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Functional Features of Speed Development in Young Athletes

Turdimuratov Jengis Auezovich – Karakalpak State University
Sultansuynov Azamat Sametovich – Karakalpak State University

Annotation. Researchers are of great interest in studying the age-related characteristics of the formation of the quality of speed in humans in various sports. The article discusses the features of the process of developing the speed abilities of young athletes. Ways to develop speed by optimizing running parameters—length and frequency of running steps—are considered. Understanding these features can help to competently structure the training process and get the best results, eliminating the risk of developing dysfunction in young athletes.
Key words: dysfunctions, physical exercise, functional impairment, speed development, team sports, running frequency and pace.

Long-term sports training begins at primary school age, at the stage of preliminary preparation. To date, there are very few recommendations on rational organizational forms, content and methods of sports activities at this stage. Meanwhile, as an analysis of literary sources shows, at primary school age there are favorable opportunities for preliminary sports training for those involved. Thus, according to numerous studies, in the age period of 6-13 years there is a very intensive development of the human body. Between the ages of 7 and over the years, the coordination of voluntary movements in children improves significantly. Movements become more varied and precise, acquiring smoothness and harmony. Children of this age master the ability to dose their efforts, subordinate movements to a certain rhythm, slow them down in time and do without unnecessary accompanying movements.

As rightly noted by V.P. Filin (1974), teaching children the technique of performing physical exercises is extremely important at the stage of preliminary sports training. The formation of their motor skills creates the necessary basis for further improvement of rational movements and maturation of the motor analyzer. It is necessary to strive to ensure that children, from the very beginning of classes, master the basics of the technique of a holistic exercise, and not its individual details.

An analysis of a large amount of scientific, methodological and special literature has shown that at the age of 8-11 years there are more favorable opportunities for developing the speed of movements (especially by increasing their frequency and running tempo) than at the age of 12-14 years. Taking this into account is of great practical importance, since programs for youth sports schools provide for the start of classes only at the age of 12-13, thereby missing those favorable opportunities for developing speed of movement.

In the age range of 8-12 years, a significant increase in maximum running speed is due to the natural development of speed of movement, while at the age of 12-14 years, an increase in running speed occurs mainly on the basis of an increase in speed-strength qualities and muscle strength. At 8-12 years of age, the motor analyzer matures and the most important locomotor acts of running are formed [1]. All this suggests that it is necessary to begin to cultivate speed already in this age period. The results of the studies are consistent with research data [2, 3], indicating that increasing the level of development of one physical quality can contribute to the improvement of others, and that the greatest effect is achieved by an integrated method of their development. In the process of cultivating speed, one should strive to maximize the range of movements that do not require the manifestation of large muscular efforts, to ensure, as far as possible, the optimal range of movements and maximum relaxation of muscle groups not involved in the work. Preference should be given not to special exercises based on the artificial isolation of individual elements, but to natural movements.

The use of special exercises in large quantities disrupts the fundamentals of correct running technique. One of the main means of developing speed in beginners and junior athletes should be

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the use of the simplest high-speed running exercises.

Summarizing the research results, we came to the conclusion that running in training sessions should be carried out in a variety of variations. Speed exercises performed in a game or competitive form are also very effective [4]. The emotionality and spirit of struggle between the participants inherent in games and competitions encourages children to make significant efforts to achieve victory.

In order to solve the problem of preliminary sports specialization, a two-year pedagogical experiment was carried out, in which the following tasks were solved: to identify the rational, preferential orientation of the training process at the stage of initial sports specialization; to experimentally substantiate the methodology for training speed and speed-strength qualities at this stage. The experiment involved 58 boys aged 11-12 years old, training in the athletics department of sports school No. 1 in the city of Nukus. The subjects were divided into three groups, in each of which from 120 to 140 training sessions were conducted during the experiment. Their methodology in the first group (control) was developed on the basis of the current athletics program for the Youth Sports School. The classes of the second group were aimed primarily at developing speed, speed-strength qualities and muscle strength with the help of outdoor and sports games, as well as sets of special preparatory exercises that contribute to the development of physical qualities that play an important role in the process of specialization in athletics. The ratio of exercises aimed primarily at developing quick strength and endurance was as follows: 50, 25, 25% of the total training time, respectively. The training program of the third experimental group included exercises from the most popular sports among school-age students (athletics, gymnastics, team sports). Each sport was allocated the same amount of practice time. During the study period, 115 pedagogical observations were carried out, more than 1000 various types of measurements were made.

With all variants of initial sports specialization compared in the experiment, there was an increase in the level of development of speed, speed-strength qualities, muscle strength and other physical qualities of the participants. However, more significant changes were observed in the second group. The level of development of speed in this group over the two years of the experiment in terms of results in the 60 m run from the start increased by 11.1%, in the 60 m run from the start - by 14.1%, in terms of motor reaction speed - by 42.1% . During the same period in the control group - by 10.7, respectively; 9.0; 27.3%. In the third group - by 10.4; 11.3; 35.1% respectively.

More significant changes in the subjects of the second group took place in the development of speed and strength qualities. Thus, the result in the standing long jump improved by 22.5%, in the standing high jump - by 22.9%; in the first group - by 17.8 and 8.2; in the third - by 14.2 and 12.9, respectively. In terms of muscle strength development, the subjects of the second group also surpassed the subjects of other experimental groups. Thus, the back strength of those in this group increased by 52.6%, and in those in the third and control experimental groups - by 43.1 and 31.2%, respectively. In all groups, the greatest increase was in deadlift strength, as well as the strength of the torso and hip extensors. Significant changes were observed in the development of speed and speed-strength qualities. Conducting classes according to the program of the second option created favorable preconditions for ensuring a solid base for the comprehensive physical preparedness of students.

Thus, the results of a two-year pedagogical experiment confirmed our hypothesis that the rational primary focus of training at the stage of preliminary sports training is that, along with various sports and outdoor games, it is advisable to use sets of special preparatory exercises for the development of physical qualities that are important in your chosen sport. Our hypothesis was also confirmed that at the stage under study, in order to develop speed, a comprehensive training method should be used, which involves the use of outdoor and sports games, game exercises, as well as sets of special preparatory exercises that ensure the development of physical qualities that play an important role in specialization in sports. athletics. The ratio of exercises aimed primarily at developing speed, strength and endurance should be approximately as follows: respectively 50, 25, 25% of the total time allocated for the lesson.

The conclusion drawn on the basis of our research is consistent with the point of view of those specialists who believe that at the preliminary stage of sports, the greatest effect is obtained from versatile training, which helps to increase strength, endurance and speed of movement to a greater

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extent than training to develop only one of the physical abilities. qualities[5, 6, 12]. Some experts believe [7] that exercises for strength, speed and endurance create the prerequisites for further targeted development of basic physical qualities. With one-sided training, a high degree of development of these qualities cannot be achieved.

It should also be taken into account that the higher nervous activity of children and adolescents is characterized by the predominance of excitation processes in the cerebral cortex. At the same time, their excitation processes are more pronounced than their inhibition processes. Therefore, during prolonged monotonous muscle activity, as well as when certain difficulties arise, protective inhibition associated with a feeling of fatigue develops in them earlier than in adults. In this regard, children and adolescents are better able to tolerate more diverse and short-term physical activity. As a result, in classes with them, along with teaching sports techniques, it is necessary to develop motor qualities through the use of a variety of means and methods of physical education. As noted by R.A. Piloyan (1984), adolescents are characterized by increased irritability and relatively rapid fatigue of the central nervous system. Such phenomena are explained, on the one hand, by increased function of the thyroid gland, and on the other, by the sometimes observed functional disturbance of the blood supply to the cerebral cortex. Due to the fact that excitatory processes still predominate over inhibitory ones, they are characterized by impetuosity of movements and excessive motor activity. This also explains some of the features of their behavior.

The conclusions arising from our research coincide with the point of view of those physiologists who speak out in favor of more targeted training at the stage of initial sports specialization.

In particular, as N.V. rightly notes. Prasad (2003), the formation of temporary connections in children 13 years of age and older can be adversely affected by excessive variety of movements. This is due to the fact that the higher nervous activity of children is not prepared for significant switches. Physical exercises should be used taking into account the feasibility of performing them for those of a given age.

Based on the results of medical and pedagogical observations, G. Bruschke (1992) came to the conclusion that there are only quantitative differences between the training programs for adult athletes and adolescents - in the level of applied training loads. If age-related characteristics are taken into account, then, from a medical point of view, there can be no objection to conducting fairly intense training in childhood.

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