"EDUCATION OF ENDURANCE OF YOUTH ENGAGED IN ATHLETICS

Sidikov Sabir Mamasoli
Associate Professor
Nabiyev Sodir Marubjanovich
Faculty of Physical Education, Fergana State University
Ferghana State University, Master of the 1st year of the
Faculty of Physical Culture

Annotation: *The article discusses the development of physical qualities as endurance athletes*

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Currently, men's middle-distance running has accumulated a lot of problems: the number of our athletes in the lists of the strongest in the world is decreasing, and there are few new names in the national team of the country. And there are reasons for this.

Young coaches, wanting to prove themselves as quickly as possible, forget about the versatile training of their students, forcing them to train. At competitions, it is often noticeable that even young athletes are overweight, have a weak musculoskeletal system, and low technical, functional, and physical fitness. There is also a low motivation of athletes to achieve high results. It is no accident that they are afraid of starts, and their competitive activity is unstable.

To a greater extent, the reason for this is also the lack of training programs, recommendations for training long-distance athletes, not enough publications in the literature, and often the unavailability of information.

To achieve the goal of the study, the following tasks were set:: There is ananalysis of the general principles of training young track and field athletes to develop a system for planning and managing the training process at various stages of training young athletes.

In the conditions of modern civilization, with a decrease in natural motor activity, systematic physical exercises should be considered the most effective, targeted effect on the body.

Sports training provides an enhanced increase in muscle performance. As the body's fitness level increases, muscle performance increases accordingly. Young athletes, in comparison with their peers who are not engaged in sports, have greater efficiency and endurance. Moreover, the older the age of young athletes and the higher the qualification, the greater the differences between athletes and non-athletes.

Skeletal musculature is the main apparatus by which physical exercises are performed. A well-developed musculature is a reliable support for the skeleton. For example, with pathological curvatures of the spine, chest deformities (and the reason for this is the weakness of the back and shoulder girdle muscles), the work of the lungs and heart becomes difficult, the

blood supply to the brain worsens, and so on.Trained back muscles strengthen the spinal table, unload it, taking part of the load on themselves, prevent "falling out" of intervertebral discs, and vertebral slippage. If the muscles are doomed to long-term rest, they begin to weaken, become flabby, and decrease in volume. Systematic training in athletics contributes to their strengthening. At the same time, muscle growth occurs not due to an increase in their length, but due to a thickening of muscle fibers. The strength of muscles depends not only on their volume, but also on the strength of nerve impulses entering the muscles from the central nervous system. In a trained, constantly exercising person, these impulses cause the muscles to contract with more force than in an untrained person.

Under the influence of physical exertion, the muscles not only stretch better, but also become more firm. Athletics activities contribute to better nutrition and blood supply to the muscles. Along with the increase in working capacity, young athletes ' ability to maximize oxygen consumption increases. Under the influence of systematic sports, aerobic performance increases, especially in girls who play sports.

Systematic exercise significantly increases aerobic performance in young athletes. Aerobic performance is also affected by the nature of the exercise performed. Young athletes engaged in cyclical sports have a higher BMD than representatives of acyclic sports.

Absolute indicators and growth rates of special strength among 17-18 - year-olds who are not involved in sports and young athletes differ significantly-they are lower for the former. For example, non-athletes with simultaneous push-off with their hands have lower strength indicators by 12.09 kg (29%), with alternating push - off with their hands - by 14.43 kg (25%) and with push-off with their feet-by 36.92 kg (20%). Athletes from 13-14 to 17-18 years of age have a sharp jump in the development of repulsive power indicators. In people who do not engage in sports, during this period, its growth rate is not significant.

The data of age-related patterns of development of special strength indicators in young athletes and schoolchildren who are not engaged in sports should be taken into account when planning the means and methods of their education in the course of training sessions.

The development of endurance by influencing anaerobic capabilities is based on the adaptation of the body to work in conditions of accumulation of under-oxidized energy supply products and is characterized by the solution of two tasks:: 1) increasing the power of the glycolytic (lactate) mechanism; 2) increasing the power of the creatine phosphate (alactate) mechanism. For this purpose, basic and specially prepared exercises of appropriate intensity are used. In this case, repeated and variable interval exercises are used.

The following requirements apply to exercises used as a means of improving the glycolytic mechanism. The work should be performed with an intensity of 90-95% of the maximum power for this segment of the distance, the duration of work is from 20 seconds to 2 minutes (the length of the segments is from 200 to 600 m in running; from 50 to 200 m in swimming). The number of repetitions in the series for beginners is 2-3, for well-prepared ones it is 4-6. The rest intervals between repetitions gradually decrease: after the first – 5-6 minutes, after the second – 3-4

minutes, after the third – 2-3 minutes. Between episodes, there should be a rest period of 15-20 minutes to eliminate lactate debt.

The following requirements apply to exercises used as a means of improving the creatine phosphate mechanism. The intensity of work should be near-limit (95% of the maximum); duration of exercises-3-8 seconds (running-20-70 m, swimming-10-20 m); rest intervals between repetitions-2-3 minutes, between series (each series consists of 4-5 repetitions) - 7-10 minutes. The rest intervals between the series are filled with very low-intensity exercises, the number of repetitions is determined based on the readiness of the participants.

The development of aerobic and anaerobic capabilities is combined. Glycolysis depends on the respiratory capacity and at the same time itself is the basis for the alactate process. Based on this, in the system of classes, it is advisable to plan the predominant development of these capabilities in the following sequence: aerobic – lactate – alactate. In the course of one lesson, the tasks for developing endurance should be solved in reverse order.

At the age of 13-17 years, rapid development of the body occurs. During this period, strength accumulates, dexterity is acquired, endurance increases, the work of all organs increases, especially the state of the nervous system, the activity of the cardiovascular and respiratory systems changes. By the age of 15, ossification of the spine, chest, pelvis and limbs does not end. The ligamentous apparatus is more elastic than in adults, so you should not make large muscle strains. In young men aged 16-17, muscle tissue grows more vigorously, and the activity of the cardiovascular system becomes more perfect. The pulse rate slows down, blood pressure decreases, the stroke volume of the heart approaches the volume of adults, the speed of blood movement decreases.

It is during this period that harmonious muscle development is very important, because a unilateral increase in one group can lead to uneven development of internal organs and disruption of their functions. At this age, you can significantly increase physical activity , actively develop special endurance and strength qualities.

An increase in the activity of the cardiovascular system is inevitably accompanied by an increase in the activity of the respiratory system; the pulse becomes faster — breathing becomes faster. Lack of coordination between them negatively affects the adaptability of the body, which should be taken into account when practicing boxing, where movements and actions are acyclic, the amount of stress changes.

In 16-17 years, there is an increased increase in lung mass, which increases their vital capacity. The intensity of gas exchange in children and adolescents is significantly higher than in adults.

It is known that the activity and performance of muscles depends on the amount of incoming blood; the more active the muscle activity, the more blood is needed for their nutrition. Therefore, when practicing boxing, for example, during a training fight with a partner, young men are more tired, their breathing is poorly set, their muscles are not sufficiently trained (the muscles of the lower and upper limbs work most actively during the fight), and the main boxing actions are not automated.

Along with the increased growth of the whole body, the heart muscle also grows; it becomes more powerful. But it should be borne in mind that the development of the heart lags behind the development of other organs, and if the muscular system and internal organs adapt and cope with the demands and stresses imposed under increased loads, then the heart works with an overstrain, its hypertrophy is possible. General physical training with gradually increasing nervous and physical activity contributes to improving the functional capabilities of the cardiovascular system, mainly during natural exercises (walking, running, skiing, swimming, etc.). A growing body needs relatively more oxygen than an adult, so classes with young men should be conducted as often as possible on the territory of the home. in the open air.

The problem of improving endurance from childhood is one of the most important in physical education and sports training. Endurance training for sports purposes should contribute to mass health promotion of the younger generation, which is especially important in connection with the existing hypokinesia in school-age children, which is aggravated by the acceleration of physical development. Running is an effective and accessible means of physical improvement for all ages, contributing to the improvement of health and harmonious development. However, the problem of sports training of young runners has caused controversy and controversy among trainers and researchers for many years. The main contradictions relate to the initial, basic stages of sports training, covering children and youth, and it is these stages that are of leading importance for achieving high sports results. It is well known that achieving high athletic performance in most sports, especially those involving long-term cyclical locomotor activity, is impossible without a high level of endurance development. Currently, high sports results in endurance running are available for girls aged 16-17 and boys aged 18-19.

At the same time, this is not an obstacle to improving the results of their transition to the category of adult athletes. Modern age-related physiology, biochemistry and morphology have accumulated considerable experimental material on certain issues of endurance development in ontogenesis due to the age-sex characteristics of the body. It is also known that this age is favorable for the development of speed of movement. However, in the theory of physical education, the issues of improving endurance for sports purposes in children, adolescents, boys and girls have not yet been sufficiently studied and are not systematic. All this determined the purpose of our work - to investigate the patterns of age-related endurance development and to experimentally substantiate the process of promising, systematic training in endurance running for children, adolescents, boys and girls.

The complexity and versatility of the problem has led to the need to construct the work in the form of a series of separate studies conducted in two main directions. The first direction is related to the study of age-related changes in endurance in its various manifestations in non-athletes-schoolchildren. The second - with the research and experimental substantiation of the method of training young runners at distances that require endurance. Starting the study, we hoped that the establishment of age-related patterns of endurance development and the biological factors that determine them would allow us to purposefully apply the recommended means and methods of training, depending on the age, gender and qualifications of young

athletes. The aim of the study was to solve a number of specific tasks that were put forward on the basis of generalizing many years of personal experience with young runners, as well as scientific, theoretical and practical data on the problem of running training and endurance training at school age. Running is a cyclical locomotor exercise of a global nature and requires the manifestation of general, special endurance and other motor qualities. In this regard, we were interested in the quantitative characteristics of factors that ensure success in running among novice athletes.

To solve this problem, we determined the change in the result for 600 m and its relationship with age, motor skills and physical development in 125 novice runners aged 11-16 years. It was found that the result in the 600 m race at this age significantly changes. However, these changes occur unevenly: the highest average annual growth rates were found in 12, 14 and 16 years. At the age of 15, there is a decrease in results, but it is statistically unreliable. The most closely related to the result is the level of endurance development according to the reserve speed indicator proposed by N. G. Ozolin. Speed is reliably associated with results only up to the age of 14, and strength - at 13 and 16 years. The result in the 600 m race at 11 and 16 years is closely related to anthropometric indicators, VEL does not affect this result, while the relative VEL is significantly associated with the result at all ages, with the exception of 13 and 16 years. Thus, the result in middle-distance running for beginners is correlated with most of the studied indicators, but the nature of this dependence, especially its changes, does not differ with age. Up to 15 years of age, the result in running for beginners is significantly affected along with endurance by speed and strength. At the age of 15, they begin the process of differentiating the influence of physical qualities on the result. In the future, one quality remains the leading one - endurance. The established close correlation of endurance with the result in the 600 m race at all ages served as a prerequisite for further, more in-depth research of this motor quality. In this regard, we investigated the age dynamics of changes in endurance and its relationship with physical development and motor qualities in different areas of work capacity and static efforts in 832 schoolchildren aged 9-17 years who are not engaged in sports. The change in endurance indicators among schoolchildren and schoolgirls in running of submaximal, high and moderate power does not occur in the same way: in boys, the greatest increase occurs at 13-14 years, and in girls, the indicators of endurance to work of submaximal and high power increase to 14 years, endurance to work of moderate power (running in combination with walking for 35 minutes) with it doesn't change significantly with age.

Indicators of endurance to static forces and to work at maximum power in boys and girls improve slightly with age. The total indicators of age-related changes in endurance are 28% in schoolchildren and 21% in schoolgirls, while the total indicators of strength increase by 177 and 107%, respectively. The lag in the development of endurance in comparison with strength shows the insufficient use of running and other natural locomotives aimed at educating this important quality at school age. The age dynamics of physical development and motor qualities established by us quite fully characterizes the formation of the body of schoolchildren who are not engaged in sports, and their difference from the development of young athletes.

The results of statistical processing reveal a significant unevenness of development, as well as periods of the greatest growth. The puberty period of puberty has a special impact on physical development and improvement of motor skills. Thus, the main factors influencing the development of endurance in schoolchildren who are not involved in sports are age, gender,and biological changes that occur in the body during puberty. Correlation analysis of physical development indicators and the level of motor qualities showed that the manifestation of endurance in most age groups of schoolchildren is not interrelated with the indicators of body length, VEL, and tends to have a negative relationship with body weight, chest circumference, and a multidirectional relationship with the degree of puberty. According to our data, the indicators of endurance in schoolchildren to work in areas of submaximal, large and moderate power have a high degree of correlation. The relationship of endurance with indicators of speed and speed-strength qualities weakens as the power of work decreases (the length of the distance), and girls have more extensive relationships of physical qualities than boys. The manifestation of endurance to work at maximum power and static endurance is very weakly correlated with indicators of other physical qualities.

So, the results of intercorrelation allowed us to establish that endurance in four zones of relative power work and under static loads in schoolchildren at most ages does not have reliable relationships with physical development and other motor qualities. This served as a prerequisite for studying the dependence of endurance on the functional capabilities of the body. We paid special attention to the study of the manifestation of endurance in running of submaximal power (since this zone of running power includes middle distances) and its relationship with the activity of the body's oxygen supply systems. At the same time, 349 boys aged 10-17 were chosen to determine the distance covered at a speed of 75% of the maximum, and 1019 girls aged 8-17 were chosen to determine the distance covered in 90 seconds. Both of these indicators have been tested by us and objectively reflect the level of development of the studied quality at all ages.

In dynamics, the following periods are distinguished: the first (10-12 years) - stabilization of endurance; the second (13-14 years) - a sharp increase in it; the third (15-16 years) - a decrease in the level of endurance; the fourth - a period of second growth, when endurance indicators tend to increase again. The increase in endurance in schoolchildren aged 13-14 is explained by high motor activity at this age, the beginning of intense puberty and the associated rapid increase in physical development indicators.

The improvement of endurance at the age of 17 is caused by the gradual approach of young men at this age in general development and development of qualities (including endurance) to the level of adults, a new increase in absolute and relative BMD, and an increase in the percentage of oxygen consumption. For girls and girls in the first period (10-13 years) there is a sharp increase in endurance; in the second (13-15 years) - a slight decrease in the intensity of growth, but in general the increase continues; in the third (15-16 years) - a slight decrease in endurance; in the fourth (17 years)-a significant decrease in endurance, especially compared to the indicators of 13-14-year-olds. Studies of the development of functional capabilities of oxygen

supply systems in girls and girls have shown that up to the age of 13 there is an intensive development of all indicators that characterize the activity of the cardiorespiratory system, and the greatest increase in their development occurs at the age of 12-13 years. After this significant increase in BMD indicators, such as the percentage of oxygen consumption and pulmonary ventilation, no changes are observed.

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