

DOI 10.31392/NPU-nc.series15.2022.3K(147).01
УДК 796

Khimich I.

*Ph.D., Associate Professor of Health and Sports Technology
National Technical University of Ukraine Igor Sikorsky Kyiv Polytechnic Institute, Ukraine
ORCID: 0000-0002-5134-5047*

Parakhonko V.

*senior lecturer at the Department of Health and Sports Technologies
National Technical University of Ukraine
Igor Sikorsky Kyiv Polytechnic Institute, Ukraine
ORCID: 0000-0001-7816-5014*

SWIMMING AS A MEANS OF IMPROVING STUDENTS 'MENTAL AND PHYSICAL WORKING CAPACITY

The article reveals the impact of swimming lessons on improving the physical and mental performance of students of higher education institutions. **Purpose:** to reveal the features of swimming lessons to improve the mental and physical performance of students. **Methodology:** the analysis of scientific and methodical literature is carried out and practical achievements of scientists are developed for the purpose of definition of a modern condition and motivation of applicants of higher education to swimming lessons. A survey of student youth was conducted to determine their psychophysical condition. **Scientific novelty:** in the process of academic swimming lessons it is possible to improve the physical condition of students through the differentiation of physical activity, taking into account the initial psycho-emotional state of those who are engaged. **Conclusions:** thus, the educational, upbringing, developmental and health-improving importance of swimming in higher education institutions, its contribution to the training of future professionals is emphasized by many authors. Swimming classes contribute to the overall harmonious development of man. However, experts note a sharp decline in interest in physical education among schoolchildren and students, as well as the insignificant effectiveness of these classes, which affects the physical development and health of students. Yesterday's student, becoming a student, gets into new conditions, characterized by intense workload, active social contacts and stressful situations. That is why the search for the most effective forms and methods of improving the health of students by means of swimming remains relevant.

Key words: students, health, swimming, physical fitness, mental capacity.

Хіміч І.Ю., Парахонько В.М. Плавання як засіб підвищення розумової та фізичної працездатності студентів. В статті розкрито вплив занять з плавання на покращення фізичної та розумової працездатності студентів закладів вищої освіти. **Мета роботи:** розкрити особливості занять з плавання на покращення показників розумної і фізичної працездатності студентів. **Методологія:** здійснено аналіз науково-методичної літератури та опрацьовано практичні доробки науковців з метою визначення сучасного стану та мотивації здобувачів вищої освіти до занять з плавання. Проведено опитування студентської молоді з метою визначення їх психофізичного стану. **Наукова новизна:** у процесі академічних занять із плавання можна поліпшити фізичний стан студентів з допомогою диференціації фізичних навантажень з урахуванням обліку вихідного психоемоційного стану, тих хто займається. **Висновки:** таким чином, освітнє, виховне, розвиваюче та оздоровче значення плавання у закладах вищої освіти, його внесок у професійну підготовку майбутніх фахівців підкреслюють багато авторів. Заняття з плавання сприяють у цілому гармонійному розвитку людини. Проте фахівці відзначають різке падіння інтересу до занять фізичною культурою і серед школярів, і серед студентів, а також незначну ефективність цих занять, що позначається на фізичному розвитку та стан здоров'я учнів. Вчорашній школяр, стаючи студентом, потрапляє до нових умов, що характеризуються інтенсивним навчальним навантаженням, активними соціальними контактами та стресовими ситуаціями. Саме тому пошук найефективніших форм і методів зміцнення здоров'я студентів засобами плавання залишається актуальним.

Ключові слова: студенти, здоров'я, плавання, фізична підготовленість, розумова працездатність.

Formulation of the problem. Physical education promotes harmonious formation developed personality and preparing students for the future professional activity. This provision is reflected in the order on approval of measures aimed at reforming the system physical education of pupils and

student youth in educational institutions of Ukraine, which states that the situation in Ukraine is relatively health status in modern conditions is critical [2].

One of the most important tasks of physical education of students in the period of study at a higher education institution is an awareness of significance physical culture and health motor activity and formation during learning the need for systematic physical self-improvement organism. Despite the fact that in recent years there have been many works in which directly or in connection with the study of other problems issues of achieving results in the formation of skills and skills in the process of physical education and the need to use fundamentally new approaches, lack of justification of tools and methods, which correspond to individual psychophysical features interests, inclinations and abilities, as well as take into account motivation each student to a certain type of motor activity.

Therefore, the issues of peculiarities remain problematic use of means and methods of physical education, their orientation and load volumes. One of the psychologically priority classes physical education is the health swimming of students. Desire swimming helps to motivate students to improving physical capabilities and active recreation, causing at the same time the removal of mental fatigue.

Analysis of literature sources. Given the low level of motivation of students to exercise, increase morbidity and change the status of physical education in higher education, there is a need to strengthen the sectional work based on the use of physical exercises that have both health and applied value [1]. According to foreign and domestic scientists, exercise in water improves the body's cardiorespiratory system, speeds up metabolism, is characterized by high energy power of physical activity, unloads the musculoskeletal system, hardens and enhances immunity (Debbie Lawrence) [6].

According to V. Volkov, swimming provides students with the formation of vital motor skills, the ability to use different styles of swimming, submarine and preparatory exercises, additional technical means for the development of psychophysical qualities [3].

In the scientific works of J. Demina it is indicated [4] that in modern youth a sedentary lifestyle prevails, and as a consequence, there is such a phenomenon as hypodynamia, static overstrain of the musculoskeletal system with simultaneous relaxation of abdominal muscles, leading to various spinal deformities, decreased functioning of the respiratory and circulatory systems, slowing down metabolic processes in the body. At the same time, the student needs a high level of mental capacity, to withstand the effects of strong psychological stimuli, to be able to concentrate and quickly switch attention, to maintain optimal emotional tone during the day. Thus, swimming is the optimal type of physical activity for students of higher education institutions.

Presentation of the main material of the study. One of the components of improving the psychophysical condition is health swimming. Healthy swimming is practiced by healthy and practically healthy people who do not need to correct any violations and shortcomings with the help of exercises in the water. The main task – to improve the functional state of the body by selecting the optimal amount of exercise and the nature of exercise for each engaged and get the desired health effect.

According to T.Yu. Krutsevich [5], the psychophysical health of student youth is the main problem. The selection of means and methods of physical education should be carried out taking into account the peculiarities of the psychophysical state of the individual and contribute to the formation of a stable, mentally stable personality.

Swimming is of great practical importance, is one of the means of physical development and health promotion. It reduces excessive excitability and irritability, strengthens the nervous system [7].

Wellness swimming is one of the means of recovery after heavy training loads. A good health effect is given by performing various physical exercises in water – aqua aerobics. Exercises are selected based on gender, age and health of students. Aqua aerobics classes promote the development of strength, endurance, flexibility, increase the functionality of the cardiovascular and respiratory systems. On the other hand, performing exercises in hydrostatic weightlessness reduces the load on the musculoskeletal system and facilitates the flow of venous blood to the heart, which is especially important for people who are overweight, cardiovascular disease, varicose veins, etc.

Different types of exercise performed in deep water can be classified into groups: walking, running, jumping, hitting, rocking ("pendulums"), swimming. The classification of physical exercises is determined by the following components: participation in the work of the upper or lower extremities, torso, all muscle groups; water resistance; the presence of buoyancy, pushing force; the amplitude of movements and the plane in which they are performed.

Psychophysical training system is one of the forms of therapeutic physical education, which uses general and special exercises to increase the functional capabilities of the body and restore health and endurance at work. It is not only an effective form of therapeutic exercise, but also a kind of psychotherapy and self-training. The psychophysical system of training is organized taking into account the scientifically sound system of physical culture, psychology and psycho-therapy and includes some breathing exercises in yoga and acupressure [2].

Differentiated approach is important in the correction of psychophysical physical condition. Differentiated selection of loads was carried out on the basis of two equal theoretical assumptions:

1) students with high psycho-emotional status should be offered uniform (quiet) modes of work, trying to avoid excuses for excitement, the risk of overtraining. This is especially true in cases where students are forced to return to intense learning activities (which is typical of many higher education institutions).

Students with low psycho-emotional status need intense, invigorating, percussive, arousing loads to bring them out of a depressed, "half-asleep" state and inclusion in the learning process;

2) students with high psycho-emotional status should be given increased loads, hoping that in such a psycho-emotional state, they "easily", unnoticed, cope with them, which, in turn, will cause a significant cumulative effect.

A person with low psycho-emotional status is not prone to intense long-term work and performs it "by force". This can reduce his overall motivation to study. In this case, he needs to recommend a standard mode. In this variant at the raised psycho-emotional state the variable character of work with an interval mode of work is used, and at the lowered psycho-emotional state the character of work is generally standard, and its mode is continuous.

Regular swimming is a powerful factor in the human nervous system. Water, acting on skin receptors, increases the electrical activity of biocurrents, their voltage, makes all nerve cells work at full strength, nerve endings concentrated in the skin, differentiated perception of temperature stimuli and aquatic pressure, while regulating the internal organs.

The influence of water temperature balances the processes of excitation and inhibition in the central nervous system, improves blood supply to the brain. Water, gently enveloping the body, massages the nerve endings in the skin and muscles, soothes and relieves fatigue. After swimming, a person falls asleep easier, sleeps better, improves his attention and memory. Swimming classes have a positive effect on the state of mind, contribute to the formation of a positive emotional mood, so necessary in everyday life, give a feeling of vigor and increase efficiency.

In recent years, there has been a significant increase in interest in means and methods of strengthening health, disease prevention, which contributes to improvement efficiency. New health systems appear regularly, many of which have no scientific basis and contain erroneous and even unhealthy recommendations [6].

Obviously, the leading role in shaping a healthy lifestyle devoted to the optimization of human motor activity in combination with nutrition and hardening. An integral part Healthy lifestyle (HLS) is the choice of technology of physical activity exercises involving:

- training programming based on health assessment and physical fitness;
- performing physical activities that meet the capabilities students and the goals they pursue;
- application of scientifically and methodologically sound means and training methods.

A large number of diverse and sometimes contradictory recommendations for determining the optimal load on the body human is associated with a variety of tasks to be solved during classes health-improving types of swimming. Yes, by means of health swimming provides active recreation and entertainment; maintenance achieved level of health; maintaining a minimum level of motor activities to reduce the risk of cardiovascular disease; increase the body's functional reserves to improve or health correction; development of basic physical qualities and training basics of swimming technique [7]. Overcoming wellness distances can go well with various exercises in the water in the mode of weekly motor activity or used as additional loads after classes.

However, as indicated by N.Zh. Bulgakov [2], sports equipment swimming methods are a unique means of correction and training cardiovascular and respiratory systems of the human body. She is characterized by high efficiency of movements, which is achieved through horizontal position of the body, rhythmic alternation of tension and relaxation of working muscles, as well as rhythmic and deep breath. All movements of the swimmer can be divided into working, or rowing, and preparatory. With the help of rowing movements swimmer moving forward. They are directed from front to back and are executed powerful and fast. All preparatory movements are performed in reverse direction – forward. If they occur in water (for example, pulling up the legs in the breaststroke), then cause the inevitable braking effect. To reduce braking forces, pull-ups are performed quickly, but very soft.

An important health and rehabilitation property of water is hydrostatic pressure, which affects all the receptors of the human body immersed in water, creates an additional load on the respiratory muscles when inhaling and exhaling. Performing cyclic movements in water in combination with breathing produces a new automatism of breathing, which is characterized by short breaths and long exhalations. The mechanism of the positive effect of swimming on the respiratory system is to actively train the respiratory muscles, increase chest mobility, pulmonary ventilation, lung vital capacity, blood oxygen consumption, increase the tone of peripheral blood vessels. When swimming, the most remote parts of the lungs take part in respiration, which eliminates stagnation in them.

Thus, swimming lessons in higher education have a positive effect on the state of the central nervous system, contribute to the formation of a balanced and strong type of nervous activity. Swimming tones the nervous system, balances the processes of excitation and inhibition, improves blood supply to the brain.

Conclusions. Thus, numerous studies and pedagogical practice confirm the positive impact of swimming on the psychophysical condition of students. It is established that at the raised initial psychoemotional state of the student it is expedient to use the physical activities promoting its decrease, and at the lowered level - physical activities during swimming which activate the student. Thus, swimming and learning sports techniques ways of swimming harmoniously develop all the muscles of the body, strengthen musculoskeletal system, increase cardiovascular function and respiratory systems.

Список використаних джерел

1. Бублей Т.А. Методика диференційованого навчання фізичних вправ учнів основної школи з відхиленнями у стані здоров'я: автореф. дис. ... канд. пед. наук : 13.00.02. Київ, 2018. 19 с.
2. Булгакова Н.Ж. Плавание: Учебник для вузов. М.: Физическая культура и спорт, 2001. 400 с.
3. Волков В.Л. Основы професійно-прикладної підготовки студентської молоді: навч. посібник. К.: Знання України, 2004. 81 с.
4. Дьоміна Ж. Г. Методика навчання вправ координаційної спрямованості майбутніх учителів музики у процесі фізичного виховання: автореф. дис. ... канд. пед. наук: 13.00.02. Київ, 2010. 22 с.
5. Круцевич Т.Ю., Андреева О.В., Благій О.Л., Садовський О.О. Проблеми формування рекреаційної культури студентської молоді в умовах активного дозвілля. *Молодий вчений*. 2018. № 4.2 (56.2). С. 24-29.
6. Lawrence D. The complete guide to exercise in water. A&C Black London, 1999. P. 15-26.
7. Vincente Banachelo. Hidrogimnastica. Santos-CER 11035-050 da Praia, 1995. 30 p.

References

1. Buble T. (2018). Methods of differentiated learning of physical exercises of primary school students with deviations in health: *Abstracts of Candidate thesis*. Kyiv, Ukraine.
2. Bulgakova N. (2001). *Swimming: A textbook for universities*. Moscow: Physical culture and sports, Russia.
3. Volkov V. (2004). *Fundamentals of vocational training of student youth: textbook*. Kyiv: Knowledge of Ukraine, Ukraine.
4. Demina J. (2010). Methods of teaching exercises of coordination orientation of future music teachers in the process of physical education: *Abstracts of Candidate thesis*. Kyiv, Ukraine
5. Kruchevich T., Andreeva O., Blagiy O., Sadovsky O. (2018). Problems of forming a recreational culture of student youth in active leisure. *Young Scientist*, 4.2 (56.2), 24-29.
6. Lawrence D. (1999). *The complete guide to exercise in water*. A&C Black London.
7. Vincente Banachelo (1995). *Hidrogimnastica*. Santos-CER 11035-050 da Praia.

DOI 10.31392/NPU-nc.series15.2022.3K(147).02

УДК 378

Placinta D.

Doctoral Student,

Tiraspol State University, Chisinau, Republic of Moldova

ORCID: 0000-0003-3441-8459

Coropceanu E.

Doctor of Sciences, Professor,

Rector of Tiraspol State University, Chisinau, Republic of Moldova

ORCID: 0000-0003-1073-828X

INVESTIGATION OF THE PHYSIOLOGICAL PROCESSES OF THE HUMAN BODY WITH THE HELP OF DIGITAL SENSORS WITHIN BIOLOGY LESSONS

*The didactics of Biology is adapted to the dynamic evolution of the learning process strategies. The multilateral factors of the development of the current society guide the young generations' competences in favorable directions for knowledge application in concrete research situations of the surrounding world. Equipping laboratories with high-performance digital resources improves the teaching-learning-assessment process in all school subjects, including Biology. Different physiological processes of the human body are studied much more efficiently with the help of sensors, which contributes to the formulation of conclusions based on a qualitative investigation of experimental activities. **Conclusions:** Improving the material supplies of high-performance laboratories will ensure the pupils' motivation to investigate as they are required to have digital skills. An ICT teacher plans an investigative activity with specific and appropriate objectives. Using different pedagogical approaches, the same practical activity can be used to achieve special educational goals. The use of*