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ANALYSIS OF THE PHYSICAL ACTIVITY OF STUDENTS OF HIGHER EDUCATIONAL INSTITUTIONS OF KAZAKHSTAN

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Analysis of the physical activity of students of higher educational institutions of Kazakhstan

Abstract. The article contains data on the theoretical analysis of literary sources relating to the study of the importance of the physical activity of student youth and the results of the study of physical activity of students of various higher educational institutions in Kazakhstan. The following characteristics have been defined: students' satisfaction with the organization of the educational process in physical education and sports universities, students' interest in physical education, the necessary periodicity of physical activity in the week cycle according to the student's opinion. During the research were established the physiological characteristics of the body of students as body composition and body mass index. On the basis of the conducted research, it can be concluded that in most institutions of higher education there is a lack of motor activity and this deficiency ultimately negatively affects the health of students.

Key words: physical activity, students, higher educational institutions, physical education.

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Қазақстанның жоғары оқу орындарындағы студенттердің қозғалыс белсенділігін талдау

Аңдатпа. Мақалада студент жастардың қозғалыс белсенділігінің мәнін зерттеуге қатысты әдеби дереккөздерді теориялық талдау бойынша деректер және Қазақстанның түрлі жоғары оқу орындарындағы студенттердің қозғалыс белсенділігін зерттеудің жеке нәтижелері көрсетіледі. Студенттердің дене шынықтыру және спорт бойынша жоғары оқу орындарында оқу үдерісін ұйымдастыруға қанағаттануы, студенттердің дене шынықтыру сабақтарына қызығушылығы, студенттердің пікірі бойынша апталық циклде дене шынықтыру сабақтарының қажетті кезеңділігі сияқты сипаттамалар айқындалды. Зерттеу барысында студенттердің денесінің құрамы мен дене салмағының индексі сияқты физиологиялық сипаттамалары анықталды. Зерттеу негізінде жоғары оқу орындарының режимінде көптеген университеттердің қозғалыс белсенділігі жетіспейді және бұл кемшілік студенттердің денсаулығына теріс ықпал етеді деген қорытынды жасауға болады.

Түйін сөздер: қозғалыс белсенділігі, студенттер, жоғары оқу орындары, дене шынықтыру.

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Анализ двигательной активности студентов высших учебных заведений Казахстана

Аннотация. В статье приводятся данные по теоретическому анализу литературных источников, касающихся изучения значения двигательной активности студенческой молодежи, и собственные результаты изучения двигательной активности студентов различных высших учебных заведений Казахстана. Определены такие характеристики, как удовлетворенность студентов организацией учебного процесса в вузах по физической культуре и спорту, заинтересованность студентов в занятиях физической культурой, необходимая периодичность занятий физической культурой в недельном цикле по мнению студентов. При проведении исследования устанавливались такие физиологические характеристика организма студентов, как состав тела и индекс массы тела. На основании проведенного исследования можно сделать вывод, что в режиме высших учебных заведений большинству вузов не хватает двигательной активности, и этот недостаток в конечном счете негативно отражается на здоровье студентов.

Ключевые слова: двигательная активность, студенты, высшие учебные заведения, физическая культура.

Introduction. According to Nikolayev A.A. (2005), As a result of the sedentary lifestyle, overeating, information overload, and neuro-emotional overload, the environment of modern man has changed dramatically, which affect negatively on his health. In the short historical period (60-80 years), the share of heavy physical labor in the production process decreased by 150-200 times, which led to the disruption of the natural nature of the human organism and «launched» a chain reaction of hypodynamic syndrome. All this led to the emergence of an entire bunch of diseases related to the cardiovascular and central nervous systems [1].

This social phenomenon also applies to student youth. The deterioration of health and incidence rate among students both in certain categories of diseases and in the general context, which has been recorded in recent years, undoubtedly negatively affects the success of educational activities in higher educational institutions. Nowadays, the healthy state of health of the young generation is considered a prerequisite for their future occupation and the effective development of the social, socio-economic, and political components of the well-being of society on a nationwide scale.

Physical activity plays an important role in the professional development of specialists, which determines the relevance of the study. So, a sufficient level of development of physical qualities is the foundation for the formation of professionally important skills and abilities, the basis for optimizing the psychophysical state of students, increases the efficiency of vocational training, provides educational and professional activity, and is one of the criteria for the professional reliability of a specialist. Insufficient level of physical fitness causes low indices of physical and mental performance, complicates the successful mastering of professional skills [2].

The pandemic associated with COVID-19 was a ccolossal blow to student physical activity. With forced quarantine restrictions, especially at the first stages in the spring of 2020, traditional (full-time) education in all subjects, including physical education, was completely stopped in Kazakhstan, which led not only to a decrease in physical activity and the level of working capacity, but also to decrease in cognitive activity and social communication of students. Only a high level of motivation allowed some students to engage in physical exercises at home and maintain at least some minimum level of physical activity, when it was forbidden even on the street, near the place of residence, to conduct physical education classes.

The purpose of the research is to study the level of physical activity of students of higher educational institutions in Kazakhstan.

Materials and methods. The analysis of the motor activity of students was carried out within the framework of the study of the influence of sports loads on the motivation of going in for sports in the student environment of a higher educational institution.

During the study, the following methods were used:

1. Analysis of scientific and methodological literature.

2. Determination of physiological characteristics of the organism of students: body composition (calculation of fat and muscle mass) was done by Matiegka J. [3], determination of body mass index (BMI), calculated by dividing body weight (in pounds) by height (in foot). According to WHO (World Health Organization) recommendations, the following BMI indicators are accepted: <18.50 - underweight; = 18.50 - 24.99 - normal weight; = 25.00 - 29.99 - overweight; = 30.00 - and above - obesity [4].

3. Anonymous questionnaire survey. 200 first-year students (Ib1 + Ib2), aged 17 to 21, took part in the survey for 3 years from 2018 to 2020. The average age of the respondents was 18.3 ± 1.5. Among the study participants, there were 100 boys (50%) aged 17 to 21 (average age 18.2 ± 1.5), girls - 100 (50%) aged 17 to 21 years (average age 18.4 ± 1.5). Control group 1 (Ib1) included university students in the direction of general and subject pedagogy in the amount of 100 people. Control group 2 (Ib2) included students of a specialized university that train specialists for the field of physical education and sport, also in the amount of 100 people.

Results and discussion. In the works of such authors as, Vystavkina V.F. (2006), Amosov N.M. (1989), Schwartz V.B. (1972) asserts that "the evolutionary development of a person predetermined the normal functioning of all his organs and systems in conditions of active physical activity. Physical activity is an integral and complex aggregate of behavior that depends on both biological and external environmental factors. It is known that physical activity is a natural stimulus, not only for a normal life but also for biological development" [5-7].

Physical activity of the person is a biological necessity, without which life is impossible. For each age period of life, it has its optimal ratio. It is very difficult to overestimate the importance of physical activity for student youth, expressed in maintaining and strengthening the level of health, increasing the duration and quality of life, increasing the adaptation of the body to the effects of external factors of the environment.

According to I.V. Rubtsova, E.V. Kubyshkina, E.V. Alatortseva, Ya.V. Gotovtseva (2007), "physi-

cal activity is a natural and specially organized physical activity of a person, which ensures his successful physical and mental development. It is an integral part of a student's lifestyle and behavior, depending on the organization of physical education, morphological and functional characteristics, the type of the nervous system, the amount of free time, motivation to study, the availability of sports facilities, and student recreation areas [8].

According to the WHO, between 2001 and 2016 in countries with a high standard of living, the prevalence of insufficient physical activity increased by 5% (from 31.6% to 36.8%)

As recommended by WHO, children and adolescents aged 5-17 should:

– to take time at least 1 hour for physical activity daily, in the context of the aerobic load of medium and high intensity.

– to take time at least 3 times a week for high-intensity aerobic physical activity, as well as those types that strengthen the human musculoskeletal system.

– it is necessary to limit the time spent in a sitting or lying position, especially when using gadgets for entertainment purposes.

Adults aged 18-64 are recommended to:

– to take time at least 2.5-5 hours for physical activity of moderate intensity per week of an aerobic nature;

– or high-intensity aerobic physical activity of at least 1-2.5 hours per week; or take time for a similar-load combination of medium-and high-intensity physical activity during the week.

– Spend time twice a week or more often with medium- or high-intensity physical activity aimed at developing muscle strength in all major muscle groups, as this brings additional health benefits; The time spent sitting or lying should be limited [9].

In our opinion, the following types of physical activity of students can be distinguished:

1. Physical activity related to domestic activities - house cleaning, going to shops and markets for food, moving from home or dormitory to university, etc.

2. Physical activity related to the performance of work in an enterprise, provided that the student combines work and study.

3. Physical exercise as well as walking or city break.

4. Sports are both amateur and professional.

Extensive mental activity tends to be accompanied by a significant reduction in the amount of time that can be devoted to leisure, physical education, and sport.

Usatov A.N. (2010) in his dissertation research notes that "the theoretical analysis and generalization of literary sources within the framework of the studied problem present students as a special social group, which is characterized by a lack of physical activity due to the enormous time spent on educational activities. The hypodynamic regime of educational activity, in conjunction with a complex of bad habits (smoking, the use of tonic and alcoholic beverages), not only worsens the health of students but also leads to early physical deterioration of the young organism" [10].

Shikhaeva M.V. Pavlycheva M.A., Efremova T.G. (2010) note that "the lack of physical activity observed in recent years due to the high academic load among the majority of students, causes the appearance of hypokinesia. It is a significant risk factor in the development of various illnesses, impairment of the mental and physical working capacity of a person. It is particularly important to organize physical activity up to the age of 25 (until the peak of motor potential is reached), during the period of the young person's professional development, when high demands are placed not only on mental activity but also physical ability» [11]

According to V.Yu. Karpov, K.K. Skorosov, M.S. Antonov. Kolpakova E.M. (2015), Kolpakovoy E.M., (2018) - "physical activity within the framework of the physiological optimum helps to increase the efficiency of the cardiorespiratory system, expand the adaptive capabilities and general nonspecific resistance of the body to unfavorable environmental factors. This allows us to consider physical activity not only as a powerful drug-free factor in maintaining and improving the level of health of the population but also as a factor that reduces to a certain extent the impact of the adverse ecological environment» [12, 13].

When analyzing the level of motor activity of first-year students for the period 2018-2020, the following data were revealed (tables 1 and 2).

As can be seen from Table 1, when examining students for body composition (calculating the amount of fat and muscle mass), a large percentage of students in the direction of general and subject pedagogy (Ib1) with a low degree of severity of the muscle component in the period from 2018 to 2020 were revealed. At the same time, an increased fat mass is also recorded in this group of students during all three years of observation. In this group, according to the BMI indicator, the degree of obesity in individual students is recorded with the dynamics of an increase in this indicator in the context of three-year observations. In Ib1, a large number of overweight students have been noted throughout all three years.

Table 1 – Body composition and body mass index of students (%)

Body composition and BMI		Period					
		2018 year		2019 year		2020 year	
		Ib1 (n=100)	Ib2 (n=100)	Ib1 (n=100)	Ib2 (n=100)	Ib1 (n=100)	Ib2 (n=100)
Increased muscle mass		1	25	0	22	0	24
Decreased muscle mass		57	3	55	2	49	3
Increased fat mass		33	1	31	2	35	2
Decreased fat mass		6	15	8	17	7	12
BMI	underweight	6	1	9	3	7	2
	healthy weight	61	98	60	95	58	95
	overweight	30	1	27	2	29	2
	obesity	3	0	4	0	6	1

Students of a specialized university (Ib2) have a significant number of students with increased muscle mass over the course of three years of observation. Being overweight in this group of students is noted in a very low range in terms of the number of people in the group. When comparing Ib1 and Ib 2, a reduced fat mass is recorded 2 times more often in students of a specialized university. The presented data indicate a significant positive effect of physical education and sport on such indicators as BMI and body composition in terms of muscle and fat components. The data from the research of the motor and physical activity of students in a sociological context are presented in Table 2.

Table 2 – Results of the questionnaire survey of students on the study of the issue of physical activity (%)

Indicator	Period					
	2018 year		2019 year		2020 year	
	Ib1 (n=100)	Ib2 (n=100)	Ib1 (n=100)	Ib2 (n=100)	Ib1 (n=100)	Ib2 (n=100)
Satisfaction of students with the organization of the educational process in physical education and sport	20	85	27	88	19	82
The interest of students in physical education and sport	24	97	26	95	22	96
The frequency of physical activity in the week cycle according to the students:						
Once a week	28	0	32	1	30	0
Twice a week	59	15	54	9	53	11
Three times a week	13	85	14	90	17	89

As can be seen from Table 2, students' satisfaction with the organization of the educational process in the context of physical education and sport is significantly higher among students from Ib2. The interest of students in physical education and sport is also significantly higher in Ib2. The frequency of physical education classes is also more rationally assessed by the students of Ib2 since from the point of

view of the theory and methodology of physical education and sport, sports physiology, and biochemistry, physical education classes 3 times a week are the most optimal for increasing the body's adaptive capabilities and the development of basic physical qualities.

As E.A. Shagako notes. (2017), "Successful mental work requires not only a trained brain but also a trained body, muscles that help the nervous system to cope with intellectual stress.

The sustainability and activity of memory, attention, perception, processing of information are directly proportional to the level of physical preparedness. The various mental functions are highly dependent on certain physical qualities. Therefore, properly organized motor activity and optimal physical exertions before, during, and after the end of mental labor can directly influence the maintenance and improvement of mental efficiency» [14].

The question of students' physical education and sport is gaining special attention since the educational process in universities is based mainly on intellectual labor. This is due to the specificity of the influence of educational activity on the human body. This type of activity is characterized by the following specific features:

1) High and dense volume of information flow, the stress of memory, attention, perception, and memory of new information;

2) a large number and speed of thought processes with a high degree of involvement of the central nervous system;

3) decreased physical activity.

Modern students, due to the order of organization of the educational process, are relieved of the need for physical labor, as a result of which students conduct training sessions in a sitting position. And in their free time, they prefer to spend more and more time in a sitting or lying position. The muscular system does not receive the necessary motor aspect from physical activity, it becomes weaker, up to the onset of atrophy of certain muscle groups. In turn, the low activity of muscle tissue has a negative effect on the work of the whole organism, leads to disruption of the central nervous system, the healing effect of physical labor, fixed by genetics and natural factors, collapses.

The change in the mode of physical activity towards its increase and expansion of the coverage area based not only on physical education but also on sports activity, for the student population and its introduction into the educational process, have long been considered several critical, not tolerating delays in the decision, especially urgent problems of theory and methodology of physical education and attracts the attention of both individual scientists and groups of authors.

In our opinion, it is precisely the habits associated with physical activity at the level of physical education and sport inherent in childhood, adolescence, and youth (student age) that make it possible to maintain and strengthen health in the future.

When students enter the first year of higher education, students complete the physiological age-related development of most organs and systems of the body, while in functional terms they have not yet reached the level of development inherent in an adult. There is steady homeostasis. Skeletal bones are formed, and the rate of growth in length slows down significantly or stops altogether. The body muscle mass reaches almost 50% of the body weight, and the muscle strength increases significantly. The adaptation of the cardiovascular and respiratory systems to physical activity becomes more perfect: the heart rate decreases almost to the physiological norms of an adult; the vital capacity reaches the maximum physiological volume. The hormone system is completing its formation. The functions of the central nervous system are reaching their full development.

At the student age, there is a strong tendency to achieve the maximum result in any kind of activity, including in sports and physical education is significantly developed.

Strengthening all physiological systems of the body, increasing the level of physical development at the student age create a favorable background for the maximum involvement of young people in physical activity by methods and methods of physical education and sport through increasing motivation to engage in these types of activities.

Due to the fact that increased educational loads significantly load the central nervous system of the body of students, academic studies should be balanced with regular motor (physical) activity both in everyday life and in the educational activities of the university.

Conclusions. Physical education should take an important place in the educational activities of students, maintaining an active lifestyle, through increasing physical activity should become an important component in their life.

Constant physical exercises have a positive effect on the physical and mental performance of students, which is why systemic knowledge and skills in physical education should be laid in higher educational institutions as the basis for a healthy lifestyle and the basis for future successful professional

activity, regardless of the chosen profession, be it a teacher, lawyer or economist... After graduation, young specialists should be trained in their chosen specialty, also have good health and be physically developed.

The data obtained in the course of the research indicate that students' satisfaction with the organization of the educational process in the context of physical education and sports activity and interest in physical education and sport are significantly higher among students of a specialized university that trains specialists for the studied area. It is also noted that the frequency of physical education classes is also more rationally assessed by students of a specialized university. The presented data indicate a significant positive influence of physical education and sports activity directly on the attitude to physical education and sport in the sociological context.

The positive effect of physical education and sports is in two main categories:

1) Specific, which manifests itself in the development of general and special adaptation of the body to physical activity in the form of improving physical qualities (strength, endurance, coordination, flexibility, etc.);

2) Non-specific, consisting in increased resistance to the action of certain factors of the social environment and an increase in the status of the body's immune system to counteract various diseases, as well as an increase in mental performance.

It determines the protective function of systematic physical activity, which is so necessary in modern conditions of a student's life. With the help of systematic physical education and sport, not only physical perfection is achieved, but also under their influence, stable homeostasis (self-regulation) develops, manifested in the coordination of the work of all systems and organs of the body, the work of the central nervous system improves, which in turn has a beneficial effect on mental processes, much needed in the educational process.

It can be stated with a high degree of confidence that in the educational regime of most higher educational institutions there is not enough full-fledged motor activity, and this lack ultimately affects the health of students.

The main incentive for understanding the role of physical culture and sports in universities as a compensatory element of the lack of motor activity and a means of forming a healthy lifestyle of students can be the introduction of innovations that increase the efficiency of the process of physical education and have a complex impact on the formation and development of motivation for independent physical culture and sports activities.

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