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## MEANS OF PHYSICAL EDUCATION. CONTENT AND FORM OF PHYSICAL EXERCISES

*In the practice of physical education, large number of various physical exercises are used, which differ from each other in both form and content.*

*The content of physical exercise is formed, on the one hand, by all those movements and operations that are included in one or another exercise, and, on the other hand, by those complex and multifaceted processes that occur in the body during exercise. They can be considered in many aspects: psychological, physiological, biomechanical, biochemical, etc.*

*The article defines the influence of the means used during physical exertion on the development of physical qualities of students of higher education institutions. It was found that during the period of distance learning, a sharp decrease in the level of physical fitness of higher education students is observed. In the course of the research, theoretical methods, analysis and generalization of methodological, sports-research and educational-methodical literature were used, the level of development of physical qualities of the participants of the educational process in the conditions of online education was revealed; surveying teachers and students of higher education institutions to find out their motivational priorities in learning and imparting knowledge in the absence of face-to-face educational process.*

*It has been established that distance learning has a negative effect on the development of physical qualities.*

**Key words:** exercises, psychology, biochemistry, structure, technique.

**Дакал Наталія, Анікеєнко Лариса, Білоконь Віталій. Засоби фізичного виховання. Зміст і форма фізичних вправ.** У практиці фізичного виховання використовується велика кількість різноманітних фізичних вправ, які відрізняються один від одного як за формою, так і за змістом.

*Зміст фізичних вправ утворюють, з одного боку, всі ті рухи і операції, які входять в ті чи інші вправи, а з іншого боку, ті складні і багатогранні процеси, які відбуваються в організмі під час виконання вправ. Їх можна розглядати в багатьох аспектах: психологічному, фізіологічному, біомеханічному, біохімічному тощо.*

*В статті визначено вплив засобів які використовуються при фізичному навантаженні на розвиток фізичних якостей студентів закладів вищої освіти. Виявлено, що за період навчання за дистанційною формою спостерігається стрімке зниження рівня фізичної підготовленості в здобувачів вищої освіти. В ході дослідження було використано теоретичні методи, аналіз і узагальнення методологічної, спортивно-дослідницької та навчально-методичної літератури, було виявлено рівень розвитку фізичних якостей учасників освітнього процесу в умовах онлайн навчання; анкетування викладачів та студентів закладів вищої освіти для з'ясування їх мотиваційних пріоритетів в навчанні та наданні знань в умовах відсутності очного навчального процесу.*

*Встановлено, що дистанційне навчання негативно впливає на розвиток фізичних якостей.*

**Ключові слова:** вправи, психологія, біохімія, структура, техніка.

**Formulation of the problem.** In the psychological and pedagogical aspect, physical exercises are considered as voluntary movements that are performed consciously and aimed at achieving a specific result (effect) in accordance with the specific tasks of physical education. Performing physical exercises is closely related to active mental activity aimed at determining the method of action, assessing the conditions for its execution, controlling movements, mobilizing willpower, emotions, and other psychological processes.

According to the physiological impact, physical exercises are characterized by the transition of the body to a higher level of functional activity compared to the state of rest. The range of these changes depends on the specifics of the exercise and can be significant. Pulmonary ventilation, for example, can increase in zo and more times, oxygen consumption - twenty times and more, minute blood volume - ten times and more. Accordingly, the volume and intensity of metabolic, dissimilation and assimilation processes in the body increase.[1]

At the same time, biochemical processes occur in the body, which determine qualitative changes in the body (expressed, for example, in an increase in muscle mass, an increase in the content of creatine phosphate in the muscles, etc.).

Psychological, and biochemical changes in the body occur against the background of biomechanical processes, which are

characterized by the movement of the body and its individual parts in space and relative to each other and determine the form of physical exercises.

**Analysis of literary sources.** The problems of informatization of education are actively dealt with by both domestic and foreign scientists, in particular, Gunko P.[1], Gurevich I. [2], Kozlakova G.[3], Nosko M.[4].

**The form of physical exercise is its internal and external structure.**

The internal structure of physical exercise is characterized by the interaction of those processes that occur in the body during the performance of one or another exercise. When performing, for example, exercises that are different in content, such as running and lifting a barbell, the processes of neuromuscular coordination, the interaction of motor and vegetative functions, as well as the ratio of energy processes (aerobic and anaerobic) will differ significantly.

The external structure of physical exercise is its visible side, which is characterized by the ratio of spatial and dynamic movement parameters.

The form and content of physical exercise are organically interconnected, and the content is the defining and more dynamic side that plays a leading role in relation to the form. To achieve success in the performance of one or another exercise, it is necessary, first, to master its content side, creating the necessary conditions for the development of strength, speed and other motor abilities, the manifestation of which decisively depends on the result of this exercise. As the elements of the content of the exercise change, so does its form. So, for example, by increasing the power, speed of movements or endurance, we influence the amplitude of movements, the ratio of supported and non-supported phases and other features of the exercise form.[2]

For its part, the form affects the content. An imperfect form of physical exercise prevents the maximum detection of functional capabilities, and, on the contrary, a perfect form promotes the most effective realization of physical abilities. It has been proven, for example, that at the same speed of movement on skis, a person who perfectly knows the rational technique of cross-country skiing spends 10-20% less energy than a person in whom this technique is less perfect.

Thus, the content and form of physical exercise are inseparable: they are in a constant dialectical relationship.

**Technique of physical exercises**

In the process of improving physical exercises, there is a search for rational ways of performing motor actions. An important prerequisite in this case is knowledge of the laws on which the so-called exercise technique depends.

**General concepts about the technique of motor actions**

In each arbitrary motor act, there is a motor task and a way in which it will be solved. So, for example, a high jump can be performed from a straight and oblique run, pushing off with the leg closer and further from the bar. By comparing these options with each other, you can find more less effective ways. Those methods of performing a motor action, with the help of which the motor task is solved with greater efficiency, are usually called the technique of physical exercises.

The technique of physical exercises is constantly developing: the usual technique improved, sometimes old ways of performing exercises die out, and new ones are born. This process caused by number of reasons:

- constant growth of requirements for the level of sports results.
- using scientific data that contribute to finding more perfect ways of performing actions.
- production of new, more advanced sports equipment and equipment.

At the same time, at a certain point in time, the technique of performing the exercise remains constant and is characterized by a rational basis of performance inherent in many performers, therefore it was called "standard technique".

The standard technique does not exclude the possibility of individual deviations in some elements of performance, of course, within limits that do not distort the basis of the action. Individualization of the technique is conducted in two directions: a) through typical individualization, when some changes are made within the standard technique according to the peculiarities of the body constitution and physical fitness of a separate group of students; b) through personal individualization, considering the characteristics of each student.

**Components of physical exercise technique.**

The meaning of the movements that are part of the motor action is not the same, therefore it is customary to distinguish the basis of the movement technique, the main (determining) link and details.

The basis of the movement technique is a set of those links and features of the movement structure that are certainly necessary for solving a movement task in a certain way (the sequence of the manifestation of muscle efforts, the main points of coordination of movements in space and time, etc.). The removal of at least one of these components or a violation of the ratio in each set of movements makes it impossible to solve a motor task.

The determining link of the technique is the most important part of the method of solving the motor task. For example, in high jumps from a run — this

push-off, combined with a quick and high swing of the leg; in throws - final effort, when lifting by extension on gymnastic equipment - timely and energetic extension in the hip joints followed by braking of the legs and simultaneous tension of the arm muscles. Performing the movements that make up the determining link usually takes place in a relatively short period of time and requires maximum muscle effort.

Details of the technique are secondary features of motor action that do not disrupt its main mechanism. The details of the technique may be different for different performers and, for the most part, depend on their individual characteristics (for example, differences in the ratio of stride length and frequency in running are due to differences in the length of the limbs; unequal squat depth when lifting a barbell is due to a different degree of development of flexibility and strength abilities, etc.).[4]

Reckless blind copying of the individual technique of famous athletes can negatively affect the results of performing a motor task. In highly qualified athletes, the technique has high stability and, at the same time, flexibility in adapting to performance conditions. For example, when repeating the same motor action under the same conditions, the similarity of their pattern is observed. And in unfavorable conditions (for example, when it is necessary to throw a disc against the wind or run on slippery ground), the

athlete successfully performs this motor task, having previously made corrections in the details of the performance of the motor action, and sometimes even in the basis of the technique.

#### Phases of performing physical exercises

Movements that are part of a motor action (physical exercise) are performed in a certain sequence and can be conventionally divided into three phases: preparatory, main (or main) and final. All three phases are interconnected, flow smoothly and condition each other.

In the preparatory phase, the most favorable conditions are created for performing the movements of the main phase. This is achieved, for example, by performing a series of consecutive movements in the form of running, jumping, or rotating movements, the direction of which approaches the direction of movements in the main phase. But there are motor actions, the preparatory phase of which is associated with movements, the direction of which is opposite to the movement in the main phase. For example, thanks to the swing in throws, support jumps and striking movements, those muscles are stretched, which in the main phase should contract strongly and quickly. The effectiveness of such a preparatory phase lies in the fact that it helps to increase the amplitude of the working movement.

Movements in the main phase are aimed directly at solving the main movement task. From a biodynamic point of view, the most important thing in this phase is rational use of efforts in the right place, direction and at the right time. For example, premature active working movement of the arm during crawling will cause the body to rise above the water and create waves.[3]

In some acyclic movements, there may be not one, but several main phases: for example, in pole vaulting — pushing off and entering the pole, transition to a stop with a turn; in the triple jump from the run - three push-offs.

Movements in the final phase are aimed at the successful completion of the exercise and consist of passive extinction or active inhibition of motor action. For example, running after the finish line, holding movements after releasing objects in throws, raising the head and spreading the legs back and forth at the end of the forward turn in a standing position, etc.

#### Characteristics of movements

All motor actions of a person flow in space and time and are performed with a certain effort, so we can talk about their spatial, temporal, spatial-temporal, dynamic and rhythmic characteristics.

#### Spatial characteristics

Spatial characteristics of physical exercise techniques include body position and the trajectory of movement of body parts.

Body position. During many physical exercises, the body or its individual parts not only move relative to each other, but also maintain a stationary position due to static muscle tension.

The need to distinguish "body position" as an independent component in the technique of exercises is explained by its great importance in the rational organization of movements, which is achieved:

- the correct initial and final position, which is taken before the start or at the end of the movement.
- maintaining the necessary posture during the movement itself.

Along with this, in solving some pedagogical tasks, many initial positions and static poses acquire an independent meaning (for example, handstand, horizontal balance, etc.). The initial position is adopted to create the most favorable conditions for the start of the action. In this regard, there are special requirements for starting positions (sprinters have a low start; boxers, fencers have a combat stance, etc.).

The starting position is a state of "operational rest", in which there are no external movements, but the purposefulness of action is concentrated.

The directionality of the effect of the exercise on the muscle groups, and therefore on the development of the power capabilities of the motor apparatus, also depends significantly on the starting position. For example, when bending and extending the trunk from the "lying arms up" position, the impact on the abdominal muscles will be much greater than from the position of the arm along the torso.[1]

The posture of the body during the exercise should correspond to biomechanical and other natural laws and aesthetic requirements. Thus, a low landing in running on skates and cycling reduces the resistance of the external environment and thereby contributes to faster movement.

A certain position of the head is of essential importance in the technique of performing many exercises related to bending, stretching, and twisting. Many errors in the position of the body or movements are the result of an incorrect position of the head (action of cervical tonic reflexes).

The trajectory of movement is determined by the path taken by the body from the initial to the final position and is measured in linear or angular units. The shape, direction and amplitude are distinguished in the trajectory.

Depending on the shape of the trajectory, movements are divided into rectilinear and curvilinear. Even though the total path of curvilinear movement is greater than the total path of rectilinear movement, the advantage of curvilinear movements is obvious: there is no need to spend additional muscle effort to overcome the state of rest and inertia of movement. A vivid example of this can be the transition from swinging the racket to hitting the ball in tennis.

As an exception, when the motor task requires it (for example, with direct blows in boxing or jabs in fencing), straight line trajectory of movement is used.

The effectiveness of physical exercises depends on the direction of the trajectory of the body, part, or the object. For example, bringing back the arms bent in front of the chest order to stretch the pectoralis major muscles will lose effectiveness if the elbows fall below the level of the shoulders. If the direction of flight of a basketball thrown from a distance six meters is deviated by only four, the ball will not enter the basket.[2]

Amplitude is the range of movement, its magnitude is determined in angular degrees (for example, lifting the leg forward or backward to a certain height), linear measures (for example, a step length of 75 cm) or by agreement (for example, a half-squat).

Movements of a very large amplitude are called predominantly sweeping. Movements with a small distance are small. If the

direction or amplitude of the movement does not correspond to the set motor task, then such movements are called imprecise.[5]

**Conclusions.** Thus, as the analysis of the special scientific and methodological literature in the field of physical education shows. Thus, as the analysis of the special scientific and methodological literature in the field of physical education indicates, our experiment shows a decrease in the level of physical activity of students under conditions of distance education. The results of the study showed that In order to ensure the development of this process in a certain appropriate direction, it is necessary to The systematic application of pedagogical management in the physical education of students of higher education institutions. The systematic application of pedagogical management in physical education of students of higher education institutions and improvement of modern methods and means of physical education, taking into account today's realities. It takes into account today's realities. Furthermore, it is important to increase motivation and interest in physical activity. It is also important to increase motivation and interest in physical activity.

An analysis of literary sources on the research of the above-mentioned topic was carried out and it was determined that the most important task of modern education is the upbringing of a healthy generation, the conscious attitude of the individual to his health and the health of others, the formation of physical, moral and mental health, the perceived need for physical improvement, development of interest and habit for independent physical education and sports, acquisition of knowledge and skills of a healthy lifestyle. The peculiarities of the implementation of health-preserving competence in physical education classes in higher education institutions are revealed. The main implementation problems and ways to solve them have been identified. It has been proven that health-preserving competence is one of the main factors in the process of physical education and the involvement of student youth in physical activity.

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#### FUNCTIONAL CONDITION OF YOUNG SWIMMERS. PSYCHOPHYSICAL INDIKATORS.

*In the problem of studying the implementation of complex motor reactions in conditions of sports activity and their tolerance, along with generally accepted psychological and pedagogical measures, the study of psychophysiological functions is used. The physiological mechanism for the implementation of complex motor functions in health and in pathology has been studied by many authors [1,2,3etc.], mainly in a state of rest. However, there are many controversial issues related to the influence of complex coordination loads, such as swimming, on the mechanisms of implementation of the contractile function in young athletes, even at the initial stages of training. Quantitative assessment of the state of the somatosensory system, which ensures the performance of a special motor function of young athletes, characteristic of a specific type of motor activity, consists in the insufficiency of methodological criteria.*

**Key words:** *problem, training, somatosensory, system, function, athletes.*

**Хіміч Ігор, Парахонько Вадим, Качалов Олександр. Психофізичні показники функціонального стану юних пловців.** У проблемі вивчення реалізації складних рухових реакцій в умовах спортивної діяльності та їх переносимості поряд із загальноприйнятими психолого-педагогічними заходами використовується вивчення психофізіологічних функцій. Фізіологічний механізм реалізації складно-рухових функцій у нормі та за патології вивчався багатьма авторами [1,2,3, та інших.] переважно у стані спокою. Однак існує багато спірних моментів, пов'язаних із впливом складно-координаційних навантажень, яким є плавання, на механізми реалізації скорочувальної функції у юних спортсменів навіть на початкових етапах навчання. Кількісна оцінка стану сомато-сенсорної системи, що забезпечує виконання спеціальної рухової функції молодих спортсменів, характерно конкретного типу рухової активності, полягає у недостатності методологічних