Studia Universitatis 4 / 2008).

The **aim of this research** is to highlight the role of the sports specialist in the motivation of those with metabolic diseases to practice fitness and the importance of the mediates of the positive results obtained by practitioners of "sport for all".

#### Aims:

- knowledge and awareness of the adverse effects on health caused by the reduction of hours of physical education and sport, by all those in leadership education system
- awareness of the importance of practicing fitness and beneficial effects that are on the human body;
- attracting graduates FEFS, to get involved and bring contributions in "sport for all"
- awareness of managers of fitness & bodybuilding clubs to improve programs and investments in sports specialists;
- encouraging professionals (trainers, coaches, EFS teachers) who are already involved in "sports for all" to elaborate more attractive and efficient programs, more adaptable and personalized to fitness practitioners;
- promotion of the media programs and results in fitness in sport for everybody, not just in the competition
- educating people to manage daily activities and daily allocation of "time sports in your free time
- educating and nurturing the characteristics of the surpassing spirit and the winning of the obstacles between body and soul

- awareness of local communities leaders to support development centers projects and to maintain and improve health by promoting physical relax activities;
- awareness of population of the risks having a passive, sedentary lifestyle!

### Hypothesis

Obtaining and maintaining the assumption of positive results obtained by practicing the fitness is just one of the challenges which the specialist of "sport for all" face. Assuming that practicing fitness as a way of life is necessary to stimulate both the physical and the affective-emotional levels, I consider that the indentifying and applying the proper factors can contribute as indicators in the fructification of the stages which the fitness specialist uses in his programs.

### Methods of research

Organization of work towards research was conducted by a study which was conducted in two phases over a period of two years. As research methods were used: observation, questionnaire, experiment, bibliographic study.

In the first phase anthropometric data indicators were monitored in an interval of 12 months on a sample of ten subjects who had some degree of obesity from which I will highlight only four (see

Tables 1, 2, 3 and 4) , the other six dropped during the program, which was the basis of this work premises.

Selection criteria for the sample were:

- the BMI
- the ratio between I and Kg
- tuck skin (abd, sbcl, dorsal)
- test Ruffier

Stage two consisted in analyzing the causes that led to quitting and / or diminishing results by some subjects, applying a questionnaire on a sample of 17 subjects selected from a total of 60 persons between 18 and 45 years, practitioners of physical activities like sports: fitness, aerobic-tae-bo, jogging

The selection criteria for the second sample were: - personal results obtained in time by practicing "sports for all" - to be practitioners of SPT for at least three months (the average was three years old in fitness) In the questionnaire were used many items but the one analyzed in order to elaborate conclusions and especially in supporting the hypothesis was the following: "Specify at least five factors that you faced in since you have been practicing physical recreational sports activities which you think that have favored in obtaining and maintaining your results (kg lost, a good physics condition, increasing immunity, etc.) "

Further results will display the sample followed in the first stage of research:

**Table 1** initial anthropometric data indicators of subjects:

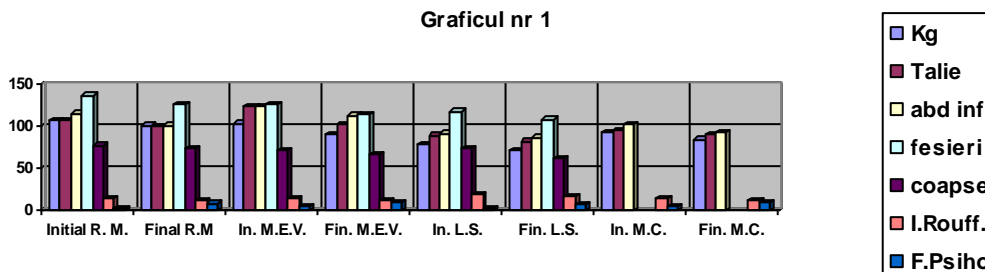
<i>Original</i> <i>subjects</i> <i>Index</i> <i>anthropometrics.</i>	<i>R.M.</i> <i>female</i>	<i>M.E.V.</i> <i>female</i>	<i>S.L.</i> <i>female</i>	<i>M.C.</i> <i>male</i>
Height	164 cm	162 cm	169 cm	179 cm
Weight	108 kg	104 kg	79 kg	93 kg
Waist (OMB level.)	108 cm	124 cm	89.5 cm	96 cm
Inferior abdomen.	116 cm	124 cm	92 cm	102 cm
Buttocks	137 cm	126 cm	118 cm	-
Thighs	76 cm	cm	74 cm left / 67 cm right.	-
I. Rouffier	13.6 pct	14.4 pct	16 pct	13.6pct
"Psycho"	2 pct	3 pct	3 pct	5 pct

Leg.: factor "Psycho" is a value measured emotional state based on a questionnaire which had a value scale from "1" to "10" and the "1" represents the affective state of depressed, anxious, unhappy, dissatisfaction and self - "10" reflects the state of good, joy, enthusiasm, happiness, fulfillment, self-satisfaction. In the above table is expressed by the increase points to the initial phase of which go

**Table 2** Results obtained after the first three months.

<i>Original subjects Index anthropometrics.</i>	<i>R.M. female</i>	<i>M.E.V. female</i>	<i>S.L. female</i>	<i>M.C. male</i>
Weight	- 7 kg	- 13 kg	- 7.2 kg	- 7 kg
Waist (OMB level.)	- 8 cm	- 21 cm	- 7.5 cm	- 6 cm
Inf abdomen.	- 15 cm	- 11 cm	- 5 cm	- 9 cm
Buttocks	- 10 cm	- 12 cm	- 9 cm	-
Thighs	- 3 cm	- 5 cm	- 12 cm stg / -6 cm dr.	-
I. Rouffier	- 2 pct	- 2 pct	- 2.4 pct	- 3 pct
"Psycho"	+6 pct	+ 7 pct	+ 7 pct	+ 4 pct

**Graficul nr 1**

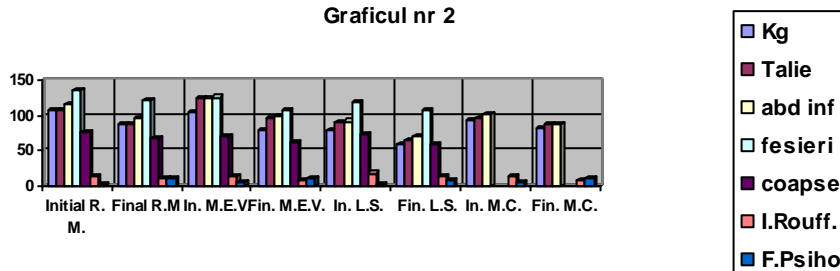


**Table 3**

The results obtained after six months (data relate to the original program from the beginning)

<i>Original subjects Index anthropometrics.</i>	<i>R.M. female</i>	<i>M.E.V. female</i>	<i>S.L. female</i>	<i>M.C. male</i>
Weight	- 21 kg	- 25 kg	- 19 kg	- 12 kg
Waist (OMB level.)	- 19 cm	- 29 cm	- 17 cm	- 8 cm
Inf abdomen.	- 20 cm	- 24 cm	- 22 cm	- 14 cm
Buttocks	- 14 cm	- 18 cm	- 11 cm	-
Thighs	- 8 cm	- 10cm	- 14 cm stg / -7 cm dr.	-
I. Rouffier	- 4 pct	- 5 pct	- 3 pct	- 4 pct
"Psycho"	+8 pct	+ 5 pct	+ 7 pct	+ 5 pct

**Graficul nr 2**



Note further positive developments in terms of improving indicators of abdominal area (-29 cm in size - 25 kg) and buttocks area (-18 cm).

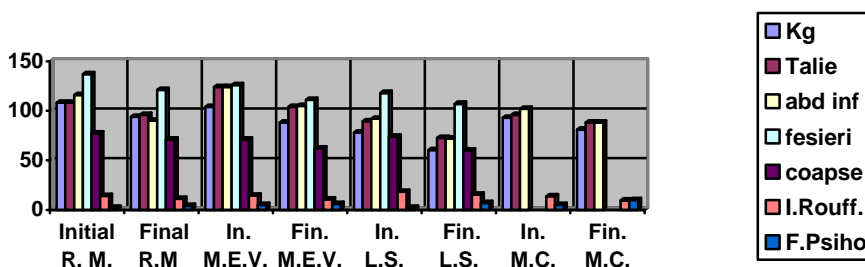
**Table 4**

Results of the final program after 12 months

( Data from the initial reports from the beginning of the program)

<i>Original subjects</i> <i>Index anthropometrics.</i>	<i>R.M. female</i>	<i>M.E.V. female</i>	<i>S.L. female</i>	<i>M.C. male</i>
Weight	- 14 kg	- 16 kg	- 18 kg	- 12 kg
Waist (OMB level.)	- 12 cm	- 20 cm	- 17 cm	- 8 cm
Inf abdomen.	- 18 cm	- 19 cm	- 20 cm	- 14 cm
Buttocks	- 16 cm	- 15 cm	- 11 cm	-
Thighs	- 6 cm	- 9 cm	- 14 cm stg / -7 cm dr.	-
I. Rouffier	- 3 pct	- 4 pct	- 3 pct	- 4 pct
"Psycho"	+2 pct	+ 1 pct	+ 5 pct	+ 5 pct

Graficul nr 3



In the tables above improving results can be seen in the first six months, and their impairment in some subjects, which led to the formulation of hypothesis and trigger the second phase of research. Second Stage of research:

The main factors favored emerged from the questionnaire applied in obtaining and maintaining results, described and interpreted by the respondents were:

Nr. Crt	Initials Sub.	Described and interpreted by the subject of the factor favored
1	A.C.	"kg loss; socializing; the feeling that you are doing something for yourself; mental condition and self esteem improvement; existence of a training partner (boyfriend / girlfriend)"
2	C.A.	"tae bo or any other of sport; eventual massage; strong motivation; lack of comfort"
3	C.C.	"correct execution of the exercises; degree of difficulty close to the practitioners; nice ambient; exercises diversity; presentation of informative materials of good quality"
4	D.V.	"perseverance; ambition; psychic balance; trust in your own person; "temperance - moderation" - Socrates"
5	M.Z.	"perseverance; to be constant (to be moving, it doesn't matter how); physical condition of any practitioner of sport; the immediate effect on body and mental condition observed by practicing sport"
6	N.S.	"will; a healthy diet; a realistic goal; choosing a trustful trainer / coach and specialist; a friend who supports you ; a frequency of at least two hours per week"
7	A.M.	"avoid excesses; hours of sport placed in programs as a permanent way of life , not as a period of treatment; If you choose a model this should be consciously chosen considering the possibilities of obtaining the results and the individual limits. (in case you want to achieve certain dimensions and kilos"
8	F.G.	"participation in regular hours of tae bo (constant); adequate diet (healthy food); will; practicing correct the exercises – conscientiousness"



9	M.R.	“the fact that "I have no mother and father" when it comes to tae-bo; my picture on the refrigerator in an enviable physical condition; the fact that I obtained a visible result, so it is worth continuing; the fact that I practice a sport that I love too much than to leave it; your classes, because they are diversified and full of life, which suits me like a glove; regular participation to tae-bo classes; setting a target in terms of weight; the existence of a model to follow; a factor in favor of obtaining a certain silhouette can be the demands of life partner; the existence of complexes in terms of physical”
10	B.U.	“increasing immunity; a nice body; the state of mind you get after the positive results; teammates that after practicing obtained extraordinary results; kilograms loss”
11	C.B.	“a sustained training effort and perseverance; the desire to keep yourself healthy; he desire to have a harmonious body; an impulse can be the results of your teammates”
12	C.A.	“Not only losing weight but maintaining the same weight (in some cases); teamwork’
13	M.D.	physical exercise of any kind (tae-bo, aerobic, walking or roller cycling, walking ...); minimum 2 liters of water daily consumed (not juice ... nothing sweetened with sugar); giving up sweets (possibly replacing them with fruits ...); no bread, pasta, fat; ... not eating anything after 18 (possibly a fruit, if we are really hungry ...)
14	M.C.	“Establishing realistic goals and timelines for achieving them; personal discipline; self motivation ; communication with the trainer; atmosphere (cleanliness, space, music ..)”
15	N.S.	“practicing the exercises regularly; diet; compliance with hours of rest; appropriate fluid intake (water charge); body massage regularly”
16	O.N.	“determination and ambition to achieve the ultimate goal; sustained participation in sport; interesting programs, friendly environment, flexible program; precarious health because of the kg in addition; the model of other person who managed to loose weight”
17	I.R.	“self esteem obtained trough a beautiful body; the instructor; the instructor’s program; the good feeling we have practice the activities; the environment”

### Results

So if you analyze the results of the research stages described above we can observe the following issues in the coming to confirm the hypothesis:

1. Achieving results is one of the motivating factors in maintaining the results and practicing fitness with success but not entirely.

2. The false perception and interpretation of certain aspects of physical activities that subject practices and the model to follow can become a unrealizable fantasy causing the subject to fail. The chosen model, with magazine pictures, posters with tips like "be strong or go home" can be wrongly interpreted by the subject if sports specialist is not responsive to the experiences the subject faces and does not intervene when success turns into failure.

3. Will, perseverance, consistency, frequency at class, the team, attractive programs, the room where the program develops, the organization of classes, contact with the subject during participation at the program and after obtaining the results, permanently encouragement, rewarding results, rewarding those who participate actively, rewarding of those who have length, all these are just a few points of reference that need to be cultivated, used and promoted permanently by the fitness coach and the managers of this kind of clubs.

### Conclusions

1. The main factor in obtaining support and maintenance of positive results of fitness practitioners have a bio-psycho-educogen character.

2. The genetic baggage, that the subject has may be influenced by training consistently but especially by the emotional intelligence applied power.

3. Practicing physical sports activities with a constant frequency under the guidance of specialists and the media coverage of these activities, has a important relevance in motivating sedentary people to practice fitness as a way of life.

4. Questioning practitioners with some experience in physical recreational activities, makes a basic contribution in this domain of body science, because, finding out directly from the subjects what they face, which are the challenges, fears, and the main aspects of success and / or failure their sports specialist can speculate these indicators in favor of education, contributing to the elimination of the unmotivated factors that produce the adverse effects on health caused by sedentariness;

### Suggestion

Practitioners of sports activities who participated in a fitness program but have not managed to reach their target and dropped before obtaining the results must be continually encouraged, and sports specialist should permanently give his interest in finding the unmotivated aspects and combating them, consequently acting to make a fair and objective fitness promotion. Attracting people to these activities





especially the physical education and sport students, brings benefits society and for EFS graduates. We know it's increasingly difficult to catch a free position for employment for a post of teacher in a school or trainer in a sports club, and this often stays at the unmotivated g factors and the indecision of students choosing a career in sports. Therefore this issue may lead to the diminution of the number of potential students from the faculties of EFS.

The perspective of promoting quality programs in physical activity in leisure sport must become a moral obligation of those involved in the field and of local communities leaders which along with the media should give their full support. The coach in "sports for all" besides the main task of leading trainings with subjects that most often present with a precarious

physical training, should make, besides a health education through physical movement, a mental health education through permanent motivation techniques. The success of the fitness practitioner is influenced by psychological factors which he faces and training a team of specialists, respectively a trainer, a nutritionist and a psychologist is a necessity in obtaining and maintaining results and adopt a healthy lifestyle, through movement!

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## **COMPARATIVE STUDY CONCERNING THE MOTOR AND PSYCHO MOTOR DEVELOPMENT LEVEL OF THE 7-8 YEARS OLD CHILDRENE**

**VAIDA MARIUS**, Assit. Univ. PhD, Petroleum and Gas University from Ploiesti

#### **Abstract**

This paper is an addition to a study started two years earlier, its results could come in the help of the teaching staff that „work” effectively with children of young scholar age, 7-8 years (physical education teachers, school teacher etc.) and to those concerned with the selection from different performance sport branches by determining the motor and psycho motor parameters at 7-8 years old children, determination necessary also to form an idea of the actual development level of these children but also to help us in the sport orientation process with the view of realizing future selections of them to different sport branches and not only.

#### **Material and methods**

The study was made on a lot of 30 boys and the same number of girls with an approximate age of 7-8, in 2008, data being compared with the ones obtained in 2007. Of the used methods and research techniques we mention the bibliographic method, the observation method, measurement and recording method (that aimed identifying the following parameters: speed running on 30 m with take-off, length jump from standing with take-off from both legs, coxo – femoral mobility in anterior plan, equilibrium, the cube test and Matorin test, resistance run), statistic-mathematical method, graphic one and the experimental one.

#### **Results**

Synthesizing the data from the centralizing tables and from the presented graphics we can notice a more or less significant growth at all parameters researched in comparison with the year 2007, both at boys and girls, with the exception of the cube test, where the number of seconds at boys and girls is lower in 2008 and where an increase of the mistake number can be observed at girls in 2008 than in 2007.

#### **Conclusions**

On the basis of those observed previously and of the specialized literature we can say that at this age it is recommended an increased attention in planning the dynamic effort. At the same time, at this age, static effort resistance at children is low. In order to realize a functional equilibrium between high antagonist muscular groups it is recommended the development of extensor muscles of the back and neck and also of the other extensor muscles groups. Resistance exercises, strength must be realized gradually and with caution, this graduation being made individually. In efficient educational conditions movement harmony and their precision can be significantly developed. By knowing the motor and psycho motor potential of pupils, as medium values and as statistic indicators we can establish certain indicators with applicability both in performance sport and in scholar physical education, but also a correct, direction, efficient for different means and specific methods used at this age.

**Key words:** early scholar age, motor development, psycho motor development.

#### **Introduction**

The present paper is an addition to a study started in 2007, that had as main target the actual motor

and psycho motor development level of 7-8 years children, the completion of the existent specific data with data that can contribute in resolving some specific

problems that condition youth formation and preparation from the physical education point of view and not only and the comparison of these data with the anterior ones, the results of this study being able to be of help to the teaching staff that “work” effectively with children of young scholar age, 7-8 years (physical education teachers, school teacher etc.) and to those concerned with the selection from different performance sport branches by determining the motor and psycho motor parameters at 7-8 years old children.

So, we can say that, this study had as main objective the study of motor and psycho motor availability of early age and comparing the results with the anterior ones, knowing that specialists from the domain were drawing the attention over the criteria improvement for the perspective evaluation of an athlete’s future, also over the clear determination on scientific bases of quality complexes and features that assure the success in the respective sport activity. The orientation, selection and training processes complexity at an early age is given also by the unusual adaptability and plasticity of the different motor and psychic functions at that age, as well as for the great compensatory capacity that a child has during the growth and development period. Mass sport development leads indirectly to results by the possibility of choosing certain talented youth from a large number of probationers and to the possibility of having superior athletic results (Svart V. B. and Hruscev S.V., 1986).

The child must not be treated as a shorter adult, but differentiate depending on his growth and development processes, also of age characteristics that must be well known by the specialists.

In this period (early scholar age) growth is almost uniform, observing an acceleration towards the end of the period, this growth is made especially by the extension of the inferior limbs, fact that determines a pronounced grace of child’s body (Ifrim M., 1986).

### Hypotheses

- I believe that by the correct determination of the motor and psycho motor potential of pupils (correlated with the other existent parameters) an efficient direction can be realized of the used means and methods during the physical education lesson and even in the sport practice, taking into account these children’s characteristics.

- I consider that by determining motor and psycho motor availabilities of the early age an expansion of the orientation concerning the physical education approach and of the mentioned age selection, but also of the physical education programs adaptability to the primary education, specific to the respective age.

- Also, I think that this study can complete the other studies from the domain helping at the establishment of certain indicators with applicability

both in performance sport and in the school physical education.

### Material and methods

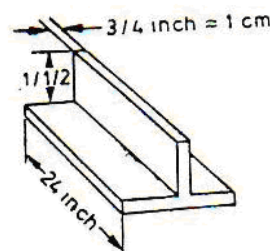
The study was made on a lot of 30 boys and the same number of girls with an approximate age of 7-8, pupils at Saint Vasile School from Ploiesti, in 2008, data being compared with the ones obtained in 2007 at 3 elementary schools randomly chosen from the entire city of Ploiesti.

Of the used methods and research techniques we mention the bibliographic method, the observation method, measurement and recording method (that aimed identifying the following parameters: speed running on 30 m with take-off, length jump from standing with take-off from both legs, coxo – femoral mobility in anterior plan, equilibrium, the cube test and Matorin test, resistance run), statistic-mathematical method, graphic one and the experimental one.

For the statistic processing the following indicators have been used: the weighted arithmetic mean, trust mean interval - 95% - + 95%, median, superior limit ( $X_{max}$ ), inferior limit ( $X_{min}$ ), quartiles – are those values of the characteristic that divide the series in four equal parts, amplitude (W), dispersion, quadratic mean abnormality (S), variability coefficient (Cv).

From the presented proofs I would like to offer more details about the ones less used and that is:

*Equilibrium (Ech)* – through this task maintaining equilibrium capacity was measured on a device in T shape that is placed reversed. This device has the vertical plate of 4cm, 2cm width and 61 cm length and the horizontal plate of 61 cm length and 35 cm width. The subject climbs on one foot on the device (having his hands on his hips) and tries to maintain as much as possible his equilibrium on the device. It is being timed the period until the subject reaches the ground with his free foot, raises his hands of the hips or falls from the device. Time is expressed in seconds and the task is made also on the left and right foot (Dragnea A., 1984).



**Fig.1** Device for equilibrium test (Dragnea A., 1984).

*The cube test (C.T.)* – this task is realized by tracing on the ground a 90cm side cube that, at its turn, is divided in 9 cubes of 30cm/30cm. At the end of this operation another two cubes of the same dimensions are traced (30cm/30cm) on the opposite sides of the large cube. It

is numbered according to the image below and it is requested to the subject that from square "0" in which he is to execute, following the existent numbering, jumps on both legs, as fast as possible, without stepping on the cube's lines or without skipping a cube. In this test we find also the number of mistakes that every subject has made and also the time expressed in seconds in which subjects finish the test.

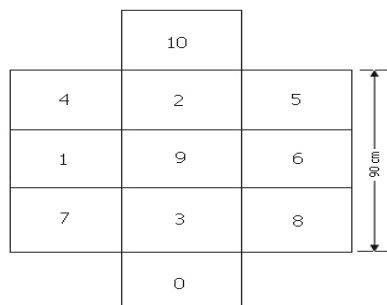


Fig. 2 Device for the cube test (C.T.)

*Matorin* – this test has been realized with the purpose of determining general condition of the subjects. This task consists of making certain jumps with take-off and returning around your own longitudinal ax trying to realize as many rotations as possible around this ax.

The test is made tracing a line of 35 cm on the ground, oriented towards north-south, subject standing with his soles on one side and the other of this line. Two jumps on the left and two on the right had been executed, the best one being noted for each part. It was requested that the subjects not to loose their equilibrium during the test, to land in approximately the same place and in the same position as the starting one. The rotation value was measured in grades with the help of the compass.

**Results**

The obtained results from this study had been centralized in four tables in which there are presented statistic calculus of the motor and psycho motor aptitudes at boys and girls separately in 2007 and 2008.

Moreover, in addition to these tables there are graphically presented in the graphic 3-7 the differences on years of all motor and psycho motor aptitudes that were researched.

Table 1. Motor and psycho motor aptitudes – boys-2007

	30 m	Lenght jump on place	Mobility	Left equilibrium	Right equilibrium	Cube test, seconds	Cube test, mistakes	Matorin left	Matorin right	Resistance (sec.)	
Number	30	30	30	30	30	30	30	30	30	30	
Arithmetic mean	6.61	107.05	-1.78	4.58	5.03	22.72	2.53	246.05	230.38	208.93	
Trust interval of the mean	-95%	6.51	103.93	-2.99	4.12	4.21	21.26	2.19	238.04	221.94	205.38
	95%	6.71	110.17	-0.57	5.05	5.86	24.17	2.88	254.06	238.83	212.48
Median	6.60	107.00	-2.00	5.00	4.00	22.00	2.00	246.50	230.00	209.00	
Inferior limit	5.80	74.00	-13.00	2.00	1.00	11.00	0.00	170.00	130.00	172.00	
Superior limit	7.90	139.00	8.00	11.00	18.00	39.00	6.00	350.00	310.00	259.00	
Lawer Quartile	6.40	102.00	-5.00	3.00	3.00	20.00	2.00	235.50	221.50	202.50	
Upper Quartile	6.80	111.50	2.00	6.00	6.00	26.00	4.00	257.00	243.00	214.50	
Amplitude	2.10	65.00	21.00	9.00	17.00	28.00	6.00	180.00	180.00	87.00	
Dispersion	0.15	145.47	21.97	3.23	10.17	31.83	1.81	961.47	1068.85	188.98	
Quadratic abnormality mean	0.39	12.06	4.69	1.80	3.19	5.64	1.35	31.01	32.69	13.75	
Standard error	0.05	1.56	0.61	0.23	0.41	0.73	0.17	4.00	4.22	1.77	
Variability coefficient	5.89	11.27	-262.83	39.21	63.35	24.84	53.14	12.60	14.19	6.58	

Table 2. Motor and psycho motor aptitudes – girls-2007

	30 m	Lenght jump on place	Mobility	Left equilibrium	Right equilibrium	Cube test, seconds	Cube test, mistakes	Matorin left	Matorin right	Resistance (sec.)	
Number	30	30	30	30	30	30	30	30	30	30	
Arithmetic mean	7.09	94.73	2.62	5.53	4.95	19.60	2.87	246.80	235.62	229.45	
Trust interval of	-95%	6.94	91.88	1.49	4.57	4.28	18.38	2.45	237.43	225.94	224.92



the mean	95%	7.24	97.59	3.75	6.50	5.62	20.82	3.29	256.17	245.29	233.98
Median		7.10	95.00	3.00	5.00	5.00	20.00	2.00	246.50	236.00	229.50
Inferior limit		6.00	69.00	-8.00	2.00	1.00	11.00	0.00	150.00	165.00	196.00
Superior limit		9.20	130.00	13.00	25.00	15.00	35.00	7.00	350.00	370.00	275.00
Lower Quartile		6.75	91.00	0.00	3.00	3.00	17.00	2.00	220.00	208.50	224.00
Upper Quartile		7.30	98.50	5.00	6.00	6.00	21.50	4.00	262.50	247.00	237.50
Amplitude		3.20	61.00	21.00	23.00	14.00	24.00	7.00	200.00	205.00	79.00
Dispersion		0.33	122.27	19.19	13.91	6.76	22.38	2.66	1317.04	1402.88	307.44
Quadratic abnormality mean		0.58	11.06	4.38	3.73	2.60	4.73	1.63	36.29	37.46	17.53
Standard error		0.07	1.43	0.57	0.48	0.34	0.61	0.21	4.69	4.84	2.26
Variability coefficient		8.14	11.67	167.41	67.41	52.53	24.14	56.89	14.70	15.90	7.64

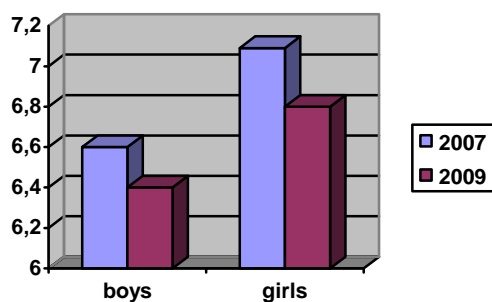
**Table 3.** Motor and psycho motor aptitudes – boys-2008

	30 m	Lenght jump on place	Mobility	Left equilibrium	Right equilibrium	Resistance (sec.)	Cube test, seconds	Cube test, mistakes	Matorin left	Matorin right	
Number	30	30	30	30	30	30	30	30	30	30	
Arithmetic mean	6.4	120.5	0.0	5.4	6.5	195.3	20.4	2.3	246.9	245.6	
Trust interval of the mean	-95%	6.0	109.1	-3.8	4.3	4.3	181.7	16.8	1.1	231.0	219.4
	95%	6.7	131.9	3.8	6.5	8.7	208.8	24.0	3.4	262.7	271.9
Median	6.5	120.5	0.0	6.0	7.0	199.0	21.0	2.0	251.5	239.0	
Inferior limit	5.8	105.0	-7.0	3.0	2.0	172.0	14.0	0.0	205.0	200.0	
Superior limit	7.1	139.0	8.0	7.0	10.0	214.0	26.0	4.0	265.0	300.0	
Lower Quartile	6.0	107.0	-3.0	4.5	4.5	180.5	17.5	1.5	243.0	226.0	
Upper Quartile	6.7	132.5	2.5	6.0	8.5	208.5	23.0	3.5	258.0	267.5	
Amplitude	1.3	34.0	15.0	4.0	8.0	42.0	12.0	4.0	60.0	100.0	
Dispersion	0.2	186.0	21.1	1.7	7.1	263.6	18.6	1.9	358.4	984.6	
Quadratic abnormality mean	0.4	13.6	4.6	1.3	2.7	16.2	4.3	1.4	18.9	31.4	
Standard error	0.2	4.8	1.6	0.5	0.9	5.7	1.5	0.5	6.7	11.1	
Variability coefficient	7.0	11.3	-	24.2	41.1	8.3	21.1	61.7	7.7	12.8	

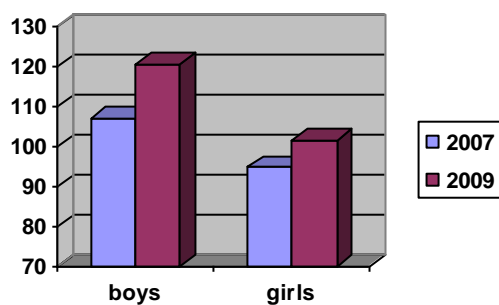
**Table 4.** Motor and psycho motor aptitudes – girls-2008

	30 m	Lenght jump on place	Mobility	Left equilibrium	Right equilibrium	Resistance (sec.)	Cube test, seconds	Cube test, mistakes	Matorin left	Matorin right
Number	30	30	30	30	30	30	30	30	30	30
Arithmetic mean	6.8	101.6	6.6	6.3	5.6	224.3	16.6	3.1	276.6	278.8

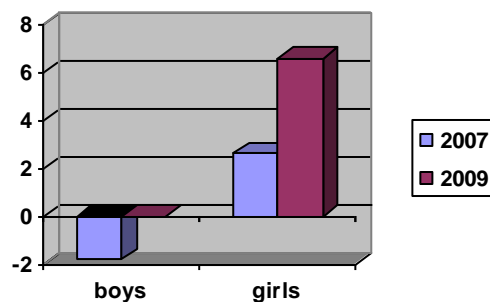
Trust interval of the mean	-95%	6.3	93.6	4.1	3.5	3.0	207.2	14.1	2.2	241.5	234.5
	95%	7.3	109.6	9.2	9.0	8.2	241.3	19.2	4.1	311.7	323.0
Median		6.6	101.0	7.0	5.5	5.0	223.5	17.0	3.0	277.5	280.0
Inferior limit		6.0	89.0	1.0	2.0	3.0	197.0	11.0	2.0	210.0	204.0
Superior limit		7.8	116.0	10.0	13.0	12.0	255.0	20.0	5.0	350.0	370.0
Lower Quartile		6.4	93.5	5.0	4.5	3.0	208.0	15.0	2.0	251.0	238.0
Upper Quartile		7.2	109.5	9.0	7.5	7.0	239.5	19.0	4.0	298.0	310.0
Amplitude		1.8	27.0	9.0	11.0	9.0	58.0	9.0	3.0	140.0	166.0
Dispersion		0.4	91.7	9.1	10.8	9.7	416.8	9.1	1.3	1762.0	2799.9
Quadratic abnormality mean		0.6	9.6	3.0	3.3	3.1	20.4	3.0	1.1	42.0	52.9
Standard error		0.2	3.4	1.1	1.2	1.1	7.2	1.1	0.4	14.8	18.7
Variability coefficient		8.9	9.4	45.6	52.5	55.4	9.1	18.2	36.0	15.2	19.0



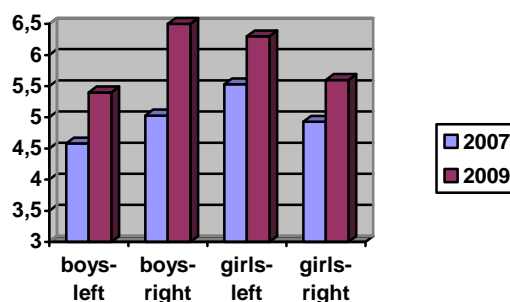
Graphic 1. Comparison of the 30 m speed task



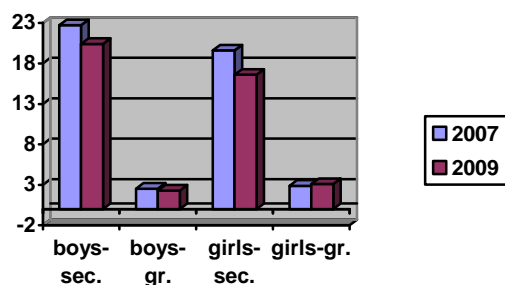
Graphic 2. Values of the length jump from standing position



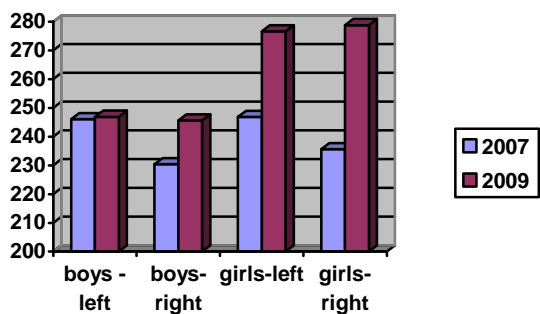
Graphic 3. Mobility task values comparison



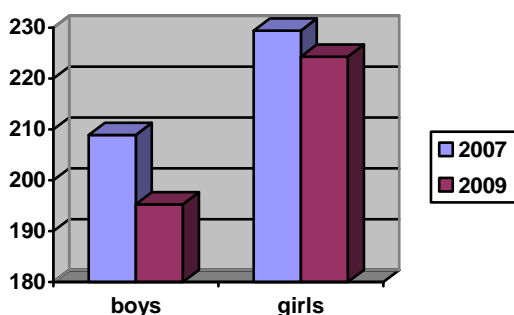
Graphic 4. Equilibrium values comparison



Graphic 5. The cube test values comparison



Graphic 6. Matorin test values comparison



Graphic 7. Resistance task values comparison

### Conclusions

From the data presented above both as table or graphic (separately on sex – boys/girls), the results from the investigation of the 60 subjects (30 girls and 30 boys) in 2007 and the same number in 2008, consisting of a number of primary data pretty significantly, we can draw the conclusion that determining these values it is necessary both to form an idea about the actual developing level of these aptitudes at these children and both to help us in the sport orientation process for making future selections of them in different sport branches and not only.

Making a synthesis of the data from the presented tables and graphics, a growth more or less significant can be observed at all studied parameters in comparison with 2007 both at boys and girls, with the exception of the cube test where the number of seconds at boys and girls is lower in 2008 and where an increase of the mistake number can be observed at girls in 2008 than in 2007.

From the statistic calculus of the variability coefficient results that at the speed run on 30 m task homogeneity is higher both at boys and girls in both studied years, but at the length jump homogeneity is medium at both sexes in both years excepting the year 2009 at girls where homogeneity is higher.

Also from a variability coefficient point of view, we can notice a lack of homogeneity at the equilibrium task in both years at both sexes, excepting the year 2009 where at boys the left equilibrium homogeneity is weak.

At the mobility task can be seen a lack of homogeneity at both sexes both in 2007 and in 2008. From the tables presented above it is seen that at the task – cube test – a lack of homogeneity at boys and girls at the chapter “mistakes” both in 2007 and in 2008 and at the test in seconds can be seen a weak homogeneity both at boys and girls in both years excepting the year 2008 where homogeneity is medium.

Moreover, from the statistic calculus of the variability coefficient at the Matorin task results that homogeneity is medium at both sexes in both years both for the left and right sides excepting the year 2008 at boys where homogeneity is higher.

Also, by knowing the motor and psycho motor potential of pupils, as medium values and as statistic indicators we can establish certain indicators with applicability both in performance sport (depending on the sport branch) and in scholar physical education, but also a correct, direction, efficient for different means and specific methods used at this age.

On the basis of those observed previously and of the specialized literature we can say that at this age it is recommended an increased attention in planning the dynamic effort. At the same time, at this age, static effort resistance at children is low. In order to realize a functional equilibrium between high antagonist muscular groups it is recommended the development of extensor muscles of the back and neck and also of the other extensor muscles groups. Resistance exercises, strength must be realized gradually and with caution, this graduation being made individually. In efficient educational conditions movement harmony and their precision can be significantly developed.

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## COMPARATIVE STUDY CONCERNING THE SOMATIC DEVELOPMENT AT EARLY SCHOLAR AGE

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DULGHERU MIRELA, University PhD, Petroleum and Gas University from Ploiesti

### Abstract

In this paper we continue a study that was started in 2007, study that aims to be an additional one to the existent ones and that wants to determine the somatic parameters at children of early scholar age (7-8 years) and comparing the results with the ones obtained in 2007, knowing that some of the physical education's objectives is also the harmonious development of children at this age. This study can continue at other levels, resulting a wide material that can be the basis of elaborating physical education programs in elementary education and not only.

### Material and Method

The study was made on a lot of 30 boys and the same number of girls of an approximate age of 7-8, in the year 2008, the data being compared with the ones obtained in 2007. From the methods and research techniques used we remind the bibliographic study method, the observation method, measuring and recording method (that aimed identifying the following anthropometric parameters: stature, body weight, bust, biacromial diameter, bitrohanterial diameter, superior limbs length, inferior limbs length, thoracic perimeter, thoracic perimeter in deep inhale, thoracic perimeter in forced exhale, abdominal perimeter in orthostatic, abdominal perimeter in dorsal horizontal position), mathematic-statistic method, graphic method and experimental one.

### Results

From the collected and compared data we can observe that in 2008 waist was bigger both at boys and girls, the same tendency of values growth being noticed at the bust, superior and inferior limbs length, at the biacromial and bitrohanterian diameter level, with the exception of the biacromial diameter at girls in 2008 that is identical with the value from 2007, and a weight growth can be observed at boys, girls having lower values than in 2007. On the other hand, at the thoracic perimeter, thoracic perimeter in deep inhale and forced exhale, also at the abdominal perimeter, we can notice a slight decrease tendency at all values in the year 2008.

### Conclusions

On the basis of the presented data in this paper we can draw the conclusion that there is an evolution at a large number of the researched parameters, this thing leading us to the statement that, at this age, we can recommend the formation of certain new motor developments, motor capacity improvement, improving the knowledge about specific technical procedures of different sport branches, the current use of exercises that have as effect the harmonious physical development, having a proper posture etc., of course taking into consideration the children's age characteristics.

**Key words:** physical education, somatic development, comparative study, early scholar age.

### Introduction

By this paper we want to study the biologic availabilities of the early age and comparing the results with the ones obtained in 2007. At the same time, this study is wanted to be as a completion at the existent studies from the field, contribution that may help resolve some specific problems that condition youth's training and formation from the physical education point of view at this age.

The child must not be treated as a shorter adult, but differentiate depending on his growth and development processes, also of age characteristics that must be well known by the persons working with them (teachers, professors etc.)

It is considered that entering the educational system is subordinate entirely to the profile characteristics of a transition phase, occupying a special position in childhood's frame configuration (Golu P., 1993).

Domain specialists that were preoccupied with this problem of the early age consider that the main characteristic that assure a harmonious development of the organism at young children are: a balanced life

style, alternating effort with rest, movement in fresh air, adequate nutrition etc.

### The hypotheses

The hypothesis we started our study are:

- I consider that by knowing the somatic potential of pupils (completed by the other specific parameters) we can direction the means and methods used by the teaching staff and not only so that these can have the maximum efficiency, knowing that we must give a special attention to effort planning at this age due to their development characteristics.

- We consider that the resulted conclusions from this study can contribute to establishing certain indicators that can have as result the increase of the quantitative level of the specific training content.

- We believe that by comparing these indicators values, by studying the biologic availabilities of the early age, we can realize the evolution from the somatic point of view at children of early scholar age, from year to year, this thing being benefic to the real determination of values that can influence certain conceptions at a macro level.



### Material and Method

The study was made on a lot of 30 boys and the same number of girls of an approximate age of 7-8, pupils at the Saint Vasile School in Ploiesti, in the year 2008, the data being compared with the ones obtained in 2007 at the general schools randomly selected from the entire Ploiesti city.

From the methods and research techniques used we remind the bibliographic study method, the observation method, measuring and recording method (that aimed identifying the following anthropometric parameters: stature, body weight, bust, biachromial diameter, bytrohanterial diameter, superior limbs length, inferior limbs length, thoracic perimeter, thoracic perimeter in deep inhale, thoracic perimeter in forced exhale, abdominal perimeter in orthostatic, abdominal perimeter in dorsal horizontal position), mathematic-statistic method, graphic method and experimental one.

For the statistic processing the following indicators were used: weighted arithmetic mean, mean interval of the mean - - 95% - + 95%, median, superior limit ( $X_{max}$ ), inferior limit ( $X_{min}$ ), quartile – are those values of the characteristics that split the series in four equal parts, amplitude (W), dispersion, quadric mean abnormality (S), variability coefficient (Cv).

### Results

The obtained results from the made study are centralized in the four tables in which are presented statistic calculus of the anthrop-motor aptitudes at boys and girls separately in 2007 and 2008. in the continuation of these tables graphic differences between the main anthrop-motor aptitudes are presented (of those mostly used by the teaching staff from schools), namely stature, weight, bust and thoracic perimeter.

**Table 1.** Statistic calculus of the anthrop-motor aptitudes – *boys 2007*

	Waist	Weig ht	Bust	Biachromi al diameter	Bytrohanteri al diameter	Superi or limbs lenght	Inferi or limbs lenght	P.T. P.T.	P.T. inhal e	P.T. exhal e	Abdomin al perimeter in orthostati c	Abdomin al perimeter in dorsal
Number	30	30	30	30	30	30	30	30	30	30	30	30
Trust interval of the mean	125.3 3	25.53	67.5 8	26.48	21.35	54.56	57.73	60.8 7	65.0 4	59.13	55.64	53.09
- 95%	124.2 0	24.79	67.0 7	26.12	21.06	53.93	56.98	60.2 2	64.4 4	58.50	54.82	52.20
Median 95%	126.4 6	26.26	68.0 9	26.84	21.63	55.19	58.47	61.5 1	65.6 5	59.76	56.46	53.97
Inferior limit	125	25.25	67.5	26.5	21.5	54.25	57.5	60.5	65	59	55.5	53
Superior limit	118	20.5	62.5	23	18.5	51	53	56.5	60	55	50	46
Lower Quartile	137.5	32.5	72	30.5	24	63	66.5	69	72.5	68	65	64
Upper Quartile	122.7 5	23	66.5	25.75	20.5	53	55.75	59.5	63.5	57.5	53.75	51.75
Amplitude	127	27	68.2 5	27.3	22	55.5	59	62	66	60	56.75	54
Dispersion	19.5	12	9.5	7.5	5.5	12	13.5	12.5	12.5	13	15	18
Quadratic abnormality mean	19.12	8.00	3.85	1.96	1.20	5.95	8.29	6.22	5.50	5.97	10.13	11.85
Standard error	4.37	2.83	1.96	1.40	1.10	2.44	2.88	2.49	2.35	2.44	3.18	3.44
Variability coefficient	0.56	0.37	0.25	0.18	0.14	0.31	0.37	0.32	0.30	0.32	0.41	0.44
Trust interval of the mean	3.49	11.08	2.90	5.28	5.14	4.47	4.99	4.10	3.61	4.13	5.72	6.48

**Table 2.** Statistic calculus of the anthrop-motor aptitudes – *boys 2008*

	Waist	Weig ht	Bust	Biachromi al diameter	Bytrohanteri al diameter	Superi or limbs lenght	Inferi or limbs lenght	P.T. P.T.	P.T. inhal e	P.T. exhal e	Abdomin al perimeter in orthostati	Abdomin al perimeter in dorsal
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c													
Number	30	30	30	30	30	30	30	30	30	30	30	30	
Trust interval of the mean	127.6	25.8	68.6	27.1	21.7	55.8	58.9	60.8	64.8	58.9	55.6	52.7	
Median	-	123.2	24.1	67.1	26.1	20.9	53.7	55.9	59.6	63.4	57.1	53.9	50.6
	95%	131.9	27.5	70.2	28.0	22.5	57.8	62.0	61.9	66.1	60.6	57.3	54.8
Inferior limit	127.0	26.3	68.5	27.0	22.0	56.0	58.8	60.8	65.0	59.0	56.0	53.0	
Superior limit	120.5	22.0	65.5	25.0	20.0	52.5	55.0	58.0	62.0	55.0	51.0	47.0	
Lawer Quartile	137.5	28.0	71.0	29.0	23.0	60.0	66.5	62.5	67.5	61.5	57.5	55.5	
Upper Quartile	124.0	24.5	67.5	26.5	21.4	53.8	56.3	60.3	63.8	57.8	55.3	52.5	
Amplitude	130.3	27.5	70.3	27.8	22.0	57.0	60.0	61.8	65.5	60.5	56.8	54.0	
Dispersion	17.0	6.0	5.5	4.0	3.0	7.5	11.5	4.5	5.5	6.5	6.5	8.5	
Quadratic abnormality mean	27.0	4.3	3.4	1.4	0.9	5.9	13.0	1.9	2.7	4.3	4.2	6.4	
Standard error	5.2	2.1	1.8	1.2	0.9	2.4	3.6	1.4	1.6	2.1	2.0	2.5	
Variability coefficient	1.8	0.7	0.7	0.4	0.3	0.9	1.3	0.5	0.6	0.7	0.7	0.9	
Trust interval of the mean	4.1	8.0	2.7	4.4	4.3	4.4	6.1	2.3	2.5	3.5	3.7	4.8	

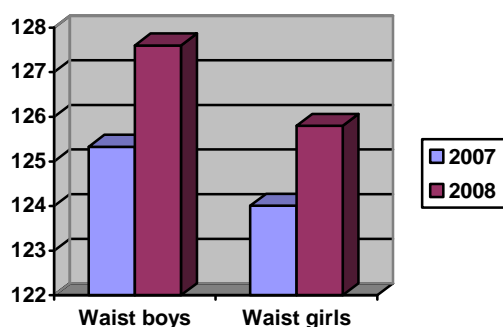
**Table 3.** Statistic calculus of the anthrop-motor aptitudes – girls 2007

Number	Waist	Weigh ht	Bust	Biachromi al diameter	Bytrohanteri al diameter	Superi or limbs lenght	Inferi or limbs lenght	P.T. P.T.	P.T. inhal e	P.T. exhal e	Abdomin		
											al perimeter in orthostati c	Abdomin al perimeter in dorsal	
Number	30	30	30	30	30	30	30	30	30	30	30	30	
Trust interval of the mean	124.0 1	24.67	67.7 9	26.40	21.09	52.86	56.19	60.4 8	64.0 5	58.28	55.07	52.91	
Median	-	122.6 8	23.58	67.0 8	26.03	20.75	52,16	55.39	59.4 0	62.9 8	57.28	53.90	51.75
	95%	125.3 5	25.75	68.4 9	26.77	21.43	53.55	56.99	61.5 6	65.1 2	59.27	56.24	54.06
Inferior limit	124	24.5	67.5	26.5	21	53	56.25	60.2 5	64	58	54.5	52.5	
Superior limit	110.5	16	60.5	22	19	47,5	49.7	53	57	51.5	46	44	
Lawer Quartile	142.5	41	75.5	30.5	25	63	67	74	77	71	68	67	
Upper Quartile	121.5	22	66.5	25.5	20.25	51	54.25	57	60.7 5	56	52.5	50.5	
Amplitude	127	26.25	69.2 5	27	21.5	54.5	58	62.5	66.2 5	60.25	56.75	54.75	
Dispersion	32	25	15	8.5	6	15,5	17.3	21	20	19.5	22	23	
Quadratic abnormality mean	26.61	17.69	7.54	2.10	1.73	7,25	9.59	17.5 3	17.1 0	14.80	20.55	19.94	
Standard error	5.16	4.21	2.75	1.45	1.32	2,69	3.10	4.19	4.14	3.85	4.53	4.47	
Variability coefficient	0.67	0.54	0.35	0.19	0.17	0.35	0.40	0.54	0.53	0.50	0.59	0.58	
Trust interval of the mean	4.16	17.05	4.05	5.49	6.24	5,09	5.51	6.92	6.46	6.60	8.23	8.44	

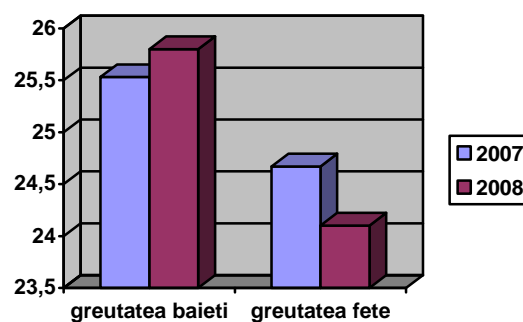
**Table 4.** Statistic calculus of the anthrop-motor aptitudes – girls 2008

	Waist	Weight	Bust	Biachromi al diameter	Bytrohanteri al diameter	Superior limbs length	Inferior limbs length	P.T. P.T.	P.T. inhal e	P.T. exhal e	Abdominal perimeter in orthostatic	Abdominal perimeter in dorsal
Number	30	30	30	30	30	30	30	30	30	30	30	30
Trust interval of the mean	125.8	24.1	68.7	26.4	21.3	53.3	57.1	59.3	63.9	57.6	54.4	51.9
Median	123.7	21.5	67.0	25.6	20.4	51.8	55.3	56.8	61.0	55.6	51.2	49.2
	128.0	26.7	70.4	27.1	22.2	54.7	58.9	61.7	66.8	59.6	57.7	54.7
Inferior limit	125.8	24.5	68.5	26.5	21.0	53.8	56.8	59.0	63.0	57.8	53.3	51.0
Superior limit	121.0	21.0	66.5	25.0	20.0	50.5	54.0	55.5	60.0	53.5	51.0	49.0
Lower Quartile	129.0	30.0	73.0	27.5	23.5	55.5	60.0	64.0	68.0	60.5	63.0	59.0
Upper Quartile	124.5	21.0	67.3	25.8	20.8	51.8	55.8	56.8	60.8	56.0	51.8	49.8
Amplitude	128.0	25.5	69.3	27.0	21.8	54.5	59.0	61.5	67.8	59.5	55.8	53.0
Dispersion	8.0	9.0	6.5	2.5	3.5	5.0	6.0	8.5	8.0	7.0	12.0	10.0
Quadratic abnormality mean	6.6	9.8	4.1	0.8	1.1	3.1	4.6	8.6	11.9	5.7	15.5	10.8
Standard error	2.6	3.1	2.0	0.9	1.1	1.8	2.2	2.9	3.5	2.4	3.9	3.3
Variability coefficient	0.9	1.1	0.7	0.3	0.4	0.6	0.8	1.0	1.2	0.8	1.4	1.2
Trust interval of the mean	2.0	13.0	3.0	3.3	5.0	3.3	3.8	4.9	5.4	4.1	7.2	6.3

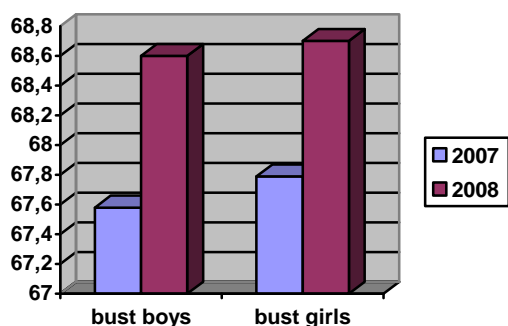
From all these data and parameter that were researched we will graphically present only a few parameters that are considered to have a general interest.



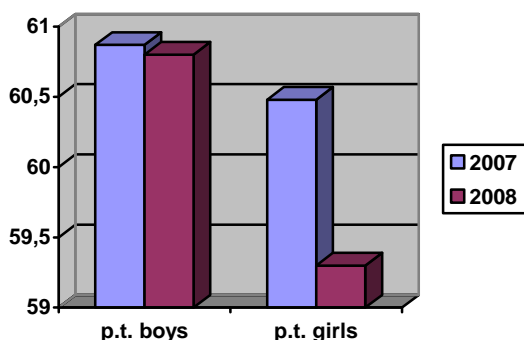
**Graphic 1.** Waist values comparison



**Graphic 2.** Weight values comparison



Graphic 3. Bust values comparison



Graphic 4. Thoracic perimeter values comparison

### Conclusions

The collected, systemized and processed data (separately depending on sex – boys/girls), resulted from the investigation of the 60 subjects (30 girls and 30 boys) in the year 2007 and the same number in the year 2008, consisting a significant number of primary data, can lead, by extrapolation, at the enlarging the orientation concerning the physical education lessons approach during school at this early age.

From the collected data and their comparison we can see that in the year 2008 waist was bigger both at boys as at girls, the same growth tendency of the values being noticed at the bust. The values?

homogeneity is bigger at waist and bust, both at girls and boys in both years.

Also, weight is increasing at boys in 2008 while at girls we can notice a lowering of the values in 2008, a medium homogeneity being observed both in 2007 and in 2008, at girls and boys, with the exception of boys' values from the year 2008, where homogeneity is higher at this researched parameter.

In 2008 a slight increase can be noticed at the values both of the biacromial diameter and of the bitrohanterial diameter, at boys and also at girls, with the exception of the biacromial diameter at girls in 2008 that is identical with the value from 2007, the homogeneity level being higher in both years, at both sexes.

The slight growing tendency is noticed also at the parameters that aim superior and inferior limbs length, both at boys and girls, homogeneity being high in both years.

In what concerns the thoracic perimeter and the thoracic perimeter in inhale and forced exhale a slight decrease tendency can be noticed at all values in 2008 both at girls and boys, homogeneity being high in both years, tendency being similar also at the researched abdominal perimeter (in orthostatic and dorsal horizontal position).

This study can continue also at other levels, resulting in an ample research material that can be the base of elaborating even physical education programs in the elementary education.

Finally, we can recommend, at this age, the formation of certain new motor skills, eliminating certain additional moves during running, walking, improving the coordinative capacities, grace, mobility, proper movement assimilation, having a proper posture etc. at this age a certain luggage of technical procedures specific to different sport branches can be realized.

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## STUDY ON THE PLACE AND ROLE OF AEROBIC GYMNASTICS IN LEISURE ACTIVITIES OF YOUNG WOMAN

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### Abstract

Practising the physical exercise regularly by people of different ages is a necessity, having general influences toward the human organism. Aerobic gymnastics has succeeded, through its multiple effects, in becoming a form of model motor activity. In carrying out my research I went on the hypothesis that the aerobic gymnastics play an important role in the life of a certain segment of young people, women, occupying a special place in the time of young woman.



The answers to the questionnaires applied to female persons reveal the fact that they are aware of: the beneficial influence of aerobic gymnastics toward health and shaping the morpho-plasticity of the body, identifying some other influences, such as: the development of the physic capacity, neuro-psychical relaxation, increasing of optimism, of self-confidence etc. The obtained information reveal that the aerobic gymnastics is a very efficient method, if is well conceived, if it aims precise purposes, if it has visible effects to become not only an argument to exercise, but also a hobby, like a necessity and a permanent desire of being always lithe, powerful and healthy.

**Keywords:** aerobic gymnastics, means, leisure activities, young

### Introduction and the object of the research

People who have respect for motion and take care of their health have an harmonious body and motion line, which requires to be completed by an ethic and moral behavior. (G. Stoenescu, 1990)

Organized a practice exercise by individuals of various ages is needed with general effects on the human body.

"Aerobics" succeeded through its multiple effects and taking into account the new vision of physical fitness to become a model of driving. From teenage desire to be in shape and look good, that Mrs age of two to forget the many duties and to feel good, aerobicul can solve many problems of physical fitness and health. (Dobrescu T., 2008)

In the present paper I have proposed establishing a research-type constatativ aimed to determine the place and role in aerobic gimnasticii leisure activities young.

**Research methods and procedures Research hypothesis.** In carrying out my research I went on the hypothesis that the aerobic gimnasticii play an important role in the life of a certain segment of young people, women, occupying a special place in the time of young woman.

#### Research methods

- drafting work.
- graphic representation of data;
- statistic-mathematical processing of results;
- setting up the questionnaire and its application;

Our research addresses a number of 44 subjects, young aged between 18 and 30. To determine the place and role in aerobic life gimnasticii our subjects, we developed and applied a questionnaire were mainly addressed attitudes and opinions regarding the subjects addressed topics. Questionnaire was implemented in

3. When asked "Practical aerobics gymnastics?" Of all 44 persons surveyed, 38 people regularly practice aerobic gymnastics, and 6 is not practical. Percentages

4. Of responses to the fourth question, which asked the reasons why respondents practice aerobic gymnastics, the 38 subjects revealed the following:

Most respondent (36.84% and 14 subjects) have proposed the elimination of aerobic gymnastics surplusului pounds,

• 9 persons (representing 10.55%) by practicing gimnasticii aerobic wish to maintain pleasant physical appearance;

the club activities "FITNESS" in Bacau, the a group of young practicing independently and constant aerobic exercise. The questionnaire used in the research consisted of seven closed or precodificate questions (with answers provided in advance of the type YES/NO/and open) and addressed a number of 44 persons female.

1. The first question asked subjects to assess whether aerobic gimnasticii practice is beneficial to health and body shaping morfoplastiei. Answers, fully affirmative, indicating that those surveyed are aware of the necessity of practicing aerobics gymnastics though not all practice aerobics gymnastics organized, others no.

2. The second question offered the opportunity of expressing 3 answers, and other influences on the practice gimnasticii aerobic. Thus:

• 44 responses (representing 33.33% of the 132 options selected) believe that aerobic exercise increases the body resistance exercise;

• 30 responses (representing 22.73% of the total of 132 options chosen) , says that aerobic exercise helps to eliminate excess body, creating more optimism and confidence in itself;

• 24 responses (representing 18.18%) believe that aerobic exercise influences the psyche;

• 16 responses (repre responses (representing 12.12%) believe that aerobic exercise is involved in muscle development and mobility;

• 12 responses (representing 9.10%) believe that aerobic exercise change and maintain the general tone;

• 6 responses (representing 4.55%) aerobic gymnastics believes that regulates certain functional disorders. percentages calculated for answers to question no. 2 are highlighted in Chart no. 1.

• 6 people (representing 10.55%) practiced want aerobic exercise by a state mental best,

• 3 persons (representing 7.90%) aerobic gymnastics practice to maintain good health;

• 3 people (representing 7.90%) want to develop strength and resistance;

• 1 person (representing 1.64%) aerobics gymnastics practice because they have a sedentary job;

• 2 people (representing 5.27%) want by practicing gymnastics aerobics, to and occupy her free time in pleasant and useful; percentages calculated for answers to question no. 3 are highlighted Chart no. 3.

5. People who do not practice aerobics gymnastics (the number of subjects surveyed 6) reasons:

- 4 persons (representing 66.67%) did not practice because aerobics exercise program were extended to the workplace;

6. When asked "what changes is your physical appearance on the practice of aerobic physical exercise", subjects responded:

- 20 people (representing 45%) have maintained a state of health to the highest standards;

- 14 persons (representing 31.82%) who practice daily aerobic exercise have seen a transformation on visible body shaping morfoplastiei;

7. By the last question I asked for suggestions for improving the activity of subjects to accept the club where practice aerobics gymnastics training.

- 18 people (representing 40.91%) consider that a room should be larger.

- 15 people (representing 34.09% ) surveyed want more varied exercises and increased complexity;

- 7 persons (representing 15.91%) propose to intervene in times of the teacher in correcting exercises done wrong;

- 4 people (representing 9.10%) propose to change at specified intervals time as a coregrafiei incentive;

- 2 people (representing 4.54%) believe that every hour should be a challenge! "percentages calculated for answers to question no. 7 are highlighted in Chart no. 6.

### Conclusions

Responses to questionnaires administered to persons women reveals that they are aware of: the influence of beneficial aerobic gimnasticii health and body shaping morfoplastiei identifying and other influences like to occupy your free time and is pleasant and helpful, the development of physical , neuro-psyhic relaxation, increased optimism, a self-confidence, etc.

- 1 person (representing 16.67%) not practice aerobics gymnastics of "lack of time"

- 1 person (representing 16.66%) did not practice organized movement of convenience. percentages calculated for answers to question no. 5 are highlighted in Chart no. 4.

- 5 people (representing 11.36%) have regained mobility of joints and increased physical strength;

- 3 people (representing 6.81%) have tonificat muscles;

- 2 people (representing 4.54%) and were kept like physical appearance. percentages calculated for answers to question no. 6 are highlighted in Chart no. 5.

Aware of these effects, most people interviewed, practică organized aerobicul, even with a daily frequency. Those who do not practice, lack of time reasons, the load at work and convenience.

The data obtained show that aerobic exercise is a particularly effective, if well designed, if and proposes concrete, if it has visible effects to be not only a reason for moving but in a hobby, as a necessity and a desire permanently to keep further, with a strong and wellbeing. The activity must be so well organized that every hour be like "a challenge", as one of the inquired persons noticed.

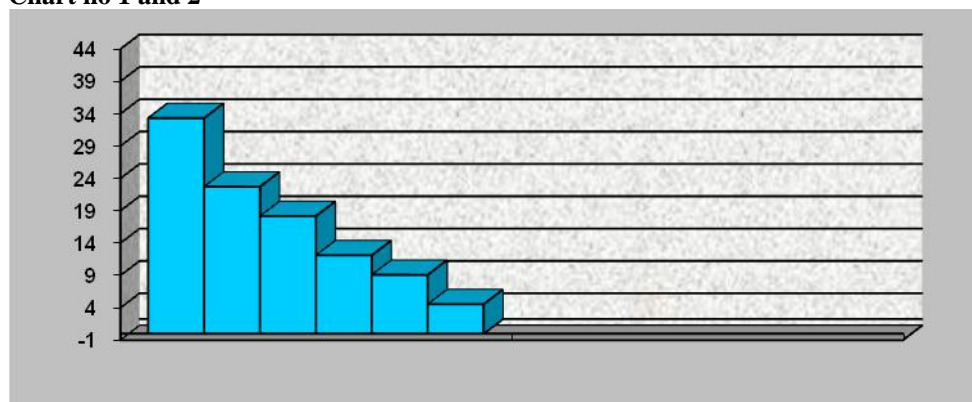
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Chart no 1 and 2



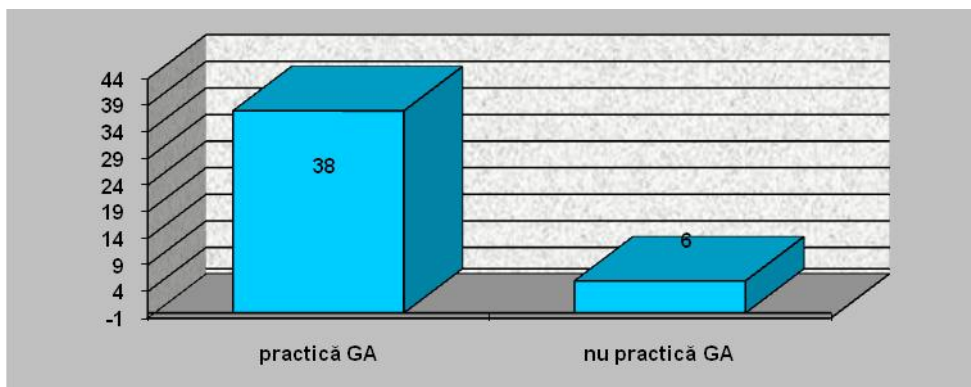


Chart no. 3

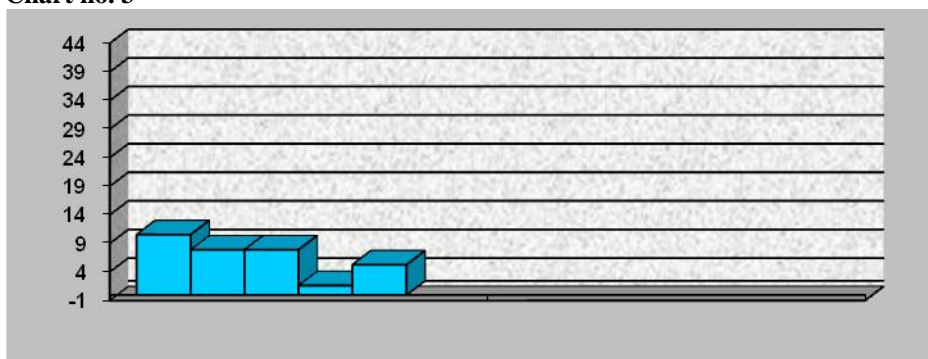


Chart no 4

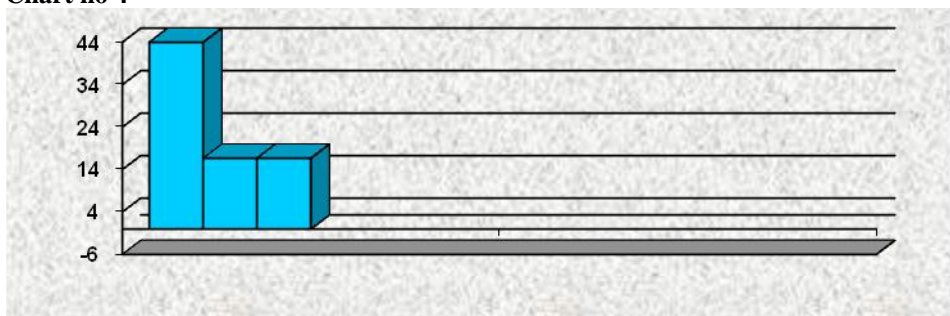


Chart no 5

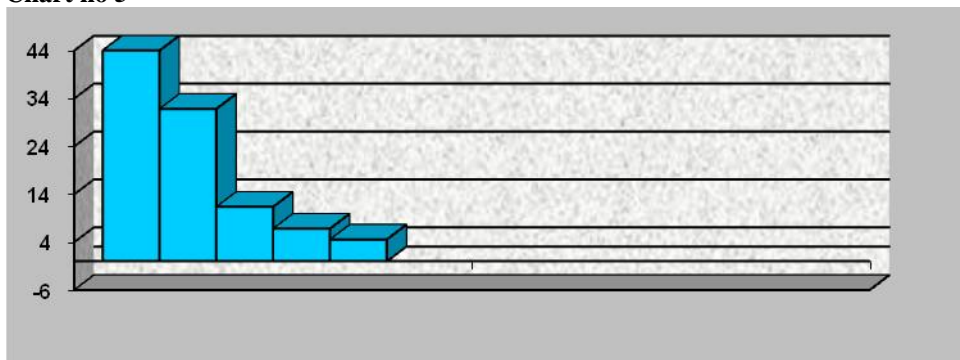
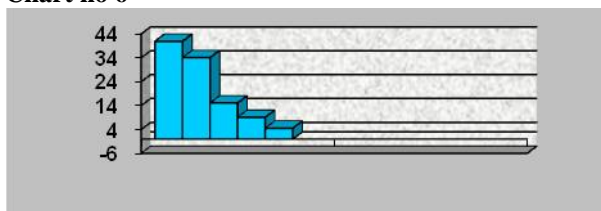


Chart no 6





## Content

### ❖ SPORT AND PERFORMANCE

- BONDOC-IONESCU DRAGOS**, “Transilvania” University of Brasov  
*SPORTSMAN’S EMOTIONAL STATES WITHIN COMPETITION, ROLE OF EMOTIONS IN SPORT / p. 237*
- CAZAN FLORIN**, Ovidius University of Constanta  
**GEORGESCU ADRIAN**, Ovidius University of Constanta  
*TAKING IN HANDBALL USING DYNAMICS AND PREPARATORY GAMES TO THE SECOND GRAD /p. 241*
- COJOCARU ADIN**, Spiru Haret University Bucuresti  
**COJOCARU MARILENA**, Spiru Haret University Bucuresti  
*STUDY ABOUT SPECIFY DIGGER SKILLS OF LIBERO PLAYER IN NATIONAL CHAMPIONSHIPS FIRST DIVISION FEMALE / p. 246*
- CONSTANTINESCU OANA VERONA**, Technical University of Construction – Bucharest  
*THE ERGOSIM SYSTEM IN SWIMMING / p. 249*
- CRĂCIUN MARIUS**, Babes-Bolyai University Cluj-Napoca  
**MONEA DAN**, Babes-Bolyai University Cluj-Napoca  
*STRESS FACTORS IN SOCCER OFFICIATING / p. 251*
- DUȚU RADU**, Universitatea de Vest Vasile Goldis Arad  
*NEURO-LINGUISTIC PROGRAMMING MIDDLE PREPAREDNESS CONTEMPORARY SPORTS / p. 255*
- ENE-VOICULESCU VIRGIL**, Navy Academy „Mircea cel Batran” Constanta  
*STEPS OF TRAINING IN OBSTACLE RACE OF NAVAL PENTATHLON / p. 257*
- GALERU OVIDIU**, University of Bacău  
*ROLE OF CONTOURGRAMS IN SPOTTING TECHNICAL MISTAKES IN FRONT CRAWL SWIMMING / p. 259*
- GIDU DIANA VICTORIA**, Ovidius University of Constanta  
*APECTS OF PSYCHOLOGICAL PROFILE ON YOUTH SOCCER PLAYERS / p. 265*
- GORGAN CARMINA MIHAELA**, University of Bacau  
**VOROVENCI CRISTIAN**, Prof.,  
*COMPARATIVE STUDY ON THE SHARE OF THE MAIN MEANS USED DURING THE PREPARATION OF OUTDOOR SEASONS IN 2007 AND 2008 TO THE ATHLETES OF C.S. ȘTIINȚA BACĂU / p. 272*
- HAZAR FATİH**, Adnan Menderes University, TURKIYE  
*MUSCULAR POWER AND SPEED PERFORMANCES IN PREPUBESCENT SOCCER PLAYERS / p. 274*
- LAZĂR ION**, Naval Academy „Mircea cel Bătrân” Constanța  
*OPTIMIZING MILITARY-MARINE STUDENT’S PERFORMANCE FOR THE OBSTACLE COURSE TEST / p. 278*
- LUPU GABRIEL**, University of Bacău,  
**DOBRESCU TATIANA**, University of Bacău  
*APPLYING THE SOCIODRAMAS AND PSYCHODRAMAS WITH THE PURPOSE OF IMPROVING THE PSYCHOSOCIAL RELATIONS IN SPORTS TEAMS / p. 282*



**METIN KAYA<sup>1</sup>, HALIL TAŞKIN<sup>2</sup>**

<sup>1</sup>School of Physical Education and Sport, Gazi University, Ankara, Turkey

<sup>2</sup>School of Physical Education and Sport, Selcuk University, Konya, Turkey

***THE COMPARISON OF URINE ZINC VALUES OF FOOTBALLERS IN THE INDUSTRIAL REGION AND OUTSIDE THE INDUSTRIAL REGION / p. 286***

**MIHAILESCU CRISTIAN**, Naval Academy “Mircea cel Bătrân” Constanța

***WORKOUT WITH HIGHT AND LOWS REPS / p. 289***

**MIHĂILESCU LILIANA**, University of Pitesti

***EXPERIENCES CONCERNING THE MOULDING/CONSOLIDATION OF THE PSHYCHOLOGICAL SKILLS FOR THE 400 M EVENT / p. 292***

**NEDER FLORINA**, Ecological University from Bucharest

***STUDY OF TRAINING PROCESS FOR FEMALE 100 m HURDLERS / p. 296***

**NEDER FLORINA**, Ecological University from Bucharest

***STUDY OF MOTOR QUALITY CONSIDER ESSENTIAL FOR TOP CLASS 100 m HURDLER / p. 300***

**OLTEAN ANTOANELA**, Ovidius University of Constanta

***THE IMPLICATIONS OF THE STATIC AND DYNAMIC BALANCE IN THE RHYTHMIC GYMNASTICS / p. 304***

**OZAN ESMER**

University of Artuklu Rectorship, Mardin, Turkey.

***THE INVESTIGATION OF THE RELATIONSHIP BETWEEN PHYSICAL PERFORMANCE and LUNG FUNCTION TESTS AT SPORTSMEN / p. 308***

**POPA CRISTIAN**, PhD Lecturer, Ovidius University of Constanta, Romania

***INFLUENCE OF JUMPING EXERCISES ON THE DEVELOPMENT OF DETENTION AT HANDBALL AGED 12 -13 YEARS / p. 312***

**POPESCU RADUCU**, Ovidius University of Constanta

***ASPECTS FOR IMPROVING A HIGHER IN TECHNICAL LEVEL ON RUGBY PLAYER / p. 315***

**ROMAN CĂLIN**, University of Oradea

***THE ANALYSIS OF THE PERFORMANCE CAPACITY OF THE FRENCH MALE NATIONAL HANDBALL TEAM DURING THE OLYMPIC GAMES FROM BEIJING – 2008 AND DURING THE WORLD CHAMPIONSHIP FROM CROATIA – 2009 / p. 318***

**SCURT CORNELIU**, Transilvania University Of Braşov

***STUDY WITH RESPECT TO PLANNING AND PROGRAMMING THE CONTENT OF THE MAIN INDICATORS OF THE TRAINING ON THE LEVEL OF A SCHOOL ATHLETIC TETHRATLON TEAM / p. 321***

**ŞUFARU CONSTANTIN**, University of Bacau

***STUDY REGARDING THE USE OF PREPARING GAMES FOR TEACHING HANDBALL, DURING THE NINTH GRADE PHYSICAL EDUCATION LESSON / p. 324***

**TOMA-URICHIANU SANDA**, Ecological University of Bucharest

***STUDY REGARDING THE MECHANICS OF BREATHING AND THE IMPLICATIONS IN THE ROWING SPORTIVE PERFORMANCE / p. 327***

**TRUȚĂ MARIUS DANIEL**, University of Bacau

***STUDY CONCERNING THE IMPROVEMENT OF LIFT AND PULL FORCE IN FREE FIGHTS / p. 330***





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**TO INVESTIGATE OF RELATIONSHIP BETWEEN AEROBIC POWER AND PULMONARY FUNCTION IN ATHLETES / p. 333**

## ❖ KINETOTHERAPY

AVRAMESCU ELENA TAINA<sup>1</sup>, Professor, MD, Ph.D, NEAMTU MARIUS CRISTIAN <sup>2</sup> Assistent MD, Ph.D student, RUSU LIGIA<sup>1</sup> Professor, MD. Ph.D, MANGRA GABRIEL <sup>1</sup> Lecturer, Ph.D

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<sup>2</sup>University of Medicine and Pharmacy, Craiova

**NEW METHODS OF DATA ACQUISITION AND WALKING ANALYSIS IN MULTIPLE SCLEROSIS AFTER FUNCTIONAL ELECTRICAL STIMULATION / p. 335**

BOTA AURA, ANEFS Bucuresti

BUZESCU ALEXANDRU, ANEFS Bucuresti

KATHARINA KISS, Physical therapist Clinical Director SO Bucuresti

**HEALTH STATUS ISSUES IN PERSONS WITH INTELLECTUAL DISABILITIES - THE SPECIAL OLYMPICS HEALTH PROMOTION PROGRAM (I) / p. 343**

DAMIAN MIRELA, Ovidius University of Constanta

DOCU-AXELERAD DAN, Ovidius University of Constanta

DOCU-AXELERAD ANY, Ovidius University of Constanta

STANCU IOANA, Liceul Teoretic "Mihail Kogalniceanu"

**AEROBIC GYMNASTICS PROGRAM FOR CORRECTION OF SCOLIOSIS - A CASE STUDY / p. 347**

ELIF ŞIKTAR <sup>1</sup>, ERDİNÇ ŞIKTAR <sup>1</sup>, HÜSEYİN EROĞLU<sup>1</sup>, YUNUS ÖZTAŞYONAR

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**THE EFFECT OF INJECTING ACUTE L-CARNITINE ON ENDURANCE TIME IN RATS EXPOSED TO DIFFERENT WATER TEMPERATURE / p. 349**

MIRCIOAGĂ ELENA – DOINA, Victor Babeş" University of Medicine and Pharmacy Timișoara"

MOGAŞEANU MARI, DUNARINȚU SIMONA, BÎRSAȘTEANU- FLORIN, Clinic of Radio- Imagery, "Victor Babeş" University of Medicine and Pharmacy Timișoara

ANTON MARGARETA, FEFS University Ecological Bucuresti

**PREVENTION OF MUSCULO-SKELETAL TRAUMAS IN COMPETITIVE SPORTSMEN (Aspects regarding trauma incidence in volleyball and basketball teams) / p. 354**

MIRATE MARIA ROSARIA, Dott.ssa, Pedagogista – ITALY

**THE PSYCHOMOTOR TRANSACTIONAL APPROACH / p. 359**

NECİP FAZİL KİŞALİ<sup>1</sup>, FATÝH KIYICI<sup>2</sup>, GULEDA BURMAOĞLU.<sup>2</sup>, TAŞ MURAT<sup>2</sup>, YAKUP PAKTAS<sup>2</sup>, FULYA ERTAN<sup>2</sup>

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**SOME DIFFERENCES IN PARAMETERS OF BONE MINERAL METABOLISM IN VARIOUS SPORT BRANCHES / p. 361**

PIERLUIGI DE PASCALIS, University of Macerata, ITALY

**EXPRESSION AND STIMULUS OF STRENGTH IN THE COURSE OF THE EVOLUTIONARY AGE / p. 365**

SAVAŞ SEYFİ<sup>1</sup>, İLYAS OKAN<sup>1</sup>, LEVENT AKSU M.<sup>2</sup>, ÖMER ŞENEL<sup>1</sup>

<sup>1</sup>Gazi University, School of Physical Education, Ankara/TURKEY

<sup>2</sup>Gazi University, Faculty of Education, Department of Chemistry, Education Ankara/TURKEY

**CHANGE OF BLOOD SE LEVELS AFTER HIGH LEVEL AEROBIC EXERCISE / p. 368**



**SÎRBU ELENA**, West University of Timișoara  
**PANTEA CORINA**, West University of Timișoara  
**MATCĂU DIANA**, University of Medicine and Pharmacy "Victor Babeș" Timișoara  
**FAUR MIHAELA**, West University of Timișoara  
**A COMPARATIVE STUDY ON THE EFFICIENCY OF ASSOCIATING THE KINETIC TREATMENT TO THE OCCUPATIONAL THERAPY WITHIN THE GENERAL TREATMENT OF OSTEOPOROSIS / p. 371**

## ❖ MANAGEMENT

**POPA CRISTIAN**, University Ovidius Constanta  
**STRATEGIC DEVELOPMENT PROJECTS FOR LOGISTICS STRUCTURES SPORTS / p. 377**

## ❖ PHYSICAL EDUCATION AND SPORT

**AKDOĞAN SELCEN**<sup>1</sup>, **GÖKYÜREK BELGIN**<sup>1</sup> **GÜNDÜZ NEVIN**<sup>2</sup>  
<sup>1</sup>Gazi University, School of Physical Education and Sports, Ankara, Turkey  
<sup>2</sup>Ankara University, School of Physical Education and Sports, Ankara, Turkey  
**VIEWS OF PHYSICAL EDUCATION TEACHERS ABOUT DIMENSION OF THE MATERIAL AND MEASUREMENT EVALUATION OF THE NEW EDUCATIONAL PROGRAM OF PHYSICAL EDUCATION COURSE OF THE PRIMARY SCHOOL / p. 380**

**BEJAN AUREL**, Navy Academy Constanta  
**OXYGEN AND ENERGY IN PHYSICAL EDUCATION / p. 385**

**BICHESCU ANDRADE IONUȚ**, "Eftimie Murgu" University Reșița  
**THE SPECIALIST IN PHYSICAL EDUCATION IN THE ROLE OF FACILITATOR FOR THE INSTITUTIONALIZED CHILDREN / p. 390**

**BOYANKA PENEVA**, National Sports Academy, Sofia – BULGARY  
**ELEONORA MILEVA**, National Sports Academy, Sofia – BULGARY  
**BULGARIAN SCHOOL PHYSICAL EDUCATION IN THE 80s AND 90s OF XX CENTURY AND AT THE BEGINNING OF XXI CENTURY / p. 395**

**CONSTANTINESCU ANAMARIA**, Petroleum - Gas University of Ploiești  
**THE IMPORTANCE OF GAME IN THE PHYSICAL EDUCATION CLASS AT ELEMENTARY SCHOOL / p. 398**

**DEACU MARCEL**, Petroleum - Gas University of Ploiești  
**SPORT GAMES - SPORT DISCIPLINES TRYING TO DEVELOP THE COMBINED MOTION QUALITIES / p. 401**

**DUMITRIU CONSTANȚA**, University Of Bacău  
**DUMITRIU IULIA CRISTINA**, University Of Bacău  
**DIFFICULTIES OF SOCIO – PROFESSIONAL INTEGRATION OF BEGINNING TEACHERS / p. 407**

**FINICHIU MARIN**, University of Petroleum and Gas from Ploiești  
**THE DYNAMIC OF RESISTANCE DEVELOPMENT IN POWER REGIME DURING THE PHYSICAL EDUCATION CLASS ON THE BASIS OF MEANS SPECIFIC TO ATHLETICS / p. 409**

**FINICHIU MARIN**, University of Petroleum and Gas from Ploiești  
**THE IMPROVEMENT OF RELATIVE INSTANTANEOUS MUSCLE POWER THROUGH THE USE OF SPECIFIC MEANS TO ATHLETICISM DURING THE PHYSICAL AND SPORT CLASS / p. 413**



**GEVAT CECILIA**, Ovidius University of Constanta

**LARION ALIN**, Ovidius University of Constanta

**POPESCU CRISTINA** "C.Bratescu" College of Constanta

**GEVAT ISMET MONICA DENISE**, Ms Gazi University Ankara

**BUCUR FLORIN**, Colegiul Iancu de Hunedoara

**OPTIMIZING THE PHYSICAL PREPARATION OF STUDENTS FROM HIGH SCHOOL THROUGH ATHLETICS / p. 418**

**HĂRDUȚ CARMEN**, "Don Orione" High school Oradea

**STOICA ALEXANDRU**, "Don Orione" High school Oradea

**MAROTI STEFAN**, University of Oradea

**STUDY ON THE RELATIONSHIP BETWEEN THE LAUNCH ANGLE AND THE ANGLE OF ENTRY OF THE BALL IN THE BASKET IN THE CASE OF THE SET SHOT / p. 422**

**LUPU ELENA**, Petroleum - Gas University of Ploiești

**THE DYNAMICS OF COMMUNICATION AND THE DETERMINATION IN THE SPORTS LESSON / p. 425**

**LOK SEFA<sup>1</sup>**, **LOK NESLIHAN<sup>2</sup>**, **TEMEL VEYSEL<sup>3</sup>**, **TASGIN ERDAL<sup>4</sup>**, **SELÇUK ALİME<sup>2</sup>**

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**DETERMINATION OF SMOKING HABITS OF PHYSICAL EDUCATION AND SPORTS STUDENTS WHO ARE ACTIVELY DOING SPORTS / p. 428**

**LOK SEFA<sup>1</sup>**, **TASGIN ERDAL<sup>3</sup>**, **TEMEL VEYSEL<sup>2</sup>**, **TASGIN OZDEN<sup>1</sup>**, **LOK NESLIHAN<sup>4</sup>**

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**THE DETERMINATION OF THE PHYSICAL EDUCATION AND SPORTS ACADEMY STUDENTS' INFORMATION, OPINIONS AND THOUGHTS ABOUT USING DOPING WHO ARE INTERESTED IN FOOTBALL AND SPORTS DIVISION / p. 432**

**NICULESCU GEORGETA**, Spiru Haret University Bucuresti

**GHEORGHE DANIEL**, Spiru Haret University Bucuresti

**BUTU OANA**, Spiru Haret University Bucuresti

**JELEASCOV CRISTINA**, Spiru Haret University Bucuresti

**RESEARCH ON THE BIOMOTRIC POTENTIAL OF FIRST YEAR STUDENTS – HAVING AS SPECIALIZATION THE KINETOTHERAPY AND SPECIAL MOTRICITY / p. 435**

**ORAVIȚAN MIHAELA**, West University of Timișoara

**AVRAM CLAUDIU**, West University of Timișoara

**CISMAȘ ANDREIA**, West University of Timișoara

**MUȘUROI CORINA**, „Tibiscus” University of Timișoara

**VLAD ADRIAN**, University from Timișoara

**SÎRBU ELENA**, West University of Timișoara

**STUDY REGARDING QUALITY OF LIFE CHANGES AT YOUNG OBESES AFTER A PHYSICAL TRAINING INDIVIDUALIZED PROGRAMME AND NUTRITION COUNSELLING/ p. 438**

**PAVEL SILVIU-IOAN**, University of Bacău

**CRITERIA, WAYS AND TESTS FOR SELECTING THE STUDENTS FOR THE REPRESENTATIVE HANDBALL TEAM, IN THE NON-SPORTIVE FACULTIES/ p. 441**

**POP CRISTIANA**, Economic Studies Academy, Bucharest

**ABOUT QUALITY IN HIGHER EDUCATION/ p. 443**



**RAȚĂ BOGDAN**, University of Bacau  
**RAȚĂ GLORIA**, University of Bacau  
**ALEXE IULIAN DAN**, University of Bacau  
**LECTURE AND ASSESSMENT – TWO EFFECTIVE METHODS IN THE PROFESSIONAL TRAINING** / p. 447

**RIZESCU CONSTANTIN**, Ovidius University of Constanta  
**GEORGESCU ADRIAN**, Ovidius University of Constanta  
**NEGREA VALENTIN**, Ovidius University of Constanta  
**IMITATION INTO HANDBALL THROUGH DYNAMIC GAMES WITH SPECIFIC ELEMENTS HANDBALL, THE CLASS II-A** / p. 452

## ❖ VARIA

**ARSLAN FATMA<sup>1</sup>, METİN KAYA<sup>2</sup>, GÜL BALTACI<sup>3</sup>, Prof. Dr., HALİL TAŞKIN<sup>4</sup>, NURTEKİN ERKMEN<sup>4</sup>**  
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<sup>4</sup>Selçuk University Physical Education and Sport High School, Konya/Turkey  
**THE EFFECT OF EIGHT-WEEK PROPRIOCEPTION TRAINING PROGRAM ON DYNAMIC POSTURAL CONTROL IN TAEKWONDO ATHLETES** / p. 455

**DUMITRESCU GHEORGHE**, University from Oradea  
**FOOTBALL PERSONALITIES FROM ORADEA DURING THE INTERWAR PERIOD** / p. 461

**DHURGHAM JASIM, ZAID KAZI GASIM, HADEEL DAHI ABDULLAH**  
College of Sport Education /University of Mousal/Iraq  
**PHILOSOPHICAL CONCEPTS OF SOME OF THE MODERN SUMMER OLYMPIC SYMBOLS** / p. 464

**IONESCU LAURENTIU**, Constatza Maritime University  
**THE ROLE OF PHYSICAL EXERCISE IN REDUCING AND COMBATING SEA SICKNESS** / p. 474

**IVAN CORINA**, National Academy of Physical Education and Sport Bucharest  
**THE DISABLED CHILDREN'S INTEGRATION INTO LEISURE TIME RECREATIONAL PROGRAMS** / p. 476

**POTOP VLADIMIR**, Ecologic University of Bucharest  
**CÎMPEANU MARIANA**, Prof. of 2<sup>nd</sup> degree Drd. School Sports Club (CSS).no.7 Dinamo Bucharest  
**ULĂREANU MARIUS**, Ecologic University of Bucharest  
**MUSCULAR STRENGTH AND BODY WEIGHT DYNAMICS IN MASS FITNESS PRACTICE** / p. 479

**RABOLU ELENA**, University of Pitesti  
**STRATEGIES OF IMPROVING THE EFFORT CAPACITY AT INSTITUTIONALIZED OF ELDERLY PEOPLE** / p. 484

**RUS R. VIRGIL**, Universitatea "Babes-Bolyai", Extensia Bistrita  
**CRETU AURICA**, Universitatea "Babes-Bolyai", Extensia Bistrita  
**MORARIU ELEONORA**, Universitatea "Babes-Bolyai", Extensia Bistrita  
**THE FITNESS SEMANTICS AND PERSPECTIVE IN COMBATING OBESITY** / p. 487

**VAIDA MARIUS**, Petroleum and Gas University from Ploiesti  
**COMPARATIVE STUDY CONCERNING THE MOTOR AND PSYCHO MOTOR DEVELOPMENT LEVEL OF THE 7-8 YEARS OLD CHILDRENE** / p. 492

**VAIDA MARIUS**, Petroleum and Gas University from Ploiesti  
**DULGHERU MIRELA**, Petroleum and Gas University from Ploiesti  
**COMPARATIVE STUDY CONCERNING THE SOMATIC DEVELOPMENT AT EARLY SCHOLAR AGE** / p. 498

**ZAHARIA ANA-MARIA**, University of Bacău  
**DOBRESCU TATIANA**, University of Bacău  
**DUMITRU RĂZVAN**, University of Bacău  
**STUDY ON THE PLACE AND ROLE OF AEROBIC GYMNASTICS IN LEISURE ACTIVITIES OF YOUNG WOMAN** / p. 502

❖ **Requirements for the elaboration of the scientific papers** / p. 513



## ❖ Alphabetical author index

### A

ALEXE I. D. / p. 399  
AKDOĞAN S. / p. 380  
ANTON M. / p. 354  
ARSLAN F. / p. 455  
AVRAM C. / p. 438  
AVRAMESCU E.T. / p. 335

### B

BEJAN A. / p. 385  
BICHESCU A. I. / p. 390  
BÎRSAȘTEANU F. / p. 354  
BONDOC I. D. / p. 237  
BOTA A. / p. 343  
BOYANKA P. / p. 395  
BUCUR F. / p. 418  
BUTU O. / p. 435  
BUZESCU A. / p. 343

### C

CAZAN F. / p. 241  
CISMAȘ A. / p. 438  
CÎMPEANU M. / p. 479  
COJOCARU A. / p. 246  
COJOCARU M. / p. 246  
CONSTANTINESCU A. / p. 398  
CONSTANTINESCU O.V. / p.249  
CRĂCIUN M. / p. 251  
CRETU A. / p. 487

### D

DAMIAN M. / p. 347  
DEACU M. / p. 401  
DOBRESCU T. / p. 282, 502  
DOCU-AXELERAD A. / p. 347  
DOCU-AXELERAD D. / p. 347  
DULGHERU M. / p. 434  
DUMITRESCU G. / p. 461  
DUMITRIU C. / p. 407  
DUMITRIU I.C. / p. 407  
DUMITRU R. / p. 502  
DUNARINȚU S. / p. 354  
DHURGHAM J. / p. 464  
DUȚU R. / p. 255

### E

ELEONORA M. / p. 395  
ELIF Ș. / p. 349  
ENE-VOICULESCU V. / p. 257  
ERDINÇ Ș. / p. 349

### F

FATÝH K. / p. 361  
FAUR M. / p. 371  
FINICHIU M. / p. 409, 413  
FULYA E. / p. 361

### G

GALERU O. / p. 259  
GEORGESCU A. / p. 241, 404  
GEVAT C. / p. 418  
GEVAT - ISMET M. D. / p. 418  
GHEORGHE D. / p. 435  
GIDU D. V. / p. 265  
GÖKYÜREK B. / p. 380  
GORGAN C. M. / p. 272  
GÜL B. / p. 455  
GULEDA B. / p. 361  
GÜNDÜZ N. / p. 380

### H

HADEEL D.A. / p. 464  
HAZAR F. / p. 274  
HALIL T. / p. 286, 455  
HÂRDUȚ C. / p. 422  
HÜSEYİN E. / p. 333, 349

### I

İLYAS O. / p. 368  
IONESCU L. / p. 474  
IVAN C. / p. 476

### J

JELEASCOV C. / p. 435

### K

KATHARINA K. / p. 324

### L

LARION A. / p. 418  
LAZĂR I. / p. 278  
LEVENT A.M. / p. 368  
LOK S. p. / 428, 432  
LOK N. p. / 428, 432  
LUPU E. / p. 425  
LUPU G. / p. 282

### M

MANGRA G. / p. 335  
MAROTI S. / p. 422  
MATCĂU D. / p. 371  
METIN K. / p. 286, 435  
MIHAILESCU C. / p. 289  
MIHAILESCU L. / p. 292  
MIRATE M. R. / p. 359  
MIRCIOAGĂ E.D. / p. 354  
MOGAȘEANU M. / p. 354  
MONEA D. / p. 249  
MORARIU E. / p. 487  
MUȘUROI C. / p. 438

### N

NEAMTU M. C. / p. 335  
NECIP F.K. / p. 361  
NEDER F. / p. 296, 300  
NEGREA V. / p. 404  
NICULESCU G. / p. 435  
NURTEKİN E. / p. 455

### O

OLTEAN A. / p. 304  
ORAVIȚAN M. / p. 438  
OZAN E. / p. 308  
ÖMER Ş / p. 368

### P

PANTEA C. / p. 371  
PAVEL S. I. / p. 441  
PIERLUIGI P. / p. 365  
POP C. / p. 443  
POPA C. / p. 312, 377  
POPESCU C. / p. 418  
POPESCU R. / p. 315  
POTOP V. / p. 479

### R

RABOLU E. / p. 484  
RAȚĂ B. / p. 399  
RAȚĂ G. / p. 399  
RIZESCU C. / p. 404  
ROMAN C. / p. 318  
RUS R. V. / p. 487  
RUSU L. / p. 335

### S

SAVAȘ S. / p. 368  
SCURT C. / p. 321  
SELÇUK A. p. / 428  
SÎRBU E. / p. 371, 438  
STANCU I. / p. 347  
STOICA A. / p. 422  
SÜLEYMAN E. E. / p. 333

### Ș

ȘUFARU C. / p. 324

### T

TAȘ M. / p. 361  
TASGIN E. p. / 428, 432  
TASGIN O. / p. 432  
TEMEL V. p. / 428, 432  
TOMA-URICHIANU S./p. 327  
TRUȚĂ M. D. / p. 330

### U

ULĂREANU M. / p. 479

### V

VAIDA M. / p. 492, 498  
VLAD A. / p. 438  
VOROVENCI C. / p. 272

### Z

ZAID K.G. / p. 464  
ZAHARIA A. / p. 502

### Y

YAKUP P. / p. 361  
YUNUS Ö. / p. 333, 349



## Requirements for the elaboration of the scientific papers (2009-2012)

### Structure of the experiment type paper:

- the title of the paper will be written with Majuscules, Times New Roman, Size 12, Bold, Align Left;
- the names of the author or authors of the research will be written with Times New Roman, Size 10, Bold, Majuscules, Align Left, one line under the title of the paper;
- under the author's name, the department /departments and institution / institutions it is e-mail address for the corresponding author;
- the source of the material support in the form of the GRANTS not more than 40 characters including spaces if need be, with Times New Roman, Size 10, Align Left;
- the Department name, institution name, contact address email *can be* as footnote;
- Abstract, Key words, Introduction, Methods, Results, Discussion, Conclusions, References.

### Abstract

The structured abstract and 3-5 key words will be written with Times New Roman, Size 10, Justified.

The abstract must not contain more than 150 words for unstructured abstracts essay type and 200-400 words for structured abstracts experiment type. The abstract must be elaborated in English language. In the abstract there will be no abbreviations used.

The structured abstract for **the experiment type paper** must contain:

- the aim / purpose / object of the research;
- the procedures and methods of research subjects, applied tests;
- the results / main results;
- discussions and conclusions;
- key words between 3 and 5 key words, which punctuates the interest areas of the article;

The aim, purpose, object, methods, results, discussions, conclusions and key words have to be written bold and minuscule.

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### Introduction

**Procedures and methods** of research (subjects, applied tests)

### Results

### Discussion

### Conclusions

All of its will be written Times New Roman, Size 10, Justified, two columns;

### Bibliography

It will be written with Times New Roman, Size 10, two columns, First Line Indent 0 cm, Hanging Indent 1cm, Left Indent 1cm. The names of the articles / book will be written in italics.

Author's name has to be written with bold and majuscule ( eg. **SMITHOSCKY, M.,2011**)

### Structure of the essay type paper:

- the title of the paper will be written with Majuscules, Times New Roman, Size 12, Bold, Align Left;
- the names of the author or authors of the research will be written with Times New Roman, Size 10, Bold, Majuscules, Align Left, one line under the title of the paper.
- under the author's name, the department /departments) and institution / institutions) it is e-mail address for the corresponding author.
- the source of the material support in the form of the GRANTS not more than 40 characters including spaces if need be, with Times New Roman, Size 10, Align Left.
- the Department name, institution name, contact address email *can be* as footnote.
- **the unstructured abstract and 3-5 key words** will be written with Times New Roman, Size 10, Justified;
- **the introduction and the object of the research, the content, the conclusions** will be written with Times New Roman, Size 10, Justified, two columns;
- the **bibliography** will be written with Times New Roman, Size 10, two columns, First Line Indent 0cm, Hanging Indent 1cm, Left Indent 1cm. **The names of the papers/ articles will be written in italics.**

### For the abstract - essay type paper

- the aim/object of the research;
- the content of the research (hort summary);
- conclusions (main conclusion);
- key words between 3 and 5 key words, which punctuates the interest areas of the article);

**Details:****Introduction**

The introduction will only contain strict and pertinent references pro and cons) on the studies that have as a common subject the object of the research.

**Research methods and procedures****Subjects**

The subjects involved in the experiment are described, their distribution in groups, identifying the age, the sex and other important characteristics. The experiments on human subjects are produced in accordance with the national legislation for the human protection and the Helsinki Declaration of 1975, revised in 2004. The names and the surnames of the subjects are not used, especially in the illustrative materials.

The work methods are identified, the apparatus on which the experiment takes place presenting the name of the producer and the address between parentheses) and the statistic methods in detail. The new or considerably modified methods are described, motivating their choice and evaluating their limits. The hypotheses of the paper must be clear and concise.

**Statistical analysis**

The statistical methods are described with sufficient details, in order to understand and to check the results obtained. The names of the computer programs used for the statistical processing of the data are specified.

**Results**

The results are presented in a logical sequence, through tables and diagrams. The results expressed through text should not be found in the tables and/or diagrams and the other way around.

**Tables**

The tables cannot be introduced in the text as photographs. The tables must be numbered in the upper part, in succession in the order of the first text quoting, followed by a conclusive and succinct title.

**Table 1.** Physical characteristics of the subjects

Variables	Feminine subjects n=21	
	M±DS	CV %
Body height cm)	166,143±5,597	3,369
Body weight kg)	61,524±8,364	13,595
IMC kg/m <sup>2</sup> )	22,338±3,282	14,692
Body fat percentage %)	25,329±3,074	12,136
Fat mass kg)	15,182±4,066	25,715

\*significant correlated with IMC, r=0,875.  
Established significance level at p<0,05.  
IMC, body mass index; M, average; DS, standard deviation; CV, variability coefficient; n, number of subjects.

In the lower part of the table the following symbols will be used, in order to emphasize the differences or the significant correlations statistically, in the following order: \*, †, ‡, §, □ □, ¶, \*\*, ††, ‡‡, etc. Also in the lower part of the tables the significance level established by the researcher will be presented and the unusual abbreviations used in the table will be explained.

Each table must be quoted in the text. The tables from other publications must be used with the permission of the author authors), indicating the bibliographical source from where it was assumed.

**Diagrams illustrations)**

The diagrams must be numbered in the lower part, in succession in the order of the first text quoting, followed by a conclusive and succinct title, preceded by the unusual abbreviations used in the diagram or other observations.

**Measurement units**

Measuring the length, height, weight and volume must be expressed in metric units meter-m, kilogram- kg, liter- l, second- s, or decimal multiples). The temperature must be measured in Celsius grades (°C), and the arterial pressure in mmHg. Other measurement units must be expressed in the International Units System SI).



## Discussions

In the chapter Discussions the new and important aspects are emphasized, which result from the data processing. The data of other similar studies presented in the introduction chapter cannot repeat in detail. Also, the implications of the results found must be discussed, their limitations and the implications of these results, for the future studies. The observations found must be reported to other similar studies.

## Conclusions

The conclusions must be reported directly to the hypotheses of the paper and derive directly from the chapter Discussions. The conclusions that are not fully backed-up by the data found or that are based on unjustified affirmations must be avoided. New hypotheses can be concluded or attach some recommendations, if the case be.

## Thanks

In the section Thanks (when the case appears) there can appear:

- the contribution of the people that are not co-authors;
- the name and surname of the people that have contributed intellectually to the accomplishment of the paper (with their agreement), but that are not co-authors- scientific counselor, data collector etc.;
- the financial help and the material support, specifying the nature of the support;
- the technical help (in a separate paragraph called "Other contributions");

## Bibliography/References

### Bibliography and text quoting

The bibliography must be arranged in alphabetical order, the unpublished papers being quoted, but that are registered for publishing. In the bibliography all the authors quoted in the text are written. In the text all the authors are written if there are 6 or less. If there are 7 or more authors, the first three authors are written, followed by "et al." (it comes from the latin "et alia" which means "and others"). If in the bibliography there are at least 2 papers that have an identical author (authors) and the publishing year, in the text, but in the bibliography as well, immediately after the publishing year, a letter will be written (in alphabetical order), in order to distinguish the papers in the bibliography (1998a), 1998b)). The name of the author / authors) must be followed by the initials of the surname.

In the text, the quotations will have the following structure:

- a) for one and/or two authors
  - at the end of the phrase T.S. Keller, and A.L. Roy, 2002);
  - in the phrase T.S. Keller and A.L. Roy 2002), T.T. Gomez, 2003 found significant differences of isometric force...
- b) up to (including) 6 authors
  - at the end of the phrase T.S. Keller, A.L. Roy, Carpenter G, 2002)
  - in the phrase "Also, T.S. Keller, A.L. Roy, G. Carpenter, 2002) found significant differences of isometric force..."
- c) more than 6 authors
  - at the end of the phrase T.S. Keller, A.L. Roy, G. Carpenter et al 2002);
  - in the phrase "Also, T.S. Keller, A.L. Roy, G. Carpenter et al 2002) found significant differences of isometric force..."

Generally, for magazines, the bibliography will have the following structure:

**NAME OF THE AUTHOR- AUTHORS year of publication), Title of the article, Magazine, number of the volume yearly number (the number of the supplement part): number of pages.**

- a) standard magazine article
- b) organization as an author
- c) no author
- d) volume with a supplement
- e) number with supplement
- f) volume with part
- g) number with part
- h) number without volume
- i) no volume and number
- j) pages in roman numbers
- k) indicating the type of article if it is necessary

**DEURENBERG, P., WESTSTRATE, J.A., SEIDELL, J.C., 1991, Body mass index as a measure of body fatness: age- and sex-specific prediction formulas. British Journal of Nutrition. 65(2):105-114.**

For **books** the bibliography will have the following structure:

- a) personal author s)





- b) editor s) as author s)
- c) organization as author or the one that publishes
- d) chapter in a book
- e) license degree paper, dissertation or PhD. Thesis.

**RISTARU, M., 2005, *The influence of pliometry on the muscular development at the lower limbs level* [dissertation].**  
Constanta, The Faculty of Physical Education and Sport.

For **unpublished materials but in the course of publication**), the bibliography will have the following structure:

For the **electronic materials**, the bibliography will have the following structure:

- a) article in electronic format
- b) computer program

Sending the manuscripts in electronic format

For the review of a research paper or a better organization of the research papers volume by the scientific board, the author (authors) will have to send a copy in electronic format (ASCII) in the format Word Microsoft Office. The papers in Romanian will be written with diacritical signs in the format Romanian Legacy) of the computer keyboard. Also, the operating system used (Microsoft Windows XP, Microsoft Vista) and the processing program of the text (Microsoft Office XP, Microsoft Office 2003, Microsoft Office 2007) will be mentioned.

#### **The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author s)**

##### **The evaluating/self-evaluating grid for the quality of the research paper by the reviewer/author s)**

1	The originality of the research theme	15 points
2	The quality of the research paper structure	5 points
3	The clarity and quality of the research hypotheses elaboration	10 points
4	The quality of the registration of the results and their presentation	10 points
5	The clarity and quality of the discussions directly linked to the results with reference to similar studies	10 points
6	The clarity and quality of the elaboration of the conclusions in accordance with the hypotheses of the paper	10 points
7	The applicability of the results found in the practical and scientific practice	10 points
8	The accuracy of the in text and bibliography quoting	10 points
9	The clarity and quality of the expression in the text	10 points
10	Strictly respecting the elaboration technical requirements	5 points

**Total 100 points**

Based on these reasons, the article will receive from the reviewers' board a number of points. A number lower than 60 will lead to the rejection of the article, between 60 and 90 points the article will suffer certain changes from the point of view of the structure, expression in the text, etc. in order to receive the accept for publication, and over 90 points the article will receive the accept for publication, after small changes in the elaboration (if the case may be).

The review of the article will be objective, clear and strictly formulated, in accordance with the **technical and scientific request for the elaboration of the scientific papers**, without discrediting the author s) of the article (manuscript).

#### **The review process**

##### **Step 1**

The article must be send in electronic format or on any media format (CD\_ROM, etc), in English (Abstract in English), through electronic mail at the address [contact@analefeffs.ro](mailto:contact@analefeffs.ro), alternative address: [gevatcecilia@yahoo.com](mailto:gevatcecilia@yahoo.com), or at the mailing address: Cpt. Av. Al. Serbanescu, no.1, Constanta, Romania, RO-900470 Tel./ Fax. +40 241 640 443 or 004 077 136 1179

##### **Step 2**

The article deposited for publishing must be accompanied by a short personal presentation and a professional CV, no more than 120 words, that must contain the detailed contact address, including phone number, fax number (if it exists) and the e-mail.

##### **Step 3**

At least two members of the Editorial Collective and of the Scientific Board will initially analyze the article and will nominate at least two reviewers to analyze the article in detail.



#### **Step 4**

The article will be officially analyzed by at least two reviewers with expertise in the thematic of the article deposited for publication. The article will receive a number of points from the reviewers' board.

#### **Step 5**

The articles that follow over 90 points) the scientific and technical standards for elaboration will be included into the waiting list for publication. The articles that need certain modifications between 60 and 90 points) will be returned with the reviewers' observations, for their modification by the author s). The articles that do not accomplish the minimum scientific and technical requests for elaboration 60 points) will be rejected by the reviewers' board.

#### **Step 6**

The articles will be included on the waiting approval) list for publication.

#### **Step 7**

After the approval, the article will be published in the magazine, and the author s) will receive a free copy of the magazine.

#### **Deadlines for handing in the articles**

Two numbers of the journal will be published per year and a supplement for number 2 of the journal in that year.

The deadline for handing in the articles for the first number of the magazine is 6<sup>th</sup> January, for the second number of the magazine is 15<sup>th</sup> of June and for the supplement of the magazine is 30 September. Based on the number of articles handed in, the Editorial Collective and the Scientific Board will be able to postpone the publishing of an article in a future number of the journal.

#### **Publishing / subscription taxes**

**The publishing fee is 10 euros just for online journal)**

**For purchase a number of the journal the fee is 15 euros for 2009, 2010, 2011 year)**

**For purchase a number of the journal the tax is 5 euros 2001-2010)**

**For subscription 3 annual numbers of journal 2011) the fee is 25 euros**