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POSITIVE EFFECT OF SWIMMING ON THE MUSCULOCAL SYSTEM. HEALTH AND THERAPEUTIC SWIMMING AS A METHOD OF PREVENTION FOR POSTURAL DISORDERS AND SCOLIOSIS

Over the last decades of the twentieth century, during the period of the scientific and technological revolution, the conditions and the labor process itself have changed dramatically. Automation of production, development of transport, improvement of living conditions have led to a decrease in physical activity of most people. In the human body, the neuro-reflex connections established by nature and strengthened in the process of hard work began to be disrupted. An urgent problem is the fight against physical inactivity, which arises due to limited mobility in many activities.

Detraining of the motor system and functional systems of the human body, which provide muscular work with energy and plastic resources, creates the preconditions under which unexpected psycho-emotional effects on a person and even not very heavy physical activity cause a strong stress reaction.

Social and medical measures do not give the expected effect in preserving people's health. Therefore, in modern society there is a need to develop one's physical abilities through physical exercise. Physical training increases physical activity, stimulates intellectual processes, promotes health and longevity and is an integral part of a harmonious and fulfilling life.

Swimming is a unique type of physical exercise and is one of the most popular sports, both in our country and abroad. It is one of the most effective means of strengthening human health and physical development, from the first months of life to old age.

Key words: *physical exercises, swimming, health, musculoskeletal system, recreational swimming, medical swimming.*

Дакал Наталія, Качалов Олександр. Позитивний вплив плавання на опорно-руховий апарат. Оздоровче та лікувальне плавання як спосіб профілактики при порушеннях постави та сколіозу. *За останні десятиліття двадцятого століття, в період науково-технічної революції, різко змінилися умови і сам процес праці. Автоматизація виробництва, розвиток транспорту, поліпшення умов життя призвели до зниження рухової активності більшості людей і студенти не є виключенням. В організмі молоді стали порушуватися закладені природою і зміцнені в процесі напруженої праці нервово-рефлекторні зв'язки. Актуальною проблемою є боротьба з гіподинамією, яка виникає через обмеження рухливості в багатьох видах діяльності.*

Детренованість рухової системи і функціональних систем організму, що забезпечують м'язову роботу енергетичними і пластичними ресурсами, створює передумови, за яких несподівані психоемоційні впливи на молоду людину і навіть не дуже важкі фізичні навантаження викликають сильну стресову реакцію.

Соціальні та медичні заходи не дають очікуваного ефекту у збереженні здоров'я. Тому в сучасному суспільстві існує потреба розвивати свої фізичні здібності за допомогою фізичних вправ. Фізична підготовка підвищує фізичну активність, стимулює інтелектуальні процеси, зміцнює здоров'я і довголіття і є невід'ємною частиною гармонійного і повноцінного життя.

Плавання є унікальним видом фізичних вправ і одним з найпопулярніших видів спорту, як в нашій країні, так і за кордоном. Це один із найефективніших засобів зміцнення здоров'я та фізичного розвитку людини, починаючи з перших місяців життя і до глибокої старості.

Ключові слова: *фізичні вправи, плавання, здоров'я, опорно-руховий апарат, оздоровче плавання, лікувальне плавання.*

Formulation of the problem. **Musculoskeletal system.** One of the most important properties of a living organism is movement in space. This function in humans is performed by the musculoskeletal system (MSA), consisting of two parts: passive and active. The first includes bones that connect to each other in various ways, the second includes muscles. The bones of the skeleton are levers driven by muscles. As a result of this, parts of the body change position in relation to each other and move the body in space. Bones and joints participate in movement passively, subject to the action of muscles, but play a leading role in the implementation of the support function. The specific shape and structure of the bones gives them greater strength, the reserve of which for compression, tension, and flexion significantly exceeds the loads possible during the daily work of the musculoskeletal system. Ligaments and cartilage of joints also have a large margin of safety [4].

Muscular system. Human muscles are divided into three types: smooth muscles of internal organs and blood vessels, characterized by slow contractions and great endurance; striated muscles of the heart, the work of which does not depend on the will of a person, and the main muscle mass is striated skeletal muscles, which are under volitional control and provide a person

with the function of movement. While performing their work, the muscles simultaneously improve the functions of almost all internal organs, primarily the cardiovascular and respiratory systems [1].

Skeletal muscles carry out both static activities, fixing the body in a certain position, and dynamic activity, ensuring the movement of the body in space and its individual parts relative to each other. Both types of muscle activity closely interact, complementing each other: static activity provides a natural background for dynamic activity. As a rule, the position of the joint is changed with the help of several muscles of multidirectional, including opposite, action. Complex joint movements are performed by coordinated, simultaneous or sequential contraction of non-directional muscles. Consistency (coordination) is especially necessary to perform motor acts in which many joints are involved [2].

Skeletal system. Bones provide rigid support for the soft tissues of the body and levers that are moved by the force of muscle contraction. The bones in the whole body form its skeleton. The outside of the bone is covered with periosteum. Only the articular surfaces of the bone are not covered by periosteum; they are covered by articular cartilage. Based on their shape, there are long bones, short bones and flat bones. A number of bones have a cavity inside filled with air; such bones are called pneumatic or pneumatic. Some limb bones resemble a tube in structure and are called tubular. On the surface of the bones there are elevations, depressions, platforms, openings of various sizes and shapes: processes, protrusions, spines, ridges, tubercles, tubercles, rough lines and a number of other formations.

Bones are divided into: bones of the body, bones of the head, which together make up the skull, bones of the upper extremities and bones of the lower extremities.

All types of bone connections are divided into two groups: continuous and discontinuous.

A continuous connection (fibrous connection) is a type of connection in which the bones seem to be fused together through one or another type of connective tissue.

A discontinuous connection of bones, a joint (synovial joint) is a movable articulation of two or more bones with the presence of a slit-like articular cavity between them [1].

Diseases of the musculoskeletal system. The human body has the ability, formed in the process of evolution, to adapt (adapt) to changing environmental conditions. However, these abilities are not unlimited. As a result of environmental conditions and physical activity, diseases can occur. Exposure to extreme factors leads to significant changes in both physiological and biochemical parameters, and to the development of morphofunctional changes in the tissues of the musculoskeletal system.

Among the many factors that cause diseases of the musculoskeletal system, in addition to physiological wear and tear of tissues, its functional overstrain, which is the cause of pathological changes, is of no small importance [2].

Pathological phenomena arising from overload of the tissues of the musculoskeletal system manifest themselves in the form of hypoxia and hypoxemia, muscle hypertonicity, microcirculation disorders and other abnormalities.

Analysis of literary sources. The following authors studied the positive impact of swimming on the general condition of students: Zubko V., Cherevichko O., Smirnov K., Garnusova V. [1], Khimich I., Parakhonko V. [2], Nazarov S. U. [3].

Swimming as a method of rehabilitation for injuries and diseases of the musculoskeletal system. Swimming exercises are very useful for general strengthening of the body. Swimming strengthens the back muscles well, and in addition relieves tension in the superficial muscles caused by excessive physical activity. In addition, by strengthening the functioning of the respiratory and cardiovascular systems, favorable conditions are created for enhancing metabolism throughout the body, including in the intervertebral discs. When swimming, almost all the joints of the spine are involved, they fully begin to use the capabilities inherent in them by nature [3].

Characteristics of the influence of swimming on the human body. Unlike other types of physical exercise, swimming occurs in an aquatic environment, where the human body is affected by both physical exercise and being in the aquatic environment. This two-way influence contains the specific features of swimming [4].

The therapeutic effects of swimming on the body are noted by many experts. It has a beneficial effect on the main indicators of human physical development: height, weight; is an excellent means of preventing and correcting postural disorders, scoliosis, flat feet; strengthening the cardiovascular and nervous system; development of the respiratory apparatus and muscular system; promotes the growth and strengthening of bone tissue [3].

The human body has buoyancy, since its specific gravity is close to the specific gravity of water, that is, in water the body becomes weightless. This property has practical significance: there is no need for any movements to maintain body position in water [1], which creates conditions for correcting postural disorders, restoring motor functions after injuries and preventing their negative consequences [4]. With any method of swimming, almost all joints of the spine act with a high amplitude and in a wide variety of planes, while the limits of capabilities are somewhat expanded, and the joints of the spine no longer bear a heavy static support load [3]. At the same time, active movement of the legs in the water in an unsupported position strengthens the feet and prevents the development of flat feet [4].

Specific features of swimming are associated with motor activity in the aquatic environment. In this case, the human body is subjected to a double impact: on the one hand, it is affected by physical exercise, and on the other, by the aquatic environment. These features are also determined by the physical properties of water: its density, viscosity, pressure, temperature, heat capacity.

Analyzing the physiological changes during swimming and its effect on the body, it is necessary to say about the motor activity of the swimmer. It is determined by the horizontal position of the body, greater resistance to movement, the development of specific motor automatisms and new coordination of movements, the strict sequence of work of individual muscle groups, the inclusion of mainly the muscles of the arms and shoulder girdle (up to 70%) and legs when swimming breaststroke. Under the influence of training, swimmers develop muscle strength well. In addition, the horizontal position of the body when swimming, water pressure on the subcutaneous venous bed, and deep diaphragmatic breathing promote blood flow to the heart and, in general, significantly facilitate its work. Therefore, swimming exercises with appropriate dosage are acceptable for people with a weakened heart and can be used as one of the means of strengthening and developing the cardiovascular system [2].

Healthy and therapeutic swimming. Swimming is beneficial for both healthy and sick people. Healthy people get excellent training, improve their physical capabilities, and for those who suffer from various diseases, swimming helps to cure diseases such as neuroses, neurasthenia, spinal injuries, consequences of injuries and diseases of the musculoskeletal system (scoliosis, flat feet) [1].

Recreational swimming is one of the forms of mass physical education and health work. Systematic swimming exercises have a hardening effect, promote the development of the muscular system, mobility of the ligamentous-articular apparatus, improve coordination of movements, have a positive effect on the nervous system, improve metabolism, the functioning of the cardiovascular and respiratory systems [2].

Swimming allows you to provide adequate physical activity, which provides comprehensive prevention of the development of pathologies of the musculoskeletal system and restores mobility to the joints. For diseases of the spinal column (osteochondrosis, herniated intervertebral discs) and postural curvatures, in addition to the main methods of treatment, it is necessary to train the back muscles in order to create a strong “muscle corset” that can support the spine in the correct physiological position. For such training and for general strengthening of the body, swimming lessons are very useful, as they strengthen the back muscles well. The healing properties of swimming are based on Archimedes' law: any body immersed in a liquid loses as much weight as the weight of the liquid it displaces. It has been proven that an average-sized person weighs only about 3 kg when placed in water. This water “weightlessness” allows you to relieve excess stress on the spine, provide an opportunity for rest, and promotes the straightening of intervertebral discs (a person’s height increases by 1-1.5 cm after 40-45 minutes of swimming!). In addition, by enhancing the functioning of the respiratory and cardiovascular systems, favorable conditions are created for enhancing metabolism throughout the body, including in the intervertebral discs [4].

Therapeutic swimming is one of the forms of therapeutic physical education (PT), the peculiarity of which is the simultaneous effect on the human body of water and active (less often passive) movements [2].

For various functional disorders that arise from pathology of the musculoskeletal system, therapeutic swimming can be used as a therapeutic procedure only when the patient can perform a set of clearly coordinated swimming movements in the water. Otherwise, we will be talking about swimming, staying in water, which also have a certain positive effect on the physical condition of the patient (hardening, increasing the overall resistance of the body, muscle tone), but without a special effect on the musculoskeletal function [3].

When there are indications for the therapeutic use of physical exercises in water, the issues of choosing one or another technique and the permissible level of load are decided individually, taking into account the nature of the disease, the age of the patient, his general condition, the level of physical fitness, in particular, the ability to float on water [2].

Therapeutic swimming classes must be conducted in strict accordance with didactic principles, namely:

- sequences, i.e. by mastering and performing simple swimming movements, more complex exercises on the water are mastered;

-gradualism, characterized by a gradual increase in load and reasonable dosage of swimming exercises;

-systematicity, which determines the systematic nature of classes - at least three times a week, to develop motor skills, strengthen the muscle corset, develop basic physical qualities, improve the swimming readiness of those involved;

-accessibility, indicating that exercises should be easy to perform and not difficult to coordinate; the tasks set in the lesson must be fully realized, accessible to this contingent of students, everyone must receive satisfaction from what has been achieved in the lesson;

-clarity, demonstrating the correct implementation of the technique of the exercises being studied by the teacher, as well as the competent use of the method of telling and showing in such classes;

-individualization, which puts forward the requirement to take into account the individual characteristics of pathology, physical condition, as well as the swimming readiness of those involved;

-comprehensiveness, aimed at the complex effect of therapeutic swimming on all muscle groups and functional systems of the body of those involved, weakened by pathology of the spinal column.

Swimming has been successfully used to correct postural disorders and shape the human spine. In particular, therapeutic swimming for scoliosis is aimed at developing correct posture, possible correction of existing deformities of the spine and chest, developing proper breathing, increasing strength, increasing muscle tone, especially the extensors of the spine and abdominals, improving the functions of the cardiovascular system, acquiring swimming skills, correction of flat feet, hardening of the body [2].

Conclusions.

Swimming is also an excellent means of preventing and correcting postural disorders. The mechanism of action is simple: during swimming, the static load on the spine is reduced, and the imbalance of the back muscles, which leads to curvature of the spine, is leveled. At the same time, active movement of the legs in the water in an unsupported position strengthens the feet and prevents the development of flat feet. When swimming, almost all the muscles of the body work, which contributes to the harmonious development of muscles and mobility in the main joints of swimmers. Swimming promotes significant muscle development, as it is accompanied by active activity of most skeletal muscles. The load on individual muscle groups is distributed moderately, and favorable conditions are created for their work. Regular swimming has a positive effect on the entire body. The overall tone of the body increases, endurance increases, movements improve, the nervous system strengthens, sleep becomes stronger, and appetite improves. Regular exercise promotes the growth and strengthening of bone tissue.

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SELF-ASSESSMENT OF THE STATE OF HEALTH AND MOTIVATIONAL PRIORITIES OF STUDENTS A TECHNICAL UNIVERSITY

An analysis of the scientific literature shows that in recent years the problem of the health of student youth has become even more pressing. A number of works are devoted to the study of not only functional, but also psychological problems of personal development of students and crises in personal development. A special branch of research into the interaction of humans and information technologies is associated with the study of computer addiction, which is understood as a person's pathological addiction to work or spending time playing computer games. Along with the increase in the amount of time spent at the computer by young people, researchers note a lack of motivation to exercise and lead a healthy lifestyle. And as you know, a positive result in any activity depends on the strength and persistence of motives, which are formed based on needs, their connections with value orientations and conditions of activity. The key to solving the current problem may be changes in physical education curricula and improving the quality of student education. Great importance should be given to modern teaching methods, allowing teachers to use new effective forms and methods of teaching. This will allow students to take an active part in the educational process and achieve their goals with high efficiency. Many authors pay attention to improving approaches to the development of personal components of a healthy lifestyle in young people through physical education. Therefore, research aimed at studying the motives of students and introducing work results into practice is relevant and should be based on the patterns of personality functioning.
Key words: *students of higher education, self-esteem, motivation, professional approach, state of health.*

Лускань Олег, Кузьменко Наталія. Самооцінка стану здоров'я та мотиваційні пріоритети студентів технічного вузу. *Аналіз наукової літератури показує, що в останні роки проблема здоров'я студентської молоді стала ще більш актуальною. Ряд робіт присвячено дослідженню не тільки функціональних, а й психологічних проблем особистісного розвитку студентів та криз особистісного становлення. Особлива галузь дослідження взаємодії людини та інформаційних технологій пов'язана з вивченням комп'ютерної залежності, під якою розуміють патологічну пристрасть людини до роботи або проведення часу за комп'ютерними іграми. Поряд зі збільшенням часу, проведеного молоддю за комп'ютером, дослідники відзначають відсутність мотивації займатися спортом і вести здоровий спосіб життя. А як відомо, позитивний результат у будь-якій діяльності залежить від сили і стійкості мотивів, які формуються на основі потреб, їх зв'язку з ціннісними орієнтаціями та умовами діяльності. Ключем до вирішення актуальної проблеми можуть стати зміни в навчальних програмах з фізичного виховання та підвищення якості навчання студентів. Велике значення слід приділяти сучасним методам навчання, що дозволяють викладачам використовувати нові ефективні форми і методи навчання. Це дозволить студентам брати активну участь у навчальному процесі та з високою ефективністю досягати поставлених цілей. Багато авторів приділяють увагу вдосконаленню підходів до розвитку особистісних компонентів здорового способу життя у молоді засобами фізичного виховання. Тому дослідження, спрямовані на вивчення мотивів діяльності студентів та впровадження результатів праці в практику.*
Ключові слова: *здобувачі вищої освіти, самооцінка, мотивація, професійний підхід, стан здоров'я.*

Formulation of the problem. Students occupy a special place among students. The period of study at a university is the final step towards future professional activity. The intensification and complexity of the learning process leads to a rapid increase in the volume of information received by students, which requires great physical and mental stress. The transformation of the nature of the learning process cannot but affect the characteristics of adaptation processes and, accordingly, the health of students who are engaged primarily in mental work and spend a lot of time at the computer. Many scientists and specialists raise the question of the need to take measures to increase not only professional knowledge, but also comprehensive readiness for future work, which includes good health, high performance and psychological stability. To do this, it is necessary to develop healthy lifestyle skills in students, to give them the necessary knowledge about the development and functioning of the body in various conditions. Physical activity is a prerequisite, an important part of a healthy lifestyle, ensuring a harmonious and fulfilling life for a person at any age. Many scientists report that in Ukraine the very low level of youth health culture is of particular concern. According to their data, only 6% of Ukrainian citizens, and only every tenth student, have a sufficient level of physical activity for health purposes.