

# A mechanism for increasing the strength of young boxers

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**Annotation.** The study examines the organization of the training process with the use of specially selected exercises for the development of speed-strength abilities in novice boxers.

**Abstract.** The study examined the organization of the training process with the use of specially selected exercises for the development of speed-strength abilities in boxers with the features of boxing techniques

**Keywords:** exercise, ability, impact, explosive force, muscle mass, musculoskeletal system.

Boxing, with its variable and conflicting nature of the relationship between rivals in battle, high emotional tension and a diverse impact on the body of athletes, is one of the most difficult types of martial arts. One of the main criteria of modern refereeing is the application of precise and accentuated blows throughout the entire match, so the development of speed and strength abilities has become a priority in competitive activities. The ever-increasing competition in the sports arena places ever higher demands on the level of development of physical qualities of boxers. Speed and strength abilities are the basis that determines the level of physical fitness of a boxer. Their insufficient development significantly increases the time required for a boxer to develop special skills in mastering boxing techniques and reduces the effectiveness of their use in a competitive match. A boxer with undeveloped speed and strength abilities with a lack of time in a fight will be late to perform attacking and defensive techniques, while losing the necessary power and intensity of actions, which will inevitably affect the effectiveness of the fight.

The central problem of training the physical qualities of novice boxers is the optimal combination of speed and strength characteristics of movement in exercises, so that the possible power of externally manifested strength is achieved with the priority of speed of movement. High demands are placed on the physical qualities, moral, strong-willed and technical and tactical training of a boxer. At the same time, physical fitness is of the utmost importance for a boxer. This is especially true for the method of developing speed and strength abilities, which remain leading in boxing [4].

In the training process, there are a number of factors that affect the development of speed and strength abilities in boxing.

Speed-strength abilities are characterized by unsaturated muscle tension, which is manifested with the necessary, often maximum power in exercises performed at a significant speed, but not reaching, as a rule, the maximum value. They manifest themselves in motor actions, in which, along with significant muscle strength, speed of movement is also required (for example, pushing off in the long and high jumps from a standstill and from a run-up, the final effort when throwing sports equipment, etc.). At the same time, the more significant the external load that the athlete overcomes (for example, when lifting a barbell on the chest), the greater the role of the power component, and with less weight (for example, when throwing a javelin), the importance of the speed component increases. Speed and power abilities include: 1) fast power; 2) explosive power.

Fast strength is characterized by unsaturated muscle tension, which is manifested in exercises that are performed at a significant speed that does not reach the limit value. It manifests itself when applying tactical punches and feints to boxers, as well as in false movements, instant defenses, and multi-hit series.

Speed and strength abilities depend approximately equally on both hereditary and environmental factors. They manifest themselves not by themselves, but through some kind of motor activity. At the same time, the manifestation of power abilities is influenced by various factors, the contribution of which in each particular case varies depending on specific motor actions and the conditions for their implementation, the type of power abilities, age, gender and individual characteristics of a person. To date, experts identify the following factors that affect the manifestation of power abilities: muscle, central nervous, personal-mental,

biomechanical, biochemical, physiological factors, as well as various environmental conditions in which motor activity is carried out[5].

Muscle factors include: contractile properties of muscles that depend on the ratio of white (relatively rapidly contracting) and red (relatively slowly contracting) muscle fibers; the activity of muscle contraction enzymes; the power of anaerobic energy supply mechanisms for muscle work; physiological cross-section and muscle mass; the quality of intermuscular coordination.

Muscle contractility, along with the anatomical structure of the muscles and their physiological cross-section, is determined by the composition of muscle fibers, that is, the ratio of different types of muscle fibers within the muscles.

The ratio of slow and fast fibers in the muscles of individuals is a genetically determined characteristic and changes slightly during training, mainly due to the transformation of transition fibers into slow or fast ones. At the same time, as a result of adaptation to speed and strength training, slow muscle fibers can acquire some of the properties of fast fibers. Fast muscle fibers can acquire a number of properties of slow fibers as a result of endurance training.

The essence of central nervous factors is the intensity (frequency) of effector impulses sent to the muscles, the coordination of their contractions and relaxation, and the trophic influence of the central nervous system on their functions.

The readiness of a person to show muscle effort depends on personal and psychological factors. They include motivational and volitional components, as well as emotional processes that contribute to the manifestation of maximum or intense and prolonged muscle tension. Biomechanical factors (the location of the body and its parts in space, the strength of the links of the musculoskeletal system, the size of the displaced masses, etc.) have a certain influence on the manifestation of strength abilities.), biochemical (hormonal) and physiological factors-features of the functioning of peripheral and central blood circulation, respiration, etc.

Hereditary prerequisites in themselves do not guarantee sufficient development of speed and strength abilities. Systematic physical exercises are a prerequisite. As a result of systematic and purposeful use of speed-strength exercises, significant physiological changes occur in fast muscle fibers, their thickness increases, and the content of contractile proteins actin and myosin, the main energy source of myoglobin, increases[1].

Exercises - as a means of developing speed and strength abilities in novice boxers:

The correct choice of means for developing strength based on the criteria for compliance with a specialized exercise is in itself a significant guarantee of training success. Means of general strength training: various physical exercises with resistances that allow you to set the strength load, both on the entire muscle system, and selectively on individual muscle groups. Means of versatile targeted strength training are resistance exercises that allow you to influence the muscles that carry the main or auxiliary load in a specialized exercise. Means of special strength training: exercises that allow you to train the strength of the muscles that carry the main load, which are an effective means of special strength development.

The first category includes exercises that are performed in compliance with all the rules of the competition. In general, the competitive period in this sport is an integral stage of preparation, as they serve as a good indicator of errors present in the preparation of an athlete.

The second type includes such exercises that allow you to develop muscle strength in close relationship with other leading motor qualities.

Still others allow local development of the strength of individual muscle groups in close relationship with another leading motor quality in accordance with the internal structure of a sports exercise, when it is methodically impossible to maintain its external structure.

An integral part of the training process is exercises with special boxing equipment that develop the necessary physical qualities and improve technical skills

Skipping rope exercises: This type of exercise is one of the main ones when training boxers. Long jumps and skipping rope contribute to the development of "explosive" leg strength, strengthen internal organs, develop coordination, clarity of movement. Exercises with a skipping rope are used in the course of each training session, especially specialized ones, the duration of which is from 3 to 15 minutes.

Exercises with a bag develop the ability to correctly hold the striking surface of the hand when hitting, use muscle forces efficiently in blows at different distances, calculate the force of the blow, especially when applying several blows quickly. The desire to deal as many strong blows as possible in a certain period of time contributes to the development of special endurance.

Using exercises with a bag, the boxer improves his skills in striking while moving forward and backward, develops a sense of distance. They usually start with single punches, then apply two consecutive punches in different combinations, and finally, a series with separate accentuated punches. Various shaped bags are used for classes. Universal boxing bag is convenient for applying all types of punches

Exercises with a wall pillow: They are used in classes most often with a group of novice boxers. This projectile is mainly used for direct strikes.

The fixed and flat surface of the projectile makes it easier to calculate the length of impacts. The wall pillow is hit with your hands - from a place, with a step forward and to the sides.

Exercises with a ball on elastic bands (pinchball): Rubbers are attached to the ball; one of them is attached with the free end to the bracket at the top, and the other-at the same distance-to the floor, as a result of which the ball can vibrate horizontally. Hitting the ball causes it to move back and forth.

Rhythmic movements of the ball force the boxer to maintain the pace, strike with a certain force and frequency. These exercises help to develop a sense of distance, accuracy and speed of striking, orientation and coordination, and they can also be used to develop back and side slants (for example, by hitting the ball, giving it a sufficient range of motion, making a slope with the torso, and then hitting the ball again).

Depending on the tasks to be solved in the development of strength abilities, the method involves the use of various isometric stresses. In the case when the task is to develop maximum muscle strength, apply isometric stresses of 80-90% of the maximum duration of 4-6 seconds and 100% – 1-2 seconds. If the task is to develop overall strength, use isometric stresses of 60-80% of the maximum duration of 10-12 seconds in each repetition. Usually, during training, 3-4 exercises are performed for 5-6 repetitions of each, from the breath between exercises for 2 minutes.

When cultivating maximum strength, isometric stresses should be developed gradually. After performing isometric exercises, it is necessary to perform relaxation exercises. The training session is held for 10-15 minutes.

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