MEANS AND METHODS OF PHYSICAL TRAINING

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Abstract: This article explores various methods and tools used in physical training to enhance strength, endurance, speed, agility, and flexibility. The effectiveness of physical exercises depends on their adaptation to individual characteristics and the application of appropriate training methods. The study highlights different types of exercises, including strength and speed-strength training, endurance-building techniques, and agility-enhancing activities. The article also examines the physiological and biochemical basis of speed and reaction development, focusing on improving reaction time and movement coordination. Additionally, endurance training strategies and the role of balance exercises in volleyball are discussed. The findings emphasize the importance of integrating multiple training methods to develop physical qualities comprehensively.

Keywords: Physical training, strength exercises, endurance, speed development, agility training, reaction time, movement coordination, training methodology, volleyball techniques, physiological basis of speed.

JISMONIY TAYYORGARLIK VOSITALARI VA USULLARI

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Annotatsiya: Ushbu maqolada jismoniy tayyorgarlikda kuch, chidamlilik, tezlik, chaqqonlik va moslashuvchanlikni rivojlantirish uchun qo‘llaniladigan turli usul va vositalar o‘rganiladi. Jismoniy mashqlarning samaradorligi ularning

individual xususiyatlarga moslashuvi va to‘g‘ri mashg‘ulot uslublarini qo‘llash bilan bog‘liq. Tadqiqotda kuch va tezlik-quvvat mashqlari, chidamlilikni oshirish usullari hamda chaqqonlikni rivojlantirish mashqlari tahlil qilinadi. Shuningdek, maqolada tezlik va reaktsiya rivojlanishining fiziologik va biokimyoviy asoslari ko‘rib chiqilib, reaktsiya vaqtini yaxshilash va harakatlarni muvofiqlashtirish usullari tahlil qilinadi. Bundan tashqari, chidamlilikni rivojlantirish strategiyalari va voleybol o‘yinida muvozanat mashqlarining ahamiyati ham yoritib beriladi. Tadqiqot natijalari jismoniy sifatlarni kompleks rivojlantirish uchun turli mashg‘ulot usullarini integratsiyalash muhimligini ta’kidlaydi.

Kalit so‘zlar: Jismoniy tayyorgarlik, kuch mashqlari, chidamlilik, tezlikni rivojlantirish, chaqqonlik mashqlari, reaktsiya vaqti, harakatlarni muvofiqlashtirish, mashg‘ulot metodikasi, voleybol texnikasi, tezlikning fiziologik asosi.

Different tools can be used to solve physical training tasks: preparatory exercises, active and sports games, educational games and competitions. One of the main conditions is the adaptation of exercises to the individual characteristics of the participants.

Physical exercises for the participants can include the following:

a) strength and speed-strength exercises affecting the development of body, arm, leg muscles;

b) exercises affecting the development of the quality of endurance (speed-endurance, speed-endurance);

c) exercises affecting the speed of movement;

g) exercises affecting the quality of agility;

d) exercises affecting the quality of flexibility;Bu mashqlardan foydalanish texnik va taktik usullarni bajarish sifatiga to‘g‘ridan to‘g‘ri ta’sir etadi.

Methods used in physical training. The following methods are used to train the physical qualities necessary for employees:

1. Steady long runs to build basic endurance.

2. Carrying out work of a variable nature while training special endurance.

3. Repetitive training method. This method is used to develop the qualities of quickness, strength and agility, in which rest intervals should provide an opportunity for the body to fully recover.

4. Intermediate style. This method is mainly used to train speed and endurance. Work and rest are strictly regulated. Rest intervals are usually short.

5. Alternative training methods. The important part of this method is that the effect changes depending on the progress of the exercise, focusing on one goal. This is achieved in different ways in different ways by correctly mastering some indicators of nagruzka (movement speed, volume of work, duration, etc.) In this case, unusual, i.e. increasingly greater demands are placed on the functional capabilities of the organism, and thus opportunities for their development are created. At the same time, changes are made to the dynamic stereotype of acquired skills due to updating the form and conditions of movement.

It is very important to select and develop the exercises given to the students to train their physical qualities according to their youthful characteristics and favorable periods of physical qualities.

Cultivating speed. Speed refers to the execution of certain activities in a short period of time. There are three main forms of speed manifestation:

1. Latent (hidden) time of motor reactions.

2. The speed of certain movements (when the external resistance is small).

3. Frequency of actions.

The forms of manifestation of speed are not related to each other.

The combination of the three indicated forms determines all cases of manifestation of speed. However, the speed of complex-coordinated integrated movements depends not only on the level of speed, but also on other factors. Therefore, the overall movement speed only indirectly expresses the quickness of a person.

A person's speed abilities are completely unique. Only similar actions can transfer directly or indirectly to each other.

Physiological and biochemical basis of speed. The latent time of the reaction consists of five components:

1) occurrence of excitation in the receptor;

2) transmission of excitation to the central nervous system;

3) passage of excitation along nerve paths and formation of an effector signal;

4) transmission of the signal from the central nervous system to the muscle;

5) stimulation of the muscle and emergence of mechanical activity in it.

Movements performed at maximum speed are physiologically different from slower movements. The most important difference between them is that during the performance of movements at maximum speed, it is difficult to form sensory connections: the reflex arc cannot carry impulses. Due to this, it is difficult to perform movements with sufficient accuracy when the speed is too high.

Cultivating normal reaction speed. The speed of the motor reaction is determined by the latent time of response to the effect. Reactions are simple and complex. A normal reaction is to respond to a known signal with a known action.

A large transition of speed (transition to another action) is characteristic of simple reactions: people who quickly come to a decision in some situations come to an idea even faster in other conditions. Practicing a variety of fast-paced exercises improves simple reaction time.

Significantly improving drive response time is a challenging task.

Several methods are used to train normal reaction speed. The most common of these is the method of reacting as quickly as possible in response to a sudden signal or a change in the surrounding situation. This method will quickly show positive results in training sessions with new participants. Unfortunately, after that, the speed of the reaction stabilizes and it becomes much more difficult to improve it.

In cases where the speed of reaction is of great importance, special methods are used to improve it. One of these methods is to gradually improve the speed of reaction under reduced conditions and the subsequent speed of movement.

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Educating the speed of complex reaction. We will dwell on two types of complex reaction, that is, the reaction to a moving object and the reaction of choice.

Let's consider the actions of the player receiving the ball in reaction to the moving object. In this case, the player must:

1) see the ball;

2) estimate the direction of the ball and its flight speed;

3) choosing an action plan to be executed;

4) start implementing this plan. In this case, the latent period of the reaction consists of these four elements. When a moving object suddenly appears, it takes 0.25 seconds to react to this object. - 1 sec. takes time. It was observed in experiments that the main part of this time is spent on the first element, i.e. quickly looking at the ball. The sensor phase itself is very low - 0.05 sec. it takes time. Thus, it is important to be able to see the ball in motion. It is this ability that should be given special attention. For this, exercises on reacting to a moving object are used; training requirements are implemented at the expense of increasing the speed of the object in motion, the sudden appearance of the object, and reducing the distance between the athlete and the object. Action games with a small ball (tennis ball) are very useful. If the object (including the ball in play) is seen before it starts to move, the reaction time is greatly reduced. It is very important to be able to

determine the direction and speed of the ball according to the actions of the player hitting the ball.

The accuracy of reacting to a moving object is improved in parallel with increasing the speed of this reaction. Only the first few exercises should be devoted to the development of reaction accuracy. It is necessary to explain to the participants that it is necessary to move faster than the moving object.

A selection reaction is concerned with choosing between possible motor responses in response to changes in the opponent's behavior or environmental conditions. The complexity of the selection reaction depends on the diversity of the possibilities of changing the conditions, for example, on the different actions of the opponent. The demand for complex reactions of volleyball players is extremely high.

The pedagogical principle of "complex reaction education" is followed, and the number of possible changes in conditions gradually increases. For example, one is taught how to defend oneself in response to a pre-arranged blow; then the practitioner is advised to answer in one of two possible ways, then one of three ways, one of four ways, and so on. Gradually, this exercise is brought closer to real conditions.

Methodology of training quickness of movement.

In the process of training quickness of movement, it is necessary to comprehensively increase the functional capabilities that determine the characteristics of speed in various types of movement activity of the organism (in direct practical and sports activities). The maximum speed that an athlete can demonstrate in a certain activity depends not only on how quickly this person has developed, but also on a number of other factors - dynamic strength, agility, level of mastery of technique, etc. Therefore, the training of movement speed should be carried out in close connection with the training of other physical qualities and the improvement of technique.

Exercises that can be performed at maximum speed (usually called speed exercises) are used as a means of training speed. They must meet the following requirements:

1) the technique should be such that it allows you to perform the exercise very quickly;

2) during the exercises, the main volitional effort should be mastered as well as possible so that it is focused not on the method of performing the exercise, but on the speed of their performance;

3) the duration of the exercises should not lead to a decrease in speed due to fatigue at the end of their performance.

Among the methods of training speed, the method of repeated training is widely used. The main tendency is to try to increase your maximum speed during training. All the features of the method (distance length, performance intensity, rest intervals, number of repetitions, etc.) are subordinated to it. The length of the distance (or the duration of the exercise) is chosen so that the speed of movement (intensity of work) does not decrease at the end of each exercise. Actions are performed at maximum speed; practitioners strive to show the best result for themselves every time. Rest intervals between training goals should be large enough to ensure a relatively full recovery of strength. Movement speed should not be allowed to decrease significantly between repetitions.

When high-speed exercise is repeated, fatigue sets in relatively quickly because there are not enough rest intervals for full recovery, which is externally expressed as a decrease in speed. A decrease in speed is the first signal to stop training speed in this exercise: repeating the exercise after that will only help to increase endurance.

It is very important to use the game and, especially, the competition method in training for the manifestation of speed. Competitions usually create an upbeat spirit, forcing a person to work harder - which in many cases leads to improved sports performance.

The main task of working with new athletes is not to specialize the athlete in a particular exercise, but to use other tools and change them in many ways to achieve relatively high results. In this case, agility exercises should be used not in a standard way, but in changing conditions and forms. In particular, active games and sports, outdoor exercise, etc. are especially useful.

In one movement, the speed can be increased mainly in two ways: 1) by increasing the maximum speed, 2) by increasing the maximum force. Experience shows that it is very difficult to significantly increase the maximum speed, and the increase in power is somewhat easier. Therefore, in practice, strength-enhancing exercises are widely used to increase the level of speed. The greater the resistance that must be overcome during movement, the higher the effectiveness of these exercises.

In the process of strength training aimed at increasing the speed of movements, two main tasks are solved:

1) increase the level of maximum muscle strength (strength abilities themselves);

2) education of the ability to show maximum power (speed-power abilities) in the conditions of rapid movements.

Speed-strength training should be based on the strength training itself and used together with them.

It is used in the development of the quality of speed sample exercises

1. Accelerated running from different initial positions (standing, sitting, lying down) according to a visual signal.

2. Running with a quick change of direction.

3. Imitation by quickly changing some movement methods.

4. Rapid transition from one type of action to another.

5. Relays requiring speed (Figures 38, 39, 40, 41).

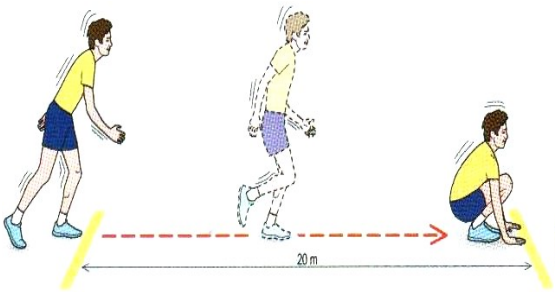
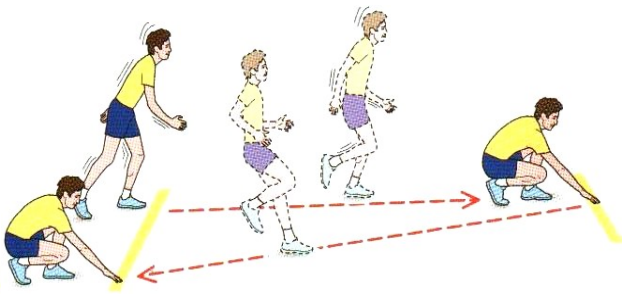


Figure 38



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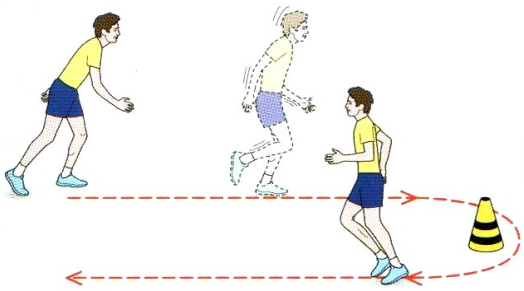

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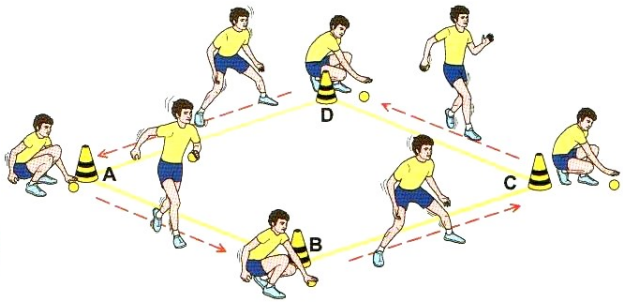


Figure 41.

Cultivating the quality of strength. Overcoming or resisting external resistance by means of muscular strength defines the quality of strength. Muscle strength is manifested as:

1) without changing their length (static, isometric);

2) reducing their length (overcoming resistance, myometric);

3) stretching (flexible, plyometric).

Muscular forces that overcome resistance and give way to them are collectively referred to as "dynamic mode". When comparing the quality of strength, the following types of strength are distinguished:

1. Relative strength. Relative strength is the amount of force per kilogram of its own weight.

2. Absolute power. The force shown in a movement is understood regardless of its weight.

3. Quick power (explosive power). The manifestation of a large amount of power in a short period of time is understood.

Resistance exercises are the main tool for developing strength. These tools are divided into two groups.

1. Exercises to overcome external resistance. Usually, the following are used as external resistance: the weight of objects; partner's resistance; resistance of elastic materials; external environment resistance;

2. Bodyweight exercises.

Weight-bearing exercises are very convenient and can work both small and large muscle groups. These exercises are also easy to moderate. Since the initial position plays a leading role in weight-bearing exercises, it is necessary to pay special attention to it.

In exercises performed with stretchy and elastic materials (spring expanders, rubber bands), tension increases toward the end of the movement.

Bodyweight exercises are usually done while hanging and leaning.

In addition to the above-mentioned classification of strength exercises, it is also necessary to take into account their division into static and dynamic, strength and speed-strength, resistance-overcoming and relaxing exercises according to the degree of selective impact (general and relatively specific effect), as well as according to the mode of muscle activity.

If the exerciser's strength is not regularly challenged, muscle strength may not increase or even decrease.

Maximum power can be generated in different ways:

1. Overcoming weights (resistances) that are not close to the limit many times at the limit level;

2. Increasing external resistance to the limit level (in dynamic and static activities);

3. Overcome obstacles with limitless speed.

It is used to develop the quality of strength sample exercises.

1. Exercises for bending the palms and paws, overcoming the resistance of the partner (or with dumbbells).

2. Toss balls of different weights. The main focus is on hand movements.

3. Exercises of bending and writing while leaning on the hands, clapping off the ground

4. Performing exercises similar in structure to technical methods that go with stretching shock-absorbing equipment.

5. Rotational body exercises with weights (barbell, dumbbells, bags filled with sand).

6. Sit-ups with a barbell on the chest.

7. Jumps with a barbell on the shoulders. The weight is 50% of the maximum.

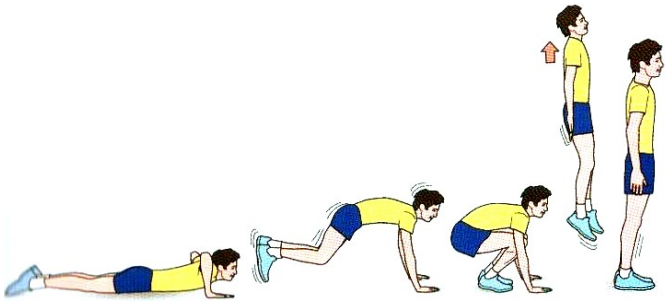
8. Jumping with a rope.

9. Touching or picking up an object hanging from the place and running up.

10 Long jumps on one and two legs.

11. Many jumps over obstacles.

12. Jumps to depth (pictures 42,43,44,45,46,47).



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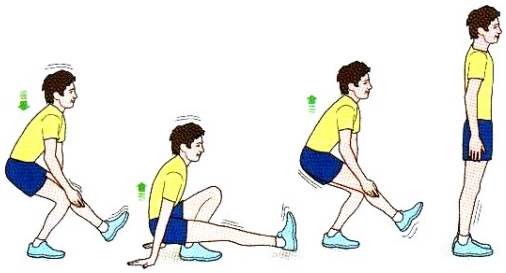

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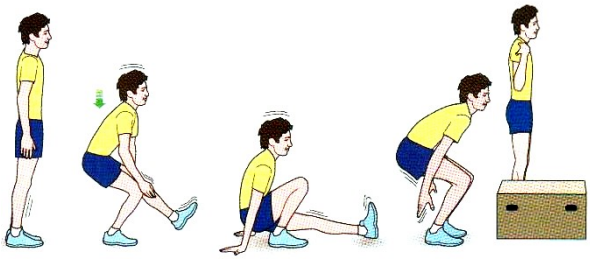

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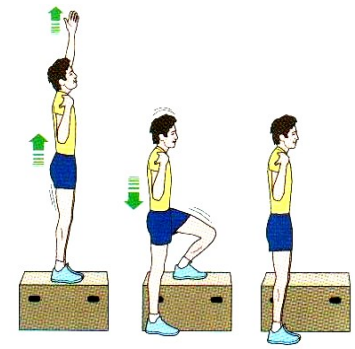

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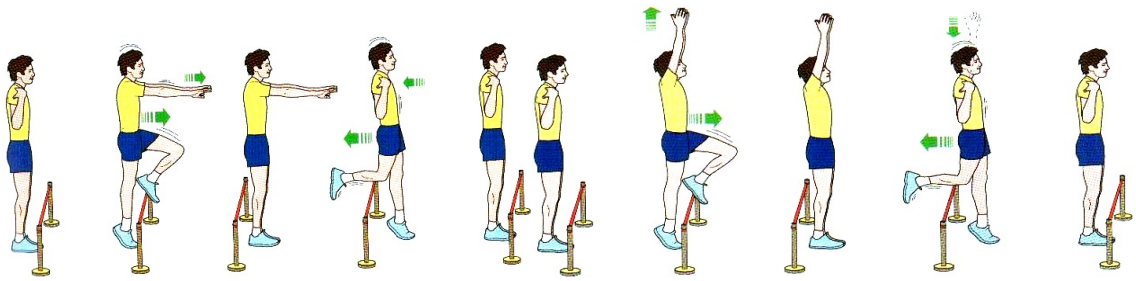


Figure 46. Figure 47.

Cultivating agility. Agility does not have a single definition as it is determined by several indicators.

Any movement is aimed at solving a specific task: jump as high as possible; hitting the ball; passing the ball and others. The complexity of the movement task is determined by the harmony of successive actions. Coordination complexity of movements is the first criterion of agility.

If the action is sufficiently accurate, the action task is executed. Accuracy of movement is the second measure of agility.

If a trainee can quickly perform new movements for him/her, he/she is considered more agile than a trainee who took longer to master these movements. Therefore, the time it takes to master actions can be one of the indicators of agility. Taking into account the above, agility can be called the ability to quickly learn new actions, to quickly rebuild movement activities in accordance with the requirements of suddenly changing conditions.

Agility training consists in training the ability to master coordination complex movements, to rebuild movement activities in accordance with the requirements of suddenly changed conditions. In this case, it is important to selectively improve balance, alternating tension and relaxation movements.

The main way to develop agility is to learn a new variety of movement skills and abilities. This effectively affects the increase in motion reserves and the functionality of the motion analyzer. It is recommended that the training of new movements be continuous. Because if the participants are not regularly trained in new movements, the ability to learn them will decrease.

Exercises related to immediate response to the effects of sudden changes in conditions are used to train agility as the ability to quickly and purposefully reconstruct movement activities. Exercises aimed at developing agility lead to fatigue relatively quickly. Meanwhile, performing these exercises requires

extremely precise muscle awareness and is less effective when fatigue occurs. That's why when training agility, rest intervals should be enough for full recovery.

In volleyball, special attention is paid to balance and training.

Balance means the ability to keep the body in a stable position. Balance in volleyball can be static (almost stationary balance) and dynamic (balance during movement). The more improved the balance function, the faster it recovers the balance, the smaller the oscillation amplitude.

Balance can be cultivated in two main ways. The first is the application of balance exercises, that is, exercises and situations in conditions that make it difficult to maintain balance. The second way is based on the selective improvement of analyzers that ensure that balance (vestibular and motor balance) is not lost. Exercises performed with straight line and angular accelerations are used to improve vestibular function.

It is used to develop the quality of agility sample exercises

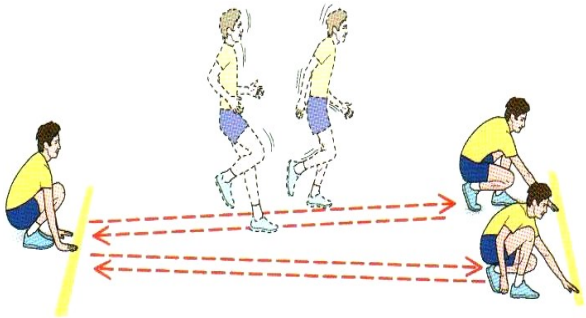
1. Single and multiple back and forth circular motions. The same exercise after performing some technical methods.

2. One and many jumps from a standing position and running, turning 180˚, 270˚, 380˚. Performing various technical movements with twists.

3. Movements between and over various objects.

4. Jumping from the gymnastic bridge and performing various movements in the air.

5. Responding to various signals and influences with specific actions. Signals and effects are gradually increased (Figures 48, 49).



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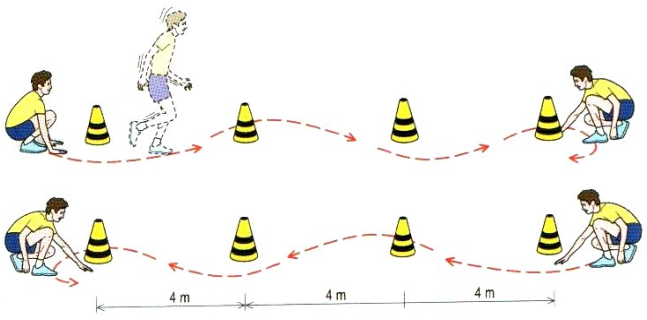

Figure 49.

Cultivating endurance

There are several types of fatigue depending on the nature of activities. These include mental, sensory (related to the load on the sense organs), emotional and physical fatigue. For sports, physical fatigue caused by muscle activity is more important.

The main measure of endurance is the time that shows how long a person can maintain a specified load intensity in their activity. Durability is measured by direct and indirect methods. In the direct measurement method, subjects are asked to perform a task (for example, run at a given speed) and how long the task is completed in a given period of time (before the speed begins to decrease) is determined.

Human activity is diverse; the nature and mechanisms of fatigue are also different in different cases. General fatigue is more common in sports.

Exercises that are identical in form can be performed at different intensities, accordingly, the time limit for performing these exercises is from a few seconds to several hours. In these cases, the fatigue mechanisms are also different. Therefore, physical exercises are classified according to their intensity.

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