

PLANNING OF TRAINING LOAD OF HIGHLY QUALIFIED ATHLETES WITH LOCOMOTOR SYSTEM DAMAGE

Abdiyev Sherzod Abdurakhmonovich

Senior teacher departments of the Adaptive Physical Culture and Sports
Uzbek State University of Physical Culture and Sports

ABSTRACT

This article considers issues of planning of competitive loads of highly qualified athletes with basic power and technical training of parathletes.

Keywords: Athletes with defects of the musculoskeletal system, special physical training, General recovery, the number and indicators of the training process.

INTRODUCTION

Paralympic sport at the present stage is characterized by a constant increase in competition with a high density and with a high level of results, which poses special requirements for the training of athletes participating in responsible international competitions.

The central event of adaptive sports is the Paralympic Games, which were first held in Rome (Italy) in 1960. In our country, Paralympic sports received recognition at the end of the twentieth century. Athletes with musculoskeletal damage from our country first took part in the Paralympic Games in 2004.

Athletics with damage to the musculoskeletal system is the most medallic species on which the team standings at the Summer Paralympic Games depend most. In 2016, 7 sets of medals were played in parathletic disciplines.

Currently, Uzbekistan pays great attention to the development of adaptive sports. With Decree of the President of the Republic of Uzbekistan No. RP-2821 of March 9, 2017 "Preparation of Uzbek athletes for the XXXII Summer Olympic Games 2020 and for the XVI Paralympic Games in Tokyo 2020."

To date, Paralympics of our country have won 16 licenses, of which 9 belong to Paralympic athletes.

Competitive exercises, as well as the content of sports training in the disciplines of athletics, differ significantly from the parathletics of persons with musculoskeletal damage. Due to these differences, it is impractical to copy the content, volume and intensity of sports training. For the effective training of athletes in the disciplines of athletics of sports of persons with musculoskeletal damage, it is necessary to create a sports training system that takes into account all the features of training and competitive activities, as well as a contingent of those involved.

We revealed that in the scientific literature there is not enough empirical and theoretical data to create a scientifically justified system of sports training of highly qualified athletes with damage to the musculoskeletal system. The most acute situation was revealed in disciplines

performed by athletes in the sitting position, as well as in disciplines performed using prosthetic equipment.

However, we have not identified work on the study of sports training in most of the studied disciplines - technical, tactical, physical, as well as periodization of training and control system.

Research objective

- To develop theoretically and to experimentally prove planning of sports training of highly skilled athletes of Paralympians taking into account features of a training and competitive activity.

- Object of research.

- Planning of a sports training of the highly skilled athletes specializing in disciplines of track and field athletics of sport of persons with defeat of the musculoskeletal device.

- Hypothesis.

- It was supposed that increase in efficiency of training and competitive activity of highly skilled athletes with defeat of the musculoskeletal device in disciplines of track and field athletics can be reached due to use of a system of a sports training which cornerstone is:

- realization when choosing means and methods of preparation of the principles of account and leveling of nosological features (principle of identification and accounting of opportunities of performance of movements, the principle of continuous modernization and maximum use of special technical means);

- optimization of types of sports preparation - physical, technical, technical and design, based on the accented development of special physical qualities to which the athlete is genetically predisposed, taking into account specifics of competitive activity and also features of material and technical resources - existence of the special prosthetic equipment, running carriages, machines for throwing.

In order to achieve the goal and to confirm the hypothesis put forward, the following research tasks were identified.

1) based on the analysis of special literature and practical experience, identify the components necessary for planning and building sports training in the disciplines of athletics of sports of persons with musculoskeletal damage;

2) to identify the features of training and competitive activities of highly qualified athletes in the disciplines of athletics of sports of persons with musculoskeletal system damage;

Scientific novelty of research results

A system of sports training of highly qualified athletes in the disciplines of athletics of sports of persons with musculoskeletal system damage was formed and experimentally justified, in which specific problems were solved through the implementation of special principles of sports training, including the principles of accounting and leveling nosological features, based on the use of means and methods of physical, technical, psychological, technical and design, tactical, theoretical, integral training;

When forming an experimental methodology for substantiating physical training in the disciplines of athletics of sports of persons with an SMA defeat, training load was planned at a basic stage lasting eight weeks - three impact weekly microcycles, one control and transition weekly microcycle; then the training cycle was repeated. After the basic stage, athletes performed the load of the pre-competition stage of preparation, lasting six weeks - two impact weekly microcycles, one control-transition weekly microcycle; then the training cycle was repeated. The experiment ended a week before the main start, in which a control and transition

microcycle was introduced. During the implementation of the experimental technique, each training session at the expense of filling with certain means had its own orientation, the schematic distribution of which during the weekly microcycles at the base stage and the pre-competition training stage for each athlete is presented in Figures 1 and 2.

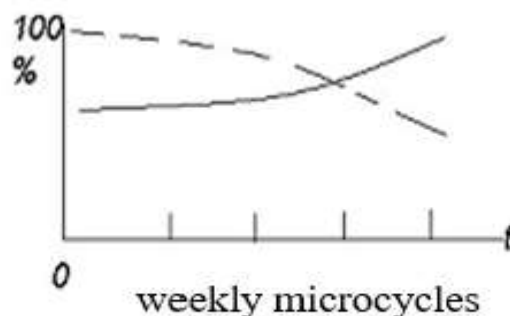


Figure 1: Gradually decrease the load volume and increase the intensity during the race.

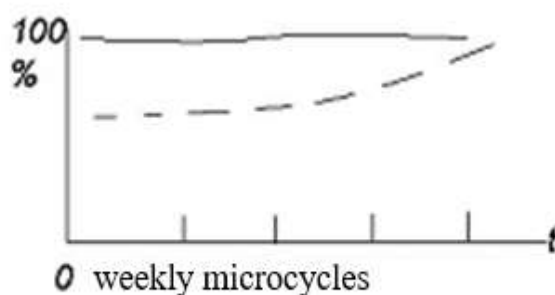


Figure 2: Gradually increase the load volume in a flat variation of intensity

Long line - loading volume; straight line - loading intensity.

In the first stage, the following tools and methods were introduced for use in solving educational tasks in the training sessions in the introduction of research on the substantiation of physical fitness in athletics for individuals with musculoskeletal injuries.

When introducing an experimental methodology for substantiating physical training in the disciplines of athletics of sports of persons with an SMA defeat at the basic stage, the following means and methods were supposed to be used to solve the main tasks of sports training in training:

- the volumes of funds performed by the athlete K.A. during the experiment were distinguished by significantly large values of the following groups of funds - aerobic exercises, jumps with more than 10 repulsions; significantly smaller values of the following groups of means - running up to 80 m (80-90%);

It was revealed that the combination of special physical qualities in the disciplines of athletics of sports of persons with an SMA defeat of various sports and functional classes is identical, but to a large extent the means and methods of developing these physical qualities can differ. On the basis of the principle of individualization of sports training, we conducted a pedagogical experiment to substantiate the physical training of highly qualified athletes in the disciplines of athletics of sports of persons with an SMA defeat. This experiment was based on the

emphasis on the development at the basic stage and at the stage of pre-competitive preparation of relevant special physical qualities by increasing the volume of relatively safe means of their development. At the end of the experiment, there was an improvement in the results in pedagogical tests characterizing the level of special physical fitness.

To assess the level of development of special physical qualities of athletes of the experimental group, a battery of pedagogical tests was introduced before and after the experiment, capable of comprehensively assessing this level. The test results are shown in Tables 1 and 2.

Table 1. Results of pedagogical tests assessing level of development of special physical qualities of athletes of experimental group, before the second stage of forming pedagogical experiment

Pedagogical tests	Athletes						M±m
	A.A.	K.A.	M.E.	F.B.	H.A.	B.M.	
Throwing the core with two hands from behind the head, m *	11,53 (3 кг)	11,89 (2 кг)	8,21 (3 кг)	6,35 (2 кг)	8,12 (3 кг)	4,58 (2 кг)	8,45± 1,07
Throwing the core with two hands from the chest, m *	12,82 (3 кг)	11,26 (2 кг)	9,23 (3 кг)	7,48 (2 кг)	9,04 (3 кг)	6,11 (2 кг)	9,32± 0,91
Throw the ball 150 g with one hand, m *	63,68	52,41	47,23	41,94	46,20	30,12	46,93± 4,15
Press the rod in position lying on the back in "Machine" Smith, "equal to 70% of its own weight, 5 times for the time, with	3,68	4,02	3,73	5,29	3,74	5,12	4,26± 0,28
Flexion-unbending of hands in a hanging on the crossbar, 5 times for a time, with	4,15	4,03	4,34	5,14	4,54	6,21	4,74± 0,31
Press the rod in position lying on the back, kg	167,5	95	112,5	107,5	122,5	97,5	117,1± 9,94
* - exercise is performed in sitting position.							

Table 2. Results of pedagogical tests assessing level of development of special physical qualities of athletes of experimental group, after the second stage of forming pedagogical experiment

Pedagogical tests	Athletes						M±m
	A.A.	K.A.	M.E.	F.B.	H.A.	B.M.	
Throwing the core with two hands from behind the head, m *	11,28 (3 кг)	12,05 (2 кг)	8,42 (3 кг)	6,17 (2 кг)	8,51 (3 кг)	4,24 (2 кг)	8,45±1,21
Throwing the core with two hands from the chest, m *	13,24 (3 кг)	10,58 (2 кг)	9,83 (3 кг)	7,68 (2 кг)	8,74 (3 кг)	5,97 (2 кг)	9,34±1,02
Throw the ball 150 g with one hand, m *	61,93	53,37	45,02	42,26	46,23	31,36	46,7±4,22
Press the bar in the position lying on the back in the "Smith Machine," equal to 70% of its own weight, 5 times for a time, with	3,46	3,90	3,58	5,53	3,62	5,42	4,25±0,39
Flexion-unbending of hands in the hanging on the crossbar 5 times for a time, with	4,04	4,17	4,21	4,92	4,24	6,41	4,67±0,37
Press the rod in position lying on the back, kg	162,5	97,50	115	105	127,5	92,5	116,7±10,5
* - exercise is performed in sitting position.							

When comparing the results of the battery of pedagogical tests evaluating the level of development of special physical fitness before and after the pedagogical experiment, no reliable differences were found (at $P < 0.05$) in any test.

At the responsible competitions - the championship of Uzbekistan in athletics of persons with the defeat of the SMA, the results of athletes were improved when compared with official personal records: in shot put ($n = 5$) was 10.25 ± 1.01 m, became 11.03 ± 1.09 m, average improvement - 0.78 m ($P < 0.05$), in disk throw ($n = 2$) was 29.06 ± 9.22 m, became 31.13 ± 8.93 m, average improvement - 2.07 m ($P < 0.05$), in javelin throw ($n = 5$) was 23.20 ± 3.12 m, became 24.27 ± 2.97 m, average improvement - 1.06 m ($P < 0.05$)

At the Asian Championships in 2019, athletes of the experimental group showed good results in 5 disciplines. Set 2 personal records in 4 disciplines.

The results obtained may indicate that during the formative pedagogical experiment it was possible to increase the level of technical training in competitive exercises of highly qualified athletes with an SMA defeat.

Conclusions. As a result of the studies, the planning of sports training of high-qualification athletes in the disciplines of athletics of sports of persons with musculoskeletal damage was experimentally justified. There were alternately carried out establishing and forming pedagogical experiments, which ensured preparation of athletes for responsible competitions.

As a result of carrying out the main stage of the forming pedagogical experiment it was succeeded to increase system effectiveness of a sports training of athletes of national team of Uzbekistan on track and field athletics of sport of persons with defeat the SMA by preparation for responsible competitions due to optimization and individualization of means and methods physical, technical, technical and design, tactical, theoretical and also due to use of informative indicators of a control system. During the training process, the principles of accounting and leveling nosological features were implemented.

Practical suggestions: Sports training in the studied disciplines has cyclical periodization. In the training of highly qualified athletes, it is most advisable to use a one-year cycle, a half-year and double one-year macrocycle. Thus, to assess the level of physical fitness, it is necessary to use a set of pedagogical tests, individual for each discipline, each sports and functional class and having a high correlation with the results in the main competitive exercise.

To control technical readiness, it is advisable to use methods for determining biomechanical characteristics based on the use of biomechanical analysis, video recording of the technique for performing a competitive exercise.

To assess the functional state, it is advisable to use means of functional control - variability of the heart rate; and/or biochemical control agents for such parameters as blood serum urea concentration level, blood serum total protein concentration level, blood serum lactate concentration level.

To control the psychological state of athletes in Paralympic sports, it is advisable to use the gas-discharge imaging method.

To increase the effectiveness of the sports training system at each stage of preparation for responsible sports forums, it is necessary to include in the work with athletes specialists of an integrated group of scientific and methodological support who are able to work with athletes in the following areas: control and optimization of training plans, control and optimization of technical training, pedagogical control of preparedness level, functional control, control and optimization of psychological preparation for training and competitive activities, increase of self-regulation level.

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