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BASIC PHYSICAL QUALITIES OF YOUNG MEN 15-17 YEARS OLD, CONSTITUTING PHYSICAL FITNESS AND METHODS OF THEIR DEVELOPMENT

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Abstract:

The article describes the ways to achieve success in various types of motor activity aimed at the formation of abilities, the development of physical qualities, increasing the level of physical development, the level of broad motor skills in adulthood.

Keywords: Education, sports, activities, efficiency, methodology, reserve, sensitive, physical fitness, working capacity.

Sports play an important role in educating a physically strong young generation with harmonious personality development. The level of sportsmanship in any kind of sports activity, in particular boxing, is associated with the level of development of basic physical abilities (strength, speed, coordination), which form the basis of physical fitness and the effectiveness of their interaction. In the field of theory and methodology of physical culture and sports, as well as in a number of related sciences, for many years the interest of specialists in the problem of controlling the processes of development of the speed-strength components of physical fitness, which require maximum mobilization of the reserve capabilities of the body, has not decreased.

Sensitive (age) periods of development of human physical qualities are a necessary tool for the work of coaches and specialists in the field of sports and physical culture. Without knowledge of this area of human physiology, it is impossible to achieve the development of the necessary motor skills in any sport, because. without the comprehensive development of motor qualities, it is impossible to achieve high results in the sport of the highest achievements. Research in the field of the formation of motor abilities shows that some physical qualities cannot be developed in adulthood.

Physical readiness is the result of physical training achieved during the performance of motor actions necessary for mastering or performing a professional or sports activity by a person.

Physical fitness is characterized by the level of functional capabilities of various body systems (cardiovascular, respiratory, muscular) and the development of basic physical qualities (strength, endurance, speed, agility, flexibility). Physical training is a process during which one or another level of physical fitness is achieved.

Physical training is aimed at strengthening health, achieving a high level of physical development, educating the physical qualities necessary for a person. It is customary to subdivide it into general physical training (GPP) and special physical training (SFP).

The goal of general physical training is to achieve high performance. It is aimed at increasing the level of physical development, broad motor fitness as prerequisites for success in various activities. Its means are a variety of physical exercises (walking, running, skiing, swimming, rowing, outdoor and sports games, gymnastics, weight training, etc.). Special physical training is a specialized process that contributes to success in a specific activity (type of profession, sport, etc.), which imposes specialized requirements on a person's motor abilities. The result of physical training is physical fitness, which reflects the achieved performance in the formed motor skills and abilities that contribute to the effectiveness of the target activity (to which the training is oriented). SFP is aimed at educating individual physical qualities, skills and abilities necessary in the chosen sport or military affairs. It is carried out systematically and helps a person to prepare for competitions or the performance of responsible tasks that require the mobilization of all physical fitness at this stage. Its means are special exercises and elements. For the development of important physical qualities, they use exercises for speed, strength, general, speed and strength endurance, for coordination of movements, etc. These are mainly exercises from basic gymnastics, from various types of athletics, sports games, weightlifting, etc. With the help of they can strengthen the muscles that account for the greatest physical load, further develop physical qualities.

By the age of 15-17, young men complete the formation of all sections of the motor analyzer, which occurs especially intensively at the age of 7-12 years.

In the process of development of the musculoskeletal system, the motor qualities of the muscles change: speed, strength, agility and endurance. Their development is uneven. First of all, speed and dexterity of movements develop.

The speed is determined by three indicators: the speed of a single movement, the time of the motor reaction and the frequency of movements.

Until the age of 15-17, the development of dexterity is mainly completed. The greatest increase in the accuracy of movements is observed from 4-5 to 7-8 years. Moreover, the ability to reproduce the amplitude of movements up to 40-50 increases to the maximum at 7-10 years and after 12 practically does not change, and the accuracy of reproduction of small angular displacements (up to 10-15) increases up to 15-17 years. Sports training has a significant impact on the development of agility in 15-17-year-old athletes. The accuracy of movements is 2 times higher than that of untrained adolescents of the same age.

Lastly, the ability to quickly solve motor problems in various situations is improved. Agility continues to improve until age 17. The most significant rates of increase in flexibility indicators in movements performed with the participation of large parts of the body (for example, in the maximum inclinations of the body) are observed, as a rule, up to 13-14 years of age.

Then these indicators stabilize and, if you do not perform exercises that specifically affect flexibility, they begin to decrease significantly already in adolescence.

The greatest increase in strength is observed in middle and senior school age, especially strength increases from 10-12 to 13-15 years. Boys surpass girls in this indicator in all age groups, but the difference is especially clear at 13-14 years old.

Later than other physical qualities, endurance develops. There are age, gender and individual differences in endurance. Endurance of preschool children is at a low level, especially for static work. An intensive increase in endurance to dynamic work is observed from the age of 11-12. Also intensively from 11-12 years old, endurance to static loads increases. In general, by the age of 15-17, the endurance of schoolchildren is about 85% of the adult level. It reaches its maximum level by 25-30 years.

A high increase in motor qualities can be obtained with the right training impact, but only in accordance with sensitive periods that characterize the growth rates of one or another quality.

Sensitive periods of development of physical qualities are presented in the sports training programs of recent years. So, for example, in the "Exemplary program of sports training for children's and youth sports schools in boxing", sensitive periods are presented for the age period of 7-17 years. As can be seen from Table 1, the age period of 15-17 years is characterized by a slow development of such qualities as flexibility, coordination abilities and a sense of balance. At the same time, accelerated growth rates of aerobic capacity (endurance), anaerobic capacity, speed and strength were noted. Slowdown in the growth of speed-strength qualities was noted at the age of 16 years. Such a physical quality as speed is characterized by a high increase in this age group.

Table 1

Approximate sensitive periods of development of motor qualities

Morphofunctional indicators, physical qualities	Age (years)										
				0	1	2	3	4	5	6	7
Height											
Muscle mass Rapidity											
Speed-strength qualities											
Force											
Endurance (aerobic capacity)											
Anaerobic Capabilities											
Flexibility Coordinating abilities Equilibrium											

Numerous data concerning the problem of age periods in the development of physical qualities do not coincide, because are in complex relationships. Therefore, the study of the age limits of the development of physical qualities is always individual in nature and depends on the means and conditions for building the training process. In this aspect, it is interesting to study the age-related aspects of the development of not only physical qualities, but also the growth rates in indicators characterizing the body systems. One of the leading researchers of this aspect of human development V.I. Lyakh noted "... the picture of sensitive periods is largely natural, but it is influenced by such factors as the setting of physical education, the use of means and methods of improvement, the individual characteristics of schoolchildren in a particular age group. However, the latter is clearly not being studied enough…". Power abilities are manifested through the force of action developed by a person through muscle tension. The force of action is measured in kilograms. The magnitude of the manifestation of the force of action depends on external factors - the magnitude of burdens, external conditions, the location of the body and its links in space; and from the internal - the functional state of the muscles and the mental state of a person. For the development of speed-strength abilities, exercises are used to

overcome the weight of one's own body (for example, jumping) and with external weights (for example, throwing stuffed balls). The most common methods for developing speed-strength abilities are the methods of repeated exercise and circuit training. The method of repeated exercise allows you to selectively develop certain groups. The circuit training method provides a complex effect on various muscle groups. In accordance with modern concepts, speed is understood as a specific motor ability of a person for high speed movements performed in the absence of significant external resistance, complex coordination of muscle work and not requiring large energy consumption. The physiological mechanism of the manifestation of speed, associated primarily with the speed characteristics of nervous processes, is presented as a multifunctional property of the central nervous system (CNS). There are several elementary forms of manifestation of speed:

1. The speed of simple and complex motor reactions.
2. The speed of a single movement.
3. The speed of a complex (multi-joint) movement associated with a change in body position or switching from one action to another in the absence of significant external resistance.
4. Frequency of movements.

The identified forms of speed manifestation are relatively independent of each other and are weakly related to the level of general physical fitness. Agility is expressed through a set of coordination abilities, as well as the ability to perform motor actions with the required range of motion (mobility in the joints).

Dexterity is brought up by teaching motor actions and solving motor tasks that require a constant change in the structure of actions.

Coordination abilities are the ability of a person to most perfectly, quickly, expediently, economically, accurately and resourcefully solve motor problems in the event of complex and unexpected situations.

Coordination abilities are associated with the ability to control movements in space and time and include: a) spatial orientation; b) the accuracy of motion reproduction in terms of spatial, force and time parameters; c) static and dynamic balance.

Spatial orientation implies: 1) the preservation of ideas about the parameters of changes in external conditions (situations) and 2) the ability to rebuild the motor action in accordance with these changes. A person does not simply react to an external situation. He must take into account the possible dynamics of its change, carry out forecasting of upcoming events and, in this regard, build an appropriate program of action aimed at achieving a positive result.

Endurance is the most important physical quality that manifests itself in professional, sports practice (to one degree or another in each sport) and everyday life. It reflects the overall level of human performance. In the theory of physical education, endurance is understood as the ability of a person to perform work for a considerable time without reducing the power of the load of its intensity or as the body's ability to resist fatigue. Endurance is a multifunctional property of the human body and integrates a large number of processes occurring at various levels: from the cellular to the whole organism. However, as the results of modern scientific research show, the leading role in the manifestation of endurance belongs to the factors of energy metabolism and the vegetative systems that provide it, namely the cardiovascular, respiratory, and central nervous systems. One of the most effective and affordable means of developing general endurance is running. The term flexibility itself is usually used for an integral assessment of the mobility of body links. If the amplitude of movements in individual joints is estimated, then it is customary to talk about mobility in them. The process of inhibition and the relaxation of muscles associated with it favor the course of recovery processes. Therefore, relaxation exercises are also used to improve blood circulation in the muscles or as distraction exercises, especially after strong static stresses. The development of physical qualities is a necessary component of a healthy lifestyle. This is agility, and endurance, and strength, and flexibility, and, of course, speed. There is no linear relationship between fitness level and health level. This connection can be schematically represented at three levels.

At the first (low) level, there is a pronounced negative effect on health, especially at a low level of endurance.

At the second (optimal, normative) level - a positive impact on health.

At the third (high) level of physical qualities, corresponding to the requirements of big sport, there is tension in all body systems, which reduces resistance to diseases due to a decrease in the body's immune functions.

Summing up the results of the analysis of the development of the physical qualities of young men aged 15-17 years, we can make an assumption that at this age, young boxers, with proper individual training, can improve almost all physical capabilities, if they are considered from the standpoint of the transformation of these qualities into basic technique and its specifics in boxing. Physical qualities are understood as socially conditioned sets of biological and mental properties of a person, expressing his physical readiness to carry out active motor activity. The main qualities that characterize the physical development of a person are strength, speed, agility, flexibility and endurance. Improving each of these qualities contributes to health, but not to the same extent. Physical qualities differ from other personality traits in that they can manifest themselves only when solving motor problems through motor actions. Motor actions used to solve a motor task can be performed differently by each individual. Some have a higher rate of execution, others have a higher accuracy of reproduction of movement parameters, etc.

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