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Horoshko Viktoriia  
Faculty of Physical Culture and Sports,  
National University Yuri Kondratyuk Poltava Polytechnic  
Pershotravnevyyi avenue, 24, 36011, Poltava, Ukraine,

### THE IMPACT OF HYPODYNAMIA ON THE FUNCTIONAL STATE OF HEALTH OF YOUNG PEOPLE DURING THEIR STUDIES IN HIGHER EDUCATIONAL INSTITUTIONS

The article analyzes the modern scientific literature on the health status of a modern student and its correction by means of physical culture of the university, as well as it was revealed the relationship between physical activity and the functional state of first and third year students of higher educational institutions. The study was carried out by analyzing publications of scientific periodicals over the past 20 years in pedagogical and medical sciences, assessment of the functional state by the method of functional tests, questionnaires and statistical data processing. In the research, the author set the following tasks: 1. to analyze the causes of hypodynamia and the consequences of its influence on the body. 2. to conduct a survey of student youth on the issues of predisposition to physical inactivity. 3. to compare the obtained data with the results of the survey of American students. Target group: student youth from 17 to 21 years old. Conclusions: 1. As a result of the study, it was found that student youth are moderately involved in sports and no obvious prerequisites for physical inactivity were found. 2. The results of studying the prerequisites for the onset of hypodynamia among young people are approximately similar in terms of basic parameters. 3. In the course of explanatory work with young people, it is necessary to focus the attention of young people on the problems of preventing hypodynamia. 4. Sport activity of students during their studies at a higher educational institution decreases by the fifth year to two hours a week, which is a critically low indicator. 5. Amid insufficient physical activity, the level of the functional state of students changes for the worse.

**Key words:** physical inactivity, sedentary lifestyle, sports.

**Горошко В. И. Влияние гиподинамии на функциональное состояние здоровья молодежи во время обучения в высших учебных заведениях.** В статье был произведен анализ современной научной литературы по вопросам состояния здоровья современного студента и его коррекции средствами физической культуры вуза. В результате исследования установлено, что молодежь умеренно занимается спортом и явных предпосылок к гиподинамии не обнаружено. Однако, необходимо обратить внимание что определенное количество опрошенных имеют предпосылки к гиподинамии. Результаты изучения предпосылок возникновения гиподинамии в среде молодежи примерно схожи по основным параметрам. В ходе разъяснительной работы с молодежью необходимо акцентировать внимание молодых людей на проблемы профилактики гиподинамии: занятия спортом, активные игры на воздухе, пешие прогулки и езда на велосипеде, ходьба по лестнице, правильный распорядок дня и сбалансированное питание. Двигательная нагрузка у студентов во время обучения в высшем учебном заведении снижается к четвертому курсу до двух часов в неделю, что является критически низким показателем. На фоне недостаточной двигательной активности изменяется уровень функционального состояния студентов в худшую сторону, что видно по результатам функциональных проб и реакции организма на физическую нагрузку.

**Ключевые слова:** гиподинамия, малоподвижный образ жизни, занятия спортом.

**Горошко В.І. Вплив гіподинамії на функціональний стан здоров'я молоді під час навчання у закладах вищої освіти.** У статті був проведений аналіз сучасної наукової літератури з питань стану здоров'я сучасного студента і його корекції засобами фізичної культури вузу. В результаті дослідження встановлено, що молодь помірно займається спортом і явних передумов до гіподинамії не виявлено. Однак, необхідно звернути увагу що певна кількість опитаних мають передумови до гіподинамії. Результати вивчення виникнення гіподинамії в середовищі молоді приблизно схожі за основними параметрами. В ході роз'яснювальної роботи з молоддю необхідно акцентувати увагу молодих людей на проблеми профілактики гіподинамії: заняття спортом, активні ігри на повітрі, піші прогулянки й їзда на велосипеді, ходьба по сходах, правильний розпорядок дня і збалансоване харчування. Рухове навантаження у студентів під час навчання у вищому навчальному закладі знижується до четвертого курсу до двох годин на тиждень, що є критично низьким показником. На фоні недостатньої рухової активності змінюється рівень функціонального стану студентів в гіршу сторону, що виявлено за результатами функціональних проб і реакції організму на фізичне навантаження.

**Ключові слова:** гіподинамія, малорухливий спосіб життя, заняття спортом.

**The formulation of the problem.** In recent decades, in the modern world, the central idea is the value of any human person in all the breadth of physical, mental and spiritual capabilities and limitations. In this regard, the task of a deeper disclosure of a person's potential becomes urgent, which is impossible without ensuring the fullness of his health as a fundamental factor, high creative potential and efficiency. Until some time, the only goal of progressive education was considered to increase the student's academic performance, the development of intellectual abilities, and the acquisition of professional

skills, which is often carried out at the cost of student's health. It is important to note that adolescents who already have an impressive baggage of functional deviations and chronic diseases acquired in educational institutions enter universities. The prevalence of hypodynamia is increasing due to urbanization, automation and automation of labor, the increasing role of communication means, and the widespread use of modern electronic gadgets. The state of hypodynamia is dangerous for any young organism because it has a negative effect on the entire human body as a whole. Physical inactivity can lead to a number of painful conditions and even diseases. When hypodynamia occurs in the young organism, the following occurs: a decrease in muscle tone and strength, a decrease in the level of calcium in bone tissue and a violation of mineral metabolism, an increase in body fat and the appearance of excess weight, the work of the capillary system is disrupted, i.e. the number of active capillaries is reduced, venous and arterial sites are narrowed. The main symptoms of hypodynamia include: weakness, increased heart rate and pulse, increased blood pressure, fatigue, emotional instability, nervousness. According to L.V. Golikov, socio-hygienic, medico-biological, environmental and psychological factors can lead to the development of diseases and morphofunctional disorders that limit professional aptitude, reduce the suitability of young men for military service, as well as reduce the quality of life of adolescents. It is shown that the main contribution to the structure of functional deviations is made by deviations in the activity of the circulatory system (382.1%), the nervous system (211.4%), and the organ of vision (168.1%). Among this category of the population, morbidity and disability are steadily increasing, and the mortality rate remains high. Among chronic diseases, the first ranking place is firmly occupied by diseases of the digestive system (277.8%). In second place are the diseases of organs of vision (97.2%).

It is shown that by the end of education at the university there is a tendency towards an increase in chronic diseases. In scientific works it is noted that the number of students in a special medical group increases from 10 to 20-25%, in some universities it reaches 40%. By the second year the number of cases of diseases increases by 23%, and by the fourth - by 43%. According to M. Yu. Abrosimov, a quarter of the students move to a worse medical group.

During the day, the student has a long and intense work of the central nervous system, combined with the influence of the factor of hypodynamia and hypokinesia, which contribute to the formation of a specific morphofunctional status of the organism, characterized by a decrease in the activity of functional systems. The consequences of mental fatigue can be various diseases, primarily - diseases of nervous and cardiovascular systems.

Studies have established the leading role of habits and daily routine in maintaining health and the formation of various pathological conditions. Risk factors for health are bad habits - smoking, use of psychoactive substances, alcohol, Internet addiction, and abuse of mobile phones. So, the use of the latter, according to a number of researchers in Europe, is the cause of mass insomnia in adolescents, reaching 10-30%. It has been proven that the use of mobile phones and computers has a negative effect on the health of their owners, who complain of headaches, increased weakness, fatigue, irritability, and have low body resistance. In the process of intense mental work during the exam, 60% of students experience tension in the mechanisms of regulation of the cardiovascular system, 30% of students complain of rapid heartbeat before exams, 20% of students in these conditions have uncontrolled muscle tremors, every fourth student complains of sleep disturbance during the session, and 5% of students during the preparation are worried about headaches

In the scientific literature, it is noted that about 19% of first-year students have neurotic disorders. Estimating the prevalence of borderline neuropsychiatric diseases in students, some authors cite a figure of 56.6%. From 51 to 70.5% of patients with neurotic diseases are persons aged 19-25 years. An analysis of the incidence of students in various multidisciplinary universities was carried out, it was found that the spread of borderline neuropsychiatric disorders in technical, biomedical, physics and mathematics and humanitarian faculties was 1: 1.5: 2: 6. The purpose of the study is to analyze modern scientific literature on the health status of a modern student and its correction by means of physical culture of a higher educational institution, as well as to reveal the connection between physical activity and the functional state of first and third year students of higher educational institutions, to reveal the number of students with preconditions of hypodynamia.

**Materials and research methods.** The study was carried out by analyzing publications of scientific periodicals over the past 20 years in pedagogical and medical sciences, theoretical analysis of regulatory documents, pedagogical observations, assessment of the functional state by the method of functional tests, sociological survey, questionnaires and statistical data processing. The working hypothesis consisted in the affirmation of the influence of physical activity on the functional state of students. The experiment involved 43 students of the National University "Yuri Kondratyuk Poltava Polytechnic"

**Research results and their discussion.** Students are one of the representative groups of the country's youth. In recent years, the number of higher educational institutions has increased significantly, and the number of students today exceeds 10 million[1]. From a biomedical point of view, in most cases, students are adolescents in the stage of social maturation, which requires due attention from both the administration of universities and researchers to the health of this category of the population. Various authors believe that the greatest risk of these diseases in the studied student population falls on the junior years (1st and 2nd), reaching a maximum by the 3rd year. Then the likelihood of developing this pathology decreases, becoming minimal at the 4th-6th courses of study. Moreover, in 46.6% of cases, the disease occurred during the examination session, since it is the peak of mental overload and a strong stressful situation.

It is well known that a sensitive indicator of health status is physical development, the level of which is closely related to socio-economic and hygienic living conditions. Studying at a university is associated with the need to maintain a sitting position for a long time, which forms a static tension of the back muscles ("static stress") and reduces physical activity. In addition, under conditions of hypodynamia, stagnant processes are formed in the circulatory system.

In the dynamics of 30-year observation of physical development among modern students, there are positive shifts in somatometric indicators (height, body weight, chest circumference), while the vital capacity of the lungs, the force of

compression of the hand, the back force, on the contrary, decreased in comparison with similar ones. indicators of students of previous years. Students who go in for sports, in comparison with students leading a sedentary lifestyle, have higher indicators of physical health.

In this regard, as noted in numerous scientific publications, the higher education system remains the only social institution and channel through which a targeted preventive effect on each student is possible. Physical education in higher educational institutions is the main link in the organization of health-improving and sports-mass work among students. In this regard, the correct organization of classes with students at the departments of physical education of universities, which should produce qualified specialists, is of great importance. At present, in modern literature there are numerous methods for increasing the effectiveness of physical culture lessons, both with the help of modern computer technologies, and specially developed pedagogical systems using the techniques of team games, gymnastic exercises, etc.

An important study was conducted by students of Columbia University: first-year students were asked to answer questions characterizing the possible predisposition of young people to the development of physical inactivity[4]. On the example of this study, in order to identify the number of Ukrainian students with prerequisites for physical inactivity, as well as to compare the data obtained with the study of American students, a survey was organized of students of the National University "Poltava Polytechnic named after Yuri Kondratyuk" at the age of 17 to 21 years on physical activity - 43 students were asked to answer 10 questions. In the research, the author set the following tasks: 1. to analyze the causes of hypodynamia and the consequences of its influence on the body. 2. to conduct a survey of student youth on the issues of predisposition to physical inactivity. 3. to compare the obtained data with the results of the survey of American students. Target group: student youth from 17 to 21 years old.

At the first stage of the study of the influence of students' activity on their functional state, a sociological survey was conducted, as a result of which it was found that the physical activity of first-year students is 5.5 hours per week, while this indicator was critically low for fifth-year students. (less than 2 hours a week), which characterizes this physical activity as hypodynamia[2]. Moreover, most of the first-year students (63%) were additionally engaged in various sports at sports schools and sections, while among the fourth, partly third-year students, only 5% were engaged independently. As shown by the questioning of students, this situation is explained by the following factors: age restriction of those involved in sports schools, heavy workload at the university, changes in marital status, part-time work in their free time, and others. In the course of the survey, 54% of young people answered that they get to school on foot and 36% by public transport, 10% prefer to get there by car. For comparison: at an American university, 21% of young people go to study on foot, 68% go by private transport, and 11% did not give an unambiguous answer to the question. In addition, in the course of the survey, 58% of students answered that they do not use the elevator, but climb the stairs on foot, 28% go home on foot only occasionally, and 14% go up only by the elevator because they get very tired after the school day. At an American university, 39% of young people do not use the "service" of the elevator at all, 48% use the elevator occasionally, and 13% always use the elevator[3].

In the course of the study, 81% of Poltava students answered that they can walk 3-4 km., 14% can walk about 1-2 trolleybus stops on their own, 5% can walk the distance from home to a stop. According to the results of the study, 47% of students periodically visit a gym (fitness club, swimming pool), 24% visit a gym systematically, and 29% answered that they visit only once a year. For comparison: 39% of Colombian students attend the gym on a regular basis, 44% visit the gym periodically and less than 17% of the respondents visit the gym once a year. According to the results, 14% of Poltava students answered that they have problems with being overweight and they periodically go on a strict diet. During the study, 2 of the most significant results were obtained:

1. It was revealed that 52% of young people surveyed in childhood attended one sports section, 24% attended several sports sections, and 24% were completely exempted from physical training. For comparison, a study by American colleagues found that 3% were exempt from physical activity, 46% attended one sports section, and 51% attended several sports sections.

2. It was found that 71% of young people occasionally suffer from increased fatigue, 19% do not suffer from fatigue at all, and 10% of the respondents have a typical syndrome of chronic fatigue. At the second stage of the study, the functional state of the organism of first and third (fourth) year students was assessed by using various functional tests, among which the most significant, accessible and most informative were the following: breath holding tests (Shtange and Genchi), heart rate indicators (HR), blood pressure (BP), respiratory rate (RR), as well as orthostatic and clinostatic tests, Romberg's test and Yanovsky's test. These functional tests were carried out as follows: Stange's test and Genchi's test (holding the breath during inhalation and exhalation for one minute), orthostatic and clinostatic tests (measuring blood pressure and heart rate lying and standing for 30 seconds), Romberg's test (maintaining static equilibrium in a given pose to a characteristic tremor, or loss of balance I, for a while) and Yanovsky's test (head rotation with a given frequency, in the initial sitting position with closed eyes, until slight dizziness or malaise, for a while)[5]. After analyzing the data obtained, it can be concluded that the indicators of the orthostatic and clinostatic tests, which characterize the state of the cardiovascular system, as well as the Genchi test (breath holding on expiration) in the third year students became significantly worse compared to the indicators of the first year students. These changes in third-year students reflect the weakening of the cardiovascular and respiratory systems (decreased breathing reserves). You can also talk about a decrease in the psychological characteristics of students, showing a change in willpower, expressed in the ability to endure oxygen debt. A strong decrease in the indicators of the balance test (Romberg's test) and Yanovsky's test indicates a deterioration in the functioning of the cerebellum. These indicators can be associated with the psychological and mental workload of senior students of specialties. At the second stage of the study, the functional state of the organism of first and fifth year students was assessed by using various functional tests, among which the most significant,

accessible and most informative were the following: breath holding tests (Shtange and Genchi), heart rate (HR) indicators, blood pressure (BP), respiratory rate (RR), as well as orthostatic and clinostatic tests, Romberg's test and Yanovsky's test.

After analyzing the data obtained, it can be concluded that the indicators of the orthostatic and clinostatic tests, which characterize the state of the cardiovascular system, as well as the Genchi test (breath holding on expiration) in the third year students became significantly worse compared to the indicators of the first year students. These changes in fifth-year students reflect the weakening of the cardiovascular and respiratory systems (decreased breathing reserves). You can also talk about a decrease in the psychological characteristics of students, showing a change in willpower, expressed in the ability to endure oxygen debt. A strong decrease in the indicators of the balance test (Romberg's test) and Yanovsky's test indicates a deterioration in the functioning of the cerebellum. These indicators can be associated with the psychological and mental workload of senior students of specialties. All these data show that mental overstrain and physical inactivity negatively affect the functional state of students. Long-term lack of sufficient physical activity among fifth-year students against the background of high psychological and mental stress in the future can be the cause of diseases. As a result of the experiment, we can say that while studying at the university, the functional state of students changes for the worse. It is obvious that sufficient physical activity is a necessary condition for maintaining the functional state and harmonious development of the personality.

**Conclusion.** Thus, it has been established that the peculiarities of the state of health of a modern student are determined, among other things, by factors of the university environment, which in turn leads to increased mental stress, lack of time for sleep, eating, rest, and physical activity. Physical culture at a university is one of the important ways of correcting and managing a student's health, which requires a systematic approach to the development and implementation of scientific and theoretical foundations to improve the system of students' physical education.

#### Findings:

1. As a result of the study, it was found that student youth are moderately involved in sports and no obvious prerequisites for physical inactivity were found. However, it is necessary to pay attention to the fact that a certain number of respondents have prerequisites for physical inactivity.

2. The results of studying the prerequisites for the onset of hypodynamia among young people are approximately similar in terms of basic parameters.

3. In the course of explanatory work with young people, it is necessary to focus the attention of young people on the problems of preventing physical inactivity: playing sports, active games in the air, walking and cycling, walking on stairs, proper daily routine and balanced nutrition.

4. The physical activity of students during their studies at a higher educational institution decreases by the fourth year to two hours per week, which is a critically low indicator.

5. Against the background of insufficient sport activity, changes in the level of the functional state of students for the worse, which is evident from the results of functional tests and the body's response to physical activity.

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