

ON THE PROBLEM OF INDEPENDENT PHYSICAL TRAINING APPLICATION IN EDUCATIONAL SPACE OF MODERN HIGHER INSTITUTIONS

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Abstract. Information of scale research of size and character of motive activity of students is resulted. All of students are engaged in physical culture in a basic and special medical group, in the group of sporting separation. All of students study, live in town and rural locality. Researches were conducted during 11 years. More than 1500 persons were inspected in all. It is marked that about 50% students of the Russian institutes of higher have rejections in a state of health. As a result of comparison proved, that motive activity renders direct influence on the level of progress and morbidity of students. Authors are offer original technology of adjusting of motive activity of students on the basis of process of the independent physical training control. The independent physical training is recommended duration no less than 15 minutes in a day (in morning, daily or evening time) with periodicity no less than 3-4 one time per a week.

Keywords: motive activity, independent, physical training, progress, morbidity, physical culture, students.

Introduction.

Scientific and technical progress promotes imbalance between mental and physical labor of man. Especially strongly it manifests in educational process of students. Increase of curriculums' scope and complication of their content lead to significant rise of specific figure of students' independent work. In its turn, it leads to nearly 50% reduction of motion activity [17].

Numerous researches, which have already been conducted in our century, show that nearly 50% of Russian higher educational institutions' students have health aberrations [2, 3, 12, 16, 18, 27]. Actual scope of students' motion activity is not sufficient for their full-fledged development. Annual increase of special educational institutions students' quantity (SEI), due to their state of health, is observed.

Similar situation is typical not only for Russia but also for other countries. By the data of A. Drachuk (2005), M. Bulatova, O. Litvin (2004), G.P.Griban, T.B. Kutek (2004), L. Dolzhenko (2008), high mental loads, deficit of motion activity, unreasonable nutrition and pernicious habits, stresses and unsatisfactory organization of physical training influence negatively on the health status of Ukrainian higher educational institutions. The researches, which carried out at the same time in Byelorussia, also revealed the increase of SEI students. The scientists of this country observed the following negative dynamics: in 2001 the quantity of SEI students was 33%, in 2002 -37%, in 2003 - 46%, in 2004 - 48% [19]. Kazakhstan scientists also ascertain that educational process in a higher educational institution is connected with reduction of motion activity due to educational timetable. Deficit of motion activity naturally results in reduction of mental and physical efficiency [20, 21].

Theoretical analysis and generalizing of data from literature, devoted to the worsening of functional and psychological organisms of youth show that everyday students' motion activity is not sufficient for optimal development of organism's main physiological systems, does not create conditions for health improvement. The increase of annual quantity of students who, by their health state belong to special medical group (SMG) is observed. The quantity of students, who are completely disabled to do any physical activity, is growing [4, 12, 16].

The data of our analytical researches show an acute demand in scientific grounding of new approaches, which could permit to solve the tasks of students motion activity deficit compensation and thus, to support vital functioning of their organisms on the level, ensuring successful learning of educational programs of higher educational institutions.

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Purpose, tasks of the work, material and methods of research.

The purpose of the work is to scientifically ground the technology of students' provision by optimal motion modes in the process of educational and everyday activity.

The following *tasks* serve for achievement of the purpose:

1. Conduction of theoretical analysis and generalizing of the problem of students' motion activity increase.
2. Study of peculiarities of students' motion activity in conditions of educational and everyday activity.
3. To ground scientifically the approaches, promoting reduction of students' motion activity, increasing of their mental and physical efficiency using the technology of independent physical training.

Our researches were carried out for 11 years on the base of Belgorodskiy State National research university (BSNRU) and involved the pupils of Belgorod comprehensive schools, students of higher educational institutions of Belgorod and Belgorodskaya region. In total, more than 1 500 persons were examined. Since January 2009 the development of this subject was entered into plan of physical and health improving scientific-educational center of Belgorodskiy state national research university (PHISEC BSNRU) and have been executed in the frames of scientific grounding of technologies of students' motion activity increasing.

The solution of the tasks, determined by the purpose of our research, conditioned the choice of research methods: theoretical analysis and generalization of literature sources, questioning, talks, testing of physical development, physical status and mental efficiency, natural, parallel, comparative experiment, statistical methods.

Results of researches.

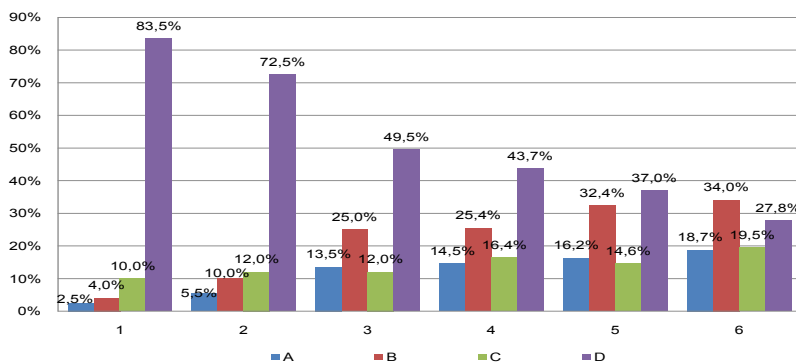
The results of the researches, which have been carried out last years [15, 24] show that the labor of students, especially first year students is of specific character. Working load in usual days is 12-14 hours per day, in the period of examinations - 16- 18 hours. With this, high intensity of educational process is accompanied by stresses, which are more often among the students, who live in hostels.

At present, in the system of higher education, the students’ motion activity is ensured by two curriculum classes on physical culture per week. But the demand of young organism in motion corresponds to 14 -19 thousand steps, or 1.3 – 1.8 per day [25]. With this, typical higher educational curriculums on physical culture, no matter how efficient they are, can not solve the task of students’ health improvement of ensuring their organisms with high level of efficiency which would promote successful mastering of their future specialty. The scope of load, declared by the mentioned curriculums, is quite insufficient. Due to this many specialists recommend to increase the scope of students’ motion activity up to 8-10 hours per week by adding off-hour optional classes or home tasks. With this, in the opinion of the head of physical and health improving scientific-educational center of Belgorodskiy state national research university (PHISEC BSNRU) professor A.A. Gorelov, this measure is not very efficient and can be realized only by observance of a number of conditions which can hardly be fulfilled now. These conditions are: the level of students scholarship, promoting independent fulfillment of physical exercises, availability of sports base at the place of residence, individual physical and functional peculiarities, ability to independently dose loads and, finally, high level of motivation to independent physical training.

Our researches showed dynamics of percentage relationship of students by health groups in higher educational institutions and in schools (fig.1). Analysis of the obtained data showed that, starting from primary forms and up to the third year of higher educational institution, we can observe clear increase of percentage of students, related to special health groups (MPC, SHG, PG), and, consequently, reduction of percentage of persons, related to the main health group.

Observations, carried out by us in some Belgorod higher educational institutions, showed that intensity of students motion activity depends on a number of factors, whose influence was studied in everyday students’ activity.

Researches of average–day and average-week dynamics value of students of different categories and groups of BNSRU, who live in urban environment, during their indoors and outdoors physical culture trainings (fig.2), showed that the most active are: firstly, students of sports department, secondly, students of the main health group. The least active are: firstly, students of special health group (SHG), who live and study in urban environment; secondly SHG students who study at Alexeyevskiy branch of BSNRU who live in country environment.



1 - primary forms, 2 - secondary forms, 3 - senior forms, 4 - I year, 5 - II year, 6 - III year

A - Release from physical training classes

B - Special health group

C- Preparatory group

D- Main group

Fig. 1. Distribution of students by health groups in school and higher educational institutions

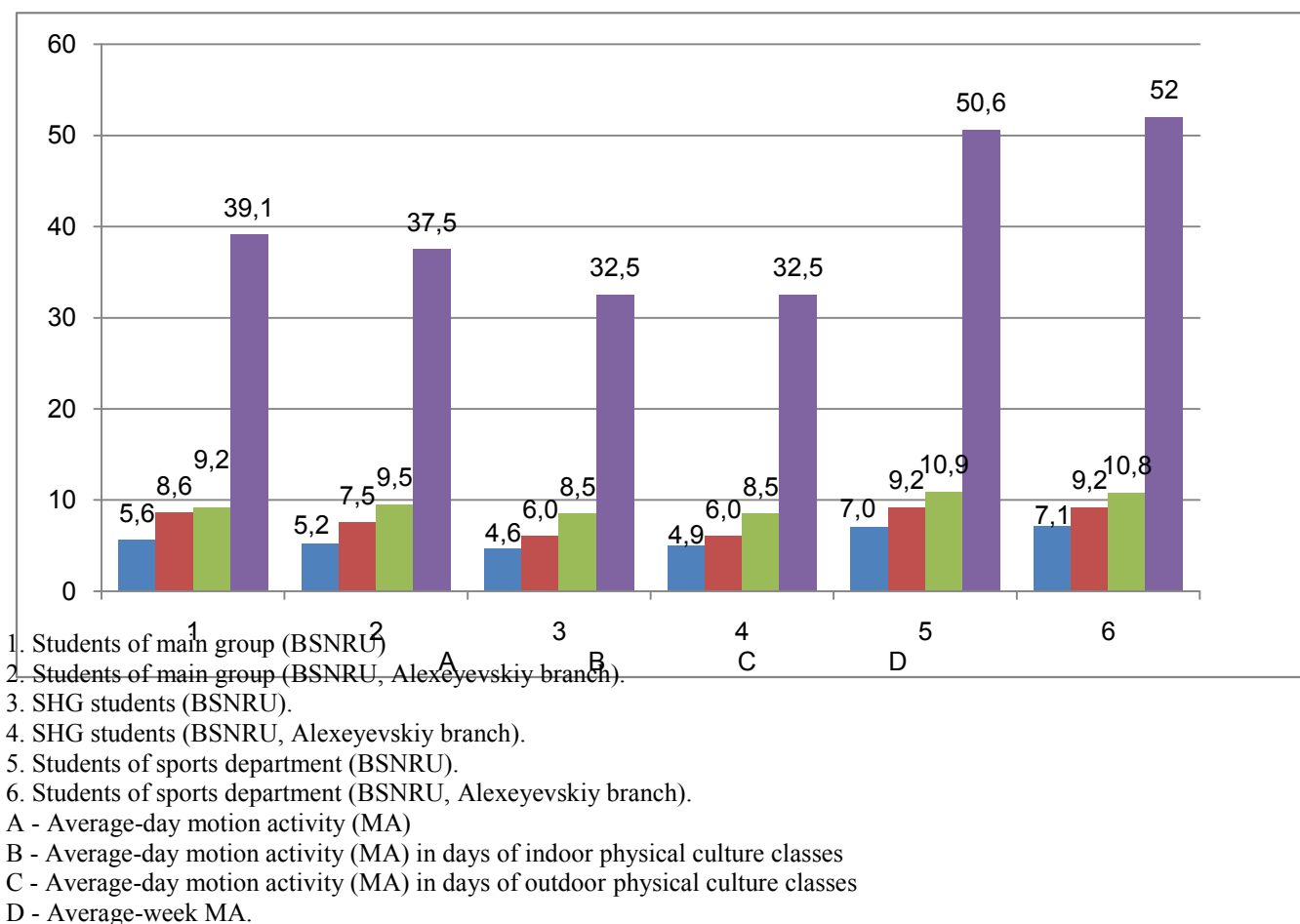


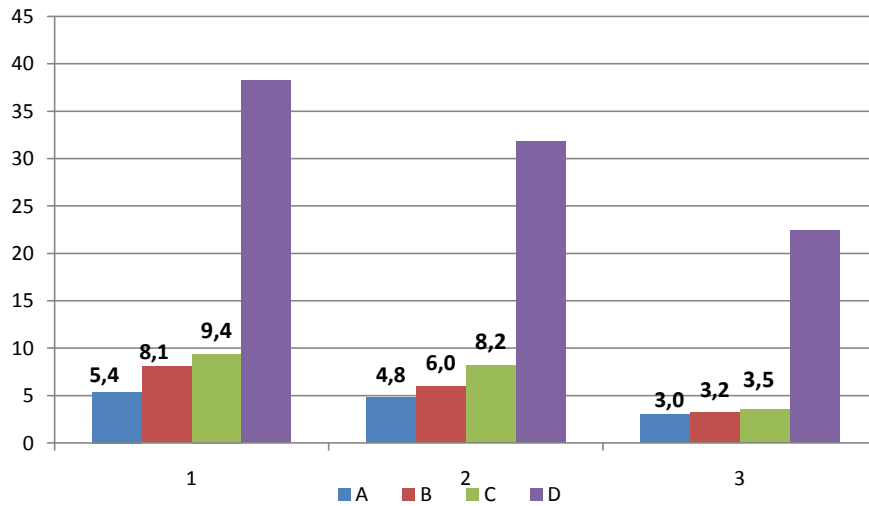
Fig.2 Motion activity (MA) of different groups students studying and living in urban environment (Belgorodskiy scientific research university) and in country environment (Belgorodskiy scientific research university, Alexeyevskiy branch).

Parallel to the study of students' motion activity status, both: those who live in urban environment and in the country, we analyzed the level of motion activity of students who were related to different health groups. The pedometering data of main health group, SHG group and students, released from physical culture classes were also studied. The data are shown in fig.3.

Information, illustrated by the figures above, shows that transfer to special health group and, more over, releasing from physical culture classes inevitably result in reduction of motion activity level and the motion activity of the students released from physical culture classes is nearly 2 times lower than the same of the main group students.

A peculiar contradiction appears: on the one hand motion activity is one of indispensable components of healthy life style, method of health improvement and on the other hand motion activity indicators of young men, having health aberrations are 2 times lower, while they especially need to improve their health.

The contradiction lies also in the fact that reduction of motion activity is at the same time the result and the reason of health level reduction. This is confirmed by the results of researches, conducted by most specialists and by our own researches, which were carried out in Belgorod higher educational institutions. So, for example, the number of Belgorod higher educational institutions students, who additionally do physical training (in sports groups or independently), is reduced in proportion to the growth the quantity of students, having health aberrations of different degrees. (Fig. 4).



- 1 - Students of main health group
- 2 - Students of special health group
- 3 - Students, who are released from physical culture classes
- A - Day MA in average
- B - Day MA in the days of indoor physical culture classes in average
- C - Day MA in the days of outdoor physical culture classes in average
- D - Week MA in average

Fig. 3. Motion activity (MA) of students of different health groups.

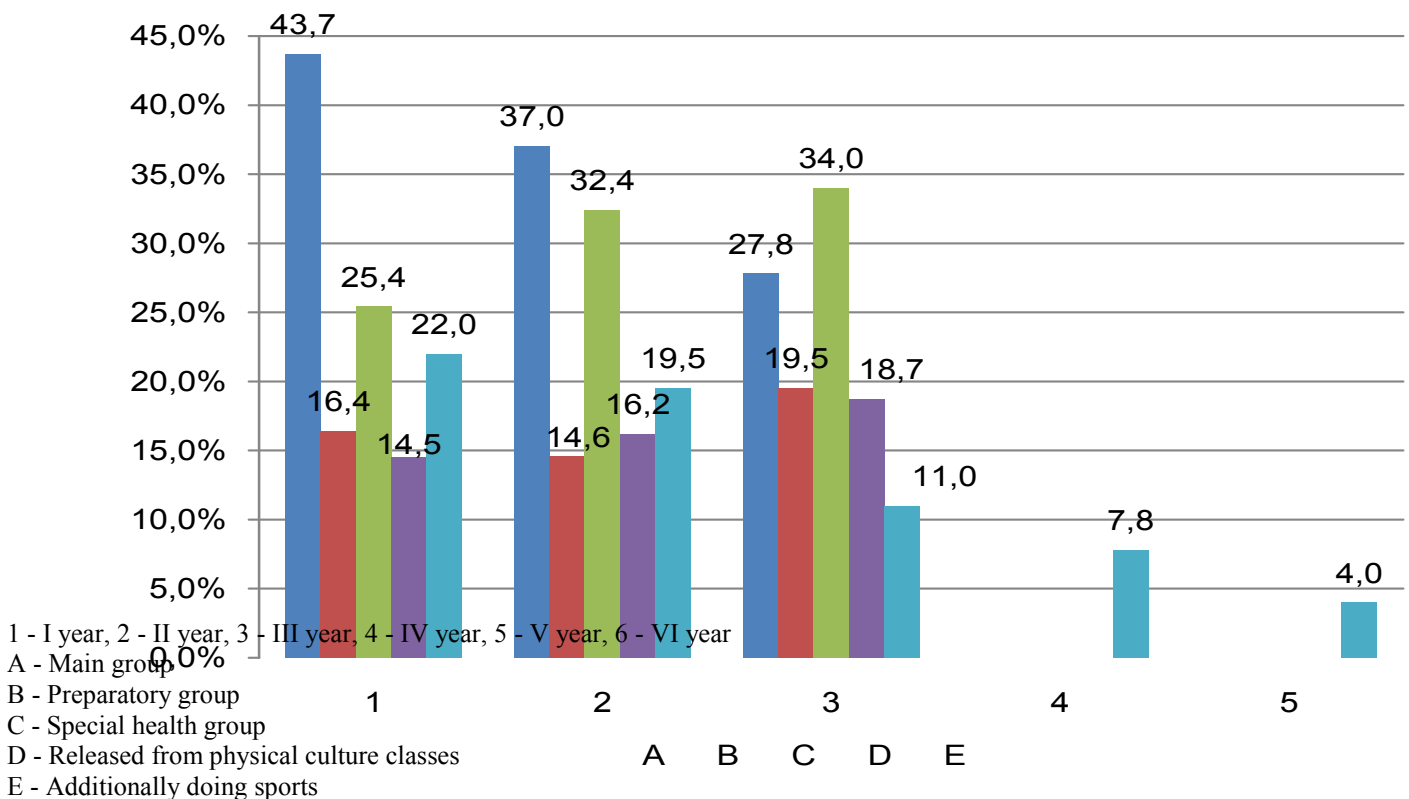
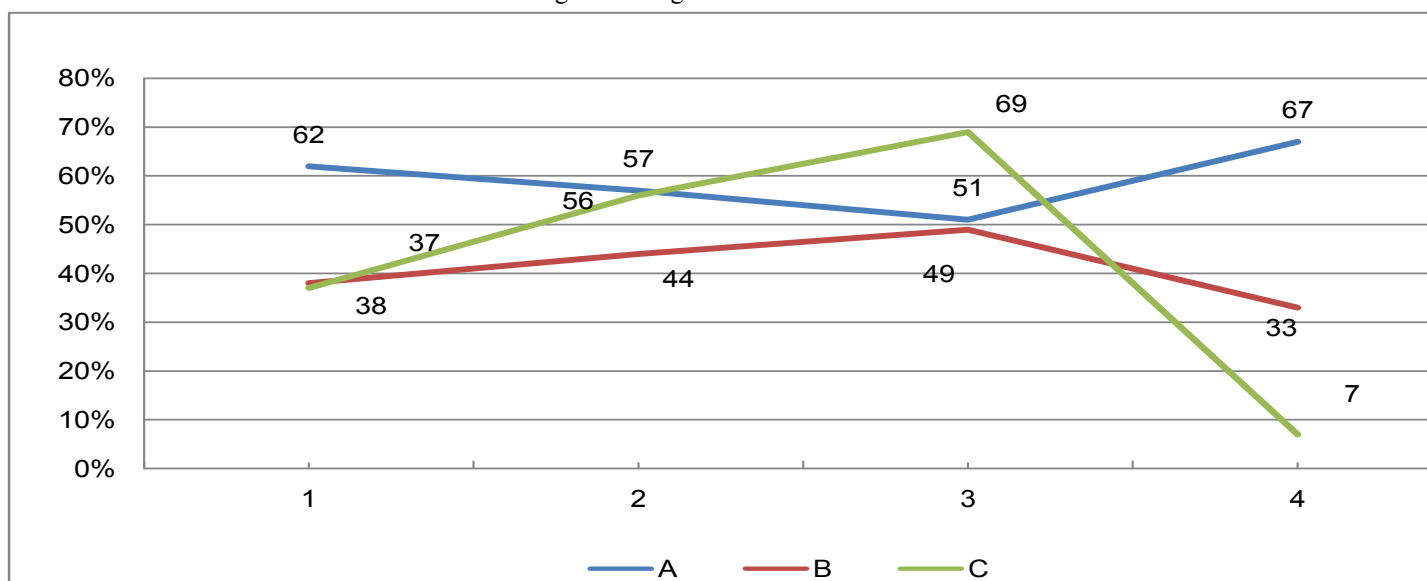


Fig. 4. Dynamics of students' distribution among health groups and the students, who additionally do sports.

Thus, research of students' motion activity of different groups and categories revealed strong problems and it requires to take certain measures on finding the ways for their solution.

In order to state the influence of motion activity on students' progress and morbidity the analysis of examination lists and students' health cards has been carried out. For every group we calculated the percentage of students who received "excellent", "good" and "satisfactory" at exams and the percentage of students, who missed classes because of catarrhal diseases. The results are given in Fig. 5.



- 1 - Main health group physical classes (average week MA – 38.3 km)
 - 2 - Special health group (SHG) (average week MA 31.8 km)
 - 3 - Released from physical classes (group of medicine physical culture) (average week MA 22.4 km)
 - 4 - Students, doing sports (average week MA 59.7 km)
- A - motion activity
 A - "excellent" and "good" progress
 B - "good" and "satisfactory" progress
 C - suffer from catarrhal diseases not less than 1-2 times a year

Fig. 5. The levels of progress and morbidity of students with different motion activity

The obtained information attests that students of main health group, who additionally do sports training, have the least percentage of morbidity (7%). The highest percentage of students who passed exams with "good" and "excellent" marks belongs also to this group. The second place is engaged by the students of main health group who attend only curriculum physical training classes. At the same time, in spite of good educational progress indicators of this group, rather high percentage of missed classes due to catarrhal diseases (37%) is characteristic for this group. This, in the first turn, attests that health is a key factor of more successful learning of curriculum, because, in spite of classes' missing, the students of this group has a certain reserve of organism, permitting to prepare more efficiently to resultant assessment.

Experimental data, obtained at SHG and MPC groups show direct dependence of morbidity percentage relationship and quality of progress in curriculum subjects. The quantity of students, having "good" and "excellent" marks, varies within 57 -51% and morbidity percentage, especially in MPC reaches 69%. It says that students with weakened health are getting tired quicker in the period of preparation to exams, it is more difficult for them to concentrate attention on the studied subject, they lack of diligence in independent learning of a teaching material.

The given conclusion is confirmed by the research of progress level of students, who live and study in urban environment (BSNRU), and in the country (Alexeyevskiy branch of BSNRU, which is illustrated by fig.6).

Thus, the most successful in learning the curriculum subjects are the students of sports department: the most often mark for this contingent of tested is "excellent" the rarest mark – "satisfactory". Practically equal level of progress has been noted among the students of main health group and SHG. The same trend is characteristic for the countryside as well.

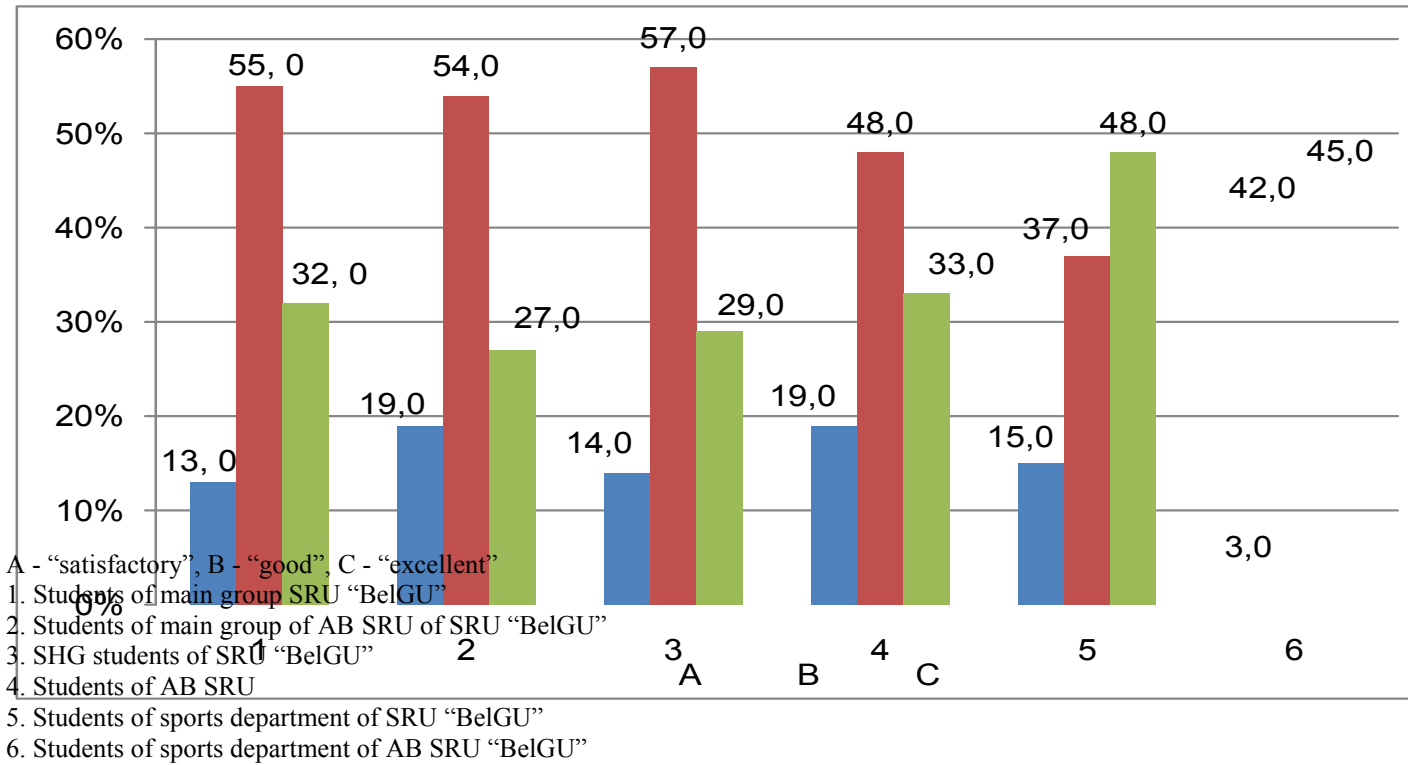


Fig.6. Students progress of different groups, living and studying in urban environment (BSNRU,) and in the country of (AB BSNRU,)

The data, given in fig. 7 show that SHG students are ailing the most often: 55-58% of this students' category are ailing not less than 1-2 times a year. Sports department students are ailing the most infrequently: 6-7% of the tested. The morbidity dynamics of urban and country students is identical.

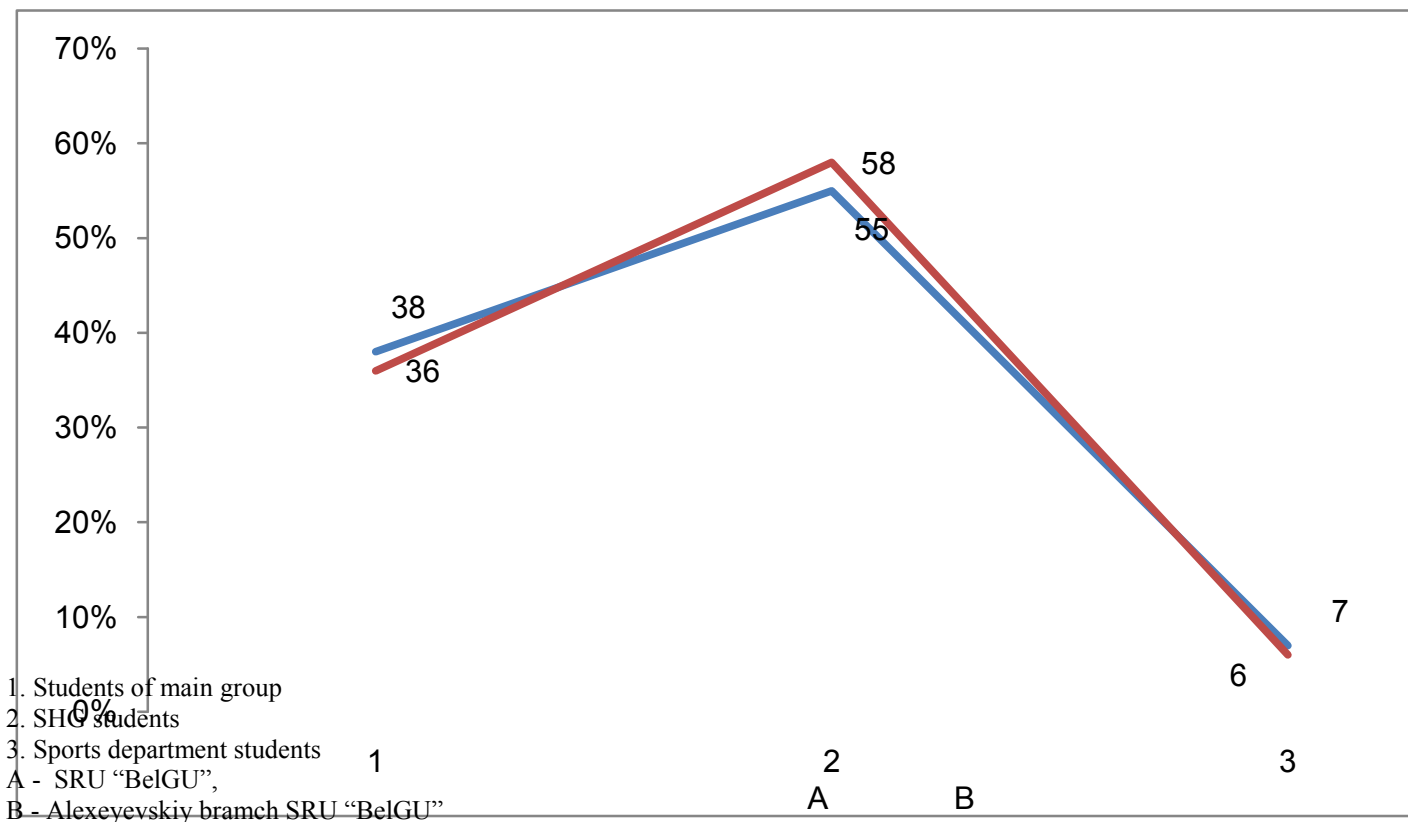


Fig.7. Morbidity level of different students' group, studying and living in urban environment (BSNRU), and in the country (AB BSNRU).

Thus, the conducted research permits to come to conclusion that students with higher level of motion activity and having good health are more successful in learning curriculum subjects. The results of researches attest that it is necessary to search efficient ways to increase motion activity of students of Russian higher educational institutions.

The higher educational program in discipline “Physical culture” stipulates plan physical training classes 2 times a week (every class – 2 hours) for 1-3 years students. These classes are compulsory for all students, having no contra-indications, irrespective of their attending any sports group or doing sports independently or not. However, the analysis of physical culture registers showed that one third of students does not attend the classes on different pretexts.

It is obvious that two 2 academic hours (90 minutes) a week can not solve the problem motion activity deficit compensation, more over in real conditions of educational activity the duration of these classes shortens. This shortening is occurred due to many objective reasons (movement to the places of classes, change of clothes, fulfillment of hygiene and sanitary requirements after classes and etc.) and subjective ones (unfavorable environment conditions, students’ delays due to returning of manuals, time losses in cloakroom, visiting WC and etc.).

Generalization of the researches, conducted in Belgorod higher educational institutions (in total 1 500 persons have been examined) leads to conclusion that motion activity is an indispensable condition of students’ good health and successful study. With this, in the process of studying students’ motion activity reduces that, in its turn, leads to reduction of their health and progress levels. The value of motion activity depends on the first: presence or absence of additional physical training in the life of a student, the second: to which group he relates for physical culture training. One of the reasons of students’ insufficient motion activity is the fact that physical training is of no interest for them and this result in missing these classes by nearly on third of students. Most of the students have not lost interest to motion activity, but they would prefer to train those exercises, which they like. The most interesting for them are classes in aerobics, outdoor games, swimming. About 40% of students are ready to do physical trainings, which are interesting for them, additionally.

The researches, conducted by V.G. Streltsov in co-authorship (1998), A.A. Gorevov in co-authorship (2003), A.A. Gorelov and I.V. Rusakova (2003, 2004) pointed to searching of efficiency measures for elimination of motion activity deficit of military distant aviation pilots and women – cadets of military educational institution have served as the bases for theoretical foundation of students motion activity monitoring in the process of their everyday and educational activity. The main idea of the a.m. authors was entering of the combat physical training “home tasks” into everyday and educational activity.

Functioning of the given physical training form was achieved by fulfillment of “home task”, that permitted to plan independent physical training (IPT), monitor it, carry out pedagogical control over it and medical control of the health of trainees.

For this purpose we developed the BSNRU students’ motion activity monitoring technology. The following conditions lied in the foundation of BSNRU students’ motion activity monitoring technology:

- ✓ Organization of independent physical training of “home task” type, offered by A.A. Gorelov in co-authorship (2003). The distinctive feature of our approach lies in the fact that IPT content of every student considered individual choice of exercises form the list enclosed;
- ✓ duration of IPT must be not less than 15 minutes and shall not exceed 30
- ✓ before the beginning of independent training, students shall learn certain scope of theoretical knowledge and practical skills of doing physical exercises, dosing physical loads, practice in self control over own physical state;
- ✓ compulsory self control diarizing of health state;
- ✓ estimation of physical abilities’ development, as well as health state, activity and mood;
- ✓ monitoring of IPT process in the course of curriculum physical culture classes;
- ✓ organization and conducting of mini complexes like “physical minute”, “physical pauses” in the course of other curriculum classes. The methodology of such mini complexes’ conducting should be given to physical organizers of students groups.
 - ✓ compulsory timing of mini complexes’ duration;
 - ✓ determination of main group students’ physical efficiency with the help of 3-minutes step-test, in SHG – 30 seconds step-test;
 - ✓ individual regulating of students’ physical loads, considering the general level of physical efficiency;
 - ✓ considering of the students place of residence, food intake time, possibility to observe hygiene sanitation requirements;
 - ✓ regular conduction of mass sports actions on Sundays, which should include competitions in different exercises, having high emotional tint and promoting to relieve emotional stresses;
 - ✓ monitoring of day-off competitions by creating motivations to students’ desire to participate in the competitions;
 - ✓ the duration of day-off physical and health improving measures shall not exceed 2 hours.

This is overall idea of the offered by us technology of BSNRU students’ motion activity monitoring.

The given above conditions lied in the foundation of basic experimental program which was planned to be conducted during one semester.

For estimation of the offered technology’s efficiency pedagogical experiment was carried out with involving of first year students of computer sciences and telecommunications faculty, law and economical faculties, Four experimental groups (EG), one pilot group (PG) and one control group (CG) were formed of students (male) and the

same groups of the students (female). As a result 12 relatively uniform, each consisting of 20 persons, were formed by average values and by the dispersion of the examined indicators, which authentically are not different.

Organization of off-schedule physical and health improving measures in PG was fulfilled according to general plan of mass sports activity of BSNRU. The students of this group were ordered to compulsory take part in this activity. With this, concerning CG there was no strict control either of classes attendance or of the participation in main mass sports actions of BSNRU.

In general, the interpretation of physical state results of all tested groups permitted to make the following summarizing conclusions. Firstly: even very insignificant by scope and intensity, but everyday motion loads promote general increase of physical status and efficiency, secondly: deficit of motion activity affect rather negatively both the dynamics of basic physical abilities development and the level of general physical efficiency of students.

The efficiency of the offered by us technology of independent physical training was studied also in the aspect of its impact on mental efficiency indicators of the tested. The data, obtained in the course of the research, illustrate, that insufficient motion activity or its absence leads to (though not authentic $P > 0.05$) but nevertheless the reduction of practically all studied parameters. In EG we observed their total improvement and in majority of cases by 95% value level ($P < 0.05$). This fact also attests the reasonability of everyday execution of any physical exercises in comfortable load mode with consequent increasing of separate loco motions in every movement. In our opinion, improvement of EG students' mental efficiency occurred due to the fact that everyday independent physical trainings relieved tension, accumulated in durable intellectual activity and thus, permitted to restore effective functioning of central nervous system.

We judged about influence of independent physical training on functional state of CG, PG and EG students, basing on the dynamics of indicators, characterizing organism's reserve capabilities. The results of our researches attest that regularities, observed by us during analyzing of physical state and mental efficiency, manifest also on the level of organisms' functional capabilities of the tested students. Practically in all EG positive changes in cardiac vascular and respiratory systems occurred, authentically functional efficiency of male and female students increased. With this, by the majority of the studied parameters the differences between initial data and final results were authentic ($P < 0.05$). As we suggested the studied parameters of the tested students significantly reduced and in spite of the absence of authentic changes, they reached key point.

Thus, pedagogical experiment, which was carried out by us, completely confirmed the put by us hypothesis and permitted to make conclusions, corresponding to the tasks which were set in the research.

Summary.

1. Analytical study of special literature, regulatory and other documents show that they postulate catastrophic situation: nearly 50% of Russian higher educational institutions students have health aberrations. Actual scope of students' motion activity does not ensure their full-fledged development. Strengthening of this problem's negative side manifests in annual growth of students, relating to special health groups. The number of students for whom, by their state of health, physical training is prohibited at all is increasing constantly. The main reason of their health worsening is insufficient motion activity.

2. Theoretical analysis and generalization of literature sources in the frames of the studied problem represent students as special social group, characterized by deficit of motion activity owing to gross time losses connected with educational activity.

3. The study of BSNRU students' motion activity showed that on the one hand it is indispensable component of healthy life style, mean of health improvement, and on the other hand motion activity of students having health aberrations were reduced two times. This contradiction is strengthened also by the fact that reduction of motion activity is simultaneously the reason and the result of bad health. This conclusion is confirmed by the researches, conducted by us, which state that the least morbidity percentage belongs to the students of the main health group, who practice additional physical training. The second place of progress in study is engaged by the students of the second group, who attend only schedule physical culture classes. However, in spite of good indicators in their studies, they have rather large percentage of classes missing owing to catarrhal diseases. This also attests the prevailing significance of health state in learning curriculum subjects of higher educational institutions.

4. The main reasons, which condition the restriction of schedule physical training time, are time losses, connected with traveling to sports base; change of clothes and receiving of sports equipment; fulfillment of hygiene requirements and etc. This, in its turn, causes: creation of students', students parents', teachers' negative attitude to physical culture in general and schedule physical training classes particularly; appearance of different skin diseases owing to non observance of hygienic requirements; non observance of optimal relationship of physical loads' scope and intensity in week and, consequently, in semester cycles of educational activity; discrimination of physical culture moral and spiritual values; leveling of positive effect of physical training due to the absence of conditions for "trace" mechanisms' formation.

5. The most purposeful and perspective form of students' motion activity raising in the process of their education is independent physical training, of at least 15 minutes a day, in the morning, day or evening time, not less than 3-4 times a week, which should consider the students' interests and their individual peculiarities.

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