



## PHYSICAL ABILITY OF THE STUDENTS PRACTICING BASKETBALL GAMES – COMPARATIVE STUDY

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### Abstract

**Purpose.** One of the main objectives in the educational process in physical education and sport in higher education is to increase the overall level of physical ability. The aim of this work is to assess the physical ability and the quality of technical exercises and tactical action of the students who have been practicing basketball and to compare these with the results of the students evaluated five years ago.

**Material and methods.** The study was conducted on two groups of subjects, control group (male and female students from Bucharest University-tested in the academic year 2004-2005) and the experimental group (male and female students from Bucharest University-tested in the academic year 2011-2012). In order to measure the general motor ability the following tests were used: 30 m sprint, abdominal muscle strength exercise testing (in 30 seconds), push-ups (30 seconds), standing vertical jump, resistance running (800 m-girls-boys 1500 m). For assessing the learning of technical and tactical elements we used Knox test. The obtained results from the experimental group have been compared with the results of control group, and to find out if the differences between the results averages are statistically significant we used the Anova test.

**Results.** For most of the parameters a decrease of values can be observed in the experimental groups for both girls and boys. Note that all the examinations that test general motor ability, the female students tested in the 2011-2012 academic year had lower results than the subjects tested in 2004-2005. For the male students the results obtained at the examinations that test speed, strength and abdominal muscle strength, are below the average of the 2005 generation, while the examinations that test leg strength and expansion the values have remained stable. In examinations that test skills (dribbling), complex motor skills (dribbling and shooting) and specific resistance (“small marathon”), the results were also below those obtained from subjects tested in 2005, both girls and boys.

**Conclusions.** We consider that the subjects tested in the present stage have a lower level of general physical ability, obtaining poorer results at the tests carried out. Also, we note that the sum of physical and technical skills is lower than that of subjects tested in 2005.

**Keywords:** physical ability, skills and motor skills, evaluation, higher non-profile education.

### Introduction

One of the main objectives in the educational process in physical education and sport in higher education is to increase the overall physical ability.

Physical ability is one of the themes conveyed in the specialized literature. If motility is a global feature, which distinguishes subjects between them is the level at which motor function is expressed, insofar as it determines the subject to adapt and it makes him capable of adapting to complex and diverse environment situations. This level is represented by the physical ability. Etymologically, the word comes from Latin *capacitas*. In modern meaning, the term can designate the ability of individuals to successfully perform a task or profession. Motor capacity evolves as an ascending curve, which expands and restructures through maturity, training and education. Its evolution is not linear but sinuous, types of motor capacity, namely: general motor capacity, consisting of basic physical skills, habits and basic skills and tool-applied, and ability-

with moments of stagnation and decline. Constant features are given by the presence of qualities, physical skills, while decline or stagnation are due to motivation or emotional states. So, ability is always demonstrated and easy to demonstrate this being the reason for which some authors have coined the term manifest motor capacity (A. Dragnea, 1994), in that it materializes in points, positions in the classifications, results from different tests, etc.. It is important that subjects correctly evaluate their own capacity without over- or underestimate it, and this is achieved by applying certain sets of tests (A. Bota., 2007).

Physical ability is a complex of mainly physical manifestations conditioned by the level of development of motor qualities, morpho-functional indices, chemical processes and metabolic processes, all comprised, correlated, conditioned, resulting in the effective actions and physical activities. In sports we talk about two specific motor skills consist of specific motor sports industry, specific driving skills and abilities.

In preparatory process one starts from the

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premise that even in very different proportions, motor ability can develop and can educate. It aims to achieve optimum availability, high capacity for each component of physical ability.

Physical skills are components that are learned in the educational process through voluntary practice becoming fully automated or partially automated, defined in the specialized literature as being, automated components of voluntary activity ". Can be considered as physical actions, that through practice have come to a high degree of stability, precision, efficiency.

Formation of motor skills depends on the way of perceiving and understanding of

**Purpose**

We have proposed in this work to evaluate the level of motric capacity and the executions technical and tactical quality of the students who practice basketball and to compare the results with those of the students evaluated five years ago.

**Methods and materials**

The test has been made on two groups of subjects: control group (male and female students from The University of Bucharest-tested in 2004-2005) and experimental group (male and female students from the University of Bucharest - tested in 2011-2012).

In order to measure the general motric capacity, we have appeal to the tests:

- 30 m sprint
- exercise for the strength of abdominal muscle ( in 30 seconds)
- push-ups ( 30 seconds)
- standing vertical jump
- resistance running (800 m – girls; 1500 m – boys)

To evaluate the level of acquirement of the technique-tactic elements we used Knox test.

information, being the cumulative result of the action of the sense organs, the cortex activity, the body muscles, bones, ligaments, joints and other internal organs. (G Rata. 2008).

According to M. Epuran, taking into account the participation of the nervous system in the their formation and reevaluation, in sports games we can talk about smart-motor skills when there is an appositive and intentional opponent . Reference is made to complex skills that are partially automated.

These skills are acquired in practical life, being based on voluntary activity of the individual within a specially organized training process.

**KNOX TEST**

The test is consists in 3 trials: dribbling and shooting, speed dribbling, fast pass. The credibility of the test was proved by using 50 high-school students in repeated test method(test-retest). For the confirmation of the test viability, Knox has been applied on 260 high-school students, who were looking forward to participate on the basketball championship from their town. The students who conform the test succeeded, formed the teams.

The four trials are:

- 1- *FAST DRIBBLING*. The route is described in fig.1. The player puts the ball on the start line and sits behind it. On the signal he takes the ball, dribbles between the milestones and gets back to the finish line. The result of this trial is represented by the time taken from the signal to the finish.

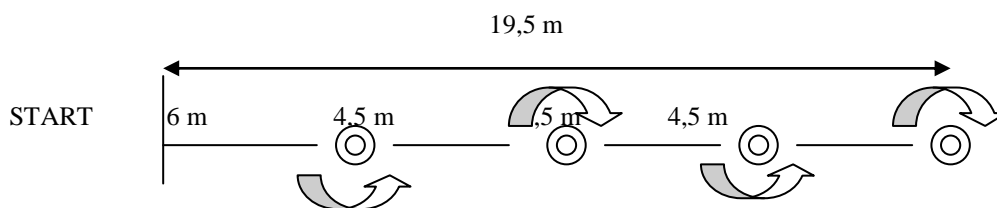
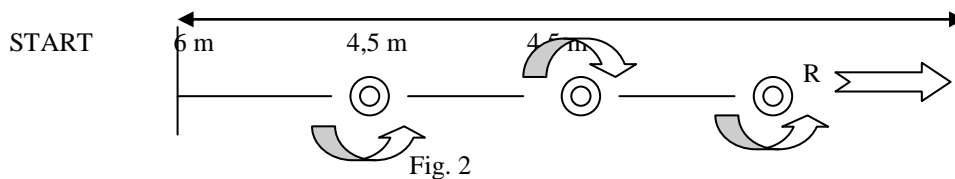


Fig.1

- 2- *FAST PASSING*. On a distance of 1,5 m from the wall is marked a line on the ground. The player with the ball sits behind the line and on the mark he starts to pass the ball to the wall fastest as he can, 15 times, with both hands from the chest. The time in seconds in which the 15 passes are made is the final score.

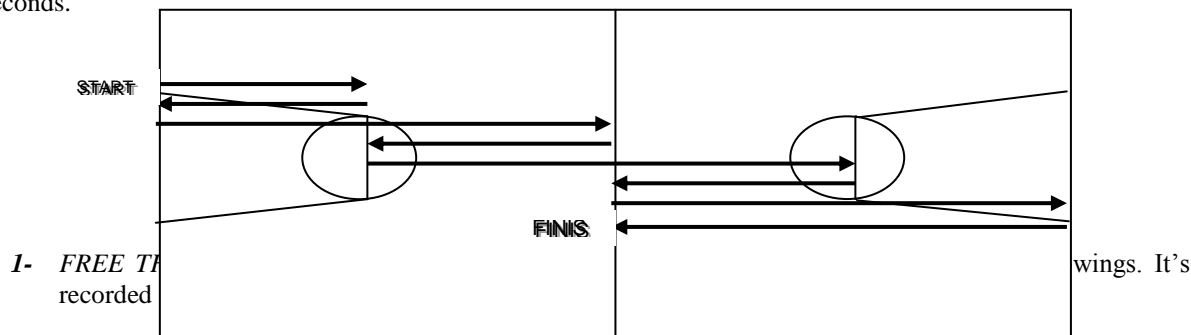
- 3- *DRIBBLING AND SHOOTING*. In this trial we use the same route as in the speed dribbling, but instead of four obstacles we have three and the player has to shoot the ball before he returns to the start (fig.2). The score of this trial is equal with the necessary time for the fullfilment of the task, in seconds

19,5 m



To these trials we added trials that test the resistance to speed regime and also the precision of free throwing.

1- *LITTLE MARATHON*. The player covers the route from fig.3, recording the time resulted in seconds.



The obtained results from the experimental group have been compared with the results of control group, and to find out if the differences between the results averages are statistically significant we used the Anova test. The p value represents the probability of a significant statistically difference and it's compared with the fixed risk probability.

**Results**

**Table 1. THE EVALUATION OF GENERAL MOTRIC CAPACITY- female students**

Motric capacity	Task	Year 2005	Year 2011	Difference
Acceleration and movement speed	30 m sprint	5,61 seconds	6,02 seconds	<b>0,41</b>
Strength of abdominal muscles	Torso lifting from dorsal lying	16,30 repeats	15,30 repeats	<b>-1</b>
Strength of upper limbs muscles in endurance regime	Push-ups on knees (30 seconds)	17repeats	14 repeats	<b>-3</b>
Explosive strength of the lower limbs- expansion	Standing vertical jump	28 centimeters	25 centimeters	<b>-3</b>
Resistance	Endurance (800 m)	4,42 minutes	5,10 minutes	<b>0,68</b>

Average compared results obtained on the experimental and control group

Indicator	Contr. group	Exp. Group	P
Speed	5,61	6,02	0,01
crunches	16,30	15,30	0,01
Push-ups	17	14	0,03
expansion	28	25	0,03
Resistance	4,42	5,10	0,01

**Table 2. EVALUATION OF GENERAL MOTRIC CAPACITY- students**

Motric capacity	Task	An 2005	An 2011	Diferența
Acceleration and movement speed	Speed running – (30 m)	4,52 seconds	4,50 seconds	<b>0,02</b>



Strength of abdominal muscles	Torso lifting from dorsal lying	22,50 repeats	21,50 repeats	<b>-1</b>
Strength of upper limbs muscles in resistancy regime	Push-ups on hands (30 seconds)	20 repeats	20repeats	<b>0</b>
Explosive strength of the lower limbs– expansion	Vertical jump without momentum	41centimeters	41centimeters	<b>0</b>
Resistance	Endurance running (1500m)	5,56 minutes	6,20 minutes	<b>0.64</b>

Average compared results obtained on the experimental and control group

	Contr. group	Exp. group	P
Indicator			
Speed	4,52	4,50	0,23
crunches	22,50	21,50	0,01
resistance	5,56	6,20	0,01

**Table 3. EVALUATION OF SPECIFIC MOTRIC CAPACITY- female students**

Task	Description	Year 2005	Year 2011	Difference
Speed dribbling	Crossing a track among four milestones(situated to a distace o 4,5 meters) while dribbling	9,21 seconds	9,33 seconds	<b>0,12</b>
Fast passing	On a 1,5m distance from the wall, are executed 15 passes with both hands from the chest	11,22 seconds	11,31seconds	<b>0,09</b>
Dribbling and shooting	Crossing the track from the first test but instead of four obstacles we have three, and the player has to throw to the basket	13,30 seconds	14,30 seconds	<b>1</b>
Free throwing	Ten free throws	4 scored baskets	4 scored baskets	<b>0</b>
Little marathon	Movement on the track of little marathon (98 meters) in maximal speed	31,20 seconds	34,20 seconds	<b>3</b>

Average compared results obtained on the experimental and control group

	Contr. group	Exp. group	P
Indicator			
Speed dribbling	9,21	9,33	0,04
Fast passes	11,22	11,31	0,02
Dribbling and shooting	13,30	14,30	0,01
Little marathon	31,20	34,20	0,01

**Table 4. EVALUATION OF GENERAL MOTRIC CAPACITY- students**

Task	Description	Year 2005	Year 2011	Difference
Speed dribbling	Crossing a track among four milestones(situated to a distace o 4,5 meters) while dribbling	8,16 sec.	9,18seconds	<b>1,02</b>
Fast passes	On a 1,5m distance from the wall, are executed 15 passes with both hands from the chest	9,53 sec.	10,12 seconds	<b>0,19</b>
Dribbling and throwing	Crossing the track from the first test but instead of four obstacles we have three, and the player has to throw to the basket	12,26 sec.	13,26 seconds	<b>1</b>
Free throws	Ten free throws	4 scored baskets	4 scored baskets	<b>0</b>



Little marathon	Movement on the track of little marathon(98 meters) in maximal speed	28,30 seconds	29,38 sec.	<b>1.08</b>
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Average compared results obtained on the experimental and control group

Indicator	Contr. group	Exp group	P
Speed dribbling	8,16	9,18	0,01
Fast passes	9,53	10,12	0,02
Dribbling and throwing	12,26	13,26	0,01
Little marathon	28,30	29,38	0,01

subjects, both in males and females. The calculations show that the differences are statistically significant.

#### Conclusions

We consider that the test subjects from the current phase have low levels of general motor capacity, scoring less on the trials. Also, we see a lower set of motor and technical skills compared with the 2005 test group.

This could be due to changes in the study programs of pre-university schools, namely cuts in the number of P.E. weekly classes, these measures having negative effects on the capacity for effort in young people, with long-term negative consequences sanogenetically and also on the capacity to get involved in professional and daily activities.

Another cause could be the preference of young people for popular activities (computer games, internet, meeting friends in clubs etc.) over sports.

The absence of physical exercise from the lifestyles of many youngsters is also a consequence of a wrong attitude towards exercising.

In this context, during classes the professors have the role to explain to the students the importance of organized, systematic and continuous physical exercise and the consequences physically and psychically.

It is a well known fact that in modern societies, engaging in physical exercise according to the individual possibilities and particularities is an essential prerequisite for a healthy life, while also being considered a form of corrective therapy. The systematic practice of any form of exercise will lead, through various means, to maintaining and strengthening the health, raising biological value, vitality and work endurance.

#### Discussions

The evaluation of the motor potential as well as the motor skills was done by comparing the motor parameters and establishing the differences between the values of the two generations and was based on the following criteria: measuring the test groups in standard conditions using the test set, interpreting the results using the performance average and comparing these with statistical-mathematical calculations.

For the majority of parameters there's a decrease in the recorded values for the experimental groups for both male and female students.

Regarding general motor capacity, we notice that for all the trials the female students in the 2011-2012 university year scored lower than the subjects from the 2004-2005 year.

The values of p show that there are significant differences between the two groups.

For male students, the values obtained in abdominal muscle strength and stamina trials are below the 2005 averages, the statistic calculations show us there is a significant difference with a lower p value than the fixed risk probability. On trials that test lower limbs strength and jumping height the values remained constant whereas the speed trial showed no statistically significant difference.

With regard to the level of specific motor skills, it is apparent that in the case of proficiency trials (dribbling), more complex motor skills (dribbling and throwing), as well as stamina (small marathon), the results are also below the values obtained by the 2005 test

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