

Development of muscle strength in physical education classes

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Abstract: In sports, it is impossible to perform movements using only one muscle. Many muscles or muscle groups are involved in solving any movement problem. The potential base of strength consists mainly of cross-sectional muscle tissue, muscle size, muscle structure and intra-muscular coordination. This also means that the nervous system focuses on the use of muscles to solve specific movement tasks. This article provides information about ways to develop the strength of different groups of muscles.

Key words: physical education, exercises, muscles, skeletal muscles, tendons, bones, elbow, step muscles.

A muscle is an anatomical tissue, an organ of the human body that contracts under the influence of nerve impulses, consisting of transverse or smooth muscle tissue. Skeletal muscles - skeletal muscles - form separate bundles and are surrounded by a thin membrane of connective tissue. Muscles attach to bones through ligaments and provide human movement. A trainer, physical education teacher or athlete knows well the location of individual muscle groups and the actions performed with them. Therefore, they better understand the essence and content of training programs, independently choose the necessary exercises for a set of exercises or independently develop the programs of these exercises. Neck. The chest - shoulder-scapular muscles are located on the front and sides of the neck and play a major role in lifting the chest when turning and bending the head. The quadriceps muscles are located inside the neck and help move the spine and lift the chest when breathing. Arms. The deltoid muscles cover the shoulder girdle.

It consists of three bundles of muscles: front, middle and back; each of them helps to move the arms to the side. The biceps brachii is located on the front of the arm above the elbow and bends the arm at the elbow joint. The triceps muscle of the shoulder is located on the back of the arm above the elbow. It bends the arm at the elbow joints. The muscles that bend the fingers and write are moved by the muscles in the shoulder girdle. The muscles on the inside of the shoulder bend the fingers, the muscles on the outside write. Chest. The pectoralis major muscle is located on the surface of the chest. Moves the hand along the body. The serrated muscles are located on the sides of the chest. It helps in turning the ribs towards the spine. The intercostal muscles are located between the ribs and help with breathing.

Belly. There are several layers of abdominal muscles that form the abdominal wall. The hamstrings divide these muscles into four parts. The abdominal muscles help straighten the body. The external sickle muscles are located on the side of the abdomen. When it contracts unilaterally, the body rotates, and when it contracts bilaterally, it bends.

Back. The trapezius muscle is located on the back of the chest and neck. Raises and lowers the ribs, brings them to the spine, pulls the head back and bends it to the side in a unilateral contraction. Expanded muscles are located on the back of the chest. Moves the shoulder towards the body and pulls the arm back and forth. The long muscles are located along the spine. He bends and turns the body in all directions.

Legs. The gluteal muscles move the legs at the hip joint and straighten the bent forward body. The quadriceps muscle is located in front of the thigh. He bends his knees. It bends and rotates the hip at the hip joints. The biceps muscle is located on the back of the thigh. Bends the knees and flexes and rotates the hip at the hip joints. The calf muscles are located above the knee. Assists in plantar flexion and flexion of the knee joints in the leg. The flounder muscles flex the sole of the foot, located inside the knee. This interaction of the muscles and muscle groups in motion is called intermuscular coordination. It is always related to a certain type of movement and does not pass from one movement to another. Antagonist muscles work in two opposite directions at the same time. Synergistic muscles perform a specific action in cooperation. Synergists and antagonists interact. Lying on the back in speed and strength, the arm is straightened and high resistance is overcome, thus the number of movements in the capabilities of the triceps and muscle unit, working together in simultaneous pulses, is accelerated to the maximum. In a series of impulses and when the contraction starts, the blocking signal comes, and the muscle tissue contracts without any control. Signal blocks in the motor units are associated with the antagonistic units in the movement, so the movement is performed without any loss of strength, without any obstacles. In simple lifting of the barbell, there is an initial burst of muscle activity, because the synergist muscle is shortened, and the antagonist muscle is weakened. This leads to acceleration of the movement of arms and legs. Then comes a quiet period. During this period, due to the contraction of the antagonist, the movement of the arms and legs slows down. At the end of the movement, the strengthening of the muscle-antagonist should stop this movement. The advantage of stretched muscles is that they are slightly stronger in the resting state (about 15% of their length coordination) and are able to develop greater strength than this initial state. On the other hand, they perform movements with a large amplitude. This provides a longer path of acceleration and an opportunity to use the available power potential. With a large amplitude, movements can be performed more smoothly, flexibly and smoothly, because the antagonists begin to brake them later. In the training practice of various sports, complex technical movements are divided into separate parts (elements). The purpose of such an action is to develop muscle groups directly involved in the implementation of competition activities through strength training. Strengthening these muscle groups is done using special exercises. The structure of the exercises corresponds to only a part of the structure of the competition exercises. With the help of non-complicated special exercises, the muscles participating in the competition can be strongly strengthened and thereby develop them more effectively. Muscle groups are better adapted and strengthened with the help of special exercises, and require special training techniques for this type of sport. If the muscles are not developed well enough, if their harmony is disturbed, difficulties will arise. For example, in the sport of nuclear throwing, strength is increased in the flexion areas of the arms and legs with the help of special exercises, but the muscles of the body are not paid attention to. This leads to a serious violation of muscle adaptation. If the adaptation between the muscles does not meet the requirements, the sudden movement of the muscles after the inactivity of the initial synergist loses the bioelectric forces, that is, the braking of the forces is earlier. If it is connected, it will have to lose a lot of power. Unlike these, for a high level of adaptation between the muscles, if the movement is performed smoothly, at the same rate, and accurately, forces are saved. It should also be said that the interaction between the muscles, as a rule, improves in the tested movements.

The development of muscle strength is an important component of physical education classes. It contributes to overall physical fitness, enhances performance in various physical activities, and promotes long-term health. Here are some key principles and strategies for the development of muscle strength in physical education classes:

Progressive Resistance Training:

- Implement a progressive resistance training program that gradually increases the resistance or load over time. This could involve using weights, resistance bands, or body weight exercises.
- Start with lighter loads and progressively increase the intensity to avoid overtraining and reduce the risk of injury.

Full Body Workouts:

- Include exercises that target major muscle groups in the body, such as squats, deadlifts, bench presses, and overhead presses.
- Design workouts that address both upper and lower body strength to ensure balanced muscular development.

Proper Technique:

- Emphasize the importance of proper technique to maximize the effectiveness of exercises and reduce the risk of injury.
- Provide demonstrations and hands-on guidance to ensure students understand and execute exercises correctly.

Body Weight Exercises:

- Incorporate body weight exercises like push-ups, pull-ups, lunges, and planks, as they are effective for developing strength and can be performed with minimal equipment.
- Body weight exercises also help improve functional strength and stability.

Circuit Training:

- Introduce circuit training, where students move through a series of exercises with minimal rest between them. This helps improve muscular endurance along with strength.
- Customize circuits to include a mix of resistance exercises and cardiovascular activities.

Flexibility Training:

- Include flexibility exercises and stretches in the program to maintain or improve the range of motion around joints.
- Flexibility training can enhance overall athletic performance and reduce the risk of injuries associated with strength training.

Periodization:

- Implement a periodization model that divides the training program into different phases, each with specific goals and intensity levels.
- This approach helps prevent plateaus, reduces the risk of overtraining, and allows for adequate recovery.

Safety and Supervision:

- Prioritize safety by ensuring that students use proper equipment, warm-up adequately, and have supervision during strength training activities.
- Educate students on the importance of listening to their bodies and avoiding excessive strain.

Incorporate Fun and Variety:

- Keep the classes engaging by incorporating a variety of exercises and activities.
- Use games, challenges, or team-based activities to make strength training enjoyable and foster a positive attitude toward fitness.

Assessment and Progress Tracking:

- Implement regular assessments to track students' progress in strength development.
- Provide feedback and encourage goal setting to motivate students and help them understand the benefits of consistent effort.

By incorporating these principles and strategies into physical education classes, educators can contribute to the holistic development of students' muscle strength, overall fitness, and lifelong health.

Conclusion:

The initial conditions form a high potential basis of strength, but there is no confidence in this, that is, in performing the movement with all its strength. When an athlete uses his potential strength for certain purposes, he realizes that the adaptation between the muscles corresponds to the movement. The difference between the athlete and the non-athlete is that he not only has more muscles, but they also achieve high results in sports. They use their potential forces correctly and achieve success.

The study underscores the significance of incorporating muscle strength development in physical education classes. The empirical evidence supports the positive impact on both physical and psychological aspects of student well-being. Educators should consider a balanced and well-

designed curriculum that integrates resistance training to promote comprehensive physical fitness among students.

Suggestions for Future Research and Implementation: Future research could delve deeper into individualized training programs and explore long-term effects on muscle strength development. Additionally, the article suggests that educators and curriculum designers consider incorporating innovative technologies and gamification to enhance student engagement in strength training activities. This holistic approach ensures a sustained interest in physical education, fostering a lifelong commitment to fitness and well-being.

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