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B. A. Podlivaev and A.N. Korzhenevsky



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COMPREHENSIVE DIAGNOSTICS OF TRAINING OF YOUNG FIGHTERS AT THE INITIAL STAGE OF PREPARATION

B.A. Podlivaev Federal Center for the Training of Sports Reserve, Moscow

> A.N. Korzhenevsky FGBU FNTS VNIIFK, Russia, Moscow

podlivaevb@mail.ru

ABSTRACT

The concept of the training system for highly qualified athletes, and the methodology for constructing model characteristics of the strongest athletes in the main groups of sports, was created by A.A. Novikov and his numerous students (Novikov, 2008; Podlivaev & Shakhmuradov, 2013), which was based on the concept of "model characteristics of the strongest athletes", and presently forms the basis of complex control in elite sports and is still extremely relevant. A comprehensive assessment of the state of various sides of fitness: technical, physical and functional gives complete information about the state of fitness of young combatants, contributes to the timely correction of training based on identifying the strengths and weaknesses of training and significantly increases the effectiveness of the training process. Evaluation of only individual sides of readiness and, in particular, physical qualities, significantly reduces the effectiveness of management of the training of young athletes (Graevskaya & Dolmatova, 2004; Kiselev, 2006; Korzhenevsky, 2011; Podlivaev, 2018; Podlivaev, 2016; Shakhmuradov, 2011)

Keywords: complex assessment, young wrestlers and boxers, technical, physical, functional readiness, physical performance, aerobic performance

INTRODUCTION

This work determined the effectiveness of the developed standards and model characteristics of technical, physical and functional readiness for young wrestlers and boxers 12-13 years old. Revealing the strengths and weaknesses of preparedness made it possible to develop an optimal structure of training for young athletes, which, in contrast to the generally accepted one, is characterized by an increase in the intensity of the exercises performed and an increase in the volume of loads of a special orientation. In the practice of sports to assess the fitness of athletes, pedagogical testing is mainly used (Godik, 1980; Karpman, Belotserkovsky & Gudkov, 1974; Kiselev, 2006).

In the currently existing program materials for assessing the fitness of young athletes standards were developed for physical fitness (Kuznetsov & Podlivaev, 2016; Podlivaev, Shakhmuradov & Kuznetsov, 2016). At the same time, only pedagogical testing does not always allow to adequately assess the level of preparedness. In the generally accepted pedagogical testing, only a part of the information is used, which often reflects the data on the fitness of athletes one-sidedly (Podlivaev, 2018). To assess the various sides of readiness, complex control is used when registering indicators of the physical, functional and psychological state, the level of technical and tactical skill, the characteristics of competitive activity (Korzhenevsky, 2011; Ozolin, 1970; Platonov, 2005). In combat sports, technical and tactical training takes the leading place in the content of the training process. In fact, the tasks of physical, mental and functional training are to create a base for the formation of high efficiency of technical and tactical actions, created or arising in the course of a duel in single combat with an opponent (Novikov, 2003; Korzhenevsky, Dakhnovsky & Podlivaev, 2004). The aim of the research was to determine the criteria of fitness of young wrestlers and boxers on the basis of complex testing of various aspects of fitness at the stage of initial training.

METHODS

In the process of 3-year studies of young wrestlers and boxers at the stage of initial training, 25 athletes of 10-13 years old took part in each year of training. When examining athletes, complex testing was used with the definition of indicators, technical, physical and functional fitness. The technical readiness of young wrestlers was assessed according to the results of the following tests: -5-fold execution of the arching to the bridgefrom standing, leaving the bridge by circling in any direction and returning to standing, (s); - alternate circling in the bridge to the left - to the right (5, 10, 15 times, depending on the weight category) (s); - flips from the bridge (5, 10, 15 times, depending on the weight category) (s); - 10 throws of a mannequin with a turn of the hips (s); - 10 dummy throws over the chest (s). The technical readiness of young boxers was assessed according to the results of the following tests: - 15-second test - maximum number of blows on a special bag; - 8-second test; - 3 minute test, - the density of the battle (number of strikes); - interval of attacks in a duel, (s) To determine the physical fitness of young wrestlers and boxers, pedagogical testing was used, which assessed the development of basic physical qualities. To assess the functional readiness of young combatants, the PWC170 test was carried out with the calculated determination of the VO2 max (Karpman, Belotserkovsky & Gudkov, 1974), the hypoxic tests of Stange and Genchi were performed with holding the breath during inhalation and exhalation (Graevskaya & Dolmatova, 2004; Karpman, Belotserkovsky & Gudkov, 1974; Korzhenevsky, 2004). The level of performance in the PWC170 test characterizes the aerobic capabilities of athletes. Breath-holding samples characterize anaerobic potential. When analyzing the data, a comprehensive assessment of a group of indicators was used:

- 1. Indicators of physical fitness of athletes;
- 2. Indicators of athletes' functional readiness;
- 3. Indicators of technical readiness of athletes;
- 4. Ergometric indicators of physical performance (PWC170);
- 5. Reserve capacity of aerobic performance (IPC);
- 6. Reserve capabilities of anaerobic performance (breath holding samples).

When analyzing the indicators of physical, functional and technical readiness among young combatants, 3 variants of assessment were used. First possibility: Uniform increase in the indicators of physical, functional and technical readiness of young athletes from year to year during the 3-year training. Second possibility: The lack of a uniform increase in indicators of physical, functional and technical readiness from year to year with a positive dynamics of their changes from 1 year of study to the end of 3 years. Third possibility: The absence of positive dynamics of changes in the indices of physical, functional and technical readiness of young athletes during the 3-year training period from the initial stage of training.

RESULTS

The results of a comprehensive study of changes in the technical, physical and functional readiness of young wrestlers in the process of long-term examinations are presented in tables 1, 2, 3. Table 1 presents the data of changes in the indicators of technical readiness of young wrestlers in the process of a 3-year study. To determine the technical readiness of young wrestlers, 6 sets of exercises were used, including special exercises. The analysis of the results obtained indicates the absence of a reliable increase in indicators from 1 year of training to 2 years and from 2 years of training to 3 years of training (p <0.05). But at the same time, a positive dynamics of changes in the indicators of technical readiness of young wrestlers was revealed from 1 to 3 years of training. (p <0.05).

Indicators of technical readiness	Year 1 Year 2		Voor 2	Significance of differences, p			
			real 5	p (1)-(2)	p (2)-(3)	p (1)-(3)	
1) set of exercises 5-fold execution Standing to back arch and bridge and circle to standing (s)	16.5±0.1	16.4±0.06	15.5±0.04	p< 0.05	p< 0.05	p< 0.05	
2) complex of exercises circles in bridge: 5-left, 5-right (s)	19±0.06	18.8±0.1	18.7±0.05	p< 0.05	p< 0.05	p< 0.05	
3) complex of circles in bridge 10- left, 10-right (s), 15-left, 15-right (s)	52±0.55	51.0±0.5	47±0.41	p< 0.05	p< 0.05	p< 0.05	
4) complex of exercises Coups on the bridge: 10 times (s)	36±0.55	35±0.45	33±0.4	p< 0.05	p< 0.05	p< 0.05	
5) complex of exercises 10 dummy throws with turn and over the hip (s)	33±0.45	32±0.55	30±0.4	p< 0.05	p< 0.05	p< 0.05	
6) complex of exercises. 10 dummy throws with back arch (s)	42±0.5	39±0.46	36±0.57	p< 0.05	p< 0.05	p< 0.05	

Table 1 - Dynamics of indicators of technical readiness of young wrestlers at the stage of initial training.

A significant increase in technical readiness indicators from 1 to 2 years of study and from 2 to 3 years of study is noted in the 3rd set of exercises (running on the bridge 10 - to the left, 10 to the right, 15 - to the left, 15 - to the right) and in the 6th a set of exercises (10 throws of the dummy with a back arch) (p <0.05). Table 2 presents

the results of 3-year dynamics of physical fitness indicators of young wrestlers. Positive dynamics of changes in physical readiness indices from year to year was revealed in the following tests: running at 400 m., 800 m., 1500 m., Flexion and extension of the arms in a lying position, pull-up on the bar, long jump from a standing position, high jump from places, triple jump from a standing position, throwing medicine ball forward from behind the head, throwing medicine ball backward, lifting legs to a hang grip on a gymnastic wall (p < 0.05). The absence of a significant increase in physical qualities from 1 to 2 years of training and from 2 to 3 years of training was determined in the following tests: running 30 m, 60, shuttle running, pulling up on the bar for 20 s, flexion and extension of the arms in the lying position for 20 s. , flexion and extension of the arms in the lying position for 20 s. (p > 0.05). The indices of physical readiness, characterized by the absence of physical qualities growth in young wrestlers from year to year (from 1 to 2 years and from 2 to 3 years of training.

Physical readiness indices	Veer 1	Vear 2	Veer 2	Significance of differences, p		
	Year I	Year 2	Year 3	p(1)-(2)	p(2)-(3)	p(1)-(3)
30 m run	6.4±0.04	6.25±0.07	6.15±0.05	p> 0.05	p> 0.05	p< 0.05
60 m run	10.3±0.07	10.2±0.06	9.9±0.05	p> 0.05	p> 0.05	p< 0.05
Shuttle run 3x10 m	8.2±0.056	8.1±0.074	7.95±0.07	p> 0.05	p> 0.05	p< 0.05
400 m run	1.43±0.05	1.40±0.06	1.37±0.04	p< 0.05	p< 0.05	p< 0.05
800 m run	3.37±0.04	3.31±0.05	3.25±0.04	p< 0.05	p< 0.05	p< 0.05
1500 m run	8.3±0.053	8.1±0.048	7.9±0.006	p< 0.05	p< 0.05	p< 0.05
Pushups	13.0±0.65	15.0±0.54	17.0±0.41	p< 0.05	p< 0.05	p< 0.05
Pullups	1.0±0.31	1.5±0.28	2.5±0.5	p< 0.05	p< 0.05	p< 0.05
Throwing a medicine ball (3 kg) forward from behind the head	2.0±0.15	2.5±0.18	3.5.0±0.2	p< 0.05	p< 0.05	p< 0.05
Medicine ball throw (3 kg) backward	1.0±0.12	2.0±0.14	3.0±0.12	p< 0.05	p> 0.05	p< 0.05
Raising the legs to the hands while hanging on bar of gymnastic wall	1.0±0.12	1.5±0.14	2.5±0.16	p< 0.05	p< 0.05	p< 0.05
Long Jump from a spot	140.0±0.9	155.0±1.2	165.0±1.1	p< 0.05	p< 0.05	p< 0.05
Vertical Jump from a spot	25.0±1.3	30.0±1.4	35.0±1.5	p< 0.05	p< 0.05	p< 0.05
Triple Jump from a spot	2.5±0.23	3.5±0.3	4.5±0.37	p< 0.05	p< 0.05	p< 0.05
Pullups in 20 seconds.	1.0±0.15	1.5±0.6	2.0±0.16	p> 0.05	p> 0.05	p< 0.05
Pushups in 20 seconds	5.0±1.1	6.0±1.2	7.0±0.9	p>0.05	p>0.05	p< 0.05
Situps in 20 seconds	2.0±0.45	2.5±0.35	3.0±0.57	p> 0.05	p> 0.05	p< 0.05

Table 2 - Dynamics of indicators of physical readiness of young wrestlers at the stage of initial training

Table 3 presents the data of changes in the indicators of the functional readiness of young wrestlers in the process of 3-year research.

Indicators of functional readiness	Voor 1 Voor 2	Year 3	Significance of differences, p			
	rear rear 2		p (1)-(2)	p (2)-(3)	p (1)-(3)	
Weight (kg)	41±06	44±0.4	48±0.4.3	p < 0.05	p < 0.05	p < 0.05
Stange test (s)	22±0.37	25±0.46	27±0.52	p < 0.05	p < 0.05	p < 0.05
Genchi test (s)	12±0.42	15±0.37	17±0.45	p < 0.05	p < 0.05	p < 0.05
PWC170 ml / min	410±44	540±34	650±38	p < 0.05	p < 0.05	p < 0.05
PWC170 kgm / kg	10±038	12±0.5	13.5±0.41	p < 0.05	p < 0.05	p < 0.05
Maximal Oxygen Capacity ml per minute	1940±55	2160±47	2600±53	p < 0.05	p < 0.05	p < 0.05
Maximal Oxygen Capacity Ml/kg/min	47±0.54	49.0±0.43	52.5±0.38	p < 0.05	p < 0.05	p < 0.05

Table 3 - Dynamics of indicators of functional readiness of young wrestlers at the stage of initial training

In the first year of training, young wrestlers showed a minimum level of development of the functional systems of the body. This refers to the indicators of body weight, reserve capacity of anaerobic functions (breath holding time in hypoxic tests), the level of physical performance (PWC170), aerobic performance (IPC). In the second year of training, the indicators of functional readiness: body weight, breath holding time in the Shtange and Genchi tests, the level of PWC170, the VO2 max in young athletes significantly increases (p <0.05). The same is observed as the athletes' fitness level increases by the third year of training. Indicators of functional readiness: body weight, breath holding time in the Stange and Genchi tests, level (PWC170), VO2 max in young athletes significantly increases (p <0.05), compared to the 2nd year of training. Table 4 presents the data of changes in the indicators of technical readiness of young boxers in the process of 3-year research. It was revealed that when performing short-term exercises lasting 8 and 15 seconds, young boxers did not show a significant improvement in the results from 1 to 2 years of training and from 2 to 3 years of training (p > 0.05). An increase in results in these tests is achieved only by the 3rd year of training (p <0.05).

Table 4 - Dynamics of indicators of technical readiness of	of young boxers at the stage of initial traini	ng
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Load duration, m., S.	Year 1	Year 2	Year 3	Reliability of differences, p		
	Technical actions, num blows			p (1)-(2)	p (2)-(3)	p (1)-(3)
15-second test	49±0.87	52±0.95	54±0.75	p > 0.05	p> 0.05	p >0.05
8-second test	26±0.54	27±0.61	28±0.55	p > 0.05	p> 0.05	p > 0.05
3-minute test	235±2.1	253±2.5	273±1.9	p < 0.05	p < 0.05	p < 0.05
Density of battle (number of strikes)	50±1.1	58±0.95	68±1.3	p < 0.05	p < 0.05	p < 0.05
Interval of attacks in a duel, (s)	3.5±0.12	3.0±0.14	2.6±0.1	p < 0.05	p < 0.05	p < 0.05

Changes in the results in the 3-minute test have a positive trend. A significant increase in the number of strikes in this test was revealed from 1 to 2 years of training and from 2 to 3 years of training (p < 0.05). The same

dynamics of changes in technical characteristics was revealed when performing technical actions (the density of the battle and the interval of attacks in a duel) in the conditions of a competitive battle. Reliably, from year to year, young wrestlers showed an increase in their characteristics: the density of the fight and the interval of attacks in the duel (p < 0.05). Table 5 presents the data of changes in the indicators of physical fitness of young boxers in the process of 3-year research. Positive dynamics of changes in physical readiness indices from year to year was revealed in the following tests: running on 3000m, (p < 0.05). The absence of an increase in physical qualities from 1 year to 2 years of training was determined in the test of flexion and extension of the arms in an emphasis lying on the floor, long jump from the spot (p > 0.05).

Physical readiness indices	Year 1 Year 2		Voor 2	Significance of differences, p		
			real 5	p (1)-(2)	p (2)-(3)	p (1)-(3)
30m running (no more than 5.4 (s)	5.9±0.056	5.7±0.072	5.5±0.045	p > 0.05	p > 0.05	p < 0.05
Running 3000 m (no more than 15 min)	16.0±0.06	15.7±0.05	15.2±0.04	p < 0.05	p < 0.05	p < 0.05
Hanging pull-ups on the bar (at least 6 times)	2.0±0.42	4.0±0.84	5.0±0.52	p > 0.05	p > 0.05	p < 0.05
Flexion and extension of the arms in an emphasis lying on the floor (at least 35 times)	25.0±0.81	28.0±0.6	35.0±0.74	p < 0.05	p > 0.05	p < 0.05
Standing long jump (not less than 180 cm)	170.0±1.2	173.0±1.4	180.0±0.9	p > 0.05	p < 0.05	p < 0.05
Push of a medicine ball 4 kg, with the strongest hand at least 6 m	3.0±0.42	3.5±0.61	5.0±0.57	p > 0.05	p > 0.05	p < 0.05
Push of a medicine ball 4 kg, with the weakest hand not less than 4 m.	2.0±0.57	3.0±0.64	4.0±0.39	p > 0.05	p > 0.05	p < 0.05

Table 5 - Dynamics of indicators of physical fitness of young boxers at the stage of initial training.

The absence of a reliable increase in physical qualities from 1 to 2 years of training and from 2 to 3 years of training was determined in the following tests: running 30 m, pulling up from a hang on the bar, pushing a medicine ball (medicine ball) 4 kg, with the strongest hand, the weakest hand (p> 0.05). Table 6 presents the data of changes in the indicators of the functional readiness of young boxers in the process of 3-year research. During many years of research, young boxers showed a significant increase in body weight, physical performance PWC170, absolute values of aerobic performance (VO2 max ml / min).

Table 6 - Dynamics of indicators of functional readiness of young boxers at the stage of initial training

Indicators of functional	Year 1	Year 2	Year 3	Significance of differences, p		
reaumess				p (1)-(2)	p (2)-(3)	p (1)-(3)
Body Weight (kg)	39±05	43±044	48±054	p < 0.05	p < 0.05	p < 0.05
Stange test (s)	19±0.48	21±043	24±051	p > 0.05	p > 0.05	p > 0.05
Genchi test (s)	10±0.57	11.3±0.62	12.4±0.42	p > 0.05	p > 0.05	p > 0.05
PWC170 kgm / min	380±35	500±31	710±38	p < 0.05	p < 0.05	p < 0.05
PWC170 kgm / kg	9.5±032	11.3±041	14.8±044	p < 0.05	p < 0.05	p < 0.05
Oxygen Uptake ml / min	1880±51	2100±45	2450±53	p < 0.05	p < 0.05	p> 0.05
Maximal Oxygen Uptake ml / min / kg	48.0±0.67	49±0.58	51.0±0.61	p > 0.05	p > 0.05	p> 0.05

The relative values of oxygen uptake during the 3-year training period stabilized at the same level and did not change significantly (p > 0.05). Although the values of indicators in the Stange and Genchi tests from 1 to 2 years of training and from 2 to 3 stages of training increase, no significant differences were found (p > 0.05). Only over a long period of time, athletes from 1 to 3 years of training showed a significant increase in the time of holding their breath in hypoxic tests (p > 0.05).

CONCLUSIONS

Complex testing of technical, physical and functional readiness of young wrestlers and boxers at the stage of initial training made it possible to reveal the orientation of the training process, positive and negative dynamics of changes in various sides of readiness, factors limiting the growth of athletes' fitness. In the process of 3-year research in young wrestlers, it was revealed that with a high level of basic and speed endurance, aerobic and anaerobic performance, the development of strength and speed-strength qualities, as well as coordination abilities is insufficient, which reduces the effectiveness of technical and tactical actions and the growth of special readiness. An increase in the normative requirements for the lagging qualities of athletes, an increase in the loads of speed and coordination orientation will contribute to an increase in the fitness level of young wrestlers. In young boxers in the process of training at the initial stage of sports specialization, a significant increase in overall endurance and aerobic capabilities was revealed during the 3-year training period. At the same time, a pronounced lag in the development of speed, power and speed-power qualities and insufficient development of anaerobic capabilities, deteriorates the technical characteristics in speed tests.

To increase the training level of young boxers, it is advisable to use an increased volume of loads of general and technical orientation, the energy supply of which is carried out due to the predominance of alactate and glycolytic anaerobic reactions to increase speed, speed-strength and strength capabilities throughout the entire period of initial training of young athletes. At the initial stage of sports training, it is especially important to take into account the peculiarities of the age development of young combatants at each stage of preparation when drawing up plans and programs of sports training. All specialists working with children should determine the structure and content of training programs, taking into account age characteristics. Knowledge about the gender, age, individual characteristics of athletes will allow coaches to successfully solve problems of forming elements of technique and tactics of single combat, improving motor qualities, psychological qualities and competitive reliability, in general.

An important role in this process should be played by systematic control of both the dynamics of changes in the indicators of physical and mental development of children and their sportsmanship. The introduction of sportsmen testing classes into the training process, on the one hand, contributes to the harmonious physical and mental development of children; forms motivation to practice the chosen sport; increases the body's resistance to physical activity. On the other hand, the analysis of testing results allows you to control the training process, make corrections to the content and structure of training programs.

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