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COMPARATIVE ASSESSMENT OF THE PHYSICAL DEVELOPMENT OF HIGHLY QUALIFIED WRESTLERS THROUGH ANTHROPOMETRIC INDICATORS

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ABOUT ARTICLE

Abstract: In the scientific literature, it is stated that as a result of training specific to a particular sport, not only the quantitative ratios of the components that make up the athlete's body mass change, but also the athlete's overall constitution, especially in young children and adolescents, may change. Taking into account the above, in this study we set the task of studying the formation and differentiation of somatotypes within one specialty, in particular, in different types of wrestling, during specific training. The anthropometric indicators of representatives of different types of wrestling who participated in the study were analyzed.

Introduction

A number of works are being carried out to popularize, develop and introduce to the world our national sport, wrestling, which embodies our ancient traditions passed down from generation to generation, in particular, courage, bravery, patriotism, and ideals, and to turn this value of ours into a global masterpiece. At the same time, the growing popularity of the sport of wrestling requires further attention to organizing prestigious international competitions, modernizing the existing infrastructure and material and technical base, improving the supply

of sports equipment and clothing, expanding production in this regard, as well as training qualified personnel, trainers and referees for the industry.

Passing on to future generations the rich traditions and values of the sport of wrestling inherited from our great ancestors, increasing the role of wrestling in the world arena under the name of the Uzbek sports brand, further strengthening the sense of patriotism in young people by supporting and encouraging their interest in national sports, and creating the necessary conditions for all segments of the population, especially young people, as well as the peoples of the world, to engage in this sport are becoming one of the urgent tasks of today.

A number of research works have been carried out on the scientific basis of the training process, which is the basis of wrestlers' training, and on the standardization of training loads. Scientific research works devoted to improving technical and tactical movements based on biomechanical analysis of movements in the performance of the "throw" technique, taking into account the body structure of wrestlers, have not been sufficiently studied. In particular, scientific research works based on their morphological, functional, and genetic indicators in the process of training athletes have not been deeply analyzed. Solving this problem is primarily due to the extreme importance of fundamental knowledge about the processes that occur in athletes' bodies as a result of the effects of heavy physical exertion, as well as the need for coaches to have such knowledge.

Literature review

Among the factors influencing sports activity, body composition indicators play an important role. The variability of body composition depends not only on age and the profession of a person, but also plays a significant role in selecting for a particular sport [10; 220-p., 11; 135-139-p., 9; 97-p.]. Somatotype is a morphological manifestation of the human constitution, which is a criterion for the movement and functional state of a person. Somatotype is formed not only under the influence of the external environment, but also under the influence of hereditary factors [1; 148-153-p., 3; 25-p., 7; 16-18-p., 2; 127-129-p.]. An example of external environmental factors is sports activity, during which an athlete forms a unique adaptive somatotype. Morphological signs can be analyzed in different ways: first, it is possible to observe the dynamics of changes in morphological signs, taking into account weak and sensitive periods during individual development; secondly, each sport has its own characteristics, which cause certain changes in the athlete's body during the adaptation process, forming a "structural trace", and this "trace" corresponds to the requirements of the selected sport. In the third stage of adaptation, the changes occurring in tissues and organs reach their final stage, reaching a

level that leaves a "structural trace". The appearance of a "structural trace" during the adaptation process not only ensures the adaptation of the organism to various physical loads, but is also one of the main factors ensuring resistance to various negative influences, immunity to diseases, and achievement of biological perfection [9; 97-p; 10; 220-p.].

Research methodology

The research we conducted used the methods of analysis of scientific and methodological literature, pedagogical observations, pedagogical testing, instrumental methods, anthropometry, somatoscopy method, morphobiomechanical approach, pedagogical experience, and mathematical statistical methods.

Analysis and results

Anthropometric studies were conducted to assess the physical development of athletes. Anthropometric studies were conducted in strict compliance with the rules using standard equipment: anthropometer, sliding and barbell compass, caliper, tape measure, etc. The body structure characteristics of athletes involved in the sports of international martial arts were determined and compared. Their torso, head, neck, arms and legs were measured in length, width, and circumference. The thickness of the skin-fat folds was measured in four different areas of the body: under the scapula, in the upper area between the abdomen and ribs, on the thigh and back of the shoulder. The level of development of athletes is based on total and partial measurements of anthropometric measurements. In the study, when asymmetry and hypertonicity were detected in some wrestlers, the following anatomical points were used as the basis for measurements: a) the location of the center of gravity of the body, the lower edge of the average 2nd coccyx and the location of the support plane were paid attention to - the location of the total center of gravity of the body relative to the support plane and its bending limit relative to the left and right sides of the body, the distance from the limit, and the balance to the point of collapse were measured.

As can be seen from Table 1, the body length of wrestling, freestyle wrestling, and Greco-Roman wrestlers is similar: - 175.72+0.62 (in freestyle wrestlers), 175.30+2.52 (in national wrestlers), 175.44+1.08 (in Greco-Roman wrestlers), only in judo wrestlers the body length is slightly less, equal to 172.38+ 1.3. However, it was found that the body mass indicators had a higher level of variability than the indicators obtained by body weight. Based on the results of the analysis, it was found that, depending on the types of wrestling, there was a difference between the mean square deviations of the morphometric indicators of athletes and the total and partial dimensions of their bodies. In particular, the variability of the mean square

deviation of the measurements ranged from 4.57 to 9.04 in body length measurements, from 5.82 to 11.04 in mass indicators, and from 1.80 to 9.89 in chest circumference measurements.

Table 1

Anthropometric indicators of representatives of international wrestling styles (n=42)

Measurements	Parameters	Freestyle	wrestling n=8	Sambo n=8	Kurash n=12	Dz-yudo n=8
Height	M+m (sm)	175,72±0,62	172,95±1,92	175,30±2,52	175,44±1,08	172,38±1,31
	Standard deviation	7,05	9,04	8,39	4,57	5,85
Weight	M+m (sm)	69,72±0,96	70,53±2,31	69,60±2,89	67,83±1,88	67,44±1,30
	Standard deviation	11,04	10,83	9,60	7,99	5,82
Thoracic circulation	M+m (sm)	93,50±0,86	98,00±1,39	95,67±0,54	91,20±1,34	93,24±0,70
	Standard deviation	9,89	6,54	1,80	5,67	3,15
Shoulder length	M+m (sm)	34,16±0,28	32,80±0,36	34,67±1,12	34,14±0,36	33,30±0,40
	Standard deviation	3,24	1,69	3,73	1,55	1,79
Wrist length	M+m (sm)	24,78±0,16	28,30±0,47	29,83±1,06	28,71±0,30	29,30±0,88
	Standard deviation	1,80	2,19	3,53	1,28	3,95
Palm length	M+m (sm)	21,85±0,86	21,00±0,36	20,50±0,60	21,71±0,50	20,70±0,27
	Standard deviation	9,90	1,67	1,98	2,12	1,19
Thigh length	M+m (sm)	45,89±0,50	42,90±0,89	44,17±1,38	44,86±1,57	40,30±0,65
	Standard deviation	5,75	4,16	4,60	6,69	2,49
Calf length	M+m (sm)	42,69±0,67	43,30±1,12	44,67±0,73	41,71±1,02	44,10±0,23
	Standard deviation	7,67	5,24	2,43	4,33	1,04
Head circumference	M+m (sm)	57,07±0,29	59,00±0,28	57,67±0,38	58,20±0,23	58,25±0,22
	Standard deviation	3,35	1,34	1,25	0,98	0,97
Shoulder circumferen	M+m (sm)	34,77±0,32	34,87±0,73	34,00±0,62	32,37±0,56	33,18±0,36

ce	Standard deviation	3,67	3,42	2,07	2,38	1,60
Wrist circumference	M+m (sm)	28,55±0,38	29,78±0,37	26,80±0,29	27,20±0,38	27,63±0,25
	Standard deviation	4,34	1,75	0,98	1,60	1,11
Hip circumference	M+m (sm)	52,33±0,53	57,50±1,02	51,67±0,81	51,20±0,50	56,88±0,64
	Standard deviation	6,08	4,80	2,69	2,14	2,85
Chest cross-section (using calipers)	M+m (sm)	34,08±0,12	30,10±0,55	30,00±0,33	27,40±0,41	28,50±0,31
	Standard deviation	1,38	2,59	1,10	1,74	1,41
Pelvic-hip (using calipers)	M+m (sm)	30,77±0,11	28,00±0,46	27,80±0,29	28,20±0,43	26,50±0,34
	Standard deviation	1,26	2,14	0,98	1,83	1,50
Fat layers	M+m (sm)	7,33±0,21	6,05±0,44	5,36±0,35	6,06±0,65	5,93±0,38
	Standard deviation	2,45	2,06	1,15	2,77	1,71

Athletes involved in various types of wrestling were found to have the widest variability in anthropometric total body measurements - mass, chest circumference. The highest variability of the chest was found in freestyle wrestlers, with a standard deviation of 9.89, 6.54 in sambo wrestlers, and 5.67 in wrestling athletes. The variability characteristic of this anthropometric characteristic was found to be low, with a standard deviation of 1.80 in Greco-Roman wrestlers and 3.15 in judo wrestlers. Depending on the type of wrestling, the average variability was found in the length of the shoulder and thigh, and the circumference of the shoulder, thigh, and thigh, while the smallest variability was found in the length of the hand, wrist, palm, foot, and thigh.

It was found that body proportions were similar among wrestlers. Anthropometric characteristics that were not subject to variability included the arm and leg segments, shoulder, wrist, hip, calf lengths, shoulder width, and head circumference. However, it was found that the mean square deviation in the length of the palm of the hand varied within the range of 1.20-9.90. In the different types of wrestling being compared, the subcutaneous fat layers were uniformly distributed, and only the thickness of the subcutaneous fat layer differed. As a result of intergroup comparisons of wrestlers, differences were found in the abdominal circumference. As a result of measurements in freestyle wrestlers, the abdominal circumference was 79.40±0.71, in sambo wrestlers – 83.20±1.43, in Greco-Roman wrestlers –

78.00±0.42, in national wrestlers – 75.40±1.1 and in judo wrestlers – 76.13+0.47 cm. However, differences in the standard deviation were also observed. Indicators characterized by stable or low variability were found only in Greco-Roman wrestlers (1.80) and judo wrestlers (2.19). In wrestling, the average variability was 4.67 and the high variability was observed in sambo wrestlers – 6.71, and in freestyle wrestlers (8.08). In wrestling, their grouping is divided based on body mass, but of course, body length should also be taken into account. For example, when selecting teenagers for wrestling, they are selected based on body length. For example, at a competition held in Minsk, wrestlers from Germany were distinguished by their height in different weight categories. The height of a wrestler creates great opportunities for an athlete, but only with an opponent who is equal to him. It should not be forgotten that as body length increases, body mass also increases, and with an increase in absolute muscle strength, relative strength decreases. Body proportions depend on the weight category of the wrestlers. 88% of heavyweight and light heavyweight wrestlers are built in the gigantoid type, and wrestlers weighing up to 52 kg are built in the styphoid type. When conducting a fight, it is necessary to take into account the opponent's morphotype.

Somatotype is a morphological appearance of the human body, a criterion for movement and functional state. Somatotype is formed not only under the influence of the external environment, but also under the influence of hereditary factors. An example of external environmental factors is sports activity, during the training process an athlete forms a unique adaptive somatotype. Morphological signs can be analyzed in different ways: firstly, the dynamics of changes in morphological signs can be observed, taking into account weak and sensitive periods during individual development, and secondly, each sport has its own characteristics, causing certain changes in the athlete's body during the adaptation process, creating a "structural imprint", and this "imprint" precisely meets the requirements of the selected sport.

In the literature, as a result of training specific to a particular sport, not only the quantitative ratios of the components that make up the athlete's body weight change, but also the athlete's overall constitution, especially in young children and adolescents, can change. Taking into account the above, this study aimed to study the formation and differentiation of somatotypes within a single specialty, in particular, in various types of wrestling, during specific training.

In order to analyze the potential of athletes to achieve high results in sports, it is advisable to include indicators of body mass components in the morphological section of the

work. Ectomorphy, endomorphy and mesomorphy are the leading factors in assessing body composition. Endomorphy is an indicator of the development of adipose tissue in the body; mesomorphy is an indicator of the level of muscle development, and ectomorphy is an indicator of the height-weight ratio of the body, expressing the length of the body in relation to its height.

According to evidence in scientific literature, under the influence of physical exertion, muscle fibers are moderately activated, which does not have a strong effect on metabolic processes, and the effect on the vascular system is also moderate, which confirms the occurrence of recovery processes.

Conclusion

The aim of our research was to study the physical development, body structure and physical performance indicators of athletes involved in various types of wrestling. In the research, the variability of the constitutional type of the body in athletes involved in wrestling, the relationship of body composition with the training plan were studied during dynamic control. Based on the results of the analysis, the mean square deviation of the morphometric indicators of athletes and the differences between the total and partial dimensions of the body were determined depending on the types of wrestling. In particular, the variability of the mean square deviation in body length measurements ranged from 4.57 to 9.04, in weight indicators - from 5.82 to 11.04, in chest circumference measurements - from 1.80 to 9.89. Athletes involved in various types of wrestling were found to have the widest variability in total anthropometric body measurements - mass, chest circumference, and body length. Depending on the type of wrestling, the average level of variability was found in shoulder and thigh length, shoulder, hip, and thigh circumferences, while the smallest level of variability was found in arm, wrist, hand, foot, and thigh length measurements.

REFERENCES:

1. Abolenskaya A.V. Geometry of adaptive changes in biology // Physiology of man, 1993, v.19 #3, p.148-153

2. Abramova T.F., Nikitina T.M., Kochetkova N.I. and dr. Features of body composition in assessing the functional state of athletes / Problems of modern human morphology M:, : Mat. mejd. conf. -2008 - P.127-129.

3. Aleksanyants G.D. Study of the phenomenon of cardiac-respiratory synchronism to assess the regulatory-adaptive capabilities of young athletes // Theory and practice of physical culture.- M.: 2004.- №8.- S. 25.

4. Alikhanov I.I. Technique and tactics of voluntary wrestling / M.: "FIS" 1986, p. 303.

5. Aranson M.V. Problems of nutrition and gene restoration in speed-strength sports and in single combat // Theory and practice of physical culture.- Moscow, 2017.- #2.- S. 14-16.

6. Bobomuradov N. Sh. Primernenie sopryajennogo podkhoda k takticheskoy podgotovke turonistov /Materials of the Internship. scientific-practical conference "Actuality of traditional types of sports and games in the protection of nations" T., October 22-24, 2009, pp. 84-86.

7. Bogen M., Fetisova O. 100 m to Zagadka tactical bega. //Legkaya atletika.- Moscow, 2000.-№23.- S. 16-18.

8. Boyko V.F., G.V. Danko Fizicheskaya podgotovka bortsov / Kiev, izd-vo "Olimpiyska litiratura", 2002, p. 124-131s.

9. Boymurodov I.Kh., Karimov B. Use of the method of circular training in preparation of calibrated kurash players / Materials of the scientific-practical conference "Actuality of traditional types of sports and games in national defense" T., October 22-24, 2009, p. 97