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CHARACTERISTICS OF THE MORPHO-FUNCTIONAL PARTICULARITIES OF BOXERS' BODIES IN THE CADET CATEGORY

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Abstract
This article describes the morpho-functional characteristics of boxing athletes' bodies in the cadet category that need to be taken into account in the multiannual training process. These peculiarities are inevitable because they are dictated by biological factors, therefore, all the changes that take place in the bodies of young athletes must be known in detail by specialist-coach-practitioners. Thus, this study highlights a detailed description of these aspects and contains concrete explanations of certain conditions, processes and factors that will complete the arsenal of skills of all members in the training process.

The purpose of this study is to characterize the morpho-functional features of the bodies of boxing athletes in the cadet category. Being difficult, this age creates a series of problems in the training process of athletes, and, in all cases, it is necessary to find new solutions, argued and deciphered scientifically, methodologically, psychologically, etc., to ameliorate critical situations.

The objectives of the study reveal the theoretical study of the morpho-functional particularities; age period argumentation; identifying the possibilities to remedy the difficult situations that have arisen. Research methods included: analysis and argumentation; case study; synthesis of information; textual descriptions. The result of the study establishes: from a physiological point of view, the age equivalent to the category of cadets in boxing is characterized by an increase in the intensity and exchange of substances in the body. Morphologically, there is an elongation of the upper and lower limbs and the trunk, creating disharmony in terms of physical appearance and proportionality of the segments. Functional - the capacity of effort is low, this being a result of the insufficient development of the lungs and heart, of the blood vessels.

Thus, the knowledge of these legalities offers the possibility to materialize the essence of the training objectives of boxing athletes at this difficult age, which will allow us to clarify and make remarks in order to obtain high-performance results in boxing.

Keywords: boxers, morphological, functional, psychological characteristics, cadet athletes, difficult period, regularity of development, training principles.

Relevance of the matter approached

Taking into account the particularities of the body of adolescents and focusing on creating favorable conditions in the boxing training process, coaches often use the variable method of actions [4]. First of all, this is explained by the fact that athletes, being subjected to multiple repetitions of the material learned for a lasting trait, get tired quickly after this activity and begin to train with indifference. In this case, the transition from quantitative to qualitative training is partially stopped. Coaches often face students in states such as atony, lack of desire to be active, spiritual indolence, inappropriate behaviour and more. Also, the effectiveness of the training process is closely related to the extent to which the anatomical and physiological features of children and adolescents, and the periods of

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development, are taken into account, which are characterized by greater receptivity to the influence of certain factors, periods of increased sensitivity and the body's low resistance. Knowledge of the morpho-functional peculiarities of the body of boxing athletes is necessary for determining the effective methods of training motor activities during training hours, for processing methods of training motor skills, developing motor qualities, for determining the content of sports work and health training [1, 6, 12, 14]. In the same sense, the knowledge of the anatomical-physiological particularities of the child's body positively influences the rational organization of work in the process of training activity and the optimization of effort [5, 8, 11].

The purpose of this study is related to the characterization of the morpho-functional features of the boxing athletes' bodies in the cadet category (age category that coincides with the difficult age). Being difficult, this age creates a series of problems in the process of training athletes, and, in all cases, it is necessary to find the scientifically, methodologically, psychologically reasoned and deciphered solutions in order to alleviate critical situations.

The objectives by which the achievement of the goal was proposed reveal the theoretical study of the respective subject (the morpho-functional particularities of the bodies of boxing athletes in the cadet category) by examining the specialized scientific literature; arguing the age period on the positions of the disciplines: anatomical-physiological, medical-biological, psychological-pedagogical; identifying the possibilities to remedy the difficult situations that appeared based on the behavior of boxing athletes in the cadet category.

Research **methods** included: analysis and argumentation; case study; synthesis of information; textual descriptions.

As a **result of the** study, it was established that middle school age (adolescence, equivalent to the cadet category) is characterized as a "difficult age" (in psychology it is referred to as the third "critical period") [4, 7, 10]. Girls aged 12-15 and boys aged 13-16 are considered adolescents. Thus, for girls, adolescence ends 1 year earlier (taking into account puberty) than for boys, but for some others, it lasts on average 3 years [4, 7].

During this period, the activity of all the physiological systems of the organism is subjected to rapid reforms [2, 8, 15]. The rapidity of age changes, which occur in adolescents, the essential differences in neuro-psychological characteristics, the specific times of qualitative movements in the activity of physiological systems, etc., all these moments make the instructive-educational and training work difficult and complicated.

From a physiological point of view, adolescence is characterized by an increased intensity of growth and exchange of substances in the body, increased oxygen consumption, a sudden increase in the activity of glands with internal secretion, and it is called puberty [3, 4, 8].

From the age of 11-12, girls slightly outgrow (by intensity) the boys, at 13-14 the growth becomes uniform, but at the age of 14-15 boys outgrow girls, and this growing excess is maintained throughout life [1, 9, 11].

The lower limbs grow most intensely, which is why long, thin legs are characteristic for teenagers. As the height increases, so does the body mass, but the increase in mass lags a little behind the maximum size of the increase. This is why adolescents have a weak (wiry) and stretched appearance [2, 7, 10, 13]. These characteristics for a boxer athlete are unrecognizable, but as soon as this period ends, the growth process (which, in turn, will condition the training process) will return to normal.

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Considering the delay in the development of muscle tissue compared to the growth of the skeleton (even in favorable training conditions), various disorders of posture and deformities of the spine may occur [2, 9, 10], which, unfortunately, can be found in the world of boxing to this day.

In some works [1, 5, 6, 14] age norms of most functional tests are elaborated and their dependence on anthropometric indices is studied.

Adolescence requires a careful and differentiated attitude in the dosage of physical effort [3, 7, 9] so that the symptoms of overload do not appear, but, in parallel, the necessary training is provided to the cardiovascular system, which is subject to radical changes.

The heart grows intensely, its annual volume increases by about 25%. Thus, the rapid increase and increase of body mass that requires intense blood supply and high oxygen supply, are ensured due to the volume of the heart and increased indices of its functional activity [2, 9, 11]. Blood pressure rises slightly and varies between +110-125 mm c / hg. Heart rate decreases from 85-90 beats/minute at the age of 11, to 70 beats/minute at the age of14-15 [3, 4, 7].

The respiratory system, which develops very intensely, also undergoes essential changes. This fact, being determined as a ***legitimacy*** characteristic of ontogenesis [5, 6, 9], is due to the intensive development of skeletal muscles at the age of 12-16 [3, 6]. During this period, the amplitude of respiratory movements increases from 230 ml. current volume at the age of 11 to 350 ml. at the age of 15, the frequency of breathing decreases from 22 to 18 breaths/minute on average. It becomes sharper and deeper.

With age, the vital volume of the lungs changes [5, 6, 14], which is characteristic of adolescence. For boys, the vital volume of the lungs (VVP) increases from 1900-2000 ml. at the age of 11 up to 2600-2700 ml. at the age of 15, and for girls from 1800-1900 ml. up to 2500-2600 ml. [6, 14].

Taking into account all the psychological and physiological changes that occur in the athlete's body, the training process acquires an extraordinary character, being very complicated, especially at the age of adolescence.

In modern boxing, the athlete goes through several stages of development, stages characterized by a series of peculiarities, which influence the way of training and coaching. The stage of the initial training specialization corresponds to the age of 10-12 and is dominated by the intense participation of the athlete in the training process. At this stage, efforts are made to initiate the future champion in the process of intellectual and physical training. For the first time, he becomes aware of his own possibilities and the competition of colleagues, a special emphasis is placed on the process of assimilating a wide range of knowledge, on physical and harmonious development, on acquiring a wide system of motor skills, and is considered a part of the development cycle.

From a motor point of view, one can easily act for the rapid development of speed, aerobic endurance and coordination skills, through exercises with objects, with a partner, in a group, at different signals and precise tasks. It is possible to act on the coordination of the movements with the respiratory act through deep breathing exercises. It intervenes in the development of motor skills and physical training with the help of games, competitions, with medium and submaximal intensities, with average duration and number of repetitions (neither too long, nor too short) [4, 11, 12].

From a morphological point of view, there is an elongation of the upper and lower limbs and the trunk, creating disharmony in terms of physical appearance and proportionality of the segments. As the bone structure is close to that of adults, but the

ossification process has not yet ended, there is a danger of deficiencies but also a predisposition to injuries (fractures). The muscles are not strong enough, they grow in length, and because of this the muscle tone is low, which allows the installation of the flat foot. Delaying the growth of the rib cage prevents the development of internal organs and a difficult adaptation to long-term and high-intensity efforts [2, 8, 15].

From a functional point of view, the capacity for effort is low, this being a result of the insufficient development of the lungs and heart, of the blood vessels, which require an increased blood pressure achieved by a greater effort of the heart and respiratory system, which is not yet well developed. The lungs are less resistant to exertion and prone to colds and diseases, there is a process of maturation and "deepening" of nerve processes, as a consequence of increasing the number of connections and convolutions. However, in the nervous system, excitability is increased in relation to inhibition, young athletes are restless, sometimes they become impulsive and susceptible, there are the greatest despairs in terms of morphology, function, psychology and even motor [5, 8, 11].

Psychically, it is the age with the most intense feelings materialized in the desire to assert oneself, confidence in one's own possibilities, adverse reactions to the parents' desires, impudence and stubbornness. Thinking becomes abstract, based on analysis, synthesis, comparison, generalization. The capacity for restraint increases and the spirit of observation and the critical one develops. Self-concern arises, arousing interest in one's own person, care and cleanliness, and especially, shocking clothing [3, 8, 10, 17].

In terms of motricity, there is also an improvement in body control due to the acquisition of a large number of basic motor skills, utilitarian-applicative and specific to boxing [1, 10, 13]. Therefore, it is necessary to interpret motor activity as a multilateral process that develops and perfects the psychophysical organization in accordance with the goals and needs of the training form (in the case of the present study, in boxing).

Based on the legitimacy of the development, depending on age, on the motor functions in children, the age of 1l-14 is appreciated as the most favorable for the directed improvement of the locomotor system. At this age, the interest in sports activities is higher. This conclusion is formulated by the hypothesis that links the favorable periods with the periods of the most essential particularities of the growth and development of the organism in children.

The effectiveness of boxing is greater during periods of spontaneous development of appropriate physical qualities. But sometimes increased blood pressure and tachycardia at rest predominate, chronic overload of the heart is often discovered [6, 14].

For example, strength, as a consequence of increasing more in length than in thickness, is also poorly developed, which requires a training program aimed at developing both the dynamic and static strength of large muscle groups [3, 16]. Therefore, at the beginning of training, adolescents must develop strength in general physical development, and then, towards the end of puberty, use specific exercises for the development of strength itself and the entire arsenal of movements specific to boxing. The rapid development of motor functions at this age is closely related to the maturation of the motor (kinesthetic) analyzer [5, 9, 13].

Thus, it is worth mentioning that the training process must be organized and carried out in close connection and correspondence to the age peculiarities of the athletes.

In **conclusion,** knowledge about these legitimacies offers the possibility to materialize the essence of the training objectives of boxing athletes at this difficult age, and which allow a series of clarifications in order to obtain the necessary results [2, 15, 17].

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At the same time, in the series of ideas presented, all bio-psycho-motor qualities are in a special need to be developed at this age: strength, speed, suppleness, skill, endurance, etc. This period is also one of the most favorable to develop and educate the coordination skills of the movements, which can positively influence the whole process of preparation and training of cadet boxers, orienting them towards new performances.

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