

# Dynamics Of Functional Indicators During Physical Loads Of Adolescent Wrestlers

**Khushvakov Nurkhan Yusupovich, Chankaev Oljaboy Achilovich,  
Haydarov Shokhrukh Tulkinovich**

*Teachers of Uzbek state university of physical education and sport*

**Annotation:** The article presents information about the change in the functional indicators of wrestlers in the process of physical training. The results obtained confirm the dependence of body weight and percentage of body fat on the physical development, physiometric and hemodynamic parameters of adolescent athletes, which can be used to assess the functional state and health status of an athlete in the pre-competitive period.

**Key words:** teen wrestlers, physical development, physiological and hemodynamic parameters, load, adaptation.

One of the medical and biological problems of children's sports is the timely assessment of changes in the growth and development of their body and health status under the influence of intense physical activity. It is necessary to solve such problems as scientific and methodological support of the young athletes training system, improvement on the basis of biomedical research [1,2].

## **Purpose of the study -**

scientifically study and substantiate the state of health of adolescent wrestlers, the structure of their body, functional and adaptive capabilities in relation to physical activity.

**Material and Methods.** 30 15-16 year old wrestlers of the Olympic Reserve School were taken as the objects of the study.

When assessing the level of physical development of teenage wrestlers, the body mass index (BMI) was calculated on the basis of data obtained on the length and weight of the body by conventional research methods [1]. Based on the results obtained using spirometry and dynamometry, the lung vitality index (weight ratio of the body to the vital capacity of the lungs) and the power index (CI of body weight in relation to the strength of the muscles of the right palm). Indicators of the activity of the cardiovascular system were checked by the following parameters: heart rate, blood pressure, Rufe tests.

A study was conducted on the basis of studying the possibilities of adaptation of young wrestlers to physical loads: pulse, Rufe index (RI), physical condition index (FIS), the possibility of adapting the vascular system, general hemodynamic parameters (GHA). The results of the study were subjected to statistical analysis using the Excel program. .

**Research results and their analysis.** The body structure and functionality of teenage wrestlers are presented in Table 1, and these results are consistent with the standards of physical development of teenage wrestlers in terms of body weight, body length and chest circumference, age, gender.

Table 1  
**Physiological indicators of the body composition of young wrestlers.**

Indicators	Physiological norm	Average value	Q25	Q25
Age	15-16	15,9	15,5	16,5
Body weight, kg	54-66	64,5	59,2	70,1
Body length, cm	166-177	176,5	172,0	182,0

Body mass index	18,8-21,5	20,3	19,4	21,8
kg/m <sup>2</sup>	80,0-89,1	87,0	84,0	91,0
Chest circumference, cm	3715-4855	4050,0	3650,0	4550,0
Upka's living capacity	58,5- 86,5	62,3	58,5	67,3
ml/kg	26,5-47,19	34,0	30,0	39,0
Vitality index, ml/kg	26,8-42,7	32,0	28,0	37,0
Muscle strength of the right arm, kg	39,8-78,6	52,8	47,7	56,6
Muscle strength of the left arm, kg	70,0-80,0	64,0	60,0	68,0
Strength index,%	101,4-125,2	110,0	100,0	115,0
Heart rate,	61,1-78,3	70,0	60,0	70,0
min /u	40,3-46,9	40,0	40,0	40,0
Systolic arterial	0,1-10	4,80	3,40	5,60
pressure, mm rt st	2,20 гача	1,71	1,53	1,87
Diastolic arterial pressure mm. rt. St.	0,526-0,826	0,815	0,733	0,870
Pulse pressure mm rt st	175 гача	144,0	137,3	155,3
Rufe index unit	7-12	7,28	6,37	8,50

The percentage of fat in the body is considered as an important energy reserve of the body, and it indicates the health status and the daily value of nutrients equal to the amount of daily energy expenditure. The average amount of fat percentage in young wrestlers is equal to physiological norms.

The body weight, height and chest circumference of teenage wrestlers correspond to the standards of physical development in relation to their age and sex. The percentage of fat in the body is considered an important energy reserve of the body, and it was determined that it is equal to the amount of daily energy consumption for the state of health and the value of daily nutrients. The average amount of fat percentage in young wrestlers corresponded to physiological norms.

Physiometric indicators (lung capacity, muscle strength of the right arm) were found to have a high level of physical development in young athletes compared to the standards of age and gender. Also, we used body weight index, vitality index and strength index to get more accurate results in evaluating physical development [4]. It turned out that the amount of indices returned above is within the norm. These results indicate that the wrestlers are healthy, physically developed, and conform to their body structure [3]. Physiological indicators of young wrestlers, their heart rate (pulse frequency) indicate the positive effect of physical exercise on the contractile function of the heart. Arterial blood pressure, Rufe's index amount is within the normal range, which indicates the suitability of the vascular system to the effect of physical loads.

In order to comprehensively evaluate the functional capabilities and adaptation capabilities of young athletes, the adaptation potential of the vascular system, physical condition index, and general hemodynamic indicators were calculated. The potential value of adaptation of the blood circulation system shows that the body is adapted to physical loads at a high level. The amount of general hemodynamic indicators was normal. Thus, the hemodynamic indicators of young athletes are at a high level of functional capacity and adaptation possibilities of the organism, and the results of this indicator confirm that they are in good health..

Table 2  
**Body composition and functional indices of adolescent wrestlers**

Indicators	ТИ	ТИ	КИ	ИР	АП	ЖХИ	УГК	УТО
Age	0,32	-	-	-	-	0,18	-	-
Body weight, kg	-	0,18	-	0,35	-	-	0,19	0,47
Body length, cm	0,17	-	-	-	-	-	-	0,20
Body weight	-	0,18	0,16	-	0,48	-	0,23	0,52
index	0,70	-	0,18	-	0,26	-	-	0,41
kg/m <sup>2</sup>	0,38	0,67	0,30	-	0,19	-	-	0,24
Chest circumference, cm	0,18	-	0,23	-	-	-	-	0,21

Upka's living capacity	0,57	-	0,77	-	0,27	-	0,19	0,24
ml/kg	0,61	-	0,61	-	0,32	-	0,20	0,24
Vitality index, ml/kg	0,16	0,23	-	-	-	-	-	-
Your right hand	-	-	-	0,48	0,57	0,80	0,77	-
muscle strength, kg	0,30	-	-	0,24	0,86	0,68	0,72	0,41
Left hand	0,28	-	-	0,25	0,74	0,65	0,69	0,32
muscle strength, kg	-	-	-	-	0,31	0,21	0,20	0,26
Strength index,%	-	-	-	-	0,36	0,44	0,42	-
Heart contractions	0,48	-	-	0,36	-	0,88	0,91	0,48
frequency, min /u	-	-	-	0,44	0,88	-	0,99	0,33
Systolic arterial	0,23	-	-	0,42	0,91	0,99	-	0,36
pressure, mm rt st	0,52	0,21	-	-	0,48	0,33	0,36	-

In the data obtained from the experiments (table-2), the general hemodynamic indicators, the index of the physical condition and the indices of the adaptation possibilities of the circulatory system are the indices of the results of the correlation analysis of the functional possibilities and adaptation reserves of the organism. These indicators confirm the correlational dependence of the vascular system on the results of all indicators. From the results of the table, it was revealed that the percentage of body fat ( $r < 0.05$ ): body weight ( $I = 0.47$ ), chest circumference ( $I = 0.41$ ), systolic arterial blood pressure ( $I = 0.47$ ), diastolic arterial blood pressure ( $I = 0.32$ ), circulatory system adaptation potential ( $I = 0.48$ ), physical condition index ( $I = 0.33$ ), general hemodynamic indicators ( $I = 0.36$ ) were equal. The above-mentioned results show that the dynamics of the functional state of young wrestlers is good.

### Summary

1. The body weight of teenage wrestlers is 20.3 (19.4-21.8) kg/m<sup>2</sup> with a body fat percentage of 7.28 (6.37-8.50)%. These indicators of teenage wrestlers correspond to the standards of physical development in relation to age, sex, body weight, height and chest circumference.

2. The indicators of the activity of the vascular system, the high level of functional and adaptability confirm the improvement of health.

3. Confirms the dependence of body weight and body fat percentage on physical development, physiometric and hemodynamic indicators of adolescent athletes. Based on these functional indicators, it is important in monitoring the dynamics of the athlete's health condition and physical preparation for competitions.

### Literature

1. Detskaya sportivnaya meditsina / Pod.ed. S. B. Tikhvinskogo, S. V. Khrushcheva.-2 -e izd.-M.: Medicine, 1991.-560 p.
2. Human physiology: Uchebnik dlya vuzov fiz. culture and faculty of physics. Vospitaniya pedagogicheskikh vuzov / Pod obshch. ed. V.I. Tchorevskogo. - M.: Fizkultura, obrazovanie i nauka, 2001. - 492 p.
3. Bobomurodov, F. I., N. Yu. Khushvakov, and U. R. Chankaev. "MORPHO-KINESIOLOGICAL ANALYSIS PHASE VYPOLNENIYA BROSOKOVYX DEYSTVIY V BORBE PO VIDU "NATIONAL STRUGGLE"." Academic research in educational sciences 2. Special Issue 1 (2021): 201-208.
4. Khaidarov, Shokhrukh Tulkinovich, , Tuychiboev Jakhongir, Jamoldinov Avaz, Dzhabbarova Gulchekhra Mukhamed-Karimovna, Zaripova Mekhrangiz Ravshanovna, Yusupova Umidakhan Rakhmanovna SRAVNITELNYY ANALYZ ANTIOXIDANTNOY AKTIVNOSTI KVERTSETINA I DIGIDROKVERTSETINA PRI EXPERIMENTAL HYPOTHIREOZE // Universum: chemistry and biology. 2021. No. 4 (82).