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TÍTULO: La Educación Física de los jóvenes en edad de estudiar: cuestiones problemáticas e investigación.

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RESUMEN: El artículo investigó la eficiencia de las clases de dos horas en educación física por semana para estudiantes de primer año y su impacto en su nivel de condición física durante un año académico. El experimento pedagógico duró un año académico. Al principio y al final del experimento, los estudiantes llevaron a cabo las pruebas que permitieron evaluar el desarrollo de sus cualidades físicas (velocidad, resistencia, fuerza y agilidad). La investigación mostró que la educación física en el ámbito de dos horas por semana es ineficiente y requiere una mejora definitiva. Al final del experimento, los resultados de los estudiantes en todos los ejercicios disminuyeron; el nivel de condición física disminuyó entre los estudiantes masculinos y femeninos.

PALABRAS CLAVES: estudiantes, proceso educativo, nivel de condición física, educación física.

TITLE: Physical education of student-age young people: problematic issues and research.

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ABSTRACT: The efficiency of two-hour classes in physical education per week for first-year students and their impact on their physical fitness level during an academic year was investigated in the article. The pedagogical experiment lasted for an academic year. At the beginning and at the end of the experiment, students carried out the tests enabling assessment of their physical qualities development (speed, endurance, strength and agility). The research showed that physical education in the scope of two hours per week is inefficient and requires definite improvement. By the end of the experiment, the results of students in all exercises declined; the physical fitness level dropped among male and female students.

KEY WORDS: students, educational process, physical fitness level, physical education.

INTRODUCTION.

Current demographic situation in Ukraine, which according to UNESCO is the country of endangered ethnos, increased level of morbidity of the population, expectancy of life of the Ukrainians lower than the same of the population in developed countries in the world explain first-rate importance of resolving the issue of strengthening human health as the highest social value. Under such conditions, building a healthy life style, with physical activity as its important factor, becomes of special importance. In the conditions of education at higher educational institutions physical education becomes an important component of their healthy life style (Bolotin, & Bakayev, 2015; Bulatova, & Usachov, 2008; Kharchenko, O., Kharchenko, N., & Shaparenko, 2019; Prysiazhniuk, et al., 2019; Zavydivska, O., Zavydivska, N., & Khanikiants, 2016).

In this highly important period in Ukraine's history, physical culture and physical education at higher educational institutions as its component gets particular significance. It is essential to understand that today's focus at creative use of physical culture tools by a specialist-to-be, by a future soldier of Armed Forces of Ukraine or National Guard requires regulated system of influence on their intellectual, emotional-volitional, and professional activity (Futornyj, 2011; Prontenko, et al., 2019; Rus, 2017; Warburton, Nicol, & Bredin, 2006).

It opens a discussion about physical education as recreational and rehabilitation academic discipline, as an important tool of building personality, citizen, future specialist and defender of the Motherland, as a goal-oriented pedagogical process, about attraction of student youth to the values of common physical culture and revival of national traditions. Enhancement of physical education classes' efficiency enables avoiding significant expenses on provision of health care and safety measures for students (Apanasenko, 1989; Prysiazhniuk, et al., 2018; Zhamardiy, et al., 2019).

The article reviews the topical issues of the modern system of physical education of students at higher educational institutions of Ukraine and the ways of its enhancement.

The analysis of scientific and methodological literature (Apanasenko, 1989; Bulych, & Muravov, 2002; Prysiazhniuk, 2006; Furmanov, & Yuspa, 2003; Prontenko, K., et al., 2019; Shkola, et al., 2019; Kolokoltsev, Iermakov, & Prusik, 2018) shows that the main tasks of the modern system of physical education at higher educational institutions are to raise the level of students' physical fitness, provide optimal conditions for their physical development, shape the demand for regular physical exercises. At the same time, some scientists (Azhyppo, et al., 2018; Amosov, 2002; Raevskiy, & Kanishevskiy, 2008; Tymoshenko, et al., 2019) indicate that modern approaches applied to organization of educational process in physical education at higher educational institutions have insufficient effect on resolution of the indicated tasks. According to G. P. Griban (2009), T. Yu. Krutsevych (2008), S. I. Prysiazhniuk (2006, 2012, 2018), A. V. Mahlovanyy (2010), it is mainly explained by the priority given to normative-based approach in educational process; reduced interest and motivation of students in traditional forms of physical education classes; lack of differentiated and individual approaches.

Most of the specialists believe that actual psychological and physical fitness level of higher educational institutions graduates does not meet modern requirements of life-sustaining activity and industry (Amosov, 2002; Gladoshchuk, 2017; Voronin, 2006; Prysiazhniuk, 2012; Cucui, 2018). This trend was also confirmed during morphological analysis of the health status and physical fitness of the students of higher educational institutions of Ukraine, analysis of occupational diseases, injury rate of those practicing extreme environment, mass-scale and creative professions, violations of production technological procedures related to insufficient manifestation of physical and psychological qualities of the graduates (Bulych, & Muravov, 2002; Griban, et al. 2019; Prysiazhniuk, Oleniev, & Parchevskiy, 2016).

The health in every new generation is improved due to the increased level of technicalization of working and living conditions. However, many factors arise, which previously the society was not even aware of. The biggest concern is caused by the fact that some of them while causing contraction, development and negative course of various diseases, start their intensive effect at a young age (so called risk factors). Among them are acceleration of production and living processes, quick change in environmental circumstances, hypodynamia and growth of neuro-psychological stresses, increased information flow and even natural disasters and regional conflicts. These factors lead to rejuvenation of numerous diseases previously specific for senior people (Muntjan, 2010; Korobeinikov, 2002; Prysiazniuk, et al., 2019; Prontenko, et al., 2019).

Normative and legal documents approved at the national level with their focus on the necessary taking into account the interests and needs of students, providing conditions for free choice of physical activity, rejecting authoritarian educational methods, have had no significant impact on the problem resolution.

DEVELOPMENT.

Methodology.

The aim of the article is to identify efficiency of two-hour classes in physical education per week for first-year students and to investigate their impact on the students' physical fitness level during an academic year.

Our research covered first-year male and female students of Kyiv National University for Civil Engineering and Architecture (KNUCA). 191 students (81 male and 110 female students) took part in the research. During the research tests and normative requirements of annual physical fitness assessment of Ukraine's population (2016) were used.

To assess the students' physical fitness level, we used tests, such as: 60 m running (male and female students), 500 m and 1000 m running (female and male students), chin-ups (male students) and dip ups (female students), lifting the body from the lying position to the sitting position with the hands behind the head in 30 sec (male and female students), standing long jump (male and female students) and shuttle run 4 x 9 m (male and female students). The indicators of physical fitness were determined at the beginning and at the end of the academic year.

Research methods: systematization of scientific and educational methodological literature, pedagogical observations, pedagogical experiment and mathematical statistics techniques. In the course of research, statistical probability of difference between the indicators was determined by applying the Student criterion, as well as changes in results in each research group (male and female students) were assessed.

Results and discussion.

Building, saving and strengthening of the health and promoting development of every student's physical qualities during their period of study, on which falls the "peak" of functional maturation of the body, stabilization of all its systems are the high priority tasks for every higher educational institution as determined nowadays by the society and the state.

Physical fitness is achieved by development of motional skills and physical qualities. The level of such development is scientifically substantiated in public documents: educational programs for pre-school children institutions, general secondary schools, higher educational institutions, State tests and normative requirements to physical fitness assessment of Ukraine's population, State standards and Unified Sports Classification of Ukraine.

The indicators of functional capabilities of a body and physical qualities of young people in Ukraine compared with developed countries occupy low position, which is characterized by the trend to accelerated aging of the body (Bulatova, & Usachov, 2008; Prysiazniuk, Oleniev, & Krasnov,

2018), increase in various deviations in their state of health, unsatisfactory physical fitness, increase in the number of missed classes due to disease, reduction of the number of male young people, who cannot be conscripted to the Armed Forces of Ukraine due to their medical state of health, etc. Today, the society is incapable of taking care of health and level of physical fitness of the student youth.

Physical fitness is readiness of a student to carry out certain scope of physical load as provided by the curriculum related to physical education. It features the level of physical qualities development achieved in the process of study.

Physical fitness is a result of students' physical activity in the course of practical physical classes, and also independent physical exercises in their free time. It is an integral indicator, as during physical exercises all systems and organs of the student's body interact.

The reform in higher education system is associated with launching innovative higher educational institutions, specific feature of which is the increased scope and intensification of the studies. Usually, various pedagogical technologies are extensively applied without conducting their preliminary physiological and hygienic study.

Processes of student youth adaptation under conditions of application of innovative pedagogical teaching technologies have not been sufficiently studied. The early 21st century has seen significant growth of study load, deterioration of environment, excessive engagement of young people in computer games, which results in restricted muscle efforts, sedentary lifestyle, deterioration of physical state, physical and mental performance efficiency and as the result in contraction of various diseases (Griban, 2009; Muntjan, 2010; Futornyj, 2011; Kharchenko, O., Kharchenko, N., & Shaparenko, 2019).

Insufficient physical fitness of a major part of Ukrainian students not allowing meeting today's requirements of life and highly-productive labour is proven by the data of annual state testing of the physical fitness in the population. According to the statistical data of the Ministry of Youth and Sports of Ukraine, only 44.4 % of students of almost 490 thousand persons screened for testing showed physical fitness normative "high" and "satisfactory" level, and 4.5 % failed tests completely. The research shows that physical fitness of all groups of the population, and first of all, of young people, can be possibly enhanced only in case of increasing efficiency and optimizing goal-oriented rehabilitation physical practice.

The most objective indicator, based on which the physical fitness level is assessed, is a system of state tests integrated in the program of physical education of students and is explained by the social demand of the society for comprehensive and harmoniously developed personality of prospective specialist, Ukraine's defender who is supposed to have high level of health condition, required physical and mental capacity to meet the requirements of educational and qualification level.

The students' physical fitness level was assessed based on the results of pedagogical tests (Tables 1, 2, 3, 4).

Table 1. Research of assessment of physical fitness indicators of first-year male students during 2018/2019 academic year (n=81).

Researched period	Statistical indicators	Test exercises					
		60 m running, sec	1000 m running, min, sec	Chin-ups, times	Lifting the body into the sitting position in 30 sec, times	Standing long jump, cm	Shuttle running 4 x 9 m, sec
Beginning of the academic year	M	8.9	3.52	9.3	25.3	222.9	9.7
	± m	0.14	0.09	0.82	0.63	2.42	0.09
End of the academic year	M	9.3	4.15	8.8	23.4	228.8	9.6
	± m	0.12	0.11	0.78	0.57	2.48	0.08
Statistical probability	t	2.17	4.43	0.44	2.24	1.70	0.83
	p	< 0.05	< 0.001	> 0.05	< 0.05	> 0.05	> 0.05

The results of research conducted during the academic year show that in case of one-time physical class per week the indicators of test exercises set considerably dropped by the end of the academic year for male as well as female students. While at the beginning of the academic year the indicator of 60 m running of male students was 8.9 ± 0.14 sec, then by the end it was 9.3 ± 0.12 sec; 1000 m running showed 3.52 ± 0.09 min, sec and 4.15 ± 0.11 min, sec, respectively; chin-ups – 9.3 ± 0.82 and 8.8 ± 0.78 times; lifting of the body into the sitting position in 30 sec – 25.3 ± 0.63 and 23.4 ± 0.57 times. The only exercise, where results were improved, was the standing long jump. The result of the shuttle running was 4 x 9 m, although it had improved by 0.1 sec, but this improvement was not supported by statistical probability. The level of physical fitness of male students went down accordingly. In particular, "sufficient" level decreased by 7.2 %, "moderate" – by 7.7 %, but "low" level considerably improved by 14.9 %.

Table 2. Comparative characteristics of physical fitness of first-year male students during 2018/2019 academic year (n=81).

Statistical indicators	Level of physical fitness (%)					
	Sufficient		Moderate		Low	
	Beginning of ac. year	End of ac. year	Beginning of ac. year	End of ac. year	Beginning of ac. year	End of ac. year
	15.5	8.3	24.4	16.7	60.1	75.0
Changes	– 7.2		– 7.7		+ 14.9	

The same situation was observed among female students, but at a higher rate. In particular, when at the beginning of the academic year the results of female students in 60 m running were 10.5 ± 0.10 sec, then at the end of the academic year – 10.9 ± 0.08 sec; in 500 m running 2.12 ± 0.04 min, sec and 2.20 ± 0.09 min, sec respectively; lifting the body into the sitting position in 30 sec – 21.6 ± 0.52 and 19.3 ± 0.57 times. It would be fair to state that the results of the tests in dip-ups in lying support and standing long jump improved, but it was not confirmed by statistical probability ($p > 0.05$). The result of the shuttle running 4 x 9 m, although improved by 0.1 sec, but was not

confirmed by statistical probability. Taking into account the results obtained, the physical fitness of female students decreased. In particular, "sufficient" level dropped by 1.5 %, "moderate" – by 16.6 %, and "low" level increased significantly by 18.1 %.

Table 3. Research of assessment of indicators of physical fitness of first-year female students during 2018/2019 academic year (n=110).

Researched period	Statistical indicators	Test exercises					
		60 m running, sec	500 m running, min, sec	Dip ups, times	Lifting the body into the sitting position in 30 sec, times	Standing long jump, cm	Shuttle running 4 x 9 m, sec
Beginning of the academic year	M	10.5	2.12	10.7	21.6	168.5	10.9
	± m	0.10	0.04	0.55	0.52	2.31	0.09
End of the academic year	M	10.9	2.20	12.4	19.3	171.5	10.8
	± m	0.08	0.09	0.76	0.57	2.88	0.09
Statistical probability	t	3.12	0.81	1.81	2.98	0.81	0.79
	p	< 0.01	> 0.05	> 0.05	< 0.05	> 0.05	> 0.05

Table 4. Comparative characteristics of physical fitness of first-year female students during 2018/2019 academic year (n=110)

Statistical indicators	Level of physical fitness (%)					
	Sufficient		Moderate		Low	
	Beginning of ac. year	End of ac. year	Beginning of ac. year	End of ac. year	Beginning of ac. year	End of ac. year
	3.4	1.9	22.4	5.8	74.2	92.3
Changes	– 1.5		– 16.6		+ 18.1	

The health should become one of the top priorities among numerous values of modern youth. Any work done without any interval for rest causes fatigue and reduces functional abilities of the body. If, regardless of tiredness a person continues working, then the body can suffer overstraining, which is always detrimental for a human health. Besides, intellectual work is related to significant load on the upper sections of the central nervous system and psychological functions of the human body (Korobeinikov, 2002).

The enforced restriction of motional activity during intellectual activity reduces the flow of impulses from muscles to motional centres of the brain cortex. It reduces excitability of nervous centres, which results in decline in mental capacity. Lack of muscle efforts and mechanic pressure in blood vessels of the posterior thigh while in the sitting position reduces intensity of blood circulation, reduces blood supply to brain, thus, complicating its functionality. The fatigue feeling develops, which is caused by intensive intellectual work and long-term same-kind working position, which negatively effects functional activity of the body (Apanasenko, 1989; Amosov, 2002; Prysiazhniuk, 2006; Prontenko, et al., 2019).

To remove such effects, some rest is required. Therefore, alternation of work and repose is the prerequisite of increased labour performance. It is commonly known that the most efficient renovation of working capacity is achieved by physical activities. To make the rest more active is possible by using specially selected physical exercises (Bulych, & Muravov, 2002; Furmanov, & Yuspa, 2003; Tymoshenko, et al., 2019; Zhamardiy, et al., 2019).

The most developed mechanism, which stimulates one of the forms of motional change was reproduced for the first time by I. M. Sechenov (1903-1904) and later was called Sechenov's phenomenon of active rest. It is known that under special experimental conditions effected by such change, restoration of muscle work capacity may be considerably accelerated.

The analysis of literature sources and state documents has shown that to increase efficiency of educational and learning process in physical education, it is required that in developing ministerial documents on physical education the Ministry of Education and Science of Ukraine and in developing their curricular higher education institutions of Ukraine should strictly follow the Decree of the Verkhovna Rada of Ukraine dated October 19, 2016 No. 1695-VIII "On Providing Sustainable Development of Physical Culture and Sports in Ukraine" and Decree of the President of Ukraine dated February 09, 2016 No. 42/2016 "On the National Strategy in Healthy Motional

Activity in Ukraine for the period till 2025 "Motional Activity – Healthy Lifestyle – Healthy Nation", and namely:

- To provide in standards for higher education at the first (bachelor) level of each major for a graduate's competence in capability to use various kinds and forms of motional activity for active rest and healthy lifestyle and for relevant results of the study, in particular, concerning performance of approved normative requirements to physical fitness.
- To recommend to rectors of higher educational institutions for the purpose of building the indicated competence and achieving the relevant performance in studies to arrange for sport classes for students during not less than two years of studies and in the scope of 4 hours a week, taking into account that sport classes have rehabilitation and recreational function.
- To add technological requirements to provision of educational work in higher education (License terms of educational institutions activities), approved by the Cabinet of Ministers of Ukraine dated December 30, 2015 No. 1187 in the part of providing the higher education students with gymnasiums, stadiums, and sport grounds (in square meters per student).
- To determine and approve strategic directions of upgrading physical education system for children and youth at educational institutions taking into account international practice and national circumstances of building health in young generation, saving genetic pool of the nation and strengthening defence potential of the country.
- To enhance separation of individuals by medical groups, avoid lethal cases at physical training classes, provide more clear regulation of the procedure and organization of control (medical, pedagogical, medical-pedagogical) over the process of physical culture classes, increase efficiency of physical education at educational institutions, approve the resolution on organization of medical, pedagogical, medical-pedagogical control during physical culture classes and sport workouts at educational institutions of Ukraine together with the Ministry of Youth and Sports and Ministry of

Health of Ukraine having recognized the order dated July 20, 2009 No. 518/674 "On Proving Medical-Pedagogical Control over Physical Education of Students at General Educational Institutions as having become void".

- To make amendments in the order dated October 15, 2015 No. 1085 "On including the form No. 086/o On the list of obligatory documents to be submitted together with the application to participate in the competitive admission to higher educational institution, in case of disability – a copy of the document assigning group of disability".

- To recommend to rectors of higher educational institutions to facilitate launching of sports-oriented infrastructure near dormitories of higher educational institutions to involve student youth in regular sport activities.

CONCLUSIONS.

The results of the research conducted during the academic year show that the level of physical fitness of the first-year students has dropped considerably by the end of the experiment. The evolution of students' physical fitness under the conditions of the existing physical education system, and namely, one-time class per week, is inefficient to such an extent that organization of the physical education system requires fundamental changes in the structure of educational process, as well as in organization of mass sport and physical rehabilitation work.

Physical educational process at a higher educational institution should be built in the way not only providing the students with a certain scope of knowledge on health improving, but also building competencies intended to preserve health. Health-preserving competencies of the students at higher professional institutions are seen by us as a complicated integral process envisaging availability of knowledge, skills required for health-preserving activity, which promotes self-development, self-learning of students, their adaptation to the changing environment, and efficient mastering of professional skills in the context of holistic learning process at higher educational institutions.

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