



PHYSICAL DEVELOPMENT AND MORPHOFUNCTIONAL CHARACTERISTICS OF BASKETBALL PLAYERS AGED 13-14

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Annotation

The issues of selection and control in sports practice have been studied for a long time and for many of them quite clear ideas and theories have developed, some aspects are still in the process of formation and require in-depth scientific study.

Such issues, in our opinion, include the assessment of the physical development of young athletes. Many coaches believe that today it is important to simply keep children in the section, sports school, and their compliance with one or another sport is not necessary. This point of view is detrimental to sports in general and to basketball, which makes special demands on athletes in particular. Thus, the assessment of indicators of physical development and morphofunctional features of young basketball players aged 13-14 seems to us to be very relevant.

Keywords: morphofunctional characteristics, sports school, young athletes, physical development, basketball players.

Introduction

The purpose of the study: is to study the indicators of physical development and morphofunctional characteristics of basketball players aged 13-14.

Results of the study and their discussion. The study of physical development and morphofunctional features of basketball players is important for medical and pedagogical control, selection and sports orientation. As is known, the characteristic features of athletes are determined by the specific requirements of the sport [4].

The study was conducted on the basis of school number 1 in Bukhara. The study involved 24 basketball players, boys born in 2005, 2006 (age 13-14). Basketball players of the training group of the 3rd year of study, who took part in the experiment, have been playing basketball since the age of 9-10, the composition of the group did not change during the experiment. The study was carried out for 3 months. To assess physical development, human measurement data were used, which are commonly called anthropometric indicators. These include the following indicators:



1. Morphological - body measurements: height, body weight, circumference and excursion of the chest, circumference of the thigh, lower leg, wrist, length of the foot, hand (Table 1);
2. Functional - indicators of body functions: muscle strength of the hands, back (deadlift), vital capacity of the lungs (VC), vital indicator (Table 2).

Table 1 - Comparative analysis of indicators of physical development of basketball players aged 13 and 14

Indicators	13age	14age	t.	Pt
	$\bar{X} \pm S\bar{x}$			
Height(cm)	167,3±1,84	176,9±1,64	3,8	≤0.05
Weight, kg)	54,7±1,42	64,2±1,62	4,1	≤0.05
Bust(cm)	75,2±80,94	81,7±20,68	5,6	≤0.05
Chest excursion(cm)	8,0±0,37	8,9±0,75	2,1	≤0.05
Wrist(cm)	16,57±0,42	18,36±0,89	1,5	≤0.05
Hip(cm)	43,0±0,57	46,9±0,39	5,8	≤0.05
Calf circumference(cm)	29,28±0,60	31,4±50,36	3,3	≤0.05
Foot length(cm)	26,2±0,2	27,2±0,2	3,2	≤0.05
Brush length(cm)	18,0±0,3	18,3±0,21	1,2	≤0.05

Comparison of two age groups of young basketball players between themselves established significant differences in a number of indicators (t to p.=2.12, at p≤0.05) Table 1 shows that 13-year-old basketball players significantly differ from their 14-year-old peers in a longer body length by an average of 9.6 cm, which is 5.4%. Compared to the average age indicators, 13-year-old basketball players differ by 7.3 cm (4.4%), and 14-year-olds by 9.9 cm (5.6%). When compared with due standards for selection in

training groups in accordance with the training standard, the difference was 3.1 cm, which is only 1.7% less than the norm [3].

The average weight indicators of 13- and 14-year-old basketball players also significantly differ by 14.7%. When compared with proper norms, 13-year-old basketball players have a body weight of 7.7 kg, 14-year-olds are 8.2 kg more, which may indicate greater muscle mass than non-basketball peers. Indicative for assessing the physical

development is the difference between the coverage dimensions of the body of basketball players, in our case, this is an excursion of the chest, which indirectly indicates an increase in lung volume. Differences between 13 and 14-year-old basketball players in this indicator are not statistically significant and amount to



10.1%; ($t=2.1$, at $p \leq 0.05$). The volumes of the thigh and lower leg are statistically significantly higher in 14-year-olds by 8.3% and 6.8%, respectively. By this indicator can be used to judge the growth of muscle mass, and, consequently, the strength of the muscles of the lower extremities. The wrist girth of 13- and 14-year-old basketball players does not statistically significantly differ by 9.7%.

Interesting for assessing the physical development of basketball players are indicators of the length of the foot and hand, which are genetically determined and indirectly indicate the future growth of the player. For 13-year-old basketball players, the length of the foot was 26.2 cm; for 14-year-olds - 27.2 cm, which is statistically significantly more by 3.7%, but the length of the hand is statistically not significantly more - by 2.7% more.

In terms of lung vital capacity (VC), statistically significant differences were obtained between basketball players aged 13 and 14 by an average of 243 cm³, which is 8.7%. Compared with the average age indicators, VC in 13-14-year-old basketball players is 415 cm³ (15%) more [2].

Table 2 - Comparative analysis of morphofunctional indicators of basketball players aged 13-14

indicators	13лет	14лет	t.	Pt
	$\bar{X} \pm S\bar{x}$			
VC(cm ³)	2544.3±68.1	2787.3±23.8	2.8	≤0.05
Dynamometer pr, brushes (kg)	31.8±0.9	36.8±0.8	4.1	≤0.05
Dynomametry lion, hands (kg)	28.4±0.9	35.2±0.8	5.2	≤0.05
Deadlift(kg)	72.5±1.5	82.0±1.08	5.1	≤0.05
Vital index(cm ³ /kg)	46.0±2.1	43.5±0.9	1.2	≤0.05

There are no statistically significant differences of 5.4% between 13- and 14-year-old basketball players in determining the vital indicator (the ratio of VC to body weight). The vital indicator characterizes the functionality of the respiratory apparatus and normally amounts to 60-65 cm³ / kg in boys. Comparison with due standards indicates

on an insufficient level of development of the functional capabilities of the respiratory apparatus of basketball players, which may be due to the increased growth in length of the body of athletes at this age [1].

On the basis of the study, we found that 13-14-year-old boys involved in basketball are characterized by higher indicators of long dimensions (height, length of the hand, foot), chest volume and weight in relation to the proper age norms. This is primarily due to the features of the selection.



Indicators such as vital capacity, vital index, hand and back strength are the result of the influence of systematic training and in our study indicate high indicators of strength and insufficient indicators of the respiratory system, which may be indirectly associated with insufficient development of endurance.

The leading somatotypic feature of the surveyed basketball players aged 13-14 is tall stature with a large body weight compared to their peers who do not play basketball. Changes in the functional indicators of VC and LP in 13- and 14-year-old basketball players reflect the direct influence of sports training on the respiratory systems and do not depend on the structural features of the basketball players' bodies. Of particular interest is the analysis of the physical development and morphological and functional indicators of young basketball players depending on the game role: centers, forwards, defenders. Comparison of the mean group values made it possible to establish a number of differences between them (Table 3).

Table 3 - Average indicators of physical development and morphological features of basketball players aged 13-14, performing various functions in the game

Parameters	Center (n=4)	Attack (n=7)	Defender (n=7)
Height(cm)	182,5±2,65	173,5±7,71	167±1,90
Weight, kg)	70,0±1,56	60,0±1,72	55,7±179
VC(ml)	2823±54,65	2624±99,43	2690±25,52
"Vital indicator" (cm ³ / kg)	40,1±0,73	43,7±1,13	47,8±1,84
Bust(cm)	81,8±1,79	79,9±1,83	78,6±1,27
Calf circumference(cm)	31,3±0,55	30,1±0,83	30,7±0,73
Hip(cm)	47,3±0,87	45,0±1,03	44,7±0,96
Dynometry (pr, kg)	37,5±2,23	34,0±1,58	34,3±0,87
Dynomometry (lion, kg)	35,3±2,47	30,3±1,58	30,6±1,13
Deadlift(kg)	84,8±0,87	77,7±1,33	75,3±2,94

The highest indicators of body length and weight characterize basketball players who perform the function of centers. On average, their height is 182.5 cm, weight - 70 kg. Also, the centers are distinguished by higher VC rates - 2823 cm³, chest girth - 81.8 cm, hips - 47.3 cm and lower legs - 31.3 cm; the strength of the right - 37.5 kg and the left 35.3 kg of the hand, back - 84.8 kg. However, the development of their respiratory apparatus is lower compared to other players, as indicated by the value of the "vital index" - 40.1 cm³ / kg, which, in our opinion, is due to the higher growth of centers. Boys basketball players who perform the function of forwards in basketball, compared to center players, are somewhat smaller in height and weight, respectively 173.5 cm and 60 kg. For other indicators, lower values were also revealed than for the center ones: VC - 2621 cm³, chest girth - 79.9 cm, hips - 45 cm and lower legs - 30.1 cm; the



strength of the right hand - 34 kg and the left hand 30.3 kg, back - 77.7 kg. The attackers have a slightly higher "vital index" - 43.7 cm³ / kg.

Basketball players who perform the function of defenders in the game differ from the two previous groups in smaller total body sizes: average height = 167 cm, weight - 55.7 kg, chest circumference 78.6 cm, hips - 44.7 cm and lower legs - 30.7 cm and back strength - 75.3 kg. Defenders are characterized by lower indicators relative to centers and higher indicators relative to defenders, the strength of the right hand - 34.3 kg and left hand 30.6 kg, as well as the highest in relation to both centers and attackers "vital indicator" - 47.8 cm³ / kg .

Conclusions. Analysis of the scientific and methodological literature showed that the period of puberty is characterized by significant changes in the physical and functional indicators of development. The lack of relevant knowledge about the child's body can lead to errors in the work of the teacher. Therefore, it is important for the future teacher to master

methodology for assessing the physical development of children. The assessment of anthropometric indicators in our study was carried out using the method of approximate calculations (assessment by formulas). The study showed the practical necessity of studying the physical development and morphofunctional features of basketball players aged 13-14 years old school No. 1 in Bukhara and made it possible to identify some of their characteristic features:

1. For basketball, indicators of body length, limbs and their ratio are important. First of all, they are tall. At the same time, 13-year-old basketball players with high growth are characterized by low vital indicators. For 14-year-old basketball players, the same height indicators are characteristic, however, the contingent athletes of this group are distinguished by more pronounced indicators of the length of the foot, chest, hips and lower leg, as well as the strength of the hand and back, VC. Having indicators of growth dynamics, the coach can predict the final value of the child's growth. So in boys aged 13.5-15.5 years, the average growth is 8-10 cm or more per year, however, there may be individual differences associated with the type of constitution. Boys between the ages of 14 and 15, the legs stop growing, and the growth rate for the torso peaks.
2. Indicators of the functional state of the respiratory system in basketball players and 13- and 14-year-olds indicate their tendency to fatigue due to a decrease in adaptation to aerobic loads against the background of intensive sexual development. Therefore, the data obtained indicate a weak development of endurance. Strength Development Indicators of the hands and back of basketball players aged 13-14 years is higher than the average age norms, which indicates a sufficient development of strength and, in



general, corresponds to the age-related characteristics of the growth dynamics of this physical quality.

3. Differences in morphological parameters are more pronounced in the age groups of athletes than when comparing playing roles. In general, the indicators of the physical development of the surveyed basketball players correspond to the specifics of basketball. Morphofunctional indicators correspond to the nature of physical activity in basketball.

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