Individual typological features of judokas of various weight categories

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Abstract

Objective of the study was to conduct a comparative analysis of morphometric indicators among judokas performing in various weight categories.

Methods and structure of the study. The survey involved 57 judokas performing in light (up to 60 kg, up to 66 kg), medium (up to 73 kg, up to 81 kg, up to 90 kg) and heavy (up to 100 kg, over 100 kg) weight categories, aged 17-23 years old with sports qualifications of at least I adult category. All athletes had the necessary anthropometric body measurements taken. The component composition of somatotype body weight was assessed using special methods. Statistical processing of experimental data was carried out using the statistical processing package STATGRAPHICS CENTURION.

Results and conclusions. Judokas competing in different weight categories differ in body type, relative content of bone and fat mass. Therefore, a differentiated approach to the content of the training process of judokas of various weight categories should be based not only on the traditionally taken into account body weight, but also focus on individual typological features of morphology, which determines preferences in the process of studying wrestling techniques and, ultimately, affects the formation of individual competitive technical arsenal of judokas.

Keywords: anthropometry, somatotype, physical development, judo, athletes, weight categories.

Introduction. Recently, the problem of finding criteria for successful competitive activity in martial arts has been under the close attention of coaches, doctors and scientists [1-3]. Informative morphofunctional criteria for rapid trainability among representatives of martial arts have been identified, which makes it possible to correctly select athletes at various stages of sports training [4-6]. At the same time, the data obtained concern athletes performing in middle weight categories.

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Results of the study and discussion. The study of morphological indicators in judokas of light, medi-

Table 1. Characteristics of study participants

Weight category	Sports qualification			Number of athletes
	I category	Candidate Master of Sports	Master of Sports	
Light	5	6	4	15
Average	11	13	5	29
Heavy	5	5	3	13
Total	21	24	12	57

um and heavy weight categories revealed a number of physique features in each of these groups. Thus, when assessing the somatotype according to the classification of M.V. Chernorutsky, it was found that in each weight category there are all three body types: asthenics, normosthenics and hypersthenics. In middleweights, the predominant somatotype is normosthenic, while in lightweights it is asthenic. Among judokas competing in heavy weight categories, hypersthenics are more common than others, and asthenics are less common. Thus, among the heavyweights, 30% of athletes were normosthenics, 43% were hypersthenics, and 17% were asthenics. Among lightweights, 33% were found to be normosthenic, 25% to be hypersthenic, and 42% to be asthenic. At the same time, in each weight category there are both short-legged and long-legged judokas, as well as athletes with a relatively wide pelvis and a relatively narrow pelvis. Judokas with different body proportions can be equally successful by using technical actions characteristic of their physique. The data obtained can be explained by the diverse arsenal of judo technical actions, which, for example, is confirmed by the research of M.V. Shimchenko [8]. The author found that judokas with long legs in their competitive arsenal more often use holds, painful holds, deflection throws, a back tripe and a hook. Medium-legged athletes are best at holding, arching and over-the-back throws from the knee. Judokas with short legs win with back throws, body throws, submissions and grabs.

Analysis of the component composition of the body mass of judokas of various weight categories revealed high levels of relative muscle tissue content, regardless of the weight of the athletes. At the same time, the highest relative indicators of body fat mass were found in heavyweights, and the lowest - in lightweights (Table 2).

Conclusions. Judokas competing in different weight categories, along with the obvious difference in body weight, differ in body type, relative content of bone and fat mass. Therefore, a differentiated approach to the content of the training process of judokas of various weight categories should be based not only on the traditionally taken into account body weight, but also focus on individual typological features of morphology, which determines preferences in the process of studying wrestling techniques at the initial stage of training and, ultimately, affects on the formation of an individual competitive technical arsenal of qualified judokas.

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Table 2. Component composition of body weight among judokas performing in different weight categories (x+Sx, cm)

Morphological indicators	Weight category		
	Light (n=15)	Average (n= 29)	т Heavy (n= 13)
Fat mass, %	7,5±0,5	9,2±0,8*	12,7±0,7**
Muscle mass, %	50,5±3,1	50,0±2 ,5	48,8±2,8
Bone mass,%	21,9±1,2	17,8±0,9*	15,5±1,1**

Note: 1) n – sample size; 2) * – differences between judokas of medium and light weight categories are significant at P < 0.05; 3) ** – differences between judokas of heavy and medium weight categories are significant at P < 0.05.

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