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## DEVELOPMENT OF PHYSICAL AND MOTOR CAPACITIES OF GYMNASIUM CLASSES STUDENTS BY BASKETBALL SPECIFIC MEANS

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### Abstract

**Objective.** The aim of the study is to highlight the content of the school curriculum and to optimize the teaching process of physical education and psychomotor education of pupils in gymnasium classes by using the specific means of playing basketball in the physical education lessons.

**Methods.** The study was carried out at the "Coresi" Gymnasium School in Targoviste, by assisting and participating in the physical education lessons. Subjects participating in the study were students of the 7th grade (the class with the highest number of pupils), in number of 22 children, of which 11 girls and 11 boys. Children aged between 13 and 14 years.

**Results.** In the long-distance jumping test, combined explosive speed with force sample, the students gained superior quantitative improvements, the differences between the averages achieved in the final test compared to the initial test were 10.64 cm for boys, and 7.36 cm for girls. In the 5x10 m runway test, better results were obtained in the second test than at the first execution time of the girls decreasing by 2.42 seconds and the boys by 1.58 seconds, an aspect that proves the effectiveness of practicing basketball exercises and the other content of the program exercises, on improving motor skills and especially speed and skill at this age. For passes with two hands from the chest, a basketball-specific test showing the accuracy and speed of execution, there was a correction of the executions, as evidenced by the differences in the average obtained, the girls with 2.28 executions more, and the boys with 4.36 executions. The triangle movement experienced improvement in decreasing the execution time from 32.17 seconds to 29.4 seconds for the girls group and from 29.53 seconds to 24.26 seconds for boys, demonstrating the effectiveness of exercises used in lessons of physical education.

**Conclusions.** The content of the physical education program can be achieved using the specific means of playing basketball, which lead to the acquisition of knowledge, skills, qualities and skills, to the development of the physical and motor skills of pupils in gymnasium classes.

**Key Words:** physical capacity, motor capacity, basketball.

### Introduction

The ideal of physical education is influenced by general educational needs, based on the formation of active, harmoniously developed and healthy people, which requires the restructuring, refinement and timing of physical education activities of children. The national curriculum establishes in this respect performance standards that the graduate student of the gymnasium cycle must achieve for all educational subjects.

The physical education system in our country includes a multitude of activities that contribute to the formation and development of pupils, through the valorisation of psycho-physical skills, the balance between psychomotricity and intellectual potential, emotivity, affectivity and will.

In order to achieve the objectives and tasks proposed, to achieve the educational ideal in physical

education and school sport a decisive role is played by combining the specific means with the non-specific ones choosing the optimal didactic strategy necessary to achieve the performance standards. It can be said that physical education, through its formative character, is an essential element of permanent education (Cucoș, 2006).

In this idea, the activity of physical school education is oriented towards finding and applying a modern method and means, having at the center of activity the personality of the student, his physical and psychic possibilities, his desires and his options. The activity of physical education and sports, through its formative valences, is a good socialization environment for pupils, because at this age, their integration into a complex group (class, group, team) develops the personality in all aspects, helping them better integrate into society.

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Following the success of the formative perspective of physical education, it is still necessary for the first classes to act in order to ensure the acquisition (qualities, knowledge, skills, driving skills) that are transferable during leisure time and independent student activities (Dragnea, 2006).

For this purpose, it is necessary to intervene the specialist in the field to take actions for the selection and use of those forms, methods, means of efficiency, variety and attractiveness which lead to the formation of the habit of systematic exercise of the physical exercise and the movement, to the development of children's interests for their own development and training. Among the modern means and methods of achieving and fulfilling the objectives of physical education are sports games.

Basketball, as well as other collective sports games, through its main feature, team play, compete to achieve the goal and objectives of physical education (Savu & Pehoiu 2018).

The basketball game has multiple influences on the practitioners in terms of recreational, educational, as a source of satisfaction and personal confidence, restoration of physical and intellectual forces, etc. An important role in child development, health improvement, the development of interpersonal relationships of collegiality, respect, conflict, tension and vulgarity in the halls or on the sports grounds.

Many authors assert that basketball is a "specific way of showing and practicing having a playful and sportive character in coporal activities and physical exercise, in which participants in teams who are in a relationship of unpredictable adversity sporting games, called sport rivalry, battling on a special basketball court to win, each attempting to make several successful throws in the opponent's basket, with the basketball ball maneuvered under the conditions of the " (Moanță, Ghițescu & Ghițescu, 2008; Predescu & Moanță, 2001).

From the point of view of sporting activity, basketball can be considered as a competitive sport, competition, being included in the general sphere of the notion of sport, defined as a specific activity of competition in which the exercises are intensively utilized in the physical exercises the view of obtaining the class or the class, the improvement of the morpho-functional and psychic possibilities, materialized in a record, a self-sufficiency of the possibilities or the overcoming of a partner. Considering basketball as a sport, along with other games, it also confers status, and implicitly, the name of sports discipline. The sport discipline status is conferred on him by the national and international organizational and sporting framework, along with

many other sporting disciplines that make up the sphere of sports activity.

### Methods

In the course of the proposed study, we started the following hypothesis according to the use of basketball game content in the physical education lessons will lead to the optimization of the physical and moral capacities of the gymnasium students.

The study was carried out within the "Coresi" Gymnasium School by assisting and participating in the physical education lessons. Subjects participating in the study were students of the 7th grade (the class with the highest number of students), of 22 children, of which 11 girls and 11 boys. Children aged between 13 and 14 years.

Lessons were held twice a week, during the first semester (October-December), and the second semester (April - May), the school year 2016-2017, respecting the specialized curriculum. The sports games taught at school were basketball and volleyball. In the sports-themed lessons, depending on the number of themes set to be achieved, I used basketball themes for 15 to 20 minutes.

The study was conducted in three stages:

- *the first stage* (October - November) is the study of the bibliographic material dealing with the chosen topic, the setting up of the group of students to be investigated, the tests of general motiveness, the initial testing were chosen and applied;

- *the second stage* consisted in staggering the contents of the basketball game study program. Physical education lessons were assisted in the idea of permanent observation of the students' response to the physical effort, the acquisition of the technical elements specific to the basketball;

- in *the third stage*, the motricity tests were applied to observe the evolution or involution of the subjects, the collected data were elaborated, analyzed and interpreted, which allowed me to formulate some conclusions and proposals.

For this study, we used both investigative methods (documentation, observation method, experimental), analysis and interpretation (mathematical-statistical method) (Dragnea, 1984).

The entire team of the class was subjected to a number of four physical tests (long-distance jump from place, 5x10m running test, passes with two hands from the chest, triangle movement), agreed with the teacher and students enrolled in the study. These tests have been chosen as they can provide us with the necessary information on the students' motricity indicators, and the characteristic of these tests is close to the driving forces, physical

movements and qualities required by the basketball game.

The content of the basketball game staggered during the two semesters took into account the learning contents established by the program for the second year of training, the conditions and material basis of the school, the students' options, and the level of their training. Thus, for the first semester there were established basketball themes in 15 lessons, and in the second semester, 16 lessons, these being done with the whole class of the VII grade. To reinforce the specific motor skills of basketball, the exercises and structures (learning activities) that have been selected and used in lessons, helps us achieve the main goal of playing the full game. For this purpose, they have resumed and used in the form of relays, competitions of ball catching and holding, ball handling in the form of games and simple procedures of collaboration with partner, co-driver, solving certain tasks, etc. in order to ensure a good density and intensity of the lesson, motivation and responsibility for the effort required.

In order to ensure greater efficiency in the acquisition and application of technical tactics during the game, it is necessary to use learning activities in accordance with the didactic principles (the principle of accessibility, from easy to difficult, from simple to complex, the principle of continuity, logical and methodical systematization of activities, etc.). For example: Although basketball is being taught after learning passing and dribbling, we believe it can be approached as a theme from the first lessons, giving students the opportunity to enjoy the success of a basket.

However, in stacking the throw-off learning, we will consider learning to throw the basket right away, then throwing the basket in dribbling and moving.

In the 7th and 8th grades, technical and tactical elements are taught and practiced as closely as

possible to play, in structures and combinations (dribbling, pass, reprimand, pass, dribbling, pirouette, throw, etc.). It is necessary for the exercises used in the lesson to be placed on the ground so that this placement itself is a condition close to the game. An important role in learning and enhancing technical skills is the practice at the end of the game lessons at one or more panels in which the role of striker changes into the defender, requiring an active and conscious participation in the game and obtaining the desired result.

The dose and intensity of effort must always accompany the exercises, both planning and content of the lesson, taking into account the physical and psychological effort, as well as the difficulty index of the themes and exercises to achieve these themes. It is also important to always keep in mind the peculiarity of pupils' gender and age, the level of previous purchases, knowledge and skills, working conditions (material basis, venue, environment and weather conditions).

#### Results

Following the motricity measurements, we obtained the data necessary for planning and staking the content of the basketball game during the two semesters as well as verifying the formulated hypothesis. Centralized data were processed and presented in Table no. 1 (group of girls) and Table no. 2 (boys group). In order to better observe the progress made from one test to another, we represented the values of the media by group in the graphs.

The analysis was done on each sample in part by groups and by comparison between groups (girls-boys). The assessment of the results highlights the students' physical education at the beginning and end of the study.

Table no. 1. The recorded results for the samples applied to the initial and final grade VII - girls

No. crt.	Initials	Year of birth	Long-distance jump from place / cm		5x10m running test / sec.		Passes with two hands from the chest / no. of rep.		Triangle movement / sec.	
			TI	TF	TI	TF	TI	TF	TI	TF
1	B. L. M.	2004	166	180	18,91	15,22	15	22	30,4	29,00
2	C. A. M.	2003	188	190	18,05	16,5	17	19	35,00	31,5
3	G. V. R.	2004	159	165	19,2	17,55	19	20	30,5	28,00
4	G. D. I.	2004	180	187	18,36	15,56	18	20	31,5	27,00
5	I. N. M.	2004	171	175	18,2	16,58	17	17	30,00	29,00
6	I. AL.	2004	165	170	20,6	17,25	18	18	29,5	28,00
7	M. G.	2003	177	182	19,39	16,65	16	17	32,5	30,5
8	N. E. S.	2003	163	169	17,05	14,01	15	21	35,00	28,5
9	N. F.	2003	178	185	19,18	16,85	16	19	31,5	30,00

10	N. C.	2003	170	178	17,2	16,35	18	21	32,5	29,5
11	P. M.	2003	168	185	19,4	16,65	17	17	35,5	32,5
<b>Arithmetic average (X)</b>			<b>171,36</b>	<b>178,72</b>	<b>18,68</b>	<b>16,26</b>	<b>16,90</b>	<b>19,18</b>	<b>32,17</b>	<b>29,40</b>
<b>The difference</b>			<b>7,36</b>		<b>2,42</b>		<b>2,28</b>		<b>2,77</b>	
<b>%</b>			<b>9,5</b>		<b>8,7</b>		<b>11,3</b>		<b>9,1</b>	

Table no. 1. The recorded results for the samples applied to the initial and final grade VII - boys

No. crt.	Initials	Year of birth	Long-distance jump from place / cm		5x10m running test / sec.		Passes with two hands from the chest / no. of rep.		Triangle movement / sec.	
			TI	TF	TI	TF	TI	TF	TI	TF
1	C. V. G.	2002	174	193	16,55	14,2	23	28	30,4	24,2
2	D. M.	2004	172	190	17,1	16,7	24	27	31,5	24,3
3	D. M.	2004	203	205	16,45	13,4	22	26	28,00	21,3
4	M. Y. F.	2004	186	190	16,01	14,85	24	28	27,00	24,8
5	P. E. L.	2003	187	189	15,35	14,8	21	26	29,00	24,5
6	P.V.V.	2003	161	185	17,15	14,45	22	25	28,00	23,8
7	S. R. I.	2003	181	185	15,02	13,85	22	27	30,5	23,5
8	S. Șt. V.	2003	168	187	17,52	16,44	21	27	28,5	24,2
9	S.A. V.	2002	179	185	16,05	15,68	23	28	30,00	25,3
10	S. A.R.	2003	178	190	17,0	14,1	24	27	29,5	25,6
11	T. AL.	2003	185	192	15,78	14,15	21	26	32,5	23,4
<b>Arithmetic average (X)</b>			<b>179,45</b>	<b>190,09</b>	<b>16,36</b>	<b>14,78</b>	<b>22,45</b>	<b>26,81</b>	<b>29,35</b>	<b>24,08</b>
<b>The difference</b>			<b>10,64</b>		<b>1,58</b>		<b>4,36</b>		<b>5,27</b>	
<b>%</b>			<b>9,4</b>		<b>9</b>		<b>12,3</b>		<b>8,21</b>	

**1. Long-distance jump from place** is a sample in N.E.E.S. (National Evaluation and Examination System) at physical education discipline, sample used to observe the force and speed of detachment of pupils, very important capacity in achieving the specific actions of the sports branches (gym jumping, athletics jumping, sports games, volleyball, basketball, handball etc.).

The individual values (Table 1 and 2), girls and boys show an improvement of these with different growth rates. Thus, the values of the girls obtained at the beginning of the study are between 159 cm (note 5), the worst result and 188 cm (note 10), that at the end of the study these should be between 165 cm (at the level of note 7) and 190 cm (equivalent to note 10). For boys, individual values are better than girls in both tests. Initial values are between 161 cm (equivalent to note 6) and 203 cm (equivalent to note 10). At the end of the study the values range from 185 cm (equivalent to 8) to 205 cm (equivalent to note 10).

The average of girls is 171.36 cm at the beginning of the study and 178.72 cm at the end of the study, with an increase of 7.36 cm, which is a 9.5% increase, good growth. The average of the boys at the initial test is 179.45 cm, while on final testing they recorded an average of 190.09 cm, with an increase of 10.64 cm, which represents an improvement of

9.4%. Observing Figure 1 we can see that the boys at the beginning of the study have a better average value than girls with 8.09 cm and at the end of the study 11.37 cm.

So, boys get an improvement in force-detachment speed, higher than the girls with 3.28 cm from one test to the other.

**2. For 5x10 m running**, a sample tracking short distance travel combined with rapid turnarounds (speed and skill) specific to basketball, (a sample also included in N.E.E.S. as an alternative to 50 m running speed), class VII pupils registered the initial test for 17.05 seconds of the best performance and the lowest 20.6 seconds, the average of the group being 18.68 seconds. For the final testing, individual values are better, ranging from 14.01 seconds to the best performance and 17.55 seconds to the worst result. The average is 16.26 seconds (Table 1).

Individual boys' initial values are between 15.02 seconds best time and 17.52 seconds being the worst time. At the end of the study, the values ranged between 13.4 seconds the best time and 16.7 seconds the worst time. We can see the growing trends from one test to the other, both girls and boys, more significant for girls. Thus, the girls record an average of 18.68 seconds at initial testing, and at the end of the study they record an average of 16.26 seconds, with an amplitude of 2.42 seconds. Boys get an



average of 16.36 seconds at the beginning, and at the end of the study they get an average of 1.58 seconds better, averaging 14.78 seconds, which represents an improvement of 9%.

If at the beginning of the study the boys had better values than the girls with 2.32 seconds, at the end of the study this difference dropped to 1.58 seconds, with a trend of improvement of the speed quality combined with boy's skills with 0.84 seconds compared to girls (Figure 2).

**3. Passes with two hands from the chest.** This test consisted of executing the passes with two hands from the chest between the partners. Even if they were determined by each person's motor skills at the time of testing, we believe that the values have been influenced by other factors (lack of homogeneity in preparation and the hereditary capabilities of each child, there are no identical students as a motoric value). Individual girls' initial values are between 15 repetitions, the smallest number and the 19 most repetitions (Table 1), and the boys' individual values are between 21 executions minimum and 24 maximum executions (Table 2). It can be seen the upward trend of the average of 16.9 repetitions in the initial testing, to 19.18 repetitions with an increase of 2.28 executions, representing a differentiation of 11.3%, which highlights the efficiency of the basketball means used to develop motricity students. Also, in the boys group, the values of the obtained media show an upward dynamic, the initial average being of 22.45 iterations, and at the end of the study it was 26.81 executions with a growth rate of 4.36 executions.

Differences between girls' and boys' comparative tests reveal better results for boys (Figure 3). If at

first the differences between girls and boys are 5.55 executions, they remain at the end of the study, even increased to 7.63 executions, with a significant advance of 2.08 executions. This is due, in our opinion, to the fact that with the aging the girls' interest in movement is decreasing.

**4. Triangle movement.** The individual values gathered in the two initial and final tests also show for this resistance test, standing force, an increase in both girls and boys with different rhythms of manifestation. Thus, the values of the girls have a large scattering between 29.5 seconds the best time 35.5 seconds the worst time for initial testing and 27.0 seconds the best time and 32.5 seconds the worst time execute.

From the analysis of the data recorded for initial boys testing it is found that they are appropriate as values, ranging between 27.0 seconds the best time and 31.5 seconds the worst time. At the end of the survey, boys' individual values are also close, with the best recorded time being 21.3 seconds and the lowest of 25.3 seconds. From the graphical representation of the averages of the investigated groups we can see that the girls perform at the beginning of the research an average of 32.17 seconds, and in the final testing an average of 29.4 seconds with an increase of 2.77 seconds, which represents an improvement of 9, 1%. (Figure 4). The group of boys records an initial average of 29.35 seconds, as the final test takes an average of 24.08 seconds, with 5.27 seconds more. These obvious increases are determined both by the means of basketball play used in physical education and sports lessons, but also by the sports activities practiced in free time (football).

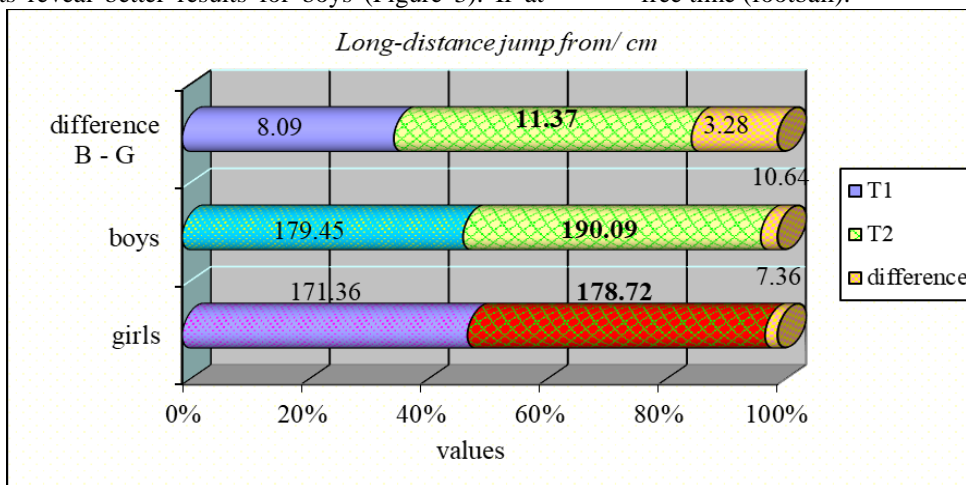


Figure 1. Comparison of the evolution of the averages obtained at long-distance jump from place between girls and boys

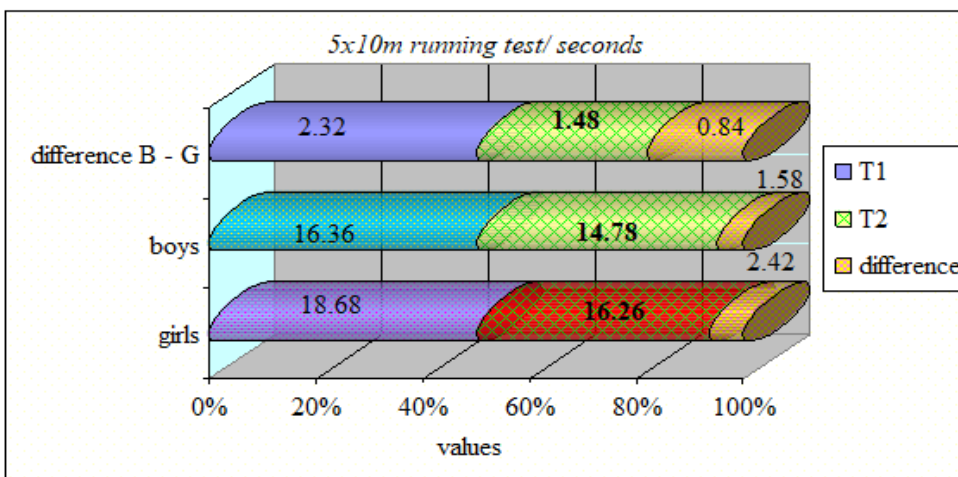


Figure 2. Comparison of the evolution of the averages obtained at *5x10m running test* place between girls and boys

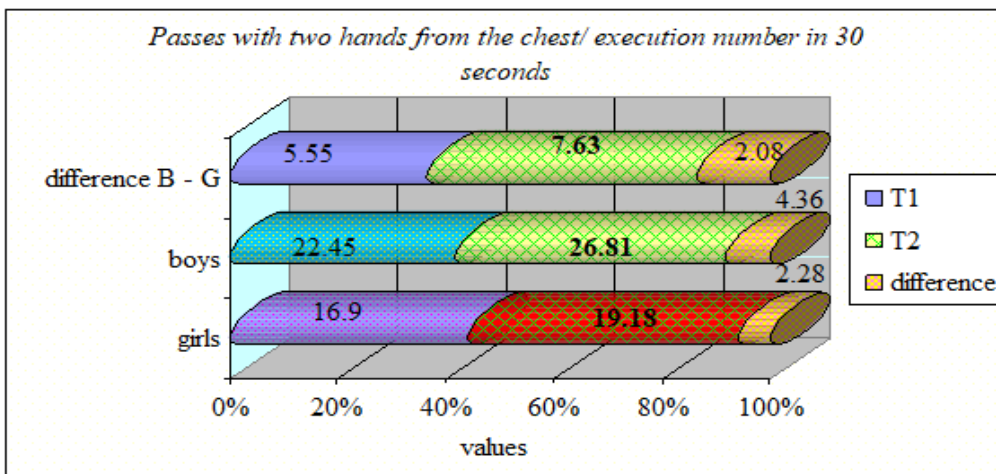


Figure 3. Comparison of the evolution of the averages obtained at *passes with two hands from the chest* place between girls and boys

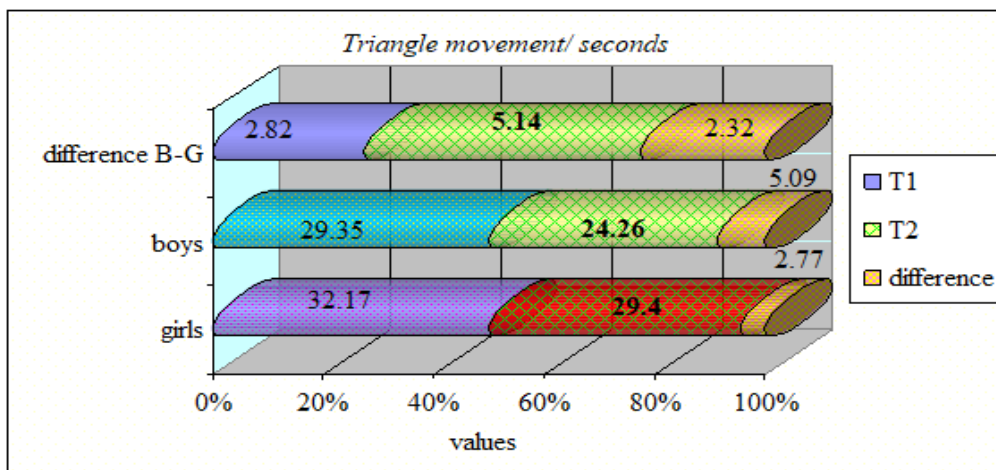


Figure 4. Comparison of the evolution of the averages obtained at *triangle movement* between girls and boys

## Discussion

From the point of view of physical school education, basketball game is a very important means of physical education, with essential attributions in the achievement of its general objectives through the attractive and varied set of specific motor skills and skills used on the one hand for the development of motricity general education of children, and on the other hand, for the education and training of motor skills and abilities.

The quality of the specific means of basketball play, its influence on the development of the general motricity and the formation of the personality of the children in the period of growth and development ensured an important place in the school curriculum in all classes (primary-secondary), being distributed a large number of lessons throughout the year.

Basketball is present in physical education lessons in all schools starting with grades 5 or even earlier, in which activities of learning and acquiring technical elements and basic tactical actions are designed and carried out by using the "school ball" then they grow into complexity, and basketball is practiced as a whole game.

For these reasons, we can say that basketball can be practiced and organized through the didactic process, but also as loisir type activity, as a mass sport, as a performing and high-performance sport, the area of its encompassing and practicing is great, attracting both girls and boys of all ages. The ever-increasing development of basketball in the last years among children and young people calls for solving organizational and methodological requirements. The school has been and is the main instrument through which the ideal of physical education can be achieved in an organizational form.

## Conclusion

After analyzing and interpreting the data gathered in the present study on the subject of the paper, I consider that the hypothesis formulated was achieved. The content of the physical education curriculum can be achieved using the specific means of playing basketball, which leads to the acquisition of knowledge, skills, qualities and skills, to achieve the objectives of physical education and the game at a higher level.

The analysis and interpretation of the data obtained from the tested test motricity tests subjects showed at the end of the study better

values than at the first test, which proves mainly the efficiency of the means and exercises from the basketball game used between the two testing.

Thus, for the long-distance jump from place test, combined explosive force with speed sample, the students gained superior quantitative improvements, the differences between the averages achieved in the final test against the initial test being 10.64 cm in boys, and in girls 7.36 cm.

In the 5x10 m running test, better results were obtained in the second test than at the first execution time of the girls with 2.42 seconds and the boys with 1.58 seconds, which proves the efficiency of the practice of the means basketball exercises, other content of the curriculum, the improvement of motor skills and, in particular, speed and skill at that age.

For passes with two hands from the chest, a basketball-specific test showing the accuracy and speed of execution, there was a correction of the executions, as evidenced by the differences in the meanings obtained, the girls with 2.28 executions more, and the boys with 4.36 executions more.

The triangle movement showed improvement in reducing the execution time from 32.17 seconds to 29.4 seconds for the group of girls and from 29.53 seconds to 24.26 seconds for boys, demonstrating the effectiveness of exercises used in lacquers of physical education.

As a final conclusion I can say that the objectives of the paper have been achieved, which confirms the hypothesis formulated and allows me to say that the contents of the physical education program can be achieved by a careful selection of the contents, a creative application taking into account the particularities of the pupils, the conditions and the specificity of the school, fact substantiated by the results recorded in the general motricity tests applied to the students of the 7th grade.

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