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Methods of preparation for long-distance runners at the stage of sports improvement perfection

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Abstract

Purpose: is to develop proposals and recommendations on preparation of long-distance runners for competitions at the stage of sports improvement.

Methods: include analysis of scientific and methodological literature, pedagogical observation, pedagogical testing, determination of the level of functional fitness and determination of HR using Polar h10 and Polar M430 devices, pedagogical experiment and methods of mathematical statistics.

Results: The obtained results of the pedagogical experiment are as follows: - in the test of running for 100 m the average index of speed qualities in athletes of the experimental group amounted to 13.22±0.84 s, and in the control group - 13.22±0.41 s, - in the test of running for 400 m the indexes of speed endurance averaged 61.41±2.21 and 60.76±2.71 s, respectively. - In the 1000 m sprint test, anaerobic-glycolytic endurance performance averaged 212.10±11.01 and 192.90±8.60 s. - In the 5000 m sprint test, the special endurance performance averaged 983.65±82.27 and 987.31±93.95 s, respectively.

From the obtained data we can see that there is no significant difference between the results of the athletes of the experimental and control groups. However, when comparing these indicators with the data of leading specialists in long-distance running, it turned out that the level of physical fitness of athletes, participants of the pedagogical experiment was at a low level to achieve high results.

Conlcusion: The methodology developed to prepare long-distance runners for various competitions is that athletes accelerate for the first 75-150 meters of each kilometer and run the remaining 850-925 meters, returning to their previous speed. This allows you to exhaust your opponents and increases tactical preparedness. This technique also promotes athlete's recovery in the process of competition. The complex of exercises developed for the preparation of long-distance runners, when used in microcycles of preparation for competitions, improves their sports performance through the development of components that ensure high athletic performance in various competitions. Constant use of small amplitude in training on the development of physical fitness of long-distance runners promotes not only the improvement of speed and strength endurance, but also the progressive development of peripheral components and functional fitness of athletes.

Keywords: running for 100m, effective preparation of long-distance runners, planning by stages, conduct a number, development of training process management techniques.

Introduction

In the world sports practice, as well as in all sports, in athletics the accumulated advanced pedagogical experience shows that the stages of the athletes' training system, the effectiveness of competitive activity, the stage of initial basic specialization and advanced sports training, as well as the stages of sports improvement are directly related to the effectiveness of the development of the structure of the educational and training process of athletes. Constant updating of the results of long-distance runners requires the introduction of innovative technologies in the training process. It is the creation of conditions that meet the requirements of modernity, organization of sports training at a high level, management and planning of the training process, selection and direction of talented and promising athletes at the stage of transition from one training group to another becomes an urgent task in the preparation of student-athletes at the stage of sports improvement to prestigious competitions, specializing in long-distance running.

Despite the fact that in the world there is scientific research aimed at improving the physical fitness of long-distance runners, rationing of loads and development of training process management techniques, for further growth of sports results it is necessary to search for scientifically based methods of training long-distance athletes. Within the framework of multi-year training at the stage of sports improvement it is required to conduct a number of scientific studies concerning the improvement of special endurance, functional state, technical fitness, competitive tactics, psychology, as well as medical, biological and biomechanical bases of training. Nevertheless, the task of effective preparation of long-distance runners for competitions always remains relevant. Especially important is the organization of training, distribution of loads on the basis of physiological regimes, planning by stages, as well as the development of cycles of initial, basic and main preparation for competitions. The analysis of athletes' training systems shows that the prob-

lem of preparation of long-distance runners for international competitions remains an urgent issue.

Results and discussion

Based on the analysis, the methods of optimizing the volume and intensity of training loads, as well as exercises performed depending on the running technique and the influence of these parameters on the improvement of special and general endurance, taking into account the aerobic, mixed and anaerobic capabilities of athletes and their technical preparedness were identified. The paper also discusses the classification of training loads for long distances, the ratio of load distribution in different stages of training, the use of means and methods in microcycles. The section also describes the methods of participation of long distance runners in various competitions and training planning for preparation for prestigious competitions.

The pedagogical research was conducted in three phases:

I stage (2022-2023): During this stage the study of normative documents, annual plans of training programs, scientific and methodological literature and statistical data on the basis of comparative analysis was carried out. The content of training methodology with the participation of student-athletes specializing in long-distance running, the distribution of the ratio of general and special physical loads, the volume, intensity, content and directions of training during the training period were discussed. Based on the analysis of scientific and methodological literature, statistical data and research results, as well as the opinions of leading scientists, the goals and objectives of the dissertation work were determined, research methods were developed and initial research was conducted.

II stage (January-June 2023): In this phase, preliminary research was conducted. In particular, the annual training programs of student-athletes specializing in long-distance running, the number of training sessions, their volume, intensity, content and directions, as well as the results of competitions, physical and functional fitness of athletes and the dynamics of their formation were studied. The results were analyzed using statistical methods for individual groups in a new format.

III stage (from June 2023): At this stage, a pedagogical experiment was conducted. The experiment involved 24 student-athletes of 2-3 years, specializing in athletics at Namangan State Pedagogical Institute, participating in long-distance running. The participants were divided into two groups: experimental and control, depending on the level of physical fitness. The experimental group took part in training sessions designed according to an optimized one-year training program. The trainings were conducted 5 times a week for 3 academic hours. The optimized training plan is presented in the tables below.

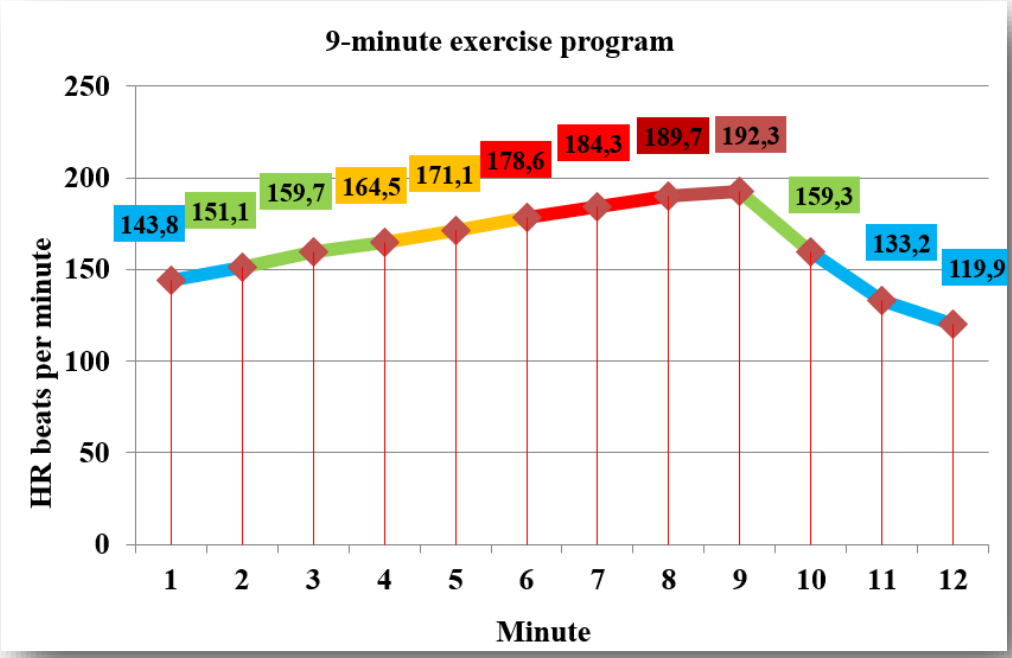
Table 1. Methods of application of tactics by long-distance runners when passing the distance by stages

Distances	Basic speed		Tactical speed		Finish
3000 m	*0-1000 m*	*1000-2000*	*1000-2000*	*2000-3000*	*2600-3000*
	3.00-3.05	2.58-3.00	2.50-2.52	2.48-2.50	0.58-1.00
5000 m	*0-2000*	*2000-5000*	*0-3000*	*3000-5000*	*4000-5000*
	3.16-3.20	3.15-3.12	3.05-3.06	3.03-3.05	2.58-3.00
10000 m	*0-5000*	*5000-10000*	*0-5000*	*5000-10000*	*9000-10000*
	3.30-3.24	3.25-3.20	3.20-3.12	3.15-3.17	3.05-3.10

The optimized one-year training plan for the experimental group of student-athletes was developed to develop speed and strength endurance, as well as a sense of distance and time, which is key to improving the performance of long-distance runners.

Figure 1 shows that the student-athletes of the experimental group, performing cyclic exercise with submaximal intensity for 9 minutes, showed an average heart rate of 156.6 beats/min in the first minute. From the second minute until the ninth minute, they continued to per-

Fig 1. Effect of the developed complex of exercises on the body of student-athletes specializing in long-distance running



form continuous running exercise in the submaximal zone, and their maximum heart rate reached 196.3 beats/min. These figures indicate that the athletes were able to maintain the load level in the submaximal zone without reducing the running pace through the application of the proposed techniques. The effectiveness of the developed technique is that after 9 minutes of cycling load, full recovery was observed within 3 minutes, with a heart rate of 121.4 beats/min.

The 9-minute exercise complex developed by us includes 18 exercises, each of which lasts 30 seconds and is performed at a competitive pace. The reaction of the athletes' organism to the load was as follows: at the 1st minute the heart rate (HR) was 143.8 beats/min, at the 2nd minute - 151.1 beats/min, and up to the 7th minute the performance of exercises in the zone of submaximal intensity was observed. At the 8th-9th minute, without reducing the pace of exercise performance, athletes were able to significantly increase special endurance in the maximum intensity zone. From the dynamics of the organism reaction it can be seen that after entering the zone of maximum intensity in 3 minutes the process of organism recovery began.

The effectiveness of the application of the developed methodology for the development of physical fitness at the stage of sports improvement has been proven. At the last international competitions, using the developed tactics, athletes, having thoroughly studied their rivals, won by using the developed tactics during the competition.

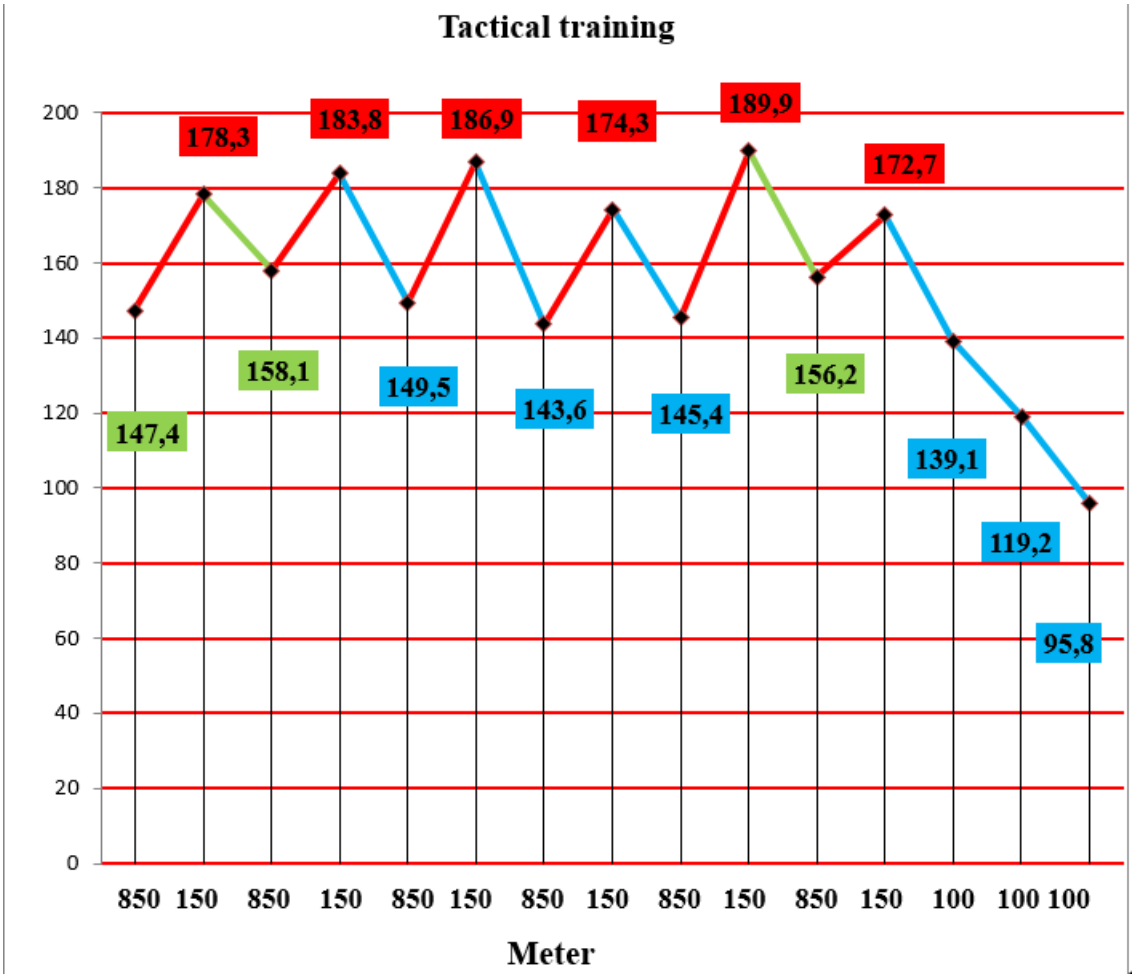
Depending on the length of the distance, the acceleration and duration of the run increased. In the 3,000 and 5,000 meter races, athletes competed in a standard 400 meter stadium. In the 10,000 meters, the lap length outside the stadium could be 600-800 meters. Thus, athletes with insufficient physical fitness gradually fell behind as the course progressed. Athletes who applied the developed tactics in time, accordingly won.

At application of tactical actions for effective passing of distances, the approximate time standards for republican and international competitions are developed. The developed methodology is presented in Table 1.

Based on this table, the athletes realized their tactical actions at different distances based on their capabilities. For example, the planned running time for the 3000 meter distance was 8:50.0-9:00.0 minutes, with a running speed of 3:00.0-3:05.0 minutes for the first 1000 meters. It was recommended to cover this distance in 2:50.0-2:52.0 minutes and maintain a base running speed of 3:00.0-3:05.0 minutes for the entire distance.

Figure 1 shows that during the 5000-meter run, the athletes' heart rate, exertion level, and running speed were recorded for each 400-meter lap. The ranges of these parameters during the race were determined. It can be seen

Fig 2. The developed method of increasing the level of tactical training of student-athletes specializing in long-distance running



that the running speed varied with the load at each stage and that the athletes in the experimental group had a heart rate of 172 beats/min at the first 400 meters with a load of 250 watts and a running speed of 2:25 min/km. In the second lap, the heart rate reached 190 beats/min at a load of 300 watts and a running speed of 2:30 min/km. On the third lap, at 1200 m, the heart rate was 167 beats/min at a load of 190 watts. On the last lap, when the running speed was 3:05 min/km, the load was equal to 170 watts.

Figure 2 shows that before the start of the 150-meter run, the average heart rate (HR) of the athletes was 147.4 beats/min, and after completing this distance, the HR was 178.3 beats/min. Before starting the second 150-meter run, the average HR was 158.1 beats/min and after completing this distance, the HR increased to 183.8 beats/min. At the end of the training session, jogging helped to return HR to baseline. The rest intervals between the series were 3-5 minutes. In addition, at the beginning of each kilometer at 75 and 150 meters, the athletes accelerated relative to their competitors, and then returned to the previous pace of running, which contributed to an increase in the level of tactical preparedness of long-distance runners.

A comparative analysis of the application of different complexes of athletics exercises was made, taking into account the HR of athletes and the duration of running distance during training. At the beginning of the training process, the average HR of the athletes was 144 beats/min, and by the last, 9th minute of the 9-minute exercise complex, the HR increased to 192 beats/min. After completion of the complex, a decrease in HR was observed. In addition, during the last minutes of cyclic exercise, HR increased to 196 beats/min and decreased to 121 beats/min by the end of the exercise.

Conclusion

According to scientific and methodological literature, there are works aimed at the management of training of long-distance runners at the stage of sports improvement, development of

training components, planning and study of problems at the stages of multi-year training. However, scientific research devoted to the complex improvement of training of student-athletes specializing in long-distance running is insufficiently covered. The analysis shows that there are several approaches to the development of athletes' preparedness, which indicates the need for scientific research in the field of integrated training of student-athletes specializing in long-distance running.

Studies on physical development show that athletes in the same group may have different levels of physical development and fitness. Different studies have noted a relationship between height and weight in runners specializing in different types of running. The frequency and length of steps, as well as the cadence of running should correspond to the level of physical development. During the pedagogical experiment, the mean height was 166.0±1.75 cm and weight was 62.09±2.37 kg. Chest circumference values at rest averaged 85.18±3.39 cm, 89.23±3.21 cm at inhalation and 82.0±3.7 cm at exhalation. When comparing these results with the data of foreign specialists, it was revealed that our growth is on average 3.7±0.1 cm behind, while the other indicators practically did not differ.

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