

Kinesitherapy as a method of prevention of the musculoskeletal system diseases of technical areas students

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Abstract—Currently, more and more attention is paid to the health of future generations. However, already when entering the University, especially in the technical areas of training, there is a significant deterioration in the health of young people. Most of them suffer from diseases of the musculoskeletal system, the main cause of which is the lack of motor activity. One of the solutions to this problem is the method of kinesitherapy, which allows you to restore the correct work of the muscles and the physiological position of the joints. Systematic dosed use of exercise in physical education classes using the method of kinesitherapy has a positive effect on the body, providing prevention of the musculoskeletal system diseases.

Keywords—*diseases of the musculoskeletal system, kinesitherapy, physical therapy, recovery, prevention, students*

I. INTRODUCTION

One of the primary tasks nowadays is to preserve and strengthen the health of the nation. However, we have to say that the percentage of students who study at the University with bad health is increasing. Most of them suffer from diseases of the musculoskeletal system. This is especially true among the technical areas students. One of the serious reasons is the lack of motor activity. Movement is one of the main manifestations of the body life and its most important functions - breathing, blood circulation, swallowing, moving the body in space, the sound side of speech – are realized, ultimately, movement – contraction of the muscular system.

People with lesions of the musculoskeletal system have problems of motor development, which, of course, has an adverse effect on the formation of neuropsychic functions. The most common among students are the following forms of pathology from the musculoskeletal system: scoliosis, osteochondrosis, arthritis, arthrosis, flat feet, etc. One of the reasons that causes diseases of the musculoskeletal system (except injuries and infectious diseases) – disproportion in muscle development. Some of the muscles are in a permanently stretched condition and weaken gradually, while others are always tense and don't allow your joints to take a physiological position. The way out of this situation is the normalization of the muscles and the restoration of the physiological position of the joints. Without this, all other treatments are doomed to fail because the root cause of the problem will not be resolved.

Various forms of movement as a result of the impact of mechanical energy on the human body have been widely used as a preventive and therapeutic agent in the early days of medicine. With the development of medical science, the use of various means and forms of motor activity for the needs of prevention, treatment and rehabilitation is gradually expanding and enriching.

One of the areas of physical therapy used in rehabilitation therapy is kinesitherapy. This method is one of the forms of therapeutic physical culture of a person, when performing active and passive movements, certain exercises of therapeutic gymnastics, a specific therapeutic result is achieved. This method is a scientific and applied activity, which combines the knowledge of medicine, pedagogy, anatomy, physiology, biochemistry, etc., in order to cure, improve and maintain a person in a healthy state, prevention of relapses, contributing to the psychophysical comfort of the individual [1].

II. METHODS

The relevance of our study is the necessity to show how systematic dosed using of exercises has a positive effect on the body, providing functional adaptation to household and professional stress.

The method of kinesitherapy is absolutely safe and suitable for everyone. Especially appropriate kinesitherapy in cases where it is impossible to more severe effects (severe pain, postoperative period). Since kinesitherapy has a therapeutic affect not only on the musculoskeletal system, but also plays the role of a corrector of violations of the all internal organs functions, it can be said that to some extent the methods of kinesitherapy are applicable to almost any disease.

The author of a unique method of the spine treatment is a well-known Russian doctor, candidate of medical Sciences Sergey Bubnovsky.

Dr. Bubnovsky developed and clinically tested a system of biomechanically flawless movements, the implementation of which on the principle of consistency and gradualism leads, ultimately, to the full restoration of the functions of the joints, organs and systems of the human body, to a full recovery. Bubnovsky complex is intended for the treatment and prevention of scoliosis of various degrees,

osteochondrosis, various hernias, arthrosis, as well as for the restoration of the musculoskeletal system after severe injuries and injuries.

The special practical importance of kinesitherapy is that prevention and treatment by this method is possible without the use of drugs. Weakened patients are offered adapted exercises with which they are happy to cope, moving on to more complex tasks. Special emphasis is placed on the production of proper breathing. Without proper breathing therapeutic movement is impossible. In addition to the treatment of exercise and exercise to improve health and prevent recurrence of the disease kinesitherapy includes a system of proper breathing, a certain diet and regular water treatments. Thanks to an integrated approach, it is possible to achieve positive results even in hopeless situations.

Unlike the specialists of physical therapy and fitness, who recommend a restrictive regime to people with back pain and joints, S. M. Bubnovsky created a technique and developed a unique equipment (MSB - a multifunctional simulator of Bubnovsky), which allows to work successfully with any diseases of the spine and joints [2].

Most of the physical exercises used in kinesitherapy have a mixed character - are a combination of cyclic exercises with acyclic.

The objective of the treatment program is to restore the quality and structure of skeletal muscles, including short deep muscles, in order to fully restore the function of the affected organs or systems.

The final result of treatment is the restoration of full working capacity without restrictions in everyday life.

The uniqueness of the method lies in the possibility of activating the spasmodic deep muscles of the spine and joints without axial load with an accurate dosage of the necessary physical effort.

Kinesitherapy is suitable for absolutely everyone and has almost no contraindications, and in addition, allows you to affect the body in such a way that not only diseases of the musculoskeletal system are cured, but also other diseases, including diseases of the nervous system [5].

Based on our experience, we can say that students of technical areas are at increased risk for diseases of the musculoskeletal system than students of other areas, as their activities are more associated with a sedentary lifestyle. Prevention of diseases and strengthening the muscles of the musculoskeletal system for them is especially important, as, by understanding about the method of kinesitherapy at the lessons of physical culture in a higher education institution, and learning to do the exercises on this method, as suitable to the disease of each student, and prophylactic, in the future, students will be able to apply them independently. Thus, the development of the disease will be stopped, and, despite the sedentary lifestyle associated with their profession, will develop a steady improvement in health.

III. RESULTS

In order to study the feasibility of using the method of kinesitherapy as a prevention of diseases of the musculoskeletal system of technical areas students of, we conducted a study. At the first stage, all students of this

direction were divided into two groups – control and experimental. There were 20 students in each group. The experimental group included 15 boys and 5 girls, the control group – 17 boys and 3 girls. Based on the data obtained from the study of medical records, the overall health of students at this stage is about the same. In the control group, 9 people had signs of disease of the musculoskeletal system, including 7 boys and 2 girls, in the experimental group – 12 people, including 8 boys and 4 girls.

At the ascertaining stage of the study, we conducted a survey of students of the control and experimental groups, as a result of which it was revealed that 92% of students have no idea about this method of physical therapy, which confirms the need for our study of the use of kinesitherapy as a prevention of diseases of the musculoskeletal system.

At the next stage of our study in the experimental group of students for 6 months of physical education classes were held on a special program, which has a preventive nature, where the leading place is given to kinesitherapy. Classes in the control group of students were conducted according to the usual program.

The basis of kinesitherapy using is the training process. If properly organized, it has a therapeutic and restorative effect on the body. According to the conditions, physical exercises were divided into two groups: exercises conducted under stereotypical, unchanging conditions (exercises of therapeutic gymnastics), and exercises under changing, non-standard conditions (games). According to the qualities that develop exercise, they are divided into exercises for strength, endurance, flexibility, agility, balance, speed. The method of training consists of preparatory, main and final parts. The training process applied to the experimental group of students included General and special training:

- Nordic walking at least 100 meters continuously;
- General educational exercises with sticks;
- alternating walking with slow Jogging for 100 meters girls 200 meters boys;
- the set of exercises adaptive gymnastics of Bubnovsky:
 1. Sit on your heels and get some air. As you inhale, you need to rise and make a circular movement with your hands back. Sit on your heels and exhale.
 2. Conduct cleansing breath: palms on the abdomen and pronounce the sound "p-f" through tightly compressed lips.
 3. Lying on the back, knees bent, hands behind the head, do exercise on the press, lifting the shoulder blades from the floor (exhale).
 4. In the same original position on the exhale, lift the pelvis, the knees should be kept together.
 5. The situation is the same. Need to regroup on the exhale: lift the torso and legs and try to keep the knees and elbows.
 6. Lie on the right side, leaning his hand on the floor and also grouped. It is necessary to try to work with the whole body, to breathe out while grouping.
 7. Repeat exercise 5.

8. Perform grouping on the left side in the same way as in the exercise 6.

9. Take the emphasis on your knees and relax the muscles of the lower back. Slightly raising the shins turn the pelvis left and right ("wagging tail").

10. In the same initial position to carry out inclinations a trunk forward and back. When leaning forward, bend your arms at the elbows.

11. To complicate the exercise # 10, alternately lifting the leg backwards when tilted.

12. Relax your muscles by sitting on your heels. Reach back with your hands on the floor.

13. Sit down, stretch your legs, lean your hands. Lift your legs, put your hands in front of you. Perform the exercise "scissors".

14. Turn on your right side. To perform alternately the flap folded, then straightened leg to shoulder. Exhale when moving with a straight leg.

15. The same exercise is performed on the other side.

- power exercises for back muscles, shoulder girdle and lower limbs:

1. sit on the floor, the emphasis feet in the legs of the simulator. Pull two hands to the chest.

2. lying on the floor, feet in the legs of the simulator. Alternately right, left hand thrust straight arm as much up, to the side and to the chin (bending the arm at the elbow).

3. sitting with its back to hotel reception. Alternately, right/left arm extension (press) up.

- elements of sports games: basketball, volleyball, mini-football;

- exercises with the ball in place, with the movement;

- coordination and vestibular exercises;

- mobile games by simplified rules;

- general developmental exercises for all muscle groups, taking into account contraindications.

Joint gymnastics, stretching exercises, elements of yoga, Pilates were also carried out, All exercises were performed with proper breathing, necessarily to the music, which tuned students to positive emotions [3, 4].

In the control group of students, physical education classes were conducted according to the General program of classes corresponding to the age of students.

At the final stage of the study, we conducted a repeated survey of students, as a result of which it was found that in the experimental group, the majority of students improved overall health, decreased or completely disappeared pain syndrome during exercising, increased smoothness and amplitude of movements of the musculoskeletal system. There were no noticeable improvements in the state of health and musculoskeletal system in the control group of students. Also, both groups made a medical check-up, as a result of which we received the following data: in the experimental group of students, the signs of diseases of the

musculoskeletal system decreased or completely disappeared among 8 people – 6 boys and 2 girls. In the control group, similar changes occurred among 3 people – 2 boys and 1 girl.

IV. DISCUSSION

Our study showed the success of kinesitherapy as a method of prevention of diseases of the musculoskeletal system among technical fields students.

Motor activity has a very powerful irritant to the whole body, all its systems and organs. Muscle activity forms the structure of the body and stimulates all its functions. It makes a significant contribution to the improvement of self-regulation and adaptation of the body to constantly changing environmental conditions.

Prevention of diseases of the musculoskeletal system is carried out using specially selected complexes of physical exercises that strengthen the ligamentous and muscular system and improve the quality of life. Accessibility, simplicity of movements helps students to stimulate them to do exercises by themselves.

Kinesitherapy is a form of physical therapy, when performing active and passive movements, certain exercises of therapeutic gymnastics, achieved a specific therapeutic result without the use of drugs. In addition to increasing the amplitude of joint mobility, relieving pain, improving blood circulation, accelerating metabolism, the systematic use of kinesitherapy has a psychotherapeutic effect and relieves emotional tension.

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