

COMPARATIVE ANALYSIS OF PHYSICAL DEVELOPMENT AND SPORTS PREPAREDNESS OF YOUTH FEMALE BASKETBALL ATHLETES

Preliminary communication

Nedyalka Mavrudieva

*National Sports Academy „V. Levski“, Sofia,
Department „Theory of the Physical Education“, Sofia, Bulgaria*

Absract

The following study has an ascertain character and its goal is to determine and analyze the level of physical development of youth female basketball athletes. Our thoughts are that with this study we will help the work of the sports pedagogues (coaches) in their selection and superintendence of their athletes. Also with this study we will help coaches to achieve better results. We think that the anthropometric dimensions are important factor guarantee the success in the future sports realization of the athletes. To achieving the goal we have done a complex research aiming to determine the level of physical development and sports preparedness of 13-14 years old female basketball athletes taking a part in regular practice sessions. The subject of this study is the characteristics of physical development and sports preparedness. The object of the study is 30 female basketball athletes in two of the leading basketball clubs in Bulgaria. Methods of this study includes: study of the the problem throughout the available literature, sport-pedagogical survey, anthropometry, sport-pedagogy test. Math-statistic methods and analysis of the results from the taken tests are done by variation analyze, compare analyses (t-test of Student), estimate marks for some of the tests, using “System for examine the results of sport preparation of pupils in sports schools” and Body mass index – BMI (recommended by the WHO). The tested groups of pupils from two Sports Schools in Bulgaria are homogeneous and semi homogeneous in all of the tested indexes in physical development. Both groups need to pay more attention in their future practice on: Increasing speed abilities; Increasing height jump; Increasing the level of power strength of the legs.

Keywords: *sports pedagogues, 13-14 years old female basketball athletes, sport-pedagogical survey, anthropometry, sport-pedagogy test, Body mass index – BMI, t-test of Student, variation analysis*

INTRODUCTION

This paper is part of a big project which goal is to evaluate the leading basketball teams in Bulgaria and after that to create an evaluation table through which the coaches to be able to evaluate the physical development, motive preparedness and playing efficiency of their 13-14 years old female basketball athletes. This will help and affect improvement of the Training practice and competitive process as well as we will improve the control over all processes. In the sports literature many authors have been written about the value of different sides of sports preparation as well as the value of the control over the athletes which bring us information for future planning, improvement and managing of training practices and competitions, which guarantee the sports (Brogli & Petkova (Брогли & Петкова), 1988; Georgiev (Георгиев), 1971; Popivanova (Попиванова), 2007; Tsarova, R. & Tsarov, K. (Църова, Р. & Църров, К.), 2005; Tsarova & Borukova (Църова & Борукова), 2012).

From other side we have to notice that the pupils' age is most propitious age for recruiting of pupils for sports, which could lead to finding sports talents for the big sport. At the same time sports practice and continuous work of the young athletes has positive effect over their psycho-physical development and mostly over their health, which makes the sports so valuable from social point of view (Georgiev (Георгиев), 1971; Slanchev (Слънчев), 1998).

The following research work is just to state the level of growth and development of the tested athletes. Its goal is to determine and analyzes the level of physical development in youth female basketball athletes. This study will help the work of the coaches and will shorten the way to success.

To reach our goal we have done a complex evaluation of the physical development and sports preparedness of 13-14 years old girls practicing basketball game on a daily bases.

The subject of this study is the characteristics of physical development and sports preparedness.

The object of the study is 30 female basketball athletes in two of the leading basketball clubs in Bulgaria.

METHODS

For this study we have used the following methods:

- Exploring available literature in the field of the problem;
- Sports-pedagogic surveillance;
- Anthropometry;
- Sport-pedagogical examination.

The math-statistical methods which we used are: variation, comparative analysis (t-criteria of Student), and marks on some of the tested indexes through “System for evaluation of the pupils' results in their sport practice at sports schools” (Borukova (Борукова), 2014; Hristov (Христов), 1996; Hristov (Христов), 2007; Tsarova, R. & Tsarov, K. (Църова, Р. & Църров, К.), 2005).

This study will help improvement of the sports practice, competitive process and will increase the efficiency of control.

RESULTS AND DISCUSSION

Variation analysis of the starting data is showing that distribution is normal or close to normal.

On Table 1 are shown comparative analysis of the physical development's distribution value. Analyzing the figure we could determine that both groups are homogene-

ous about height, length of leg, length of arm, length of span, chest diameter – pause and horizontal extension of arms. The tested groups are semi homo-geneous about the weight, BMI and chest diameter – difference.

Table 1. Comparative analyses of physical development distribution at pupils from sports schools

Variables	Variability (%) of physical development	
	Sports school	
	132 SS "Vanya Voinova"	166 SS "Vasil Levski"
Height	4,46	3,26
Weight	14,88	16,96
BMV	12,78	13,97
Length of lower limb	5,03	5,15
Upper limb length	5,19	6,07
Length of Span	7,21	4,10
Girth chest - pauza	8,03	9,19
Girth chest - difference	15,88	15,88
Horizontal stretch	5,98	3,17

Table 2. Significance in the difference among physical development of the pupils from sports schools

Variables	Mean of physical development		t-test critical=2,05
	Sports school		
	166 SS "Vasil Levski"	166 SS "Vasil Levski"	
Horizontal stretch	165,21	164,64	0,19
Girth chest - difference	6,71	8,86	3,39
Girth chest - pauza	85,14	81,86	1,20
Length of Span	21,79	20,76	2,21
Upper limb length	73,29	74,93	1,04
Length of lower limb	100,79	98,92	0,96
Weight	57,43	56,71	0,21
Height	165,93	166,21	0,11

Table 3. Comparative analysis of dispersion indexes in physical preparedness of pupils in Sports Schools

Variables	Variability (%) of physical preparedness	
	Sports school	
	132 SS "Vanya Voinova"	166 SS "Vasil Levski"
Running 20 m.	8,05	5,49
Running between stands	6,43	3,85
Shuttle 112 m.	5,93	4,96
Vertical rebound	19,60	16,79
Long jump	12,54	12,67
Throwing a solid ball - from thesead face	15,62	9,88
Defensive movement	6,29	5,75
Sit ups	9,70	19,40

Table 4. Comparative analysis of the average marks of the pupils from the Sports School about their physical preparedness

Variables	Average marks of physical preparedness	
	Sports school	
	166 SS "Vasil Levski"	132 SS "Vanya Voinova"
Average score for the group	3,88	4,44
Sit ups	3,43	4,43
Long jump	3,86	3,91
Vertical rebound	3,00	4,75
Running between stands	6,00	4,77
Running 20 m.	3,09	4,36

For achieving the goal of this study we have used comparative analysis of the average results of the evaluated indexes (Table 2). According to the statistic the existing differences are not giving us to do general conclusions, that is why we have used t-criteria of Student for unpaired tails. On Table 2 are shown the significant differences in between

different indexes with $t_{critical} = 2.05$. It is visible that in more of the used indexes the value is very close one to another, but they are not proofed by necessary significance. Only in two of the examined indexes the critical value is and even over it is reached. This fact is giving us the right to claim that the girls from 132 Sports School have better

development in length of span than the girls from 166 Sports School. The girls from 166 Sports School have better chest capacity results than the girls from 132 Sports School which is proofed by Statistic.

On Table 3 is shown the comparative analyses in the dispersion of the tested indexes about physical development. Both groups are homogeneous about speed abilities, quickness of moves on the field without a ball, speed endurance and movement in defense stand. The groups are semi homogeneous about the height jump and long jump. We have to notice that the explosive power in both groups has different variation. The pupils from 166 Sports School are homogeneous ($V=9.88$) in this index, while the pupils from 132 Sports School are semi homogeneous (15.62) about the explosive power. The group of tested children from 132 Sports School is homogeneous ($V=9.70$) about dynamic power of the abdominal muscles. While the group of 166 Sports School are semi homogeneous ($V=19.40$).

In our study we have used 16 balls basketball rate system used in Sports School for control and evaluation the pupils there with profile basketball. We have evaluated the physical preparedness of the tested pupils in five indexes.

In the comparative analyses shown on Table 4 we could determine that the pupils from 166 Sports School have higher mark in one of the tested indexes (6.00) compare to the pupils from 132 Sports School. This mark they have achieved for their ability to move fast among cons on the play court. Better marks have achieved in all of the rest evaluated indexes from the pupils from 132 Sports School. Their marks are better compare to the pupils from the other school in: fast running from high position (4.36), high jump (4.75), long jump (3.91) and dynamic power of abdominal muscles (4.43)

The average marks in both groups are about 4. The exact mark for the pupils from 166 Sports School is - 3.88, and for pupils from 132 Sports School is - 4.44. These marks are urging us to advise the teacher in these schools to increase the time for physical preparedness and improvement of sport practice about physical preparedness of the pupils. And these need to be done mostly with pupils from 166 Sports School.

CONCLUSIONS

1. The tested groups of pupils from two Sports Schools in Bulgaria are homogeneous and semi homogeneous in all of the tested indexes in physical development.
2. The pupils from 132 Sports School have advantage compare to the pupils from 166 Sports School about anthropometric index – length of span.
3. The pupils from 166 Sports School have advantage compare to the pupils from 132 Sports School about functional capacity of the chest.
4. Both tested groups are homogeneous about: Speed abilities; Speed movement on the court without a ball; Speed endurance; Moving in defense stand.
5. Both groups are semi homogeneous about the height jump and long jump.
6. According to the rate system for evaluation of the pupils with profile basketball in Sports School which we have used in both tested groups, the average mark is around the middle - Good4.

7. Both groups need to pay more attention in their future practice on: Increasing speed abilities; Increasing height jump; Increasing the level of power strength of the legs; Increasing the level of dynamic power of the abdominal power.

8. Increasing the individual work outs, as the force needed to be directed precisely to these indexes where the results are low or unsatisfactory.

REFERENCES

- Борукова, М. (2014). *Усъвършенстване на системата за прием и контрол на баскетболни таланти в системата на спортните училища в България* [Improvement of evaluation and control system of basketball athletes for entry level at Sports schools in Bulgaria. In Bulgarian.] (Unpublished doctoral dissertation, National Sports Academy “Vasil Levski”, Sofia) София: Национална спортна академия „В. Левски”.
- Бреснишки, Г. (2012). *Физическо развитие и кондиционни способности на млади спортисти* [Physical development and conditional abilities with youth athletes. In Bulgarian.] София: Авангард прим.
- Брогли, Я., & Петкова, Л. (1988). *Статистически методи в спорта* [Statistic methods in sports. In Bulgarian.] София: Медицина и Физкултура.
- Георгиев, В. (1971). Лонгитодитално изследване на физическото развитие на учениците от 11 до 14 години [Dynamic of physical development, physical efficiency and gender maturing with active female athletes during the puberty period. In Bulgarian.] *Въпроси на физическата култура*, 16(3), 32-37.
- Петкова, Л. (1971). *Динамика на физическото развитие, физическата дееспособност и половото съзряване на активно спортуващи момичета през пубертетния период* [Dynamic of physical development, physical efficiency and gender maturing with active female athletes during the puberty period. In Bulgarian.] (Unpublished doctoral dissertation, National Sports Academy “Vasil Levski”, Sofia) София: Национална спортна академия „В. Левски”.
- Попиванова, Цв. (2007). Намалената двигателна активност на учениците и риска от остеопороза [Movement activity of pupils and risk of osteoporosis. In Bulgarian.] *Спорт и наука*, 51(1), 32-36.
- Христов, Р., (1996). Проблеми свързани с физическата подготовка в групите за предварителна спортна подготовка у нас [Problems connected with physical preparedness in pre-sport groups in our country. In Bulgarian.] *Спорт и наука*, 40(3), 26-30.
- Христов, Р. (2007). *Проучване и оптимизиране физическата подготовка при младите хокеисти* [Research and improvement of conditional preparedness in youth hockey players. In Bulgarian.] (Unpublished doctoral dissertation, National Sports Academy “Vasil Levski”, Sofia) София: Национална спортна академия „В. Левски”.
- Църва, Р., & Църв, К. (2005). *Нормативи за контрол и оценка на физическата и технико-тактическата подготовка на баскетболисти на 14-15 годишни български баскетболисти* [Norms, control and evaluation of physical and technical and tactical preparedness of the top level basketball players at the age of 14-15 years Bulgarian basketball players (male and female). In Bulgarian.] София: БФ Баскетбол, НСА ПРЕС.
- Църва, Р., & Борукова, М. (2012). *Система за оценка и контрол на спортната готовност на учениците от спортните училища* [System for evaluation of the results in sports preparedness of pupils in Sports Schools. In Bulgarian.] София: Болд инс.
- Слънчев, П. (1998). *Спортна медицина* [Sports medicine. In Bulgarian.] София: Нови знания.

Correspondence:

Nedyalka Mavrudieva
National Sports Academy „Vassl Levski“
Department „Theory of the Physical Education“
Studentski grad, 1700 Sofia, Bulgaria
E-mail: nmavrudieva@hotmail.com