

Peculiarities of morphological indexes of the pushers of the nucleus at the stage of specialized basic preparation

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Purpose: explore peculiarities morphological indexes of the pushers of the nucleus at the stage of specialized basic preparation.

Material & Methods: the study was attended by 12 core pushers 15–17 years who were at the stage of specialized basic training. We used the following methods: analysis and synthesis of scientific and technical literature, the definition of anthropometric indicators index method.

Results: presented morphological indexes of the pushers of the nucleus at the stage of specialized basic preparation.

Conclusions: the figures obtained showed that at the stage of specialized basic preparation the somatotype of shot-putters corresponds the somatotype of the highly qualified shot-putters.

Keywords: morphological indexes, stage of specialized basic preparation, shot putters.

Introduction

The problem of the definition of morphological indicators of sportsmen is represented actual in the connection with questions of a sports selection [5]. Morphological indicators have to take the main place, to push the shot as much as possible further; a sportsman has to answer the corresponding morphological parameters for the selection and preparation of shot putters [1; 8]. G. Savka, F. Muzik [6; 7] noted that rates of ontogenesis depend on features of morphological indicators.

K. Singh [8], having analyzed morphological indicators of highly skilled shot putters, noted the prevalence of a hypersthene type of a constitution of a body. Also the author notes that shot putters – are sportsmen with a big weight and growth.

J. Novotny [9] provided the special value among anthropometrical indicators to scope of hands, in view of genetic conditionality of it to a sign, considered necessary his account in the course of an initial selection. The definition of individual morphological indicators of shot putters promotes the shortest management of the training process [2; 3].

However the works of most of authors are devoted to features of morphological indicators of highly skilled shot putters. Not enough attention is paid to features of morphological indicators of shot putters at a stage of the specialized basic preparation. Therefore it is very important to define features of morphological parameters of shot putters at a stage of the specialized basic preparation.

Communication of the research with scientific programs, plans, subjects

The research was carried out according to the subject of scientific researches KhSAPC “Modeling of technical and tactical actions of the qualified sportsmen in swimming and high-speed and power disciplines of track and field athletics”.

The purpose of the research

To investigate morphological indicators of shot putters at a stage of the specialized basic preparation.

Material and Methods of the research

12 shot putters of 15–17 years old, who was at a stage of the specialized basic preparation, took part in the research. The following methods of the research were used: analysis and generalization of scientifically methodical literature, definition of anthropometrical indicators, and method of indexes.

Results of the research and their discussion

Having analyzed anthropometrical parameters (tab. 1), we see that in general, except the weight of sportsmen, where average uniformity (coefficient of variability of 11,79%) is observed, morphological indicators have no considerable divergences, that is uniform. Coefficients of a variation are in an interval from 2,65–7,41% that gives the chance to claim about almost identical morphological indicators of the studied sportsmen.

Table 1
Anthropometrical indicators of shot putters at a stage of the specialized basic preparation (n=12)

Anthropometrical indicators	\bar{X}	σ	V, %
Growth (sm)	185,58	4,96	2,67
Length of a hand (sm)	75,58	4,03	5,34
Scope of hands (sm)	199,5	9,45	4,74
Width of shoulders (sm)	48,42	3	6,19
Length of a trunk (sm)	56,25	3,36	5,97
Length of a leg (sm)	92,33	3,26	3,53
GT (sm)	104,08	7,72	7,41
Waistline (sm)	101,08	6,2	6,13
Weight (kg)	91,33	10,76	11,79

Sportsmen had a high growth, big weight, scope of hands and width of shoulders.

It was defined a somatotype of shot putters on the basis of the received indicators according to the classification of M. V. Chernorutsky [5]. All studied shot putters had a hypersthene type of a constitution of a body of pyknic type that is characteristic of highly skilled shot putters, that is, it is possible to claim that shot putters have a somatotype as at highly skilled shot putters already at a stage of the specialized basic preparation. The received indicators a somatotype testify to a strong constitution of a body, heavy and wide bones, and volume shoulders. But unlike other types of a constitution of a body at this type, a slower course of metabolic processes in an organism is observed; as a result, it is shown in an excess adipopexis.

According to the method of W. Sterna [1], the weight of a fatty layer was determined (tab. 2).

Table 2

The weight of a fatty layer of shot putters at a stage of the specialized basic preparation

Sportsmen	Weight of a fatty layer (kg)	% from body weight
1	9,742	10,26
2	11,721	10,19
3	9,042	10,28
4	8,744	10,29
5	9,532	10,25
6	8,161	10,33
7	9,453	10,28
8	9,234	10,26
9	9,707	10,22
10	10,732	10,22
11	8,002	10,39
12	8,467	10,33

Having analyzed the weight of a fatty layer, it was defined that the fatty layer doesn't exceed 10% of body weight at the studied sportsmen. As for the weight of a fatty layer, it fluctuates in the range of 9–10 kg in most of sportsmen.

The weight of segments of a body was calculated, on the basis of data of body weight and growth of shot putters, who took part in the research, by the method of V. M. Seluyanov [4], the data are noted in tab. 3.

Apparently from the noted table, in half of indicators, the average uniformity of results (coefficient of variability of 11–14,4%) is observed, it is connected first of all with differences of weight at the studied sportsmen.

Table 3

The weight of segments of a body of shot putters at a stage of the specialized basic preparation (n=12)

Indicator	\bar{X}	σ	V, %
Foot (kg)	1,198	0,1	8,8
Shin (kg)	3,925	0,43	11
Hip (kg)	13,283	1,62	12,2
Hand (kg)	0,616	0,05	8,2
Forearm (kg)	1,419	0,14	9,9
Shoulder (kg)	2,433	0,31	12,8
Head (кг)	5,451	0,23	4,4
Top part of a trunk (kg)	14,434	1,81	12,5
Middle part of a trunk (kg)	15,277	2,2	14,4
Lower part of a trunk (kg)	10,544	1,24	11,7

The middle part of a trunk has the largest weight – 15,277±2,2 kg from between all parts of a body, the top part of a trunk and a hip weighs a little less – 14,434±1,81 kg and 13,283±1,62 kg respectively. A foot – 1,198±0,1 kg, a forearm – 1,419±0,14 kg and a hand – 0,616±0,05 kg have the smallest weight.

The weight-growth index was defined for the definition of distribution of weight to sm of the growth and determination of excess weight, the data are provided in tab. 4

It is visible from the obtained data that the greatest indicators of the weight-growth index are observed at the second sportsman and the tenth sportsman, it demonstrates the considerable excess of weight, as for the sixth and eleventh sportsmen, they have the smallest indicators of the weight-growth index, it testifies to the lack of excess weight and compliance of weight to growth of these sportsmen. The average value of the weight-growth index makes 492±49,5 g·sm⁻¹. In general the level of a divergence of indicators of the weight-growth index is on the verge of average uniformity (coefficient of variability of 10,00%).

Conclusions

The analysis of scientific and methodical literature showed that, despite a large number of the works which are devoted to features of morphological indicators, not enough attention is paid to features of morphological indicators of shot putters at a stage of the specialized basic preparation.

The obtained data showed that a somatotype of shot putters answers a somatotype of highly skilled shot putters already at a stage of specialized basic preparation.

Morphological indicators have to correspond the following requirements for the selection and preparation of shot

Table 4

Weight-growth index of shot putters at a stage of the specialized basic preparation

Indicator	Sportsmen												\bar{X}	σ	V, %
	1	2	3	4	5	6	7	8	9	10	11	12			
Weight-growth index, g·sm ⁻¹	500	605	471	459	492	444	487	479	500	568	438	456	492	49,5	10

putters at a stage of the specialized basic preparation: hypersthenic structure of a constitution of a body, growth – 185,58±4,96 sm, hand length – 75,58±4,03 sm, scope of hands – 199,5±9,45 sm, width of shoulders – 48,42±3 sm, trunk length – 56,25±3,36 sm, leg length, – 92,33±3,26, GT – 104,08±7,72 sm, waistline – 101,08±6,2 sm, weight – 91,33±10,76 kg, the weight of a fatty layer, – is no more than

10% of body weight, the largest weight has to fall on a middle part of a trunk – 15,277±2,2 kg from gross weight, the weight-growth index – 492±49,5 g·sm⁻¹.

Prospects of the subsequent researches. It is provided to define the influence of morphological indicators on parameters of technical preparedness of shot putters.

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