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FITNESS TECHNOLOGY IN PHYSICAL EDUCATION OF STUDENTS

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The purpose of the study is to determine the content and technologies to improve the level of health and physical fitness of students by means of physical training.

The main research method is a pedagogical experiment.

The article describes the need for the implementation of innovative technologies in the educational process of students' physical education.

The author proposes a fitness technology of cardio strength training and implementation of the results that have confirmed its effectiveness. Specifically, a pedagogical experiment revealed that the students of the experimental group significantly were superior the control groups of students in terms of physical characteristics, level of physical health and anthropometric indicators of physical development.

The area of application of the results is the learning process of physical education in vocational education.

Keywords: physical education, fitness technology standard of health, physical fitness.

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ФИТНЕС ТЕХНОЛОГИЯ В ФИЗИЧЕСКОМ ВОСПИТАНИИ СТУДЕНТОВ

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Цель исследования - определение содержания и технологии повышения уровня здоровья и физической подготовленности студенческой молодежи средствами физической культуры.

Основной метод исследования педагогический эксперимент.

В статье рассмотрена необходимость внедрения инновационных технологий в образовательный процесс физического воспитания студенческой молодежи. Автором предложена фитнес технология кардио-силового тренинга и результаты внедрения, подтвердившие её эффективность. А именно, в педагогическом эксперименте выявлено, что студенты экспериментальных групп достоверно превзошли студентов контрольных групп по уровню развития физических качеств, уровню соматического здоровья и антропометрических показателей физического развития.

Область применения результатов: учебный процесс по физическому воспитанию в системе профессионального образования.

Ключевые слова: физическое воспитание, фитнес технология, уровень здоровья, физическая подготовленность.

Social order of society to prepare healthy, competent and professional up-and-coming employees, able to lead a healthy lifestyle and improve themselves in the profession today determines the main direction of modernization of physical education in higher school. Ill health of young people, an increase in the incidence in educative process is not only a medical but also a serious pedagogical problem.

Traditionally, the forms of organizational and methodological solutions of health care problems, absent of a comprehensive service of medical examination for students borne mainly by the department of physical education. It develops a system for monitoring a teaching physical assessment of opportunities for students and implement health-giving educational technology.

An analysis of the scientific literature and current practices in dealing with issues of healthy lifestyle of students revealed a number of contradictions between:

the need to strengthen the role of physical education and in building a culture of health of the individual;

low efficiency of traditional technologies in physical education solving health problems.

The aim of the study is - defining the content and technologies to improve the level of health and physical fitness of students by means of physical training.

Materials and methods.

In the educational process of physical education in recent years there is a tendency to expand the means and methods of training and development of physical qualities. Suffice it to list the currently available programs for physical education in various educational institutions (from pre-school to higher education).

With regard to improving technologies in the educational process, although they are found in some authoring or state programs, but not enough [2].

The introduction of fitness and its technology in educational institutions is a temporary way of reforming and modernization of physical education, according to many authors [3, 7].

The use of fitness programs, as the results of numerous studies show [4, 5, 9, 10], satisfy the needs of different physical activity groups engaged in educational process and stimulate the improvement of physical development, physical fitness.

However, it is an interesting task of scientific rationale focused on the integration of different fitness exercises in the content of lesson units on athletic training for students.

In the study the following methods were used: analysis of the problem according to the scientific literature; survey in the form of a questionnaire, teacher observation, educational experiment, testing (method of control tests), the method of anthropometry, methods of mathematical statistics.

Results and its discussion. We conducted the surveys for 164 PVGUS students of 1-2 courses about the motives of individual choice in sport or exercise systems confirmed our hypothesis that, along with the motive of health promotion for young people of 17-20 years old, not less important motive is to correct the shortcomings of physical development and build; the third motive is to enhance physical fitness (Fig. 1).

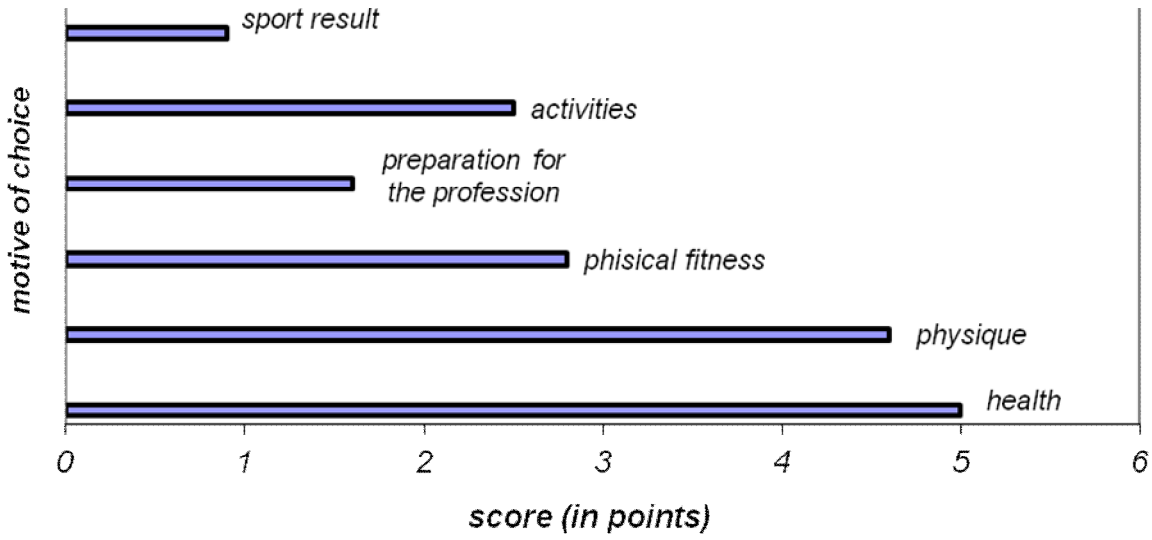

Fig. 1. Diagram of motivational options for individual students' choice of sports or exercise systems

Analyzing the preferences of PVGUS students in the selection of sports and exercise systems, while also estimating the material and technical conditions of the

educational process in physical education, we have made a comprehensive range of health-fitness technology - cardio strength training. For females the program has been developed, which combines the principles of the system of the "IZOTON" [8] and cardio-respiratory component for fitness and health training [6].

The proposed strength training exercises were performed with the following requirements:

- Intensity muscle activation was 30-70%.
- It was forbidden to hold their breath when performing strength exercises. When the muscles are contracted they were given the instructions to do the slow exhalation, with inferior work - short medium depth breath.
- The duration of the exercise - for at least 30 seconds and not more than 60 seconds. Exercise was performed to the feeling of "burning" in the muscle.
- Strength training exercises supplemented by stretching exercises to relieve pain and increase the elasticity of the working muscles.

Cardio-respiratory component has a number of general principles:

- a gradual increase in intensity;
- wide range of load and / or intensity;
- logical and progressive sequence of introduction of elements;
- impact on different groups muscles;
- intensity control based on heart rate and / or RFIDs.

The study determined the content of the program of cardio strength training for females, including exercises Unit 4: *Unit 1* - cardio complex fitball aerobics, *2 unit* - 6 stator dynamic exercises, and *3 block* - 6 exercises with special equipment (dumbbells, shock absorbers, fitballs and *Unit 4* - 4 of stretching exercises.

For males the program included cardio training with a given intensity in the form of cyclic exercise (running and cycling cross) and two power complex in the form of circuit training, including exercises with dumbbells and a partner.

Cardio training for males used to gradually drawn into the work, endurance development of body and the strengthening of cardiorespiratory system. The running and cycling at a rate over a 20-30 minute workout was used in the training, but the speed with increasing fitness increased. The criterion of change of velocity is an indicator of aerobic exercise heart rate, which was measured during basic training work and compared with the target heart rate on the Karvonen formula: ChSStsel. = (220 - age) * 0.65.

Exercises with dumbbells were the content of the initial phase of training, for 4 weeks. Depending on the weight and force capabilities of individual young were used dumbbells weighing 3, 4 and 5 kg. The complex consisted of 6 exercises designed to develop specific muscle groups: arms and upper body, torso and legs.

Exercises performed in pairs on the second phase of training for six weeks, using the method of circuit training. An external weight was the weight of a partner.

The main objectives of a developed comprehensive fitness technology were:

1. Correction of physical development and physical fitness of students 17-20 years of age.
2. Formation of sustained motivation for systematic physical training.
3. Achieving personal goals involved in the implementation of the common tasks physical education (body shaping, health promotion, getting pleasure from making, etc.).

To test the effectiveness of a health and fitness technology of cardio strength training there was conducted a pedagogical experiment, in which it was used a comparative monitoring of the level of health, physical development and physical fitness of students 17-20 years of experimental and control groups.

Comparison of the control and experimental groups was performed on the results of control tests before and after the pedagogical experiment, the level of health by the method of G.L. Apanasenko [1]. During the experiment and it was also monitored the level of strength, flexibility and subcutaneous level - adipose tissue.

As a result, there is the following evidence.

Testing the level of development of the physical qualities of the females showed that higher dynamics in the period of the experiment have those students who attended the experimental group. The results are given in Table 1. In all six tests, there has been significant improvement in the results after the experiment.

Table 1

Comparative analysis of the results of testing the physical qualities of the experimental group

Number	tests	before experiment	after experiment	The t-test	ρ
		χsr	χsr		
1	tilt forward	22,2 ± 1,8	18,9 ± 1,4	3.69	0.01
2	push-ups	17 ± 1,1	18,3 ± 0,9	2.51	0.05
3	pull-ups	14,5 ± 0,6	15,2 ± 0,5	2.5	0.05
4	press	26,6 ± 0,9	28,8 ± 1,1	3.92	0.01
5	Hanging around the corner	16,1 ± 0,7	17,4 ± 1,2	2.67	0.05
6	broad jump	179,8 ± 5,5	183,8 ± 3,2	2.44	0.05

The positive dynamics of changes in the level of development of physical qualities in the control group has been noted in only one of the six control exercise - "Hanging around the corner" (table 2).

Thus, a program of strength training had the most varied effects on the physical fitness of the participants of the experiment.

Traditional method, which was used in the control group, has allowed us to improve the level of hand muscle endurance strength, abdomen and lower limbs. But did not improve the results in jumping, push-ups, pull-ups and test "press" which could serve as the basis for the suggestion of the need to diversify the traditional means of

university programs by incorporating strength training exercises in physical education class in the amount of 25-30% of the time.

Table 2

Comparative analysis of the physical properties testing of the control group

Number	tests	to judge ep.	after experts.	The t-test	
		χsr	χsr		ρ
1	tilt forward	22,5 ± 0,9	22,7 ± 1,1	0.54	-
2	push-ups	16,6 ± 1,7	16,9 ± 0,7	0.64	-
3	pull-ups	13,7 ± 0,7	13,4 ± 0,8	1.11	-
4	press	26,1 ± 1,1	26,8 ± 1,2	1.67	-
5	Hanging around the corner	15,3 ± 0,8	16,1 ± 1,3	2.0	0.1
6	broad jump	179,2 ± 3,6	177,2 ± 2,6	1.74	-

Analysis of the level of physical development of young men control and experimental groups before the experiment showed that the experimental group is superior (P <0.05) control the level of development of the leg muscles (test number 2 - "squats") and extensors of hands (test number 3 - "push-ups"). The exercises "press" and "pull" (test number 1, 4) significant differences in the groups before the experiment were found (Chart 3).

Comparative analysis using the Student's t-test the level of development of the forces of young men after the experiment revealed a clear superiority of the experimental group (P <0.05) in all four control exercises and anthropometric measures (Table 3), which gives rise to an efficiency of the developed tools and techniques cardio strength training young men 17-20 years old.

In order to test the effectiveness of the developed technology improving fitness we assessed the level of students' health control and experimental groups before and after the teaching experiment by methodology of G.L. Apanasenko [1]

Table 3

Indicators of physical fitness of young men 17-20 years

Test	Experimental group XCP ± m	Control group XCP ± m	Reliability of Differences Student t-test
Before the experiment			
1 - "press"	38,9 ± 0,46	37,9 ± 0,75	P> 0.05
2 - "squats"	25,7 ± 0,24	22,4 ± 0,43	P <0.05
3 - "push-ups"	41,6 ± 0,58	38,4 ± 0,52	P <0.05
4 - "pull"	8,3 ± 0,07	7,9 ± 0,08	P> 0.05
girth shoulder	33,4 ± 0,02	32,8 ± 0,05	P> 0.05
After the experiment			
1 - "press"	42,4 ± 0,49	38,4 ± 0,45	P <0.05
2 - "squats"	28,3 ± 0,37	22,8 ± 0,36	P <0.05
3 - "push-ups"	45,4 ± 0,53	39,3 ± 0,42	P <0.05
4 - "pull"	10,4 ± 0,09	8,4 ± 0,06	P <0.05
girth shoulder	35,7 ± 0,06	33,6 ± 0,1	P <0.05

A comparative analysis of somatic health showed that the students of the experimental and control groups before the experiment were similar (Fig. 2).

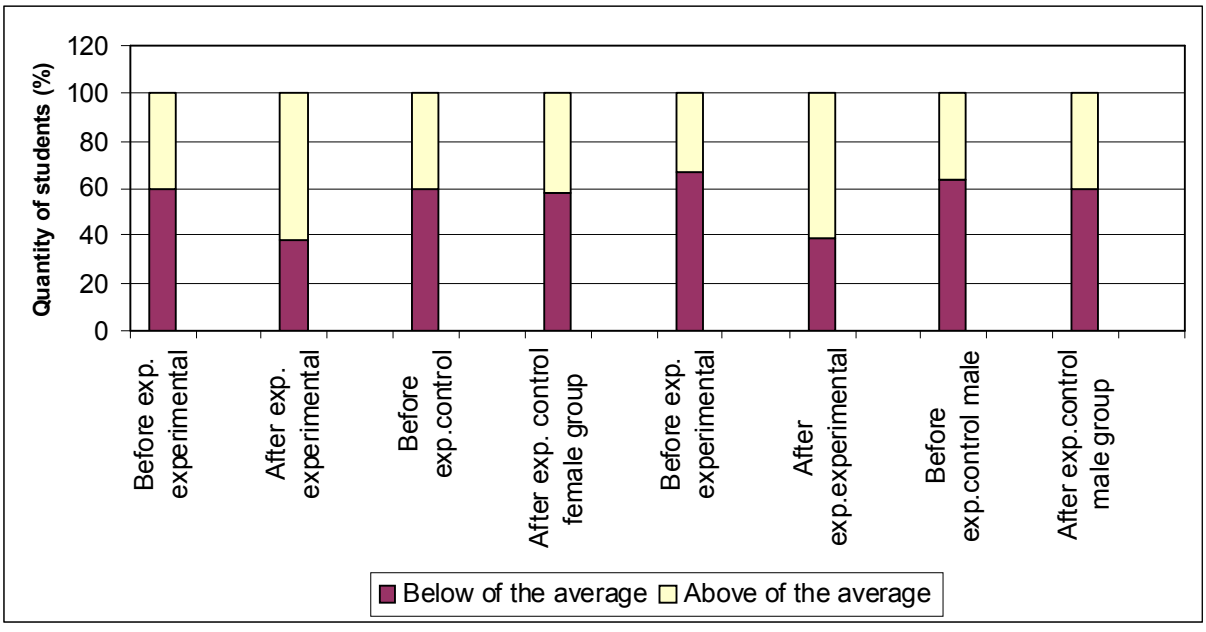

Fig. 2. Diagram of distribution of students of the experimental and control groups in levels of health before and after the pedagogical experiment

After research in the experimental groups showed a statistically significant increase in the number of students belonging to a group of health is above average. However, the control groups of students in health improvement were not statistically significant. Results are presented in Figure 2.

During the experiment, we found the growth of interest among the students of the experimental groups to the results of fitness activities and their positive attitude towards the systematic physical exercises.

Output. Analyzing the obtained results we can admit the effectiveness of the use the cardio strength training as a fitness technology in the physical education of college students.

Thus, the introduction of the concept of fitness training combined with education into the methodology of physical education of students is a modern and efficient development trend of the education system.

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