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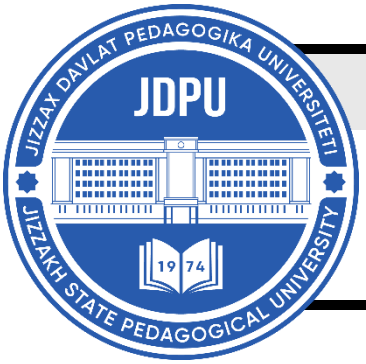

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THE DYNAMICS OF CHANGES OF DIFFERENT POWER ENDURANCE AND THEIR PULSOMETRIC VALUE IN ANNUAL TRAINING CYCLES IN HIGHLY QUALIFIED BELT WRESTLERS

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ABOUT ARTICLE

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Abstract: In the article, the rapid strength endurance and its pulsometric value of qualified belt wrestlers belonging to different weight categories were studied during annual training cycles. Second, the pulsometric value of quick power endurance recorded at the beginning of the basic training cycle increased at the end of this cycle, especially in wrestlers belonging to light and middle weight categories. However, it was observed that the pulsametric value of mask endurance was partially decreased in heavy weight wrestlers.

INTRODUCTION

It is known that human life, professional activity, and in particular, all actions performed in sports practice, movement qualities (strength, quickness, agility, endurance, flexibility), including technical and tactical methods, are an integral product of body functions. Therefore, knowledge of their functional value in the development of physical qualities specific to all sports and the formation of technical-tactical movements is important for the correct selection of appropriate exercises, their targeted application, and optimization of the volume and intensity of training sessions in training cycles.

V.F.Boyko, G.V.Danko [2004] stated that the development of general and special physical qualities within the framework of the specific characteristics of sports and the effective formation of technical and tactical actions depend on the athlete's functional capabilities. As a result of the formation of this or that physical quality and certain technical-tactical methods on the basis of specific specialized exercises, functional capabilities are also specialized. According to these authors, in sports

related to overcoming resistance, especially in wrestling, types of strength and tension are of leading importance in the effective formation of specific physical qualities and technical-tactical methods. Because the effectiveness of all movements depends on actin and myosin, phosphate energy reserves - ATF, KrF, glycogen and other substrates, which provide the strength and speed of muscle contraction and contraction. Therefore, knowing the functional value of all movement qualities, including strength and tension types of exercises, makes it possible to carry out training in an optimal order.

It should be noted that strength (quick, maximum strength, strength endurance) and types of tension (isotonic, isometric, isokinetic), especially in belt wrestling, have priority [I.K. Boymurodov, 2009; U.R. Karimov, T.R. Ishmukhamedov, 2015; Sh.S. Mirzanov, T.R. Ishmukhamedov, 2014; Z.S. Artikov, 2019].

The purpose of the study was to study the dynamics of changes in the annual training cycles of strength types and their pulsometric value in the case of qualified belt wrestlers.

RESEARCH METHODS AND ITS ORGANIZATION

In conducting the research, the test for determining the frequency of muscle contraction with the help of a pulse oximetry was used before and after the test load of throwing a 3 kg t/night into a mareker installed at a height of 3 m for 60 seconds. The research was conducted before the basic training phase of the annual training process, at the beginning and at the end of the competition cycle. Qualified belt wrestlers belonging to the following weight categories were involved in the study: 60 kg. -n = 27; 73 kg.- n = 32; 81 kg. –n = 30; 90 kg. –n = 25

The results of the research and their comparative analysis. The 3 kg ball was used to evaluate the fast power endurance for 60 seconds. during 3 m. The results of the maximum throw test on a marker placed at a height at the beginning of the basic cycles of the 2017 training process for wrestlers in the 60 kg weight category were 31.27±3.57 times. When applying the test load, the average of these wrestlers was 67.13±3.49 beats/min. expressed by , after the test load, YuQCh increased to 137.22±5.18 beats/min.

(Table 1).

Table 1

Dynamics of changes in quick power endurance and its pulsometric value in annual training cycles in highly qualified belt wrestlers of different weight categories, ($\overline{X} \pm s$)

(according to the test of choosing a 3 kg filling ball to a marker set at 3 heights for a maximum of 60 seconds)

Tests / Weight class (kg)	Before the test, the heart rate (beats/min.)	Throw the filler ball max times, (times)	Speed after test, (beats/min.)	R value of test load, (blows/min.)

At the beginning of basic training (January 2017)				
60 n=27	67,13±3,49	31,27±3,57	137,22±5,18	70,09
73 n=32	65,08±3,23	30,13±3,24	141,18±6,02	76,10
81 n=30	69,21±3,75	28,35±3,04	148,28±5,07	79,07
90 n=25	68,55±4,13	27,06±2,97	152,13±4,15	83,58
Before Competition Cycles (March 2017)				
60 n=27	68,07±3,13	31,03±3,49	141,14±4,67	73,07
73 n=30	70,19±4,02	29,28±3,11	147,35±4,12	77,16
81 n=26	69,23±3,89	27,16±2,97	152,27±4,37	83,04
90 n=25	67,24±3,93	24,15±3,05	156,17±4,78	88,93
At the end of competition cycles (November 2017)				
60 n=26	69,13±4,03	30,14±2,87	143,16±5,32	74,03
73 n=32	71,02±4,18	28,38±2,77	149,27±4,93	78,25
81 n=28	72,15±4,27	26,21±2,63	153,33±4,77	81,18
90 n=24	71,87±4,23	23,54±2,96	155,23±4,83	83,36

So, the pulsometric value of the test load or fast power endurance was equal to 70.09 beats/min. For wrestlers in the 73 kg weight category, these indicators are correspondingly: 30.13±3.34 times; 65.08±3.23 beats/min.; 141.18±6.02 beats/min.; pulsometric value was 76.10 beats/min. 81 kg. in the weight category: 28.35±3.04 times; 69.21±3.75 beats/min.;

148.28±5.07 beats/min.; pulsometric value – 79.07 beats/min. was recorded with 90 kg weight: 27.06±2.97 times; 68.55±4.13 beats/min.; 152.13±4.15 beats/min.; pulsometric value – 83.58 beats/min. expressed with Based on the dynamics of these indicators, it can be recognized that as the weight class of wrestlers increases, the endurance of quick power decreases. But under the influence of short-term rapid loading, the rhythmic response of the heart and the pulsometric value of this load increased. Such a situation indicates that the functional capacity of the heart in heavyweight wrestlers is not adapted even to short-term loads. Therefore, it emphasizes the need to increase the duration of exercises that develop quick strength endurance in fighters of all weight classes, especially heavyweights. In this process, it is advisable to use recovery measures between exercise series so that symptoms of fatigue do not increase.

By the end of the three-month basic cycles (UJT, MJT, MOT) of the annual training process, it was observed that the level of all the indicators recorded at the beginning of the basic training on the speed strength endurance decreased. But as the weight category of wrestlers increases, under the influence of short-term loading (60 sec.), the rhythmic response of the heart accelerates from 144.14±4.67 beats/min to 150.17±4.78 beats/min, and the pulsometric value of this fast loading An increase from 73.07 bpm to 88.93 bpm was observed.

3 kg ball for 60 seconds. during 3 m. Rapid strength endurance, especially 60 and + kg, assessed by a maximum throw test on a marker placed at a height. it was found that it dropped sharply in

weight class wrestlers (from 31.27 ± 3.57 times to 24.15 times). The pulsometric value of these short-term loads was also represented by the largest indicator (88.93 beats/min.).

It is known that both functional indicators and action indicators (for example, quick strength endurance) recorded in a rest state or before loads should serve to ensure the overall efficiency of these loads (test loads, training or competition loads carried out in preparatory cycles). The higher these preliminary indicators are in a positive sense, the more functional and high the movement reserve is. Unfortunately, it was observed that initial values of rapid power endurance obtained in belt wrestlers of different weights partially decreased at the end of the basic training cycles, but sharply decreased by the end of the competition cycles. Although the initial and subsequent parameters of the heart rate were relatively within the limits of the physiological norm, but the rhythmic response and the weight category of the test load or fast power endurance increased. For example, 60 kg. 3 m. 60 sec to the marker set high. while the maximum number of throws was 31.27±3.57 times at the beginning of the basic training cycles, it decreased to 31.03±3.49 times at the end of these cycles or before the competition cycles.

At the end of the competition cycles, this indicator decreased to 30.14±2.87 times. In wrestlers belonging to other weight categories, these indicators decreased with approximately the same dynamics. Heart rate (pulse) and rapid strength endurance or pulsometric value of the test load increased in order according to the weight category. The lowest initial indicator, which represents the endurance of fast power, is 90 and + kg. was recorded in weight class wrestlers (27.06±2.97 times), its level decreased to 24.15±3.05 times at the end of basic training cycles, and to 23.54±2.96 times at the end of competition cycles. The pulsometric value of the test loads was also recorded with the highest index in wrestlers belonging to this weight category.

It is known from the research of some experts that the real level of endurance of fast power or its dynamics of change under the influence of loads may depend on the level of development of the qualities of maximum power and fast-explosive power. In other words, in the recording of each type of force, there is also a share of other types of force [V.N. Platonov, 2004; V. F. Boyko, G. V. Danko, 2004].

According to the opinion of these experts, when using exercises that develop maximum strength, the weight of the equipment representing weight should be 70-90% of the athlete's maximum strength. However, if the weight of the equipment (for example, an exercise ball, dumbbell, personal weight resistance) is equal to 20-30% of the maximum strength (weight throwing, throwing, etc.) is repeated in a dynamic order based on isometric or isokinetic tension for 30-60 seconds (exercises (provided recovery of strength in between), rapid strength endurance, if these exercises are used as much as possible, maximal strength endurance can be effectively developed. For effective implementation of such a process, it is advisable to control the functional (for example,

cardiohemodynamic, respiratory, neurodynamic, etc.) value of the applied exercise load. Unfortunately, the results of many years of visual observations, objective interviews with leading wrestlers and experienced trainers led to the conclusion that in all types of wrestling, and in particular, in the practice of belt wrestling, following the above-mentioned technological approach to the training methodology, especially in the formation of strength and tension types as it remains out of the view of expert trainers. In order to substantiate this opinion, we conducted appropriate studies on highly skilled belt wrestlers. The results of the study confirmed the validity of our stated opinion. For example, a 3 kg ball is 3 m. the maximum strength endurance determined by the maximum possible throw test on a marker placed at a height at the beginning of the basic cycles of the annual training season (UJT, MJT, MOT) (January 2017) is 60 kg. it was 35.43±4.16 in weight class wrestlers. The HR obtained before this test load was 67.16±3.24 beats/min. was represented by, and after loading, the contraction rhythm of the heart increased to 147.24±5.63 beats/min.

(Table 2).

Table 2.

Dynamics of changes in maximum power endurance and its pulsometric value in annual training cycles in highly skilled belt wrestlers of different weight categories, ($\bar{X} \pm s$)

(according to the test of jumping a 3 kg ball to a marker placed at a height of 3 m as many times as possible)

Tests / Weight class (kg)	Before the test, the heart rate (beats/min.)	Throw the filler ball max times, (times)	Speed after test, (beats/min.)	R value of test load, (blows/min.)
At the beginning of basic training (January 2017)				
60 n=27	67,16±3,24	35,43±4,16	147,24±5,63	80,08
73 n=32	69,34±3,73	36,57±4,34	150,47±6,48	81,83
81 n=30	66,22±2,95	38,79±3,87	152,21±6,17	85,99
90 n=25	68,43±4,71	41,83±4,66	157,36±5,93	88,93
Before Competition Cycles (March 2017)				
60 n=27	66,25±2,87	34,29±3,63	149,23±5,36	82,98
73 n=30	65,47±2,63	35,07±3,79	153,63±6,47	88,16
81 n=26	66,17±3,12	37,13±4,08	155,22±6,77	89,05
90 n=25	67,33±4,25	38,16±5,17	158,37±4,93	91,83
At the end of competition cycles (November 2017)				
60 n=26	67,33±2,94	33,04±3,15	148,17±5,75	80,84
73 n=32	68,41±3,37	32,19±3,07	154,12±6,23	85,71
81 n=28	69,09±3,92	35,23±4,28	155,24±6,49	86,15
90 n=24	71,27±4,24	36,13±4,21	159,63±5,87	88,36

So, the pulsometric value of the recorded maximum power endurance was 80.08 beats/min. 73 kg. In wrestlers of the weight category, these indicators were observed in the following quantities:

36.57±4.37 times; 69.34±3.73 beats/min.; 150.17±6.48 beats/min.; pulsometric value of loading is 81.83 beats/min. expressed with 81 kg weight: 38.79±3.87 times; 66.22±2.95 beats/min.; 152.21±6.17 beats/min.; the pulsometric value of maximum endurance was equal to 85.99 beats/min. in the weight category of 90 and + kg: 41.83±4.66 times; 68.43±4.71 beats/min.; 157.36±5.93 beats/min.; the pulsometric value of maximum endurance was 88.93 beats/min. So, as it can be seen from these indicators, as the weight class of wrestlers increases, not only the filler ball as much as possible 3 m. the maximum power endurance recorded by the test of throwing a maximum time to a marker placed at a height increased, but also the rhythmic response of the heart and the pulsometric value of this endurance (or load) increased under the influence of this load.

On the eve of the beginning of the basic ki competition cycles (March 2017), it was observed that the maximal strength endurance of wrestlers in all weight classes was partially decreased. For example, such regressive dynamics determined by the maximum number of times possible to throw the filler ball to the marker of this power endurance is 60 kg. up to 34.29±3.63 times in weight class wrestlers, 73 kg. in weight - up to 35.07±3.79 times, 81 kg. in weight - up to 37.13±4.08 times, 90 and + kg. in weight - decreased to 38.16±5.17 times. It is noteworthy that as the average statistical value ( ) of these indicators decreases, their average squared deviation (d) increases. If the rhythmic reaction of the heart (YuQCh indicators) was shown within the physiological norm before the load of throwing the filler ball to the upper marker as much as possible, despite the decrease in the volume of this load in all wrestlers, not only the level of this rhythmic reaction increased, but also its pulsometric value increased. For example, under the influence of the applied test load, the rhythmic response of the heart in wrestlers of all weight categories increased from 149.23±5.36 beats/min to 158.37±4.93 beats/min, and the pulsometric value of the load was 82.98 beats/min. increased from . to 91.83 beats/min.

CONCLUSION

In fact, in sports practice, the first basic cycle of the annual training process or the general physical training cycle, for example, in belt wrestling, usually starts from January, and all the exercises used during this cycle are primarily the formation of general physical qualities (strength, speed, agility, endurance, flexibility) in a proportional ratio. and should be focused on increasing functional capabilities. The second basic cycle - the cycle of special physical training - should be devoted to solving the tasks of improving special physical qualities (types of strength, speed and coordination ability, anaerobic endurance and special flexibility) in the direction of adapting technical and tactical methods to the coordination of technical and tactical methods, depending on the specific characteristics of each sport. In the third basic cycle, all trainings are focused on formation of technical and tactical methods based on specialized and modeled exercises, development of working ability and enabling to polish sports form. This cycle should emphasize the regular use of high-

volume, high-intensity competition exercises. Unfortunately, the results of our research show that the above-mentioned procedures were not followed, including the failure to use recovery measures during training cycles or between training and control competitions. It can be said with confidence that due to these noted "defects" in wrestlers of all weight categories, the quick and maximum power endurance decreased at the end of the basic cycles (UJT, MJT, MOT). One of the more unfortunate things was that learned maximal strength endurance was observed to decline significantly even at the end of the competition cycles. For example, 60 kg. maximum power endurance in weight class wrestlers compared to the initial indicator (35.43±4.16 times) by 2.39 times, 73 kg. in the weight category (36.57±4.34 times) 4.48 times, 81 kg. in the weight category (38.79±3.87 times) 3.56 times and 90 kg. in the weight category (41.83±4.66 times) dropped to 5.70 times. Such a decrease in maximum power endurance should logically lead to the fact that the load does not increase and the pulsometric value of the load does not increase. However, these indicators also ranged from 148.17±5.75 beats/min to 159.63±5.87 beats/min (rhythmic response of the heart to the impact of loading) in wrestlers of all weight categories and 80, It was found that it increased from 84 beats/min to 88.36 beats/min. Therefore, as mentioned above, the exercises used in all cycles of the annual training process indicate that the main physical qualities, including maximum strength endurance and its pulsometric value, could not be formed in a progressive direction. This situation also supports the fact that at the end of the training and competition loads used in wrestlers, including in the intervals of multiple series and sets of exercises, serious attention was not paid to the timely recovery of work capacity, especially strength endurance.

A 3 kg ball was used for the assessment of quick and maximum dynamic strength endurance 3m. 60 sec. during the maximum possible number of throws 60, 73, 81, 90 kg. in wrestlers belonging to weight categories, the corresponding ratio at the beginning (at the beginning of basic training) is 29.17, ±3.09; 29.02±2.97, 26.72±3.19, 25.15±2.87 kg. organized, by the end of basic training or before competition cycles (March), these indicators dropped. It is important to note that these indicators, which have weakened, have been observed to further decrease under the influence of official competitions and trainings used in competition cycles. It is possible to admit that the rapid and maximum dynamic strength endurance clearly decreases at the end of the annual training, firstly, the fatigue symptom increases, secondly, the strength endurance is weakly formed, thirdly, it was justified by the fact that measures to restore working ability were not taken at the end of traditional training and competition.

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