

**Research Article****Physical and Recreational Preventing Measure Technology of Disturbances  
in the Cordial and Vascular System of Students****Victor L. Kondakov, Lyudmila N. Voloshina, Evgenya N. Kopeikina,****Natalia V. Balysheva, Daria E. Nikulina**

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Russia, e-mail: [kondakov@bsu.edu.ru](mailto:kondakov@bsu.edu.ru)**ABSTRACT :**

Our aim is to prove scientifically and to check experimentally physical and recreational technology dosages of motive loads of the students, who have disturbances in cardiovascular system. The carried out researches demonstrate the general positive influence of the developed sport improving technology of dispensing of motive loads of the students, who have changes in cardiovascular system and its influence on somatic health. The developed technology allows to submit its contents and an orientation as integrated means of increasing in functionality of an organism and ensuring high efficiency of educational process of students by leveling the impact of changes in a condition of cardiovascular system.

**Keywords:** recreational technology, disturbance in condition of cardiovascular system, the dosed health-improving walking and running, health-improving swimming, water aerobics, breathing exercises, outdoor games and elements of sports, exercises for restoration.

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[kondakov@bsu.edu.ru](mailto:kondakov@bsu.edu.ru)**INTRODUCTION.**

The problem of prevention diseases and strengthening the health of population should be carried to the supreme category (Voloshina L.N., 2007, Balysheva N.V., et al., 2011, Symons A.B., et al., 2013). From 70% to 80% of preschool and school age children, students have different types of diseases (Voloshina L.N., 2005, Grachev A.S., et al., 2014, Prosvirina L.N., et al., 2015, Kondakov V.L., et al., 2016). According to various researches, only 10% of youth have the level of physical state and health close to norm, about 40% of children have chronic diseases. Sharply diseases of cardiovascular system and bone and muscular systems which are in many respects caused by hypodynamia and gipokineziya progress (Voloshina L.N., et al., 2007, Kopeikina E.N., et al., 2012, 2013, 2016). The main reason of cardiovascular

diseases – low physical activity. Experts pay special attention on negative affects on all life support systems of organism because of the lack of movements and power manifestations in everyday life (Kovaleva M.V., et al., 2013, Golod N.R., 2015, Samokish I.I., 2016, Sobko I.N., et al., 2016).

Our theoretical analysis and synthesis of literary data on problem of prevention disturbance in condition of cardiovascular system of students, proves existence of the problematic situation (Gorelov A.A., et al., 2009, 2010, Ahmad T., et al., 2010, Tretyakov A.A., et al., 2012, Grachyov A.S., et al., 2013). The researches conducted within this problem allow to draw conclusion, that the level of students' physical activity does not correspond due to development of the main physiological systems of organism,

the lack of the movement leads to different diseases. Every year after passing medical examination, most of students are transferred from the main group of health to special medical group or have dismissal (Gorelov A.A., et al., 2008, 2013, 2014, Kopeikina E.N., et al., 2011, Kondakov V.L., et al., 2015).

**Material:** in a research participated students of higher education institution: girls (n = 52) and young men (n=54). In the course of studies students were engaged: was applied K. P. Buteyko's technique of the dosed recreational walking, jogging (it was applied as the main agent to correction of a functional condition in cardiovascular system), sets of exercises of the physical qualities aimed at the development (to the general strengthening of an organism), breathing exercises technique (A.N. Strelnikova and G. Childers), breathing exercises were engaged for the purpose of correction of a CVS functional state and restoration of their organism after a excursions, recreational swimming (for rising physical activity), water aerobics (it was applied as the main agent of rising physical activity and psychophysiological fitness of students), outdoor games and elements of sports, relays (as an agent of active recreation, rising of a psycho emotional background), exercises in extension and relaxation (were applied for restoration of students' organism after a load).

**Purpose, work tasks, materials and methods.**

The purpose – scientifically to prove and to check experimentally recreational technology of dispensing motive students' loads of the data on orientation of their cardiovascular system by generalization in educational space in modern higher educational institution.

The following criteria have been put in basis of contents and orientation of the recreational technology and directed to prevent disturbance in condition of cardiovascular system: content of recreational technology has to make complex health-improving impact, mainly promote improvement of functions in cardiac muscle, normalize functions of the central nervous system, increase elasticity of vessels, improve microcirculation, stabilize blood pressure. Means and methods of recreational technology have to promote restoration in physical and intellectual working capacity, remove neuroemotional pres-

sure (Khudolii O.M., et al., 2015, Kumbet A.N., et al., 2016, Kondakov V.L., et al., 2016).

Our researches have shown that the most widely known types of physical activity are: the dosed health-improving walking and running (Gorelov A.A., et al., 2010, Kondakov V.L., et al., 2014, 2015) health-improving swimming (Drogometretsky V.V., et al., 2013, 2017), athletic gymnastics (Goginava S.E., et al., 2014), sports and outdoor games (Pivneva M.M., et al., 2013), water aerobics (Prosvirina L.N., et al., 2015), breathing exercises (Kopeikina E.N., et al., 2011, Kovaleva M.V., et al., 2013, Kondakov V.L., et al., 2016). Positive changes in indicators, functional condition of cardiovascular system, are noted in groups of students who were engaged in the dosed health-improving walking and running (Gorelov A.A., et al., 2010, Balyshева N.V., et al., 2011, Kondakov V.L., et al., 2015). The above-stated types of physical activity need to be used as additional resources of physical education studies among students with disturbance of cardiovascular system.

As the main components of recreational technology of prevention disturbance in condition of cardiovascular system, we used the following: the dosed health-improving walking and the dosed running; breathing exercises by A. N. Strelnikova's techniques and G. Childers; health-improving swimming; water aerobics; mobile and elements of sports, relays – the relay and game block; the exercises aimed at the development of basic physical qualities – complex training; the all-developing exercises; breathing exercises by K. P. Buteyko's technique; exercises in stretching and relaxation exercises.

At organizational stage of formation groups of examinees, we carried out: two experimental groups (experimental groups of girls and boys) and two control groups (final groups of girls and boys) which participated in research. All participants have been informed of "The Helsinki declaration of the world medical association", it is reconsidered: the 29th World medical assembly (Tokyo, 1975), the 35th World medical assembly (Venice, 1983), the 41st World medical assembly (Hong Kong, 1989) have also given the written consent to participation in pilot studies.

Pilot approbation of experimental recreational technology of prevention disturbance of the car-

diovascular system has been calculated on 12 classes of physical education, given twice a week without independent occupations.

The pilot experiment directed of efficient application in the conditions of educational space of higher educational institution in the developed recreational technology of prevention disturbance of the cardiovascular system, was conducted with students of the main educational office, i.e. with the young people who do not have the expressed disturbance of the state of their health.

**Statistical analysis.** The obtained data demonstrates that physical development of students has practically not changed as a result of experimental exercises – the dosed health-improving walking.

**Dynamics of indicators of sportsmanship.** The obtained data confirms the general improvement in students' sportsmanship, as a result of experimental occupations by the dosed recreational walking. Generalizing the obtained data, it is possible to conclude that the dosed health-improving walking exercises promoted improvement of students' sportsmanship in both groups. At the same time, more essential changes have happened in group of girls.

**Dynamics of indicators of physical training.** Despite of the lack in reliable changes, the obtained data confirms ambiguous influence of the dosed health-improving walking exercises on functional training among students.

**Dynamics of indicators of functional training.** Generalizing the obtained data, it is possible to conclude that in the functionality which is engaged, has more noticeable positive dynamics in the dosed health-improving walking exercises and traced in group of young men. Changes of indicators in group of girls show tendencies of decrease in profitability of functioning of cardiovascular system (CVS) and physical working capacity, and also disbalance of sympathetic and parasympathetic influences in regulation of activity of CVS.

**Dynamics of indicators of somatic health.** Calculation of the indexes characterizing the level of somatic health confirms non-equivalence influence of the dosed health-improving walking exercises on organisms among young men and girls and indicates ob-

vious tendency of decrease in somatic health at girls' group and increase at the group of boys.

Thus, results of laboratory experiment on studying influence of the dosed health-improving walking exercises on the state of health of examinees testified the overall higher effectiveness of such exercises among boys in comparison with girls. The most noticeable positive impact of walking exercises was exerted on physical training and somatic health, the least noticeable – on physical development. Ambiguous was their influence on condition of functional training that is probably explained by the insufficient size of exercise stress in the course of the walking exercises.

It is possible to assume that the following factors can exert impacts on decrease in efficiency of exercises: lack of independent exercises of PE, the insufficient number of exercises per week, use of aerobics exercises in small quantity. In this regard the following corrections have been made: the main part of exercises includes the dosed health-improving walking and the dosed running. Dispensing happened due to increase in loading on the volume and intensity. Several ways of dispensing were allocated: by the number of repetitions, on tempo of execution, at the choice of starting position, on complexity of performance, on performance range, on activity of performance, on existence of emotional factor, on use of objects, apparatuses, burdenings and by quantity of breathing exercises in one time.

**Results of researches.** During the corrected pedagogical experiment of recreational technology the following results have been received:

- the corrected option of recreational technology in general has made positive impact on physical development of students. Reliable changes have happened in both groups: have increased the thorax excursion, vital capacity of lungs, force of both hands.

- the corrected option has also exerted positive impact on physical training of students. In group of girls reliable changes have happened in all indicators, only in two tests negative dynamics have been revealed – the explosive strength has authentically decreased and ability to coordination of movements has decreased. In group of young men reliable improvements have been

recorded in indicators of static muscular strength of legs and endurance; minor improvements of average values – in indicators of force two-headed and three-headed muscles of shoulder, muscular strength of prelum abdominale, speed, frequency of movements, ability to balance. Doubtful negative dynamics is revealed in indicators of explosive strength and ability of coordination movements.

- On functional training of students the corrected option confirms the general ambiguous influence of the dosed running exercises. So, for example, in group of girls it should be noted reliable deterioration in two indicators: Ruffye's test and vegetative index of Kerdo (VIK). Negative dynamics is revealed also in HR indicators at rest, the pulse pressure (PP), the systolic volume of blood (SVB), test the Ghencea, Skibinskaya's index. Positive shifts have happened in indicators of the arterial pressure (AP), minute volume of blood (MVB), Stange's test, orthostatic test, the modified step test. In group of boys results are slightly better, but too ambiguous. Reliable positive changes have happened in indicators AP, Stange's tests, Skibinskaya's index; reliable negative changes – in orthotest and VIK. Positive dynamics was outlined in HR indicators at rest, tests the Ghencea and Ruffye, step test.

- calculation of the indexes characterizing the level of somatic health confirms ambiguity and non-equivalence of occupations influence with the dosed jogging on examinees, and also emphasizes results of the previous calculations – insignificant decrease in results of girls in comparison with young men.

Generalizing the obtained data, it is possible to conclude that at the general ambiguous assessment of exercises, positive dynamics is revealed in group of boys. Changes of indicators in group of girls indicate tendencies of decrease in profitability of functioning of cardiovascular system (CVS), disbalance of sympathetic and parasympathetic influences in regulation of activity of CVS, decrease in physical working capacity.

Thus, running has appeared more effective for boys in comparison with girls – they have noted improvement in physical development, physical training, functional training, somatic health. Girls' negative dynamics, first of all, has been

revealed in indicators of functionality of the organism. At the same time, running promoted reliable improvement of physical training on girls on the majority of the surveyed indicators and less noticeable improvement of physical training of boys. The analysis and generalization of the received data in these control groups, confirms the following:

**Dynamics of indicators of physical development.** The obtained data confirms the lack of essential changes in indicators of physical development of students of controlled groups. Generalizing the obtained data, it is possible to draw a conclusion that doing physical activity have not made noticeable impact on physical development of students.

**Dynamics of indicators of physical training.** The obtained data confirms the lack of essential changes in indicators of physical training among students of control groups.

**Dynamics of indicators of functional training.** The obtained data confirms the lack of essential changes in indicators of functional training of students.

**Dynamics of indicators of somatic health.** Calculation of the indexes characterizing the level of somatic health confirms the lack of essential changes in health indicators of students.

**Conclusion:** The analysis of the received results allows to draw conclusion that the expected effect of experimental occupations has not been reached for a number of reasons. Firstly, the author's technology of health-improving walking and running has initially been developed for students with the weakened health, and we used it with students who do not have deviation in the state of health. In our opinion the offered loading was not sufficient for such category of students as in work with such students it is necessary to use loadings of higher intensity. Secondly, decrease in level of functionality of students' organism. It is also connected with physiological changes in organism of young people. Namely with the entry into the post-pubertal period of girls, and into the pubertal period of boys.

**Summary.** The theoretical analysis which was carried out by us and synthesis of literary data

on problem of prevention violations in condition of cardiovascular system of students, proves existence of problematic situation (Balysheva N.V., et al., 2011, Gorelov A.A., et al., 2011, Kovaleva M.V., et al., 2013, Kondakov V.L., et al., 2015, Drogomeretsky V.V., et al., 2017).

Nowadays, Russian high educational system of physical training has increasing problems on the level of somatic health and physical activity of students, instilling in students the need for systematic sports activity (including independent), identifications of effective ways of introduction in contents of training programs of physical activity types, attract students (Pivneva M.M., et al., 2013, Goginava S.E., et al., 2014, Khudolii O.M., et al., 2015, Kondakov V.L., et al., 2017). Generalizing what was already told, we think, that all of these, emphasizes our research and confirms the need of development and deployment recreational technologies in educational space of modern higher educational institutions. On the one hand, development and improvement of basic physical qualities, formation of basic movement skills, and strengthening health. And on the other hand, providing optimum conditions of activity of the functional systems on organism involved in maintenance of high level of intellectual and physical efficiency of the student (Gorelov A.A., et al., 2010, Pivneva M.M., et al., 2013, Khudolii O.M., et al., 2015, Kondakov V.L., et al., 2017).

The tendency of deterioration in students' health points out on the need of development and deployment of recreational technologies in higher educational institutions and it is based on complex of using medico-biological, psychology and pedagogical means, and also the means of selective character of physical activity (Balysheva N.V., et al., 2011, Kopeikina E.N., et al., 2011, Drogomeretsky V.V., et al., 2013, Gorelov A.A., et al., 2013, Golod N.R., 2015, Samokish I.I., 2016).

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