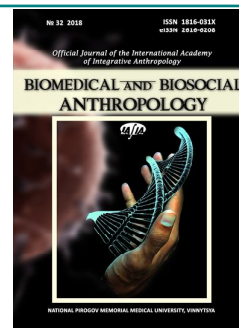




BIOMEDICAL AND BIOSOCIAL ANTHROPOLOGY

Official Journal of the International Academy
of Integrative Anthropology

journal homepage: <http://bba-journal.com>



Motor activity of students of modern education institutions: biomedical and physiological-hygienic aspects of its assessment and optimization

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ARTICLE INFO

Received: 3 July, 2018

Accepted: 23 August, 2018

UDC: 613:616-053.82:378

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One of the key problems of modern biomedical anthropology is the scientific substantiation of the prerequisites for the formation of a healthy lifestyle, the introduction of health-saving technologies that take into account its, psychophysiological and personality features. The aim of the study is biomedical and physiological and hygienic assessment of motor activity of students of modern institutions of higher education and scientific substantiation of ways of its optimization. 385 students aged from 19 to 21 were under observation during the research. As quantitative criteria for assessing motor activity, the values of daily energy consumption, the number of locomotions in a daily cycle and the duration of the dynamic component in the daily budget of time were used. The qualitative description of the values of motor activity was carried out on the basis of studying the main types of locomotives and their distribution patterns with the allocation of zones of minimal (hypokinesia), optimal (normokinesia) and maximum (hyperkinesia) values. The statistical analysis of the received materials provided for the application of the standard package of applications "Statistica 6.1". As the norms of motor activity of modern students, the following indicators are determined: daily energy consumption values - 9000-11000 kJ for young women and 11000-13500 kJ for young men; number of locomotions in a daily cycle - 14000-18000 steps for young women and 15000-19000 steps for young men; the duration of the dynamic component in the daily budget time - 130-180 minutes in young women and 140-190 minutes in young men. Among the leading ways of optimizing motor activity are: the implementation of continuous monitoring and individualized integrated assessment of habitual motor activity; taking into account the norms of motor activity of student youth, which provide a beneficial effect on the processes of formation of their health and adaptive capacity of the body of future specialists and the mandatory achievement of their values; development and implementation of a set of measures aimed at optimizing motor activity and rational organization of motor activity of modern students.

Keywords: students, institutions of higher education, motor activity, standards, ways of optimization.

Introduction

One of the key problems of modern biomedical anthropology is the scientific substantiation of the prerequisites for the formation of a healthy lifestyle, enhancement of adaptive resources of its organism and quality of life, introduction into the process of vital functions of health-saving technologies that take into account the morphological, psychophysiological and personality features of the person and based on the results of the medical-ecological monitoring of the modern population [1, 4, 8, 18, 32, 34, 35].

In this context, the biomedical phenomenon, such as

motor activity (MA), plays an important role in the anthropological, physiological and hygienic category of modern theoretical, clinical and preventive medicine, a criterion of its nature and health-creating in its content, a characteristic of the level of adaptation and functionality an organism of a person determined by a certain total amount of locomotions (ie movements) that a person of a certain age, a certain gender and a certain professional group performs in the process of vital activity and either for a particular period of time (year, month, week, day, hour, etc.) [10, 30, 36, 38].

As the main components of the MA, based on the positions of the adequate solution of the health problems of pupils and students, it is customary to allocate a focused MA in the course of performing educational or professional activities, MA in the process of physical education, as well as spontaneous MA in their free time [5, 24, 30, 40].

Given this fact, the concept of the state of health depends on the level of the usual MA, which is an inalienable attribute of the usual, peculiar to each person, of life, is fully grounded in the studies of O.G. Sukharev [36-39], according to which the maximum strongest positive impact on the state of health and level of functional capabilities of the organism can be produced only by MA, the total amount of which satisfies the biological need of the organism in movements, promotes health promotion and improvement of functional and thus corresponds to the value of a certain physiological and hygienic norm to be determined, established and scientifically substantiated [21, 22, 36, 38].

The purpose of the work is biomedical, physiological and hygienic assessment of motor activity of students of modern higher education institutions and scientific substantiation of ways of its optimization.

Materials and methods

The research was conducted on the basis of National Pirogov Memorial Medical University, Vinnytsya. Under supervision, 385 students (including 200 young women and 185 young men) aged from 19 to 21 stayed in the structure of conducting cross-sectional (one-stage) and longitudinal (longitudinal) observations during the period.

As the leading quantitative criteria of the MA, the following indicators were used: the daily energy consumption, the number of locomotions in a daily cycle, and the duration of the dynamic component in the daily budget of the time. The qualitative characteristics of the MA were based on the study of the main types of locomotions that took place, the form of their organization, the goal achieved through motor activity, as well as the structure of the distribution of different levels of MA in young women and young men with the allocation of zones of minimal (hypokinesia), optimal and maximum (hyperkinesia) [2, 30, 35-38, 40].

The number of locomotions in a daily cycle (in steps) was determined daily using the method of counting steps every day during the week. During the observations, the digital pedometers SIGETA PMT-01, I-PDM 2002 new and Pedometr G014, which ensure the identity of the measurements, are located in a vertical plane near the center of gravity of the body, which minimizes the error of the device, does not interfere with the students in their usual activities and creates certain ease of control and readout of the device during the experiment. Students were asked to walk with pedometers one week. At the end of each day during the week indicators of the pedometer were recorded and recorded in a specially designed form. Then the average number of steps per day and week was calculated.

The duration of the dynamic component in the daily budget

of the time (in minutes) was determined based on the timing of the main types of educational and extra-curricular activities, as well as questioning and interviewing students.

The amount of energy consumption (in kJ) was calculated by applying the time-table method, taking into account that the energy expenditures of the developing organism include the following components in its structure: energy expenditure in support of the vital functions of the organism (basic exchange); energy costs associated with the specific-dynamic action of food (12% of the main exchange), as well as energy expenditure in connection with the implementation of certain neuromuscular activities and, therefore, directly caused by MA. The calculation of values was carried out in accordance with separate days of the week using tables of energy value of different types of activities.

For the statistical processing of the received materials a standard package of applied programs of multivariate statistical analysis "Statistica 6.1" (license number BXXR901E245722FA, belongs to the National Pirogov Memorial Medical University, Vinnytsya) was used [3, 27].

Results

During the hygienic estimation of the daily energy consumption of students based on the use of the time-table method, it was found that their mean values were 10247 ± 144 kJ for young women and 12903 ± 246 kJ for young men ($p(t) < 0.001$) (Table 1).

During determination the structural features of the distribution of the values of the daily students MA, it was found that the most significant, according to the degree of distribution in the student environment among the young women, it was necessary to assume the values of daily energy consumption in the range from 10000 to 11000 kJ (22.3%), in the range from 9000 to 10000 kJ (21.2%) and in the range of 8000 to 9000 kJ (19.2%), among young men, the daily energy consumption in the range from 10000 to 11000 kJ (16.2%), in the range of 13000 to 14000 kJ (14.8%) and in the range of 11000 to 12000 kJ (13.4%).

Very interesting was the recognition of data characterizing

Table 1. Indicators of the daily energy consumption of students based on the use of the timekeeping table method in the weekly cycle, kJ.

Weekday	Groups of students				p
	Young women		Young men		
	n	M±m	n	M±m	
Monday	194	10577±187	143	13214±288	<0,001
Tuesday	194	10194±166	143	12942±263	<0,001
Wednesday	194	10295±152	143	13122±279	<0,001
Thursday	194	10322±178	143	12879±270	<0,001
Friday	194	10353±166	143	12749±268	<0,001
Saturday	194	10245±178	143	12859±291	<0,001
Sunday	194	9739±167	143	12554±295	<0,001
Totally	194	10247±144	143	12903±246	<0,001

Table 2. Indicators of the number of students locomotions in the week cycle based on the use of the method of counting steps, steps.

Weekday	Groups of students				p
	Young women		Young men		
	n	M±m	n	M±m	
Monday	105	16847±304	105	18465±328	<0,001
Tuesday	105	16015±336	105	17732±359	<0,001
Wednesday	105	16160±310	105	17811±326	<0,001
Thursday	105	15992±297	105	17434±317	<0,01
Friday	105	16603±298	105	16991±346	>0,05
Saturday	105	16175±352	105	17172±386	>0,05
Sunday	105	15175±322	105	16674±389	<0,001
Totally	105	16138±306	105	17469±330	<0,001

Table 3. Indicators of the duration of the dynamic component in the daily budget of the week in the student cycle, min.

Weekday	Groups of students				p
	Young women		Young men		
	n	M±m	n	M±m	
Monday	150	175,7±3,7	135	188,1±4,0	<0,05
Tuesday	150	170,1±4,0	135	180,1±4,2	>0,05
Wednesday	150	168,1±3,4	135	178,7±3,8	<0,05
Thursday	150	167,2±3,4	135	167,9±3,4	>0,05
Friday	150	170,7±3,4	135	163,0±4,1	>0,05
Saturday	150	164,4±4,2	135	165,7±4,8	>0,05
Sunday	150	138,4±3,2	135	155,0±4,4	<0,01
Totally	150	164,9±3,5	135	170,9±4,0	>0,05

the fluctuations of the values of the studied indicators in a daily cycle. Among young women and young men, the highest daily energy consumption rates were recorded on Monday, and the smallest on Sunday. At the same time, in general, in order to decrease the value of daily energy consumption among young women it was necessary to arrange as follows: Monday - Friday - Thursday - Wednesday - Saturday - Tuesday - Sunday, among the young men: Monday - Wednesday - Tuesday - Thursday - Saturday - Friday - Sunday.

In the course of the determination and subsequent assessment of the values of students' locomotions in a daily cycle based on the use of the method of counting steps, it was found that their mean values were 16138 ± 306 steps for young women and 17469 ± 330 steps for young men ($p(t) < 0.001$) (Table 2).

Similarly, the shift in the weekly cycle of indicators, which reflected data relative to the duration of the dynamic component in the daily budget of time, should also be considered. According to the data obtained during the determination and hygienic estimation of the values of the indicators of the duration of the dynamic component in the daily budget of the students, it was found that their average values were 164.9 ± 3.5 min in young women and 170.9 ± 4.0 min in young men ($p(t) > 0.05$) (Table 3).

Discussion

The data obtained during the determination of the specific features of the number of students' locomotions in the week cycle and the values of the dynamic component in the daily budget of the students confirmed the general patterns that were identified when determining the values of daily energy consumption, and their dynamic changes, although they determined a certain variability of the studied values, in most the cases were sufficiently identical to the changes that occurred in the dynamics of the week from the daily energy consumption of young women and young men. It should be noted that the data of the comprehensive hygienic assessment of the usual MA of modern students who study in the medical IHE, conducted on the basis of determining the daily energy consumption, the number of students locomotions in the daily cycle and the duration of the dynamic component in the daily budget of the time, convincingly confirmed it fairly low level. Paying attention to the fact that during the analysis of data that characterizes the fluctuations of the values of the MA in the daily cycle, both among young women and among young men, their most significant values were recorded on Monday, the smallest - on Sunday. Such a characterization of the daily energy consumption in a daily cycle, as well as indicators of the number of locomotives and the duration of the dynamic component, differs from the peculiarities of school-age students, for which according to a number of studies conducted during the last decades of the twentieth century and the first decade of the XXI centuries, the structural features of the reciprocal content should be considered characteristic, namely: reduction of the level of daily energy consumption, the number of locomotions, the duration of the dynamic component in the daily budget of the time and in accordance with the MA in the studying days, and their marked increase in the weekend, free from studying sessions and holidays, and also has certain common features with the data obtained over the past years [5, 17, 20, 36, 38].

The results of the research are clearly and adequately determined by the fact that for research purposes in order to scientifically substantiate the values of the MA of student youth aged 19-21, it is necessary first of all to use the most informative and objective criterion for determining the peculiarities of motor activity of young women and young men, which is not subject to the influence of individual as internal as well as external factors, and is marked by the absence of pronounced individualized differences during the week cycle, namely, the values of daily energy output in the obligatory interconnection and interconnection with a number of other criteria, which are indicators of the number of locomotions in the daily budget of time and the magnitude of the duration of the dynamic component in the daily budget of time [6, 7, 9, 16, 19, 28].

Secondly, taking into account the peculiarities of the spread of different levels of students MA, they should be further divided into 3 groups of comparison, which should involve individuals in accordance with high, middle and low

MA levels. How should one measure the daily energy consumption of up to 9000 kJ (low MA), 9000 to 11000 kJ (average grade of MA) and over 11000 kJ (high level of MA) among young women, and MA up to 11000 kJ (low MA level), from 11000 to 13500 kJ (middle level of MA) and more than 13500 kJ (high level MA) - among young men. Thirdly, the initial element of the research to be carried out should be the analysis of the peculiarities of both the generalized values of the MA of young women and young men, as well as the peculiarities of the distribution of individual MA indicators in the daily budget of the time. Finally, the fourth, an integral part of further research aimed at establishing the criterial values of MA students, is the definition of the peculiarities of the processes of formation of such indicators of the level of psychophysiological adaptation of their organism to the conditions of conducting educational and extra-curricular activities in medical IHE, as characteristics of the development of individual psychophysiological functions of student youth in both natural and pre-formed conditions.

Thus, in the course of carrying out a hygienic assessment of the characteristics of the conditions of stay, the regime of organization of daily activities and lifestyle students and their depending on the level of MA, it was established that the smallest number of persons with negative subjective- (the degree of stress of the educational process, the level of nervous and emotional tension, peculiarities of well-being at the end of academical and weekend days, etc.) and objectively- (level of morbidity, etc.) were significant signs registered among young women and young men of the 2nd MA group.

In analyzing the correlations between the characteristics of household and social conditions of life, the day's regime and the indicators of academic performance, adaptive capacity and the state of health of students, depending on the level of MA, it is determined that as the largest number of correlations that were established (namely, such a phenomenon is a sign of a higher level of interaction of individual components of a multidimensional system, in which the processes of formation, self-organization and development are taking place), and the deepest and closest of their nature, discovered among young women and young men who belonged to 2 group of MA. Significantly less correlations between the studied indicators had characteristic for students who belonged to 3 MA group and, especially, to 1 group of MA.

The data obtained during the study of the leading psychophysiological correlates of higher nervous activity of modern students determine the fact that the most significant, positive in their content indicators that show the highest level of functional readiness of the body of both young women and young men, are registered among representatives and representatives of 2 MA group, the least significant, negative in their content indicators that show the lowest level of functional readiness of the organism both among young women and among young men in the vast majority of cases observed in representatives of 3 MA group.

During determining the relationships between the characteristics of the visual sensor system and the level of MA, it was necessary to draw attention to the existence of certain differences with the data obtained during the definition of similar relationships between the level of MA and the characteristics of higher nervous activity - the most positive-significant indicators were observed either in students who also had to be classified in MA group 1 or in students who should be classified in MA group 3. The MA level, characteristic for the representatives of the MA group 2, did not produce the most favorable effect, however, taking intermediate position in the rating of similar action on the psychophysiological properties of the body of student youth, had no statistically significant differences with the indicators of that group (1 group of MA in young women and 3 groups of MA in young men), which had the most significant positive effect.

The most significant, positive in their content indicators of coordination of movements, which testify to the highest level of functional readiness of the body to intensive training activities in IHE, both in young women and in young men, were registered among representatives of 2 MA groups. Instead, the least significant, negative in their content indicators indicating the lowest level of functional readiness of the body both among young women and among young men in the vast majority of cases were observed among representatives and representatives of the first MA group, which characterized the daily energy consumption in the range up to 9000 kJ (young women) and up to 11000 kJ (young men).

Summarizing the data obtained during the determination of the characteristics of attention, mental functions, according to the use of Schultz tables and correctional samples, and physical, according to the results of the method of step-test (PWC170) with one load, students' performance, it should be noted that despite their sufficient mosaic, the most optimal one is to recognize the results that are typical of young women and young men who belonged to 2 MA group.

The use of correlation analysis procedures was confirmed by the fact that the greatest number of correlation relations between the studied characteristics of psychophysiological functions and the leading characteristics of the state of health, the adaptive capacity of the organism and the indicators of the level of academic achievement in the professionally oriented disciplines studied were recorded as for young women, and for young men who belonged to 2 group MA (daily energy consumption from 9000 to 11000 kJ for young women and from 11000 kJ to 13500 kJ for young men), that according to the existing representations [6, 10-12, 15, 16, 19, 29, 31, 33], confirms most pronounced positive effect on the processes of development and formation is an organization of motor activity. The smallest number of correlation relations was characteristic for students in group 1 of MA (daily energy consumption up to 9000 kJ in young women and up to 11000 kJ in young men), indicators of students who belonged to 3

group of MA (daily energy intake of more than 11000 kJ in young women and over 13500 kJ in young men), occupied an intermediate position.

The data of the physiological and hygienic assessment of the degree of effectiveness of the impact on the functional capabilities of the body of adolescents of a complex of measures aimed at optimizing of MA and rational organization of motor activity of modern students, the main stages of implementation and practical implementation of which, given the recommendations, are given in a number of literary sources [9, 13, 14, 16, 29, 41], were the following stages: hygienic estimation of the level of the usual MA of young women and young men on the basis of determination of daily energy consumption, number of locomotions in a daily cycle, and the duration of the dynamic component in the daily budget of the time (stage 1), ensuring the rational organization of the daily activities of students through optimization of the main mode elements in accordance with existing normative approaches (stage 2), the use of individual exercises of the proposed set of activities, namely: exercises of morning hygienic gymnastics and evening relaxation gymnastics before sleep, sports walking and running exercises, exercises of respiratory and visual gymnastics, etc., witnessed the appearance of a number of positive results in terms of content.

Thus, the obtained results determined that the most significant positive effect developed by the complex of measures was made on the indicators of the functional state of such psycho-physiological functions, such as mobility and equilibrium of nerve processes and coordination of movements. In particular, the use of the developed complex provided improvement ($p < 0.01-0.001$) of the functional characteristics of the mobility of the nervous processes by 59.5% for young women and 44.0% for young men, the characteristics of the balance of nervous processes - by 25.4% for young women and 26.5% for young men, the number of touches during the measurement of finger movements - 17.2% in young women and 22.6% in young men, indicators of the integral indicator of coordination of movements - 16.4% in young women and 22.3% in young men.

A somewhat less pronounced effect of the complex was observed in the case of physical-hygienic evaluation of such psychophysiological functions ($p < 0.05-0.001$), the speed of a simple and differentiated visual-motor reaction, as well as indicators of labor efficiency that is carried out. Thus, the use of the developed complex provided a decrease in the latent period of the simple visual-motor reaction by 13.1% for young women and 11.9% for young men, a decrease in the values of the latent period of differentiated visual-motor reaction - by 10.6% for young women and 11.1% for young men, for indicators of labor efficiency, which is carried out - by 13.1% for young women and 10.6% for young men. In the end, the least significant positive impact of a set of measures aimed at optimizing the MA and the rational organization of motor activity of modern students, which was implemented,

was inherent in the indicators of the functional state of such psychophysiological functions as the functionality of the visual sensor system and indicators of the degree of involvement in the activity being performed and psychic endurance. In particular, the use of the developed complex provided improvement of the functional characteristics of the critical frequency of fusion of light flashing at 3.2% in young women and 5.1% in young men, indicators of the degree of engagement in the activity being carried out - 2.0% in young men, indicators of mental endurance - 2.0% in young men.

Consequently, the process of valuation of the MA should include the determination of optimal values of MA in a daily cycle, and in the shorter terms, first of all, during the studying and extracurricular time, necessarily on the basis of an assessment of the effects of different MA modes on the leading correlations of their psychophysiological adaptation to the conditions of the daily activities of the IHE, the characteristics of the development of individual psychophysiological functions, housing and social conditions of life, the mode of the day and the functional capacity of the students, students youth, etc. [7, 9, 23, 25, 26, 30, 35, 36, 38].

In the course of the research the most positive-significant influence and the features of daily activity and lifestyle, the processes of formation of individual psychophysiological functions and characteristics of psycho-physiological adaptation in general, the objective correlates of mental and physical efficiency, established the mode of motor activity characteristic of students who belonged to 2 MA group.

Therefore, the following MA indices, which can be recommended as norms of the IHE MA of students, should be considered as fully justified both from physiological and hygienic positions and from the point of view of evidence-based medicine, taking into account the peculiarities of social formation and professional growth of future specialists and have the most significant beneficial effects on the processes of formation of health and adaptive possibilities of their body: the daily energy consumption - 9000-11000 kJ in young women and 11000-13500 kJ in young men; number of locomotions in a daily cycle - 14000-18000 steps in young women and 15000-19000 steps in young men; the duration of the dynamic component in the daily budget of the time - 130-180 minutes in young women and 140-190 minutes in young men (Table 4).

At the same time, the leading ways of optimizing the MA of student youth against the backdrop of numerous adverse trends in changes in the indicators of adaptive and functional capacity of the body and the state of health of young women and young men who study in IHE, the absence of significant positive changes on the part of indicators of the processes of formation of psychophysiological functions, mental and physical disability, passive sedentary lifestyle, which are realities for the vast majority of modern students, it is necessary to distinguish: the implementation of continuous monitoring and individualized comprehensive hygienic assessment of the usual MA of students based on the

Table 4. Norms of motor activity of modern students.

Sexual features	Motor activity level		
	Hypokinesia	Normokinesia	Hyperkinesia
Daily energy consumption level, kJ			
Young men	up to 11000	11000 - 13500	over 13500
Young women	up to 9000	9000 - 11000	over 11000
Number of locomotions in a daily cycle, steps			
Young men	up to 15000	15000 - 19000	over 19000
Young women	up to 14000	14000 - 18000	over 18000
The duration of the dynamic component in the daily budget time, minutes			
Young men	up to 140	140 - 190	over 190
Young women	up to 130	130 - 180	over 180

determination of the daily energy consumption, the number of locomotions and the duration of the dynamic component in the daily budget of the time; taking into account the hygiene norms of the MA of student youth, which provide a significant beneficial impact on the processes of their health and adaptation capabilities of the body of future specialists and the mandatory achievement of their meanings in the process of organizing the educational process in the IHE and during the extracurricular activities of young men and young women; scientific substantiation and implementation of prophylactically determined strategies for the organization of day-to-day teaching and extracurricular activities, developed on the basis of the hygiene norms of the MA of student's youth, and, in particular, a set of measures aimed at optimizing the MA and rational organization of the motor activity of modern students.

Conclusions

During the conducted research biomedical and physiological-hygienic estimation of students' motor activity from modern institutions of higher education and scientifically grounded ways of its optimization were carried out. As the norms of motor activity of modern students, the following indicators are determined: daily energy consumption values - 9000-11000 kJ for young women and 11000-13500 kJ for young men; number of locomotions in a daily cycle - 14000-18000 steps in young women and 15000-19000 steps in young men; the duration of the dynamic component in the daily budget of the time - 130-180 minutes in young women and 140-190 minutes in young men. Leading ways to optimize motor activity must include: implementation of continuous monitoring and individualized comprehensive hygienic assessment of the usual MA students based on the determination of daily energy consumption, number of locomotions and the duration of the dynamic component in the daily budget of the time; taking into account the hygienic norms of the MA students youth, which provide a significant beneficial impact on the processes of their health and adaptation capabilities of the body of future specialists and the mandatory achievement of their values in the process of organizing the educational process in the IHE and during the extracurricular activities of adolescents; scientific substantiation and implementation of prophylactically determined strategies for the organization of day-to-day educational and extracurricular activities developed in the light of the hygienic norms of the MA of student's youth and, in particular, a set of measures aimed at optimizing MA and rational organization of the motor activity of modern students.

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РУХОВА АКТИВНІСТЬ СТУДЕНТІВ СУЧАСНИХ ЗАКЛАДІВ ВИЩОЇ ОСВІТИ: БІОМЕДИЧНІ І ФІЗІОЛОГО-ГІГІЄНИЧНІ АСПЕКТИ ЇЇ ОЦІНКИ ТА ОПТИМІЗАЦІЇ

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Однією із ключових проблем сучасної біомедичної антропології є наукове обґрунтування передумов до формування здорового способу життя людини, запровадження здоров'язберігаючих технологій, які ураховують її психофізіологічні і особистісні особливості. Метою роботи є біомедична і фізіолого-гігієнічна оцінка рухової активності студентів сучасних закладів вищої освіти та наукове обґрунтування шляхів її оптимізації. Під наглядом протягом проведених досліджень перебували 385 студентів у віці від 19 до 21 років. Як кількісні критерії оцінки рухової активності використовувались величини добових енерговитрат, кількості локомоцій у добовому циклі та тривалості динамічного компонента у добовому бюджеті часу. Якісну характеристику величин рухової активності здійснювали на підставі вивчення основних видів локомоцій та структури

їх розподілу з виділенням зон мінімальних (гіпокінезія), оптимальних (нормокінезія) і максимальних (гіперкінезія) значень. Статистичний аналіз отриманих матеріалів передбачає застосування стандартного пакету прикладних програм "Statistica 6.1". Як нормативи рухової активності сучасних студентів визначені наступні показники: величини добових енерговитрат - 9000-11000 кДж у дівчат і 11000-13500 кДж у юнаків; кількість локомоцій в добовому циклі - 14000-18000 кроків у дівчат і 15000-19000 кроків у юнаків; тривалість динамічного компоненту у добовому бюджеті часу - 130-180 хв у дівчат і 140-190 хв у юнаків. До числа провідних шляхів оптимізації рухової активності слід віднести: здійснення постійного моніторингу та індивідуалізованої комплексної оцінки звичної рухової активності; урахування нормативів рухової активності студентської молоді, які забезпечують сприятливий вплив на процеси формування стану їх здоров'я та адаптаційні можливості організму майбутніх фахівців і обов'язкове досягнення їх значень; розроблення та запровадження комплексу заходів, спрямованих на оптимізацію рухової активності і раціональну організацію рухової діяльності сучасних студентів.

Ключові слова: студенти, заклади вищої освіти, рухова активність, нормативи, шляхи оптимізації.

ДВИГАТЕЛЬНАЯ АКТИВНОСТЬ СТУДЕНТОВ СОВРЕМЕННЫХ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ: БИМЕДИЦИНСКИЕ И ФИЗИОЛОГО-ГИГИЕНИЧЕСКИЕ АСПЕКТЫ ЕЕ ОЦЕНКИ И ОПТИМИЗАЦИИ

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Одной из ключевых проблем современной биомедицинской антропологии является научное обоснование предпосылок к формированию здорового образа жизни человека, внедрение здоровьесберегающих технологий, учитывающих его психофизиологические и личностные особенности. Целью работы является биомедицинская и физиолого-гигиеническая оценка двигательной активности студентов современных высших учебных заведений и научное обоснование путей ее оптимизации. Под наблюдением на протяжении проведенных исследований находилось 385 студентов в возрасте от 19 до 21 лет. В качестве количественных критериев оценки двигательной активности использовались величины суточных энергозатрат, количество локомоций в суточном цикле и продолжительность динамического компонента в суточном бюджете времени. Качественную характеристику величин двигательной активности осуществляли на основании изучения основных видов локомоций и структуры их распределения с выделением зон минимальных (гипокинезия), оптимальных (нормокинезия) и максимальных (гиперкинезия) значений. Статистический анализ полученных материалов предусматривал применение стандартного пакета прикладных программ "Statistica 6.1". В качестве нормативов двигательной активности современных студентов определены следующие показатели: величины суточных энергозатрат - 9000-11000 кДж у девушек и 11000-13500 кДж у юношей; количество локомоций в суточном цикле - 14000-18000 шагов у девушек и 15000-19000 шагов у юношей; продолжительность динамического компонента в суточном бюджете времени - 130-180 мин у девушек и 140-190 мин у юношей. К числу ведущих путей оптимизации двигательной активности следует отнести: осуществление постоянного мониторинга и индивидуализированной комплексной оценки привычной двигательной активности; учет нормативов двигательной активности студенческой молодежи, обеспечивающих благоприятное воздействие на процессы формирования состояния их здоровья и адаптационные возможности организма будущих специалистов и обязательное достижение их значений; разработку и внедрение комплекса мероприятий, направленных на оптимизацию двигательной активности и рациональную организацию двигательной деятельности современных студентов.

Ключевые слова: студенты, высшие учебные заведения, двигательная активность, нормативы, пути оптимизации.
