ORIGINAL ARTICLE

Method of physical improvement of higher education students by means of functional training in the aspect of health-preservation

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ABSTRACT

Aim: To justify and experimentally verify the modern method of physical improvement of higher education students by means of functional training, taking into account the individual capabilities of student age in the aspect of health-preservation.

Materials and Methods: 264 students of the 1st-2nd years of the specialties: «Physical therapy, occupational therapy», «Technologies of medical diagnosis and treatment», specialty «Secondary education. Physical culture» and «Physical culture and sport. Sport» took part in the study. They attended physical education classes and extracurricular functional training classes during 2020-2022 in three stages: theoretical and diagnostic stage; analytical and research stage; experimental and generalizing stage. Students were from the Educational and Scientific Institute of Physical Education and Sports of the State Institution «Luhansk National University named after Taras Shevchenko», the Communal Institution «Kharkiv Humanitarian and Pedagogical Academy» of the Kharkiv Regional Council. Research methods: theoretical, empirical, methods of statistical data processing.

Results: The survey of the tested contingent showed that 60% of respondents want to increase muscle mass, increase strength - 30%, correct the figure - 10%. Among the forms of classes, 46% students consider independent classes to be the best, physical education classes - 40%, personal and group classes - 14%.

Conclusions: An experimental method of physical improvement of students of higher education institutions using functional training exercises has been developed. A feature of the developed methodology is the individualization and integral combination of traditional teaching methods with innovative ones with gradual complication of the content of classes.

KEY WORDS: technique, physical improvement, students of higher education, quality of training, means of functional training, health-preservation

Acta Balneol. 2024;66(1):40-48. doi: 10.36740/ABAL202401107

INTRODUCTION

The concept of physical education in the education system of Ukraine focused attention on the development of scientific research on the problems of physical education in institutions of higher education: development of the concept of the development of science in the field of physical education and sports, programm and normative foundations of physical education of young people, taking into account the criteria for assessing health, maintaining a healthy lifestyle, and physical self-improvement [1].

Scientists [2-4] and others note that in today's conditions there is a negative trend of increasing the number of students of special medical groups as among first-year students, as well as in the process of learning in institutions of higher education, which arises due to the reduction of credits for «physical education», the deterioration of the state of health of students, the peculiarities of the organization of the educational process in institutions of higher education during the Pandemic-2019 and martial law period.

Following scientists have studied the influence of health fitness on various body systems [5-9]. Some aspects of functional training in the physical education system of female students were considered by [10], functional training as a form of extracurricular sports mass work in a higher educational institution [11], features of functional training using the «TRX Functional Loops» simulator [12].

Considering this problem in European scientific space, scientists drew attention to: Characteristics of morphofunctional state of paratrooper cadets in the process of crossfit training [13]; Dynamics of students' fitness level while differentiating physical education classes in accordance with their health and nosology of diseases [2]; Physical Development by Means of Fitness Technologies as one of General Aspects of Student's Health [14]; Methodical System of Using Fitness Technologies in Physical Education of Students [15]; Checking of the Methodical System Efficiency of Fitness Technologies Application in Students' Physical Education [7]; System of Preparation of Future Fitness Coaches' for Health-Improving Activity in the Conditions of Rehabilitation Establishments [16]; Dynamics of the Functional State of Students in the Process of Powerlifting in Higher Education [17]; Leisure and recreational activities of student

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youth in the context of healthpreservation [18]; Modern approaches to the formation of professional readiness of future specialists in physical rehabilitation in the context of restoring the health of athletes [4]; Analysis of the Current State of Training of Future Specialists in Physical Culture and Sports in the Conditions of Distance Learning [19]; Study of the State of Physical Fitness of Students of Medical Institutions of Higher Education by Means of Crossfit in the Process of Physical Education [3]; The influence of tae-bo on the development of motor potential of students of medical and pedagogical specialties and its efficiency in the process of extracurricular activitiesh [20].

It should be noted that for the prevention of deviations in the state of health, physical exercises aimed at strengthening health and creative activity are necessary. Increasing work capacity and active longevity is associated with certain difficulties caused by the low level of knowledge of the impact of physical exercises on the human body, the peculiarities of individualization of health-oriented physical programs, the use of exercise equipment depending on functional and physical fitness. Therefore, one of the main tasks of physical education is to ensure the optimal level of motor activity, which allows to achieve the highest level of functional capabilities and vitality of the body. Therefore, we proposed a modern method of physical improvement of students of higher education by means of functional training in the aspect of health-preservation.

AIM

The aim of the study is to justify and experimentally verify the modern method of physical improvement of higher education students by means of functional training, taking into account the individual capabilities of student age in the aspect of health-preservation.

MATERIALS AND METHODS

264 students of the 1st-2nd years of the specialties: «Physical therapy, occupational therapy», «Technologies of medical diagnosis and treatment», specialty «Secondary education. Physical culture» and «Physical culture and sport. Sport» took part in the study. Students were from the Educational and Scientific Institute of Physical Education and Sports of the State Institution «Luhansk National University named after Taras Shevchenko», the Communal Institution «Kharkiv Humanitarian and Pedagogical Academy» of the Kharkiv Regional Council. They attended physical education classes and extracurricular functional training classes during 2020-2022 in three stages: *theoretical and diagnostic stage* (2020); *analytical and research stage* (2021-2022); *experimental and generalizing stage* (2022).

At different stages we have used such *set of research methods*:

- *theoretical* – methods of conceptual and comparative analysis, which compared the existing theoretical approaches on the basis of generalization of philosophical, methodological, psychological, pedagogical, educational literature and video materials; method of structural-system analysis and modeling;
- *empirical* – methods of collecting information (questionnaires, surveys, pedagogical testing), analysis of learning outcomes, interviews, methods of expert assessment, self-assessment, generalization of independent characteristics; ascertaining, formative, and control stages of pedagogical experiment, methods of clarity;
- *methods of statistical data processing* – for processing experimental data, their quantitative and qualitative analysis. They were used to identify the reliability of the difference between the studied indicators, the correct processing of the results, reflecting them in graphical and tabular forms, conducting experimental testing; descriptive statistics, determination of the statistical significance of differences between groups by correlation analysis by Pearson's method.

The Ethics Commission of the Luhansk Taras Shevchenko National University has no comments on the methods used in this study.

RESULTS

In the educational and scientific institute of physical education and sports of the State institution «Luhansk National University named after Taras Shevchenko», teachers actively introduce following into the educational process: health-preserving technologies, modern methods and the latest technologies in the conditions of mixed learning, the Internet is widely used, modern multimedia software, a student-centered approach aimed at individual personality development, enjoyment of classes. Tasks of students' health-preservation in higher education are solved in the process of teaching the following disciplines: «Musical and rhythmic education and the basics of health fitness», «Gymnastics with teaching methods», «Technologies of physical culture and health activities for training people with special needs», «New technologies and modern methods of teaching physical culture in educational institutions», «Recreation in physical culture of different population groups» and others.

Young men demonstrate an increase in the popularity of such types of fitness as strength training with simulators (36%), crossfit (25%) and functional training (27%), while girls prefer exercises performed to music, like dance aerobics (21%), step aerobics (19%), functional training (14%). Respondents consider endurance, strength and flexibility to be the most important qualities for an active life. In order to correct those, most students are ready to devote 3 hours a week or more to functional training.

When performing various fitness exercises and functional training exercises, the highest heart rate (HR) occurs when performing exercises that include large groups of muscles, of a strength nature or performed at a large amplitude. There is a linear relationship between heart rate and work intensity within 50-90% of maximum load tolerance.

So, as a result of systematic training, such changes occur that ensure an increase in the body's oxygen consumption during muscle work. The strength of respiratory muscles increases. The total volume of the lungs and the vital capacity

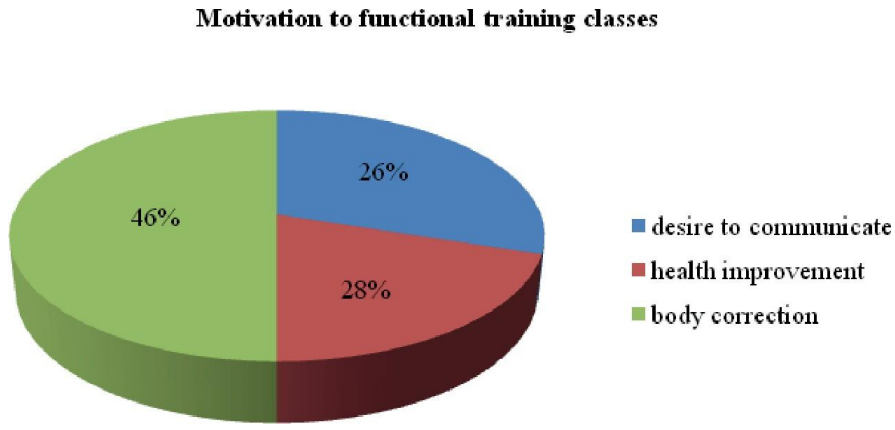

Fig. 1. The leading motives of higher education seekers for engaging in functional training, %.

of the lungs increases, the number of blood vessels in the lungs increases, which makes it possible during work for a larger amount of blood to be saturated with oxygen and get rid of carbon dioxide in a shorter time.

Thus, systematic classes of functional training make it possible to acquire a good sense of well-being, improve health, and are gaining more and more popularity among young people. As a result of studying the motives and interests of functional training, it was found that the most pronounced motive is to increase the functional capabilities of the body and the desire to improve one's appearance – 46%. The next leading internal factor that affects the motive among the surveyed students of the 1st-2nd years is strengthening one's health – 28%. This is followed by the possibility of relieving emotional tension, the desire to look good in one's own eyes and the desire to communicate – 26% (Fig. 1.).

The survey of the tested contingent showed that 60% of respondents want to increase muscle mass, increase strength – 30%, correct the figure – 10%. Among the forms of classes, 46% students consider independent classes to be the best, physical education classes – 40%, personal and group classes – 14%. To the question: «Are you able to independently select exercises for functional training» – only 29.8% answered «yes». The vast majority of respondents (70.2%) answered «no».

During the entire experiment, the subjects did not have any serious illnesses or injuries. The subjects noted a gradual improvement in their well-being, an increase in the general working capacity of the body. Particularly significant changes were observed in persons with a low level of physical condition. As a result of the experiment, the resting heart rate of the participants slightly decreased, on average by 4.05 beats per minute (bpm). The reaction of the heart to standard physical exercises (functional tests) improved. This was manifested in a smaller increase in heart rate when performing loads of the same power and in a more intense recovery of this indicator, on average by 10 seconds. Arterial pressure at rest during the entire experiment in all subjects was stable and within normal values. There was only a slight tendency to its decrease, on average by 5.48 mm Hg. As a result of the classes, there were significant changes in the functional state of the muscular system. Skeletal muscle strength determined by dynamometry increased by an average of 2.86 kg.

The effectiveness of the methodology of functional training consists in the complex physical development of the body immediately in the following directions: high performance of the cardiovascular and respiratory systems, general and strength endurance, strength, power, speed, balance, accuracy, flexibility, coordination, as well as quick adaptation to changes in load. When conducting classes, on the recommendation of D. Pyatnytska, O. Shkola gradually made the content of classes more difficult: the first level involves mastering individual exercises without using movements, combining them into «chains»; the second level involves the sequential combination of several «chains» to form a complete «connection» of the exercise; the third level of difficulty includes exercises performed with different movements.

In the process of the experiment (taking into account the recommendations of scientists and practitioners), a basis was developed for the creation of experimental methods of physical improvement of students of higher education institutions (Table 1) and experimental methods of physical improvement of students of higher education institutions using functional training exercises (Table 2). We improved the methodology, which included: the structure of the class at the stage of learning functional training exercises, which differed in that the emphasis was placed on increasing general physical fitness, building endurance, teaching the technique of performing special exercises with gradual complication of the content of classes. In our teaching methodology, 15-20% of the total time of the lesson was allocated to the preparatory part of the lesson. In the preparatory part, they performed various types of running, general development and gymnastic exercises, a combination of running with «push-ups», jumping on a rope. Up to 30-40% of the total class time was allocated to the main part of the class. In the main part, they performed a series of strength, aerobic and mixed exercises using the circular training method. Circular training increased motor and emotional density, made classes more diverse

Table 1. The basis for the creation of experimental methods of physical improvement of students of higher education institutions

Purpose and tasks			
Primary		**Secondary**	
Comprehensive physical development of the body in aspect of health-preservation	Physical improvement	Relaxation exercises	Resting
Increase in general physical fitness. Quick adaptation to load changes	High performance of the cardiovascular and respiratory systems. General and strength endurance, strength, power, speed, balance, accuracy, flexibility, coordination	Coordination exercises and stretching exercises	Breathing and psychoemotional exercises
Use of various types of motor activity			
Means			
Learning the technique of performing special exercises			
Varieties of running, general development and gymnastic exercises. Jumping with a rope	Functional strength and aerobic exercises. Aerobics, dance exercises	Imitating real movements. Exercises in balance. Stretching	Breathing exercises. Art therapy

Table 2. Experimental method of physical improvement of students of higher education institutions using functional training exercises

DISTRIBUTION OF EXERCISES BY LEVEL OF DIFFICULTY		
Basic level program	**Intermediate level program**	**High level program**
– basic elements of functional training; – learning the correct exercise technique and safety techniques.	– demonstration of the main elements of functional training with an explanation of the exercises at the teacher's expense and accompanied by music.	– teaching the technique of performing special exercises; – combination with other types of motor activity; – increasing the speed of performing exercises; – performance of functional training without pauses.
RESULTS OF TRAINING		
1. Training in accordance with the level of physical fitness of students of higher education for the purpose of health-preservation. 2. The sequence of learning functional strength, aerobic and jumping exercises with gradual complication of the content of classes. 3. Complex physical development with the use of additional exercises: general developmental, gymnastic, dance, breathing, psycho-emotional exercises, stretching, art therapy. 4. Improving the content of academic disciplines: «Musical and rhythmic education and the basics of health fitness», «Gymnastics with teaching methods», «Technologies of physical culture and health activities for the training of persons with special needs», «New technologies and modern methods of teaching physical culture in educational institutions», «Recreation in physical culture of different population groups».		

and interesting for students, giving space to individual opportunities and personal initiative, thereby increasing motivation to engage in physical culture. In addition, dance steps were included: gallop step, polka, waltz step, various snakes, jumping exercises. Exercises on the short rope included: jumps with a double rotation; jumps with a 180° turn; jumping with movement, including handwork; jumping in place for 30 seconds without stopping, jumping in place for 1 minute, without stopping, at an average pace. Only 5-10% of the total class time was allocated to the final part of the class. The content of the final part included exercises for the abdominal muscles 3-4 sets of 15-25 times, stretching exercises and art therapy.

The main content of the developed methodology is theoretical, practical, sectional and independent classes in leisure activities. It also included forms of physical exercise control and self-control, taking into account individual, differentiated, systemic and gender approaches.

Functional training classes were offered, the program and method of their application consisted of 2 blocks:

1. A block of exercises using: skipping ropes – gymnastic sticks – bodybars – fitballs – rubber balls of different diameters.

2. Block of exercises using: step platform – platform slide – Airex Balance Pad.

Simulators produced by Kettler were also used in the classes: strength training center «HAMER»; multifunctional

simulator «ULTRA»; multifunctional simulator «BASIC»; step simulator «STEP»; bicycle ergometer «TX-1» (equipped with a cardio sensor); treadmills «PROFORM» and «TUNTURY» (equipped with a cardio sensor).

Functional training included exercises with dumbbells and a barbell, which allowed many more varieties of one exercise, to change the angle of inclination and amplitude of movements. Exercises were performed for several muscle groups at the same time (complex exercises), which provided more effective training. Natural movements were the basis, that allowed to improve coordination of movements and develop the ability to maintain balance.

The selection of rational means of physical education for health-oriented classes was carried out taking into account the age and physical condition of the participants. Functional training classes were held 2-3 times a week for 60-90 minutes. Exercises on the cycle ergometer, treadmill, step trainer were cyclic in nature, performed at a uniform pace and occupied 60% of the training time in persons with a low and below average level of physical condition and 40% of the time in persons with an average and above average level of physical condition. Subjects with a low level of physical condition performed cyclic exercises at a heart rate of about 130-140 bpm. At a higher level of physical condition, the heart rate was maintained at the level of 140-160 bpm. The results of the survey are presented in Table 3.

So, on the basis of the presented questions, we can come to the conclusion that the introduction of the functional training method had a positive effect on the attitude of 1-2 year students to their own health and motivation for classes.

The regularity of physical exercise classes for students of 1-2 courses as part of their own physical self-improvement is specified in Table 4.

So, as we can see from the table, almost half of girls and boys do not do physical exercises. During the research, general scientific methods were used: observation, description, comparison, analysis, synthesis, generalization, classification. The generalized quantitative results of the initial level of adaptation of students of 1-2 courses to physical education classes by means of functional training and health-preserving technologies of EG and CG are shown in Table 5.

DISCUSSION

Scientists noted that in the physical education of students of higher education, the main focus is traditionally on the development of motor skills and sports and technical readiness (mastering the techniques of various sports). Education of the need for physical improvement, taking into account individual characteristics, in the practice of physical education teachers is mostly carried out episodically [3, 7, 9, 21-26]. Among the external factors of the formation of the need for physical self-improvement are: personality of the teacher, content of training and teaching methods, condition of sports facilities, availability of sports equipment. Among the internal ones are: motives, interests, value orientations, level of development of personal qualities, self-assessment of the state of health and physical fitness. The results of the analysis of practice and numerous scientific studies show that the process of formation of the need for physical self-improvement

Table 3. The results of the survey of students of 1-2 years

Questions and answers in the survey	November 2021 (%)		November 2022 (%)	
	EG	CG	EG	CG
Your attitude towards functional training classes:				
I do it with great desire	20%	18%	68%	22%
Satisfactory	44%	46%	20%	50%
Indifferently	24%	23%	9%	20%
I don't have time for training	12%	13%	3%	8%
Do you have missed lessons?				
Rarely, only for a good reason (illness, etc.)	56%	50%	28%	44%
Often, for no good reason	24%	26%	8%	26%
I visit regularly	20%	24%	64%	30%
How does functional training affect your health?				
Positively	52%	53%	76%	60%
Negatively	12%	14%	8%	10%
Hard to answer	36%	33%	16%	30%
What types of physical activity do you like to do?				
Athletics	20%	23%	16%	22%
Gymnastics	24%	20%	18%	17%
Sports games	36%	40%	22%	38%
Functional training	20%	17%	44%	23%

Table 4. Table of the regularity of physical exercises of students of higher education within the framework of their own physical self-improvement

Regularity of classes	Boys, %		Girls, %	
	Beginning	End	Beginning	End
5-6 times a week	6.4%	14.2%	5.0%	12.5%
3-4 times a week	20.4%	28.5%	18.4%	25.3%
1-2 times a week	26.2%	40.5%	20.2%	38.2%
Do not perform	47.0%	16.8%	56.4	24.0%
Including those who are taking classes:				
With an instructor or a teacher	22.8%	43.2%	12.4%	35.4%
Independently	30.2%	40.0	31.2%	40.6%

Table 5. Initial level of adaptation of students of 1-2 courses to physical education classes by means of functional training and health-preserving technologies (%)

Group	Levels, %					
	High		Medium		Low	
	Beginning	End	Beginning	End	Beginning	End
Experimental group	9.8	22.4	35.6	53.6	54.5	26.0
Control group	10.2	12.0	32.5	38.0	57. 3	50.0

among students of higher education consists of a number of interrelated directions: fostering a positive attitude towards physical education and sports; mastery of knowledge and awareness based on them of beliefs in the need for systematic physical exercises; formation of relevant abilities and skills; involvement of student youth in daily physical education classes [21-22].

We agree with S. Sychev's opinion that self-improvement is most often motivated by the desire to surpass the current self, to achieve higher results, to improve one's skills, to acquire important personal qualities. This is constant work on oneself with the aim of positive change, getting closer to a certain ideal «Self», realization of the tendency towards personal growth, towards professional development, self-discovery and self-determination [22]. In our study, we will physically improve students of 1-2 courses by means of functional training, which are part of fitness classes in the process of physical education and extracurricular activities. Fitness is, first of all, a healthy lifestyle, a chance to change the quality of life without excessive effort; the most advanced training system to date, which includes all the most effective methods of «body education» [5-7, 19, 27]. Fitness is classified by following main categories:

1) *cardio programs*, aimed at the development of the cardio-respiratory system, which include all types of aerobics, namely: basic, health, sports, applied, step aerobics, dance aerobics, interval, spinning, tai-bo, kick aerobics, boxing aerobics, slide aerobics, aqua aerobics;

2) *strength training programs*, which are aimed at developing the strength of all muscle groups of the body with the use of various sports equipment, namely: dumbbells, body bars, a special barbell-pumps, stuffed balls, etc.;

3) *fitness programs of recreational gymnastics*: classes in yoga, pilates, fitball, calanetics, stretching, etc.);

4) *functional training*, that is, complex fitness programs that provide an opportunity to simultaneously develop strength, flexibility, balance, and dexterity. Functional training is carried out both as a separate training and as an additional load to traditional strength training.

As points out, modern popular functional programs include crossfit training, the Tabata protocol and TRX loops. Complication of training occurs due to special equipment, in particular core platforms, bosu (rubber hemispheres), fitballs (rubber gymnastic balls), TRX loops, etc. [12].

Next, we will consider the concept of «functional training» according to different authors (Table 6).

We agree with that the features of functional training are [11]: a wide range of physical exercises (with or without objects, on equipment, simulators, etc.); functional connection of motor activity with music, high emotionality of classes; wide variability in the use of methods and methodological techniques; opportunities for creative self-expression, getting pleasure from performing various motor actions; improvement of movement capabilities, improvement of movement culture; acquisition of special knowledge and self-control skills.

S. Oger notes: «At the beginning, in functional training it is quite enough to use only the weight of one's own body. Then you can add various additional equipment: rubber shock absorbers, unstable platforms, balls, free weights, body bars, etc. But it is fundamentally important to first learn how to technically perform the basic exercises, and only after that you can add additional resistance or elements of instability (unstable platforms, bosu, TRX, etc.)». The author suggested using hanging loops, thanks to which

Table 6. Definition of the concept of «functional training» according to different authors

Author, year	Definition
V. Biletska, E. Petrenko, I. Bondarenko, 2012	«Functional training» is aimed at learning motor actions, education of physical qualities (strength, endurance, flexibility, speed and coordination abilities) and their combination, improvement of physique, i.e. what can be defined as «good physical condition», «good physical shape», «athletic appearance» [10].
N. Dovgan, 2017	«Functional training» is a process of sports training aimed at strengthening health, developing motor skills, increasing the level of physical fitness, which is determined by the components of physical, mental, spiritual and social states; is a very promising innovative technology that expands students' opportunities for physical self-improvement, diversity of the training process, providing individual coloring and showing one's own individuality [11].
A. Miroshnikov, 2013	«Functional training» is primarily movement training, not muscle training. Only a strengthening effect is exerted on the muscles in the process of functional training [23].
Y. Tatura, 2006	«Functional training» (in the narrow sense) – training aimed at developing coordination (balance). Functional training contributes to the harmonious development and improvement of the body, increases the level of physical development, the formation of the need for motor activity, the achievement of physical improvement, strengthening health by determining the presence of the necessary strength, speed, endurance and dexterity, a wide variety of motor skills and abilities [24].
S. Oher, 2019	«Functional training» is a combination of exercises used in functional training classes, that contribute to the improvement of all physical qualities, psychologically relieve the body, and increase emotional mood [12].

you can change the load individually to suit yourself and your level of physical fitness [12].

In turn, V. Biletska, E. Petrenko, I. Bondarenko noted that the most popular directions of functional training are training using step platforms, Core platforms, Bosu (rubber hemispheres), fitballs (rubber gymnastic m cages), Airex Balance Pad balancing pillows (pillows made of soft «foam» material), jump ropes, gymnastic sticks, rubber balls, body bars [10].

For the purpose of physical improvement, functional training helps students of higher education to adapt to all the variety of physical loads that they have to face every day in everyday life. The main principle of functional training is adaptation to loads that determine the manifestation of general aerobic endurance, speed endurance, power endurance, speed-power endurance, speed, dynamic muscle strength, functional strength, flexibility, stability, balance and coordination [25-27]. We also note that in many European countries, functional training is a global program aimed at strengthening the health of the nation. Analysis of the classifications of existing health-preserving technologies used in the educational process of higher education institutions made it possible to distinguish the following types [6]: *health-preserving technologies*, which create safe conditions for the education of students and solve the tasks of rational organization of the educational process (taking into account age, sex, individual characteristics and hygienic norms), compliance of educational and physical loads with the capabilities of the student; *health technologies*, aimed at solving the tasks of strengthening the health of student youth and increasing health resources, which include hardening, health gymnastics, massage, phytotherapy, music therapy; *health-preservation education technologies* – hygiene training, formation of life skills (emotion management, conflict resolution), injury prevention and substance abuse, sex education; *education of health culture* – education in students of personal qualities that contribute to preserving and strengthening health, forming ideas about health as a value, strengthening motivation to lead a healthy lifestyle, increasing responsibility for personal and family health. According to the analysis of literary sources, the use of health-preserving technologies in physical education in higher education institutions allows expanding the reserves of physiological functions, restoring the body's ability to self-regulate. It is necessary to ensure a comprehensive approach to the harmonious formation of all components of health, improvement of physical and psychological preparation for an active life and professional activity, especially in conditions of martial law; use of various forms of motor activity and means of physical improvement [11, 13, 20]. So, the health-improving effect of fitness training is associated with increasing the functional capabilities of the cardiovascular system. It consists in economizing the work of the heart at rest and increasing the reserve capabilities of the circulatory system during muscle activity.

Scientists point out that adolescence is the period of completion of growth processes, an important stage in the formation of physical development indicators, which begins in high school age and passes into the first period of adulthood in the last courses of study at a higher education institution [28]. The anatomical and physiological «tension» of this age is explained by a sharp change in the place of residence, climate, social conditions, daily routine, nutrition, physical and mental load. Most often, the reason for these changes is graduation from a general secondary education institution and entry and study at a higher education institution.

Then comes the «stress stage» of physical, psychological and social development. At this age, it is recommended to do physical exercises at least 3 times a week for 2 hours with an additional health-improving and recreational effect [28].

An important role in the preparation of individual programs is played by the test results, which determine the expediency of using simulators, allow you to determine the time of exercise, the pace and the amount of resistance of the simulator. Determining a low level of physical condition gives reason to include cyclical exercises on the «treadmill», «cycle ergometer», and «stepper» in classes. Lag of strength indicators from normative values serve as a basis for using exercises with weights [2, 15, 16]. Therefore, with the complex use of simulators, the sequence of using various means in health training should be followed. A positive effect from exercises is observed if the training process first achieves the goal of increasing general endurance, then speed-strength and speed qualities. When selecting exercises on the simulators, it is also important to follow the optimal sequence and include the muscle groups of the legs, back, abdomen, arms and trunk in the work.

CONCLUSIONS

Therefore, the level of adaptation of higher education students to physical education classes by means of functional training and health-preserving technologies increased significantly in the experimental group and remained almost unchanged in the control group.

Based on the analysis of scientific and methodological literature, we have developed an experimental method of physical improvement of students of higher education institutions using functional training exercises. The peculiarities of the methodology of conducting functional training classes, which provide for the implementation and conduct of general and special training of students of higher education, taking into account the individual characteristics of physical development and physical fitness, have been revealed. A feature of the developed methodology is the individualization and integral combination of traditional teaching methods with innovative ones with gradual complication of the content of classes.

Physical improvement can be based only on a personal and individual approach, taking into account the physical capabilities of each student. Physical self-improvement is a set of methods and types of life activities that determine and regulate the position of a person in relation to his physical development, physical fitness and state of health.

The health-improving effect of functional training classes is associated with increasing the functional capabilities of the cardiovascular system and consists in saving the work of the heart at rest and increasing the reserve capabilities of the circulatory system during muscle activity. Therefore, systematic classes are aimed at good health and health-preservation. In the future work, the differentiation of training in functional training classes will be carried out.

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The article was written in accordance with the topic of the research work «Perspective directions of improving the quality of professional training of specialists in physical culture and sports» (state registration number 0117U005556) of the Department of Theory and Methods of Physical Education of Luhansk Taras Shevchenko National University. Research was financed by authors.

CONFLICT OF INTEREST
The Authors declare no conflict of interest

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A -Work concept and design, B - Data collection and analysis, C - Responsibility for statistical analysis, D -Writing the article, E - Critical review, F - Final approval of the article

RECEIVED: 14.12.2023
ACCEPTED: 09.02.2024