

# Assessment of the Physical Condition of Students of a Special Medical Group for Physical Education of The National University of Uzbekistan

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**Abstract.** One of the main factors of a healthy lifestyle of a modern person is rational motor activity that significantly improves physical health, especially the state of the musculoskeletal and cardiovascular systems, improves immunity, and has a positive effect on the general tone of a person. Therefore, universities pay special attention to sports and recreation technology, which is a way to implement activities aimed at achieving and maintaining physical well-being and reducing the risk of developing diseases.

**Key words:** physical health, sports and health technology, physical education

## **Relevance.**

One of the main factors of a healthy lifestyle of a modern person is rational motor activity, manifested in the form of natural locomotion (walking, running, swimming, cycling), game disciplines, power and gymnastic complexes, training systems, as well as various non-traditional exercises, as a rule, innovative character [1]. Regular physical activity significantly improves physical health, especially the state of the musculoskeletal and cardiovascular systems, improves immunity, and has a positive effect on the general tone of a person [2,3]. Therefore, universities pay special attention to sports and recreation technology, which is a way to implement activities aimed at achieving and maintaining physical well-being and reducing the risk of developing diseases by means of physical culture and health improvement [4]. Today, sports and health technologies are not the property of the personal experience of rare specialists, but are developed in accordance with the achievements of medical science. Any sports and health-improving technology includes setting goals and objectives of health improvement, as well as the actual implementation of sports and health-improving activities in one form or another. Physical culture and health technologies can be implemented in a variety of areas: shaping, aerobics, fitness, stretching, as well as running, hiking, swimming - as recreational sports [5,6]. As you know, in universities they are implemented in physical education classes and in sports sections, at extracurricular sports and recreational activities.

As a rule, currently in Uzbekistan, university students, depending on physical development, health status and functional training, interests, are divided into groups: basic, special medical and sports. Students assigned to the main and preparatory medical groups are enrolled in the main educational department. The main medical group includes students without deviations in the state of health and physical development, who have a good functional state and age-appropriate physical development, as well as students with minor (often functional) deviations, but who do not lag behind their peers in physical development and physical fitness [7]. The students assigned to this group are allowed to study in full according to the curriculum of physical education, prepare and pass tests of individual physical fitness. The preparatory group includes practically healthy students who are allowed to take classes in physical education curricula, subject to a more gradual mastering of a set of motor skills and abilities, especially those related to the presentation of increased requirements to the body, a more careful dosage of physical activity and the exclusion of contraindicated movements [8]. A special medical group enrolls students with significant health problems of a permanent or temporary nature (chronic diseases, congenital malformations) that do not interfere with the performance of the usual load, but require limitation of physical activity. It is important to keep in mind that students classified as SPECIAL GROUPS for health reasons need other physical activity no less, but most often more than healthy people [9].

As a result of providing special exercises to students suffering from certain diseases during physical education classes, the following important points will be achieved [10]:

- health promotion;
- increasing the functional level of organs and systems of the body of students weakened by the disease;
- increasing physical and mental performance;
- training in the rules of orthopedic regimen;
- teaching rational breathing;
- development of basic motor skills and abilities;
- improvement of coordination of movements, balance;
- rational visual mode training;
- education of interest and habits for independent physical exercises and their introduction into the daily routine;
- training in self-control to assess the functional state of the body.

### **Objective**

Evaluation of the effectiveness of special classes in physical education for students suffering from certain diseases, taking into account the assessment of the physical condition of the body.

### **Materials And Research Methods**

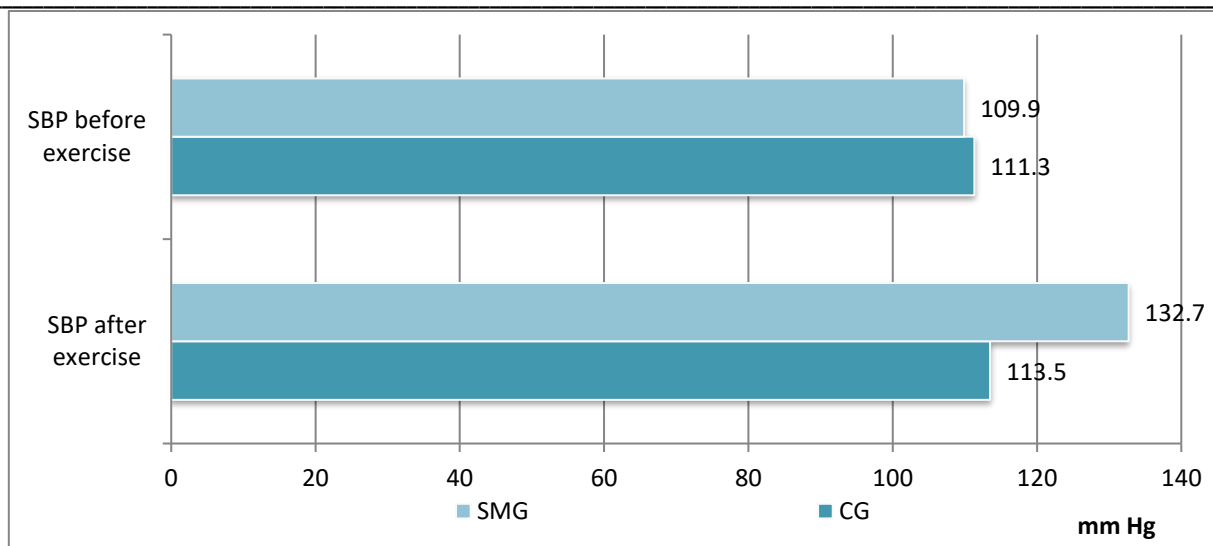
50 first-year students of the National University of Uzbekistan named after M. Ulugbek were involved in the research work. Of these, 2 groups were identified: 30 students entered the special medical group (SMG), and 20 students of the regular group participated as a control group (CG).

The subject of the study was the study of the dynamics of indicators of the physical condition of the body on the background of special classes in physical education of students of the medical special group, as well as in certain parts of the lesson, taking into account the self-control of the physical condition.

Each student was assessed the functional state of the cardiovascular and respiratory system before and during physical education classes, namely: measurement of heart rate (HR), respiratory rate (RR), blood pressure (BP). Also, the dynamics of changes in these indicators and the development of functional capabilities in SMG students were assessed on the background of a set of prepared special exercises for 30 days.

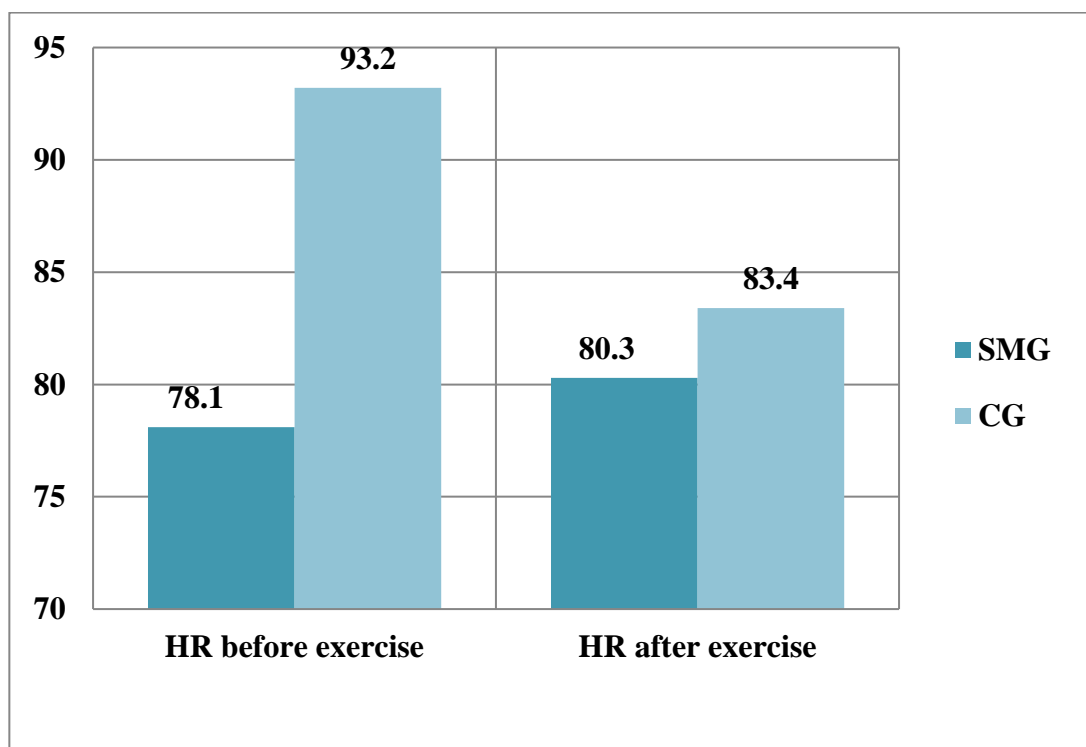
### **Results**

The assessment of the average group values indicates the ambiguity of the parameters characterizing the functional state of the vital systems of the students' body. A comparative analysis of the obtained results showed that the heart rate in SMG and CG is practically stable at the beginning of training. However, in students of the special group, this indicator is definitely higher than the permissible values:  $87.00 \pm 4.01$  beats/min, which probably reflects the impact on the body of the underlying disease. At the same time, SMG revealed a significant increase in systolic blood pressure (SBP) during exercise (diagram 1). Thus, in SMG, SBP is  $132.7 \pm 9.67$  mm Hg, and in CG it is  $113.5 \pm 9.33$  mm Hg. An increase in SBP indicates the degree of capillary patency, the state of vascular tone in SMG by the end of the session and is an unfavorable prognostic sign.

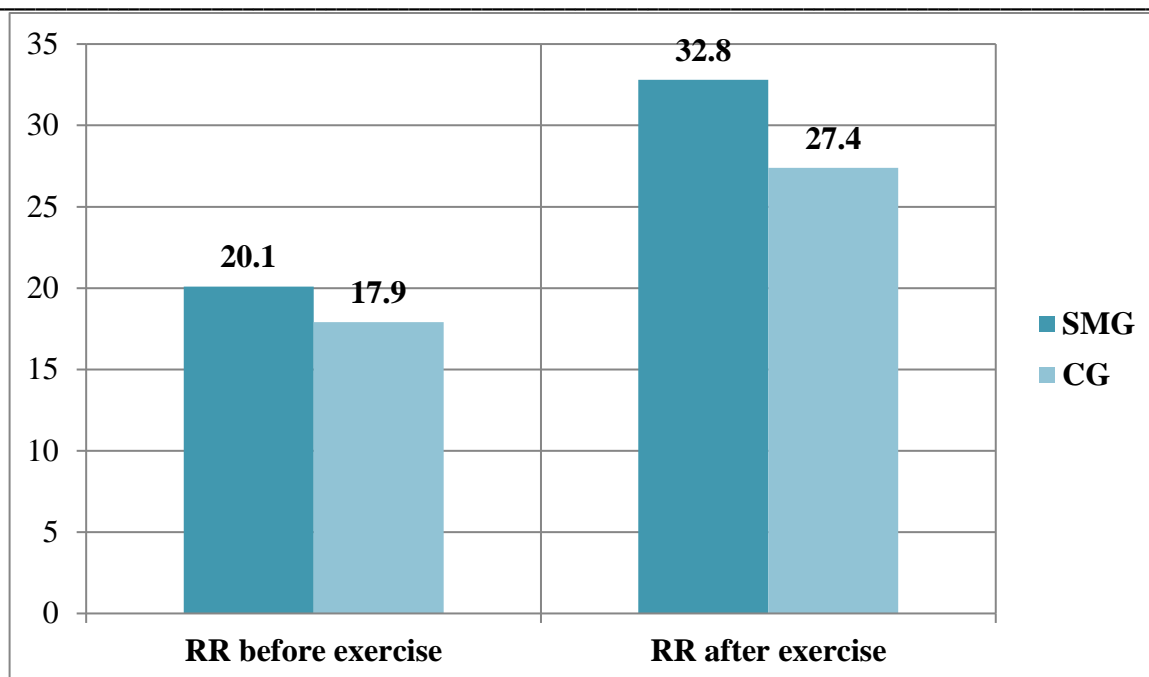


**Diagram 1.** Indicators of systolic blood pressure (SBP) against the background of physical activity; SMG - students of a special medical group; CG - students of the regular group.

Considering the breathing parameters in SMG, one can note their noticeable increase by the end of the session. Thus, in SMG, the RR is  $32.8 \pm 2.67$  per minute, and in CG it is  $27.4 \pm 2.4$  per minute.



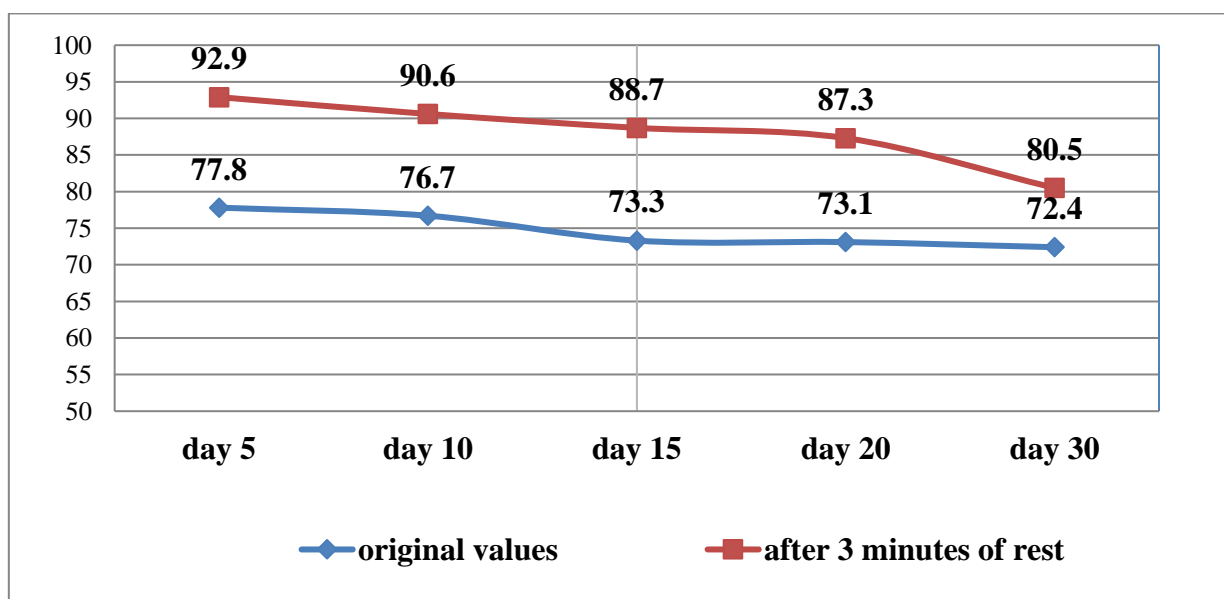
**Diagram 2.** Heart rate (HR) indicators against the background of physical activity; SMG - students of a special medical group; CG - students of the regular group.



**Diagram 3.** Indicators of respiratory rate (RR) on the background of physical activity; SMG - students of a special medical group; CG - students of the regular group.

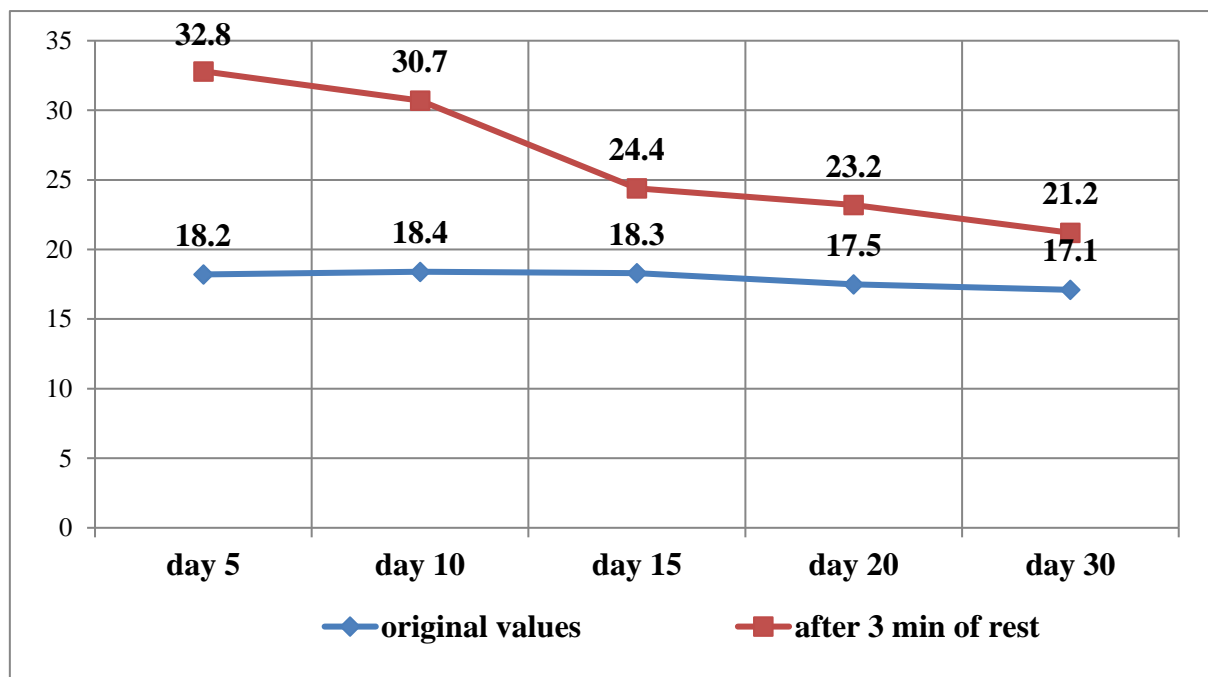
The study of the vegetative status of students in terms of heart rate revealed changes in regulatory neurohumoral influences in the body of students. The results showed that SMG showed more significant changes in the rhythmic activity of the heart than CG. As can be seen from the diagram 2, heart rate also differed between groups. So, at the end of the session, the heart rate in the SMG after a 3-minute rest was  $93.2 \pm 3.2$  per minute, while in the CG it was  $83.4 \pm 3.2$  per minute. The activity of vagal regulation of the heart rhythm in CG is almost unchanged.

The assessment of increasing tolerance to physical activity against the background of special training for SMG showed positive results. Students learned self-control by assessing heart rate and respiratory rate. A good state of the cardiorespiratory system in a month was detected in the dynamics of heart rate and respiratory rate. As can be seen from diagram 4, heart rate in dynamics tends to return to the original after 3 minutes.



**Diagram 4.** Dynamics of heart rate on the background of physical activity; SMG - students of a special medical group; CG - students of the regular group.

In turn, the majority of SMG students (79.0%) had a satisfactory state of the respiratory system against the background of special classes on physical condition. So, the RR in the dynamics tended to return to the original after 3 minutes (diagram 5).



**Diagram 5.** Dynamics of respiratory rate against the background of physical activity; SMG - students of a special medical group; CG - students of the regular group

So, the results of the study show that SMG has increased exercise tolerance, which affects the functioning of the cardiovascular and respiratory systems. The increase in tolerance to physical activity in the learning process is probably associated with the expansion of the range of functional manifestations.

### Conclusion

1. Education at the university leads to a change in the functional state of students, characterized by a complex of physiological properties of the body and adaptive reserves that determine learning activities for a long time.
2. In SMG, the learning process at the university proceeds with a slightly increased heart rate, there is a decrease in the function of external respiration, a decrease in the activity of the humoral regulation channel and sympathetic influences on the heart, an increase in the degree of tension of regulatory mechanisms.
3. In the process of training, girls show an increase in SBP, but within acceptable values, a decrease in respiratory function, an increase in the degree of centralization of the regulatory mechanisms of the heart rhythm.

Thus, as a result of the study, we came to the conclusion that in physical development and physical improvement, the SMG has certain significant differences from the CG, which, in our opinion, is due to the lag among SMG students due to their low adaptive potential. Increasing the adaptive potential and adaptability to the conditions of special training will allow them to successfully solve the tasks set for them during their studies at the university.

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