

Method Of Using Physical Exercises For High School Age Children With Scoliosis

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Annotation. In this article, guidelines for organizing a physical education lesson for schoolchildren with scoliosis are mentioned. It is explained what exercises are appropriate for students with curvature of the spine. The need to refrain from certain prohibited actions is indicated.

Keywords: Scoliosis, spinal disc, spine mobility, Therapeutic Physical Education (TPE), degrees of scoliosis, kyphosis, lordosis, thoracic vertebrae, diaphragm, heart rate.

In 2017, the President of the Republic of Uzbekistan Shavkat Mirziyoyev signed a new decision "On measures to further develop physical education and mass sports". In the decision, the country's population, especially the young generation, has created conditions suitable for regular physical education and mass sports, large-scale work has been carried out on the selection of talented athletes and the systematic organization of targeted training, students and It was noted that the sports competitions "Umid Nihollar", "Barkamol Avlod", "Universiada", which are increasingly popular among students, have become an effective means of introducing young people to sports and healthy sports. Based on the decision of the President of the Republic of Uzbekistan dated 23.12.2022 No. PQ-449 "On measures for the further development of gymnastics sports", starting from the 2023-2024 academic year:

- "The first step to gymnastics" program in preschool educational organizations;
- to introduce the "Gymnastics for Children" program based on the program developed for the elementary training groups of the sports school for gymnastics sports, intended for elementary school students in general secondary schools.

Note that:

a) within the "First step to gymnastics" program:

- by popularizing and widely promoting gymnastics in pre-school educational organizations, attracting students to regularly engage in this type of sport;
- preparation for sports skills recommended by doctors - a specialist in physiological development of the pupils' body;
- great attention is paid to the formation of a strong and effective motivation for children to engage in gymnastics;

b) Within the framework of the "Gymnastics for Children" program:

- general secondary education schools with students who have a high desire to do gymnastics and have gyms are identified;
- in selected general secondary schools, trainings in gymnastics sports are conducted in separate sports sections outside of class by trainers recruited from the sports school in the area where the school is located;
- investments and grants are attracted for the establishment of gymnasiums in general secondary schools, expansion and equipment of the existing gymnastics infrastructure;
- measures will be taken to widely promote and popularize gymnastics sports among young people, to increase their interest in this sport, and to support the holding of gymnastics competitions. Treatment and prevention of common diseases in the future generation is an urgent issue during the planned works.

In modern orthopedics, children's scoliosis is a very common disease, and it is a relatively young disease. This phenomenon is expressed by the rapid development of bones and muscles in children. In addition, this phenomenon is characterized by the fact that the development of muscle tissue occurs more slowly than the growth of bone tissue. Scoliosis in children has a tendency to develop and reaches its highest level towards the end of the child's growth. Studies of schoolchildren have shown that from 30% to 60% have dysfunction of the musculoskeletal system (ie, various curvatures of the spine), which increases from lower grades to higher grades. Even in children's sports schools, many students with scoliosis and similar diseases were found.

The most dangerous period of scoliosis is the intensive growth of the child (6-8 years, 10-14 years), as well as puberty (girls 10-13 years, boys 11-14 years).

At the same time, childhood scoliosis is becoming a growing medical and social problem.

The younger the child, the more difficult it is to detect the disease - scoliosis develops as the child grows. From 2 to 9 cases of scoliosis are detected for every 100 children examined. The incidence of scoliosis is approximately the same among early-aged girls and boys. However, girls are more prone to the development of scoliosis (especially during adolescence), which is related to the physiology of the female body. At the age of 10-15, when girls begin to grow rapidly, the muscular system cannot grow as fast as the skeletal bones, which leads to the development of scoliosis, so the appearance of a specific form of scoliosis at a later age is more common in girls than in boys 3 -4 times more common.

Scoliosis (a sideways curvature of the spine) can cause shoulder pain and poor posture in the future. When the posture of the body is disturbed, the shape of the skeleton changes, the pressure on the joints, tendons, and muscles is distributed incorrectly, the whole locomotor system suffers from this, and the functions of the spine spring deteriorate. A decrease in the function of the spinal cord causes damage to the head and spinal cord during walking, running and other activities, which has a negative effect on the higher nervous system, and a decrease in working capacity is observed.

Spinal cord injuries are most common in children of primary and secondary school age. This also happens in adults. This disease of the spine can be present in children from birth or it can be caused by improper sitting or walking. The most correct and convenient way to treat this disease is a set of exercises and procedures (DJT, massage, paraffin therapy, swimming and gymnastics).

Research object: functional conditions of the spine in all deviations of children of the specialized state educational institution (boarding school) for mentally retarded children No. 3 of the Republic.

The subject of the research: improving the effectiveness of physical exercises used to increase the mobility of the spine of the students of the specialized state educational institution (boarding school) for mentally retarded children No. 3 under the control of the Republic.

Methods used in conducting research:

- Theoretical method (summarization of analysis and scientific-methodical literature)
- Anthropometric measurements (shoulder circumference, chest circumference, spirometry)
- The method of determining the mobility of the spine
- The method of determining the amount of physical labor opportunities.
- Mathematical statistical methods.

Research innovation: an effective physical loading procedure has been developed taking into account the functional status of athletes with scoliosis.

Effectiveness of therapeutic physical education for scoliosis.

Therapeutic gymnastics is one of the oldest medical sciences. The history of using physical exercises for therapeutic and preventive purposes goes back several thousand years. The first sources that talk about medicinal effects are found in Ancient China. These were manuscripts from 3000-2000 BC. They noted the existence of schools of medical gymnastics in Ancient China, where they taught therapeutic gymnastics and massage, as well as how to use them in the treatment of patients. Passive movements, resistance exercises, breathing exercises were used for diseases of the respiratory system, circulatory system and surgical diseases (dislocation, fracture, curvature of the spine).

The use of exercise for therapeutic purposes was widespread in Ancient Greece. The creator of medical gymnastics is considered to be the physician Geradic (484-425 BC), who used dosed walking, running,

gymnastics and massage to treat patients. Generations of ancient Greek physicians, philosophers, and thinkers have written about the importance of exercise in prolonging life and curing disease.

This is due to the fact that the spine, which is in the initial stage of formation, is better able to support correction. Treatment of scoliosis during adolescence is much more difficult and lasts longer, and after the age of eighteen, only surgery can completely correct the curvature of the spine.

Treatment of scoliosis consists of three interrelated parts: mobilization of the spine, correction of the deformity and stabilization of the spine in the state of the achieved correction. In addition, treatment is aimed at eliminating pathological changes in other organs and systems of the child's body. The main and most difficult task that determines the success of the treatment in general is not to mobilize and correct the curvature, but to stabilize the spine in the corrected position. Correction of a deformity that is not supported by spinal stabilization measures is ineffective. Treatment of scoliosis, i.e. reduction of its structural deformation, can only be achieved through long-term and strict treatment during the entire period of spine growth with the mandatory complex use of orthopedic treatment. Treatment of scoliosis is a long-term process that continues throughout the entire period of spine growth, which is characterized by a mandatory reduction of not only the functional, but also the structural component of the deformity.

Exercise therapy is the most effective procedure in the treatment of scoliosis, and it should be done regularly, every day. Exercise therapy and posture correctors are the most reliable weapons in the fight against this disease. Exercise therapy should be different for different types of curvature. Thus, for scoliotic deformity, sports activities that can be easily performed at home are prescribed. Its task is to gradually increase physical activity. Exercises for scoliosis at home will not be difficult and will be in your own environment.

Physical exercises are natural and specifically selected movements used in exercise therapy. Any physical exercise can be used if it is used correctly, taking into account the goals of treatment, the strength and physical fitness of the child. Under the influence of physical exercise, the state of the main nervous processes normalizes (excitability increases with the intensification of incubation processes, and incubation reactions develop with an increase in pathologically expressed excitability).

In serious cases, the disease manifests itself as lateral deviation of the shoulders, asymmetry of the scapular bones, curvature of the chest. In this case, it is necessary to choose exercises carefully. It is possible to continue training in a special school, hospital or sanatorium.

In the thesis, we talk about the usefulness of exercise therapy for the treatment and prevention of scoliosis, in which cases it harms health, aggravates the course of the disease, why it is necessary to do therapeutic exercises with a specialist, and we consider a set of possible exercises.

Benefits of exercise therapy for scoliosis.

Regular exercise therapy for scoliosis has a healing and restorative effect on the body and solves several problems at the same time. Morning physical education: Morning physical education is one of the activities that have a beneficial effect on the child's body. It consists of a complex of moderate physical exercises that cover the main skeletal muscles. During sleep, the child's central nervous system is in a state of rest from daytime activity. At the same time, the intensity of physiological processes in the body decreases. After waking up, the excitability of the central nervous system and the functional activity of various organs gradually increase, but this process can take a long time, which affects the character of the child, such as drowsiness, lethargy, and sometimes irrational irritability. affects. EB improves the tone of the child's body, increases vital processes (blood circulation, respiration, metabolism, etc.), makes attention stronger, increases discipline (inculcates hygienic skills for exercise) and gradually transitions the body from the state of rest provides. When choosing exercises, it is necessary to ensure their diversity in terms of form and effect on different muscle groups. A set of exercises should cover all the muscles of the body from the legs to the neck. Physical activity and the dynamics of its growth from lesson to lesson cannot be the same for everyone. They are strictly individual depending on the age and degree of scoliosis.

What is the effectiveness of Therapeutic Physical Education?

- There is no need to take tablets.
- Therapeutic physical training (DJT) helps restore muscle strength and elasticity.
- The work of the heart and lungs is activated.
- The curvature of the spinal cord slows down or stops.
- The person feels relieved.

-Muscle fatigue disappears.

Therapeutic physical training exercises are prescribed by an orthopedic doctor.

Principles of gymnastics for scoliosis: One of the main types of exercises for scoliosis at home is gymnastics. It includes (improves physical development) and special (corrective) exercises. Let's take a closer look at the second type. Their task is to form the correct posture and correct spinal disorders.

A set of exercises for scoliosis: Therapeutic physical education is widely used for the treatment and prevention of scoliosis. Physical activity with constant load improves general fitness and is beneficial for the spine: it strengthens the muscle corset, increases strength and range of motion, reduces the load on the axial skeleton, and forms the correct posture. Exercise therapy for scoliosis has its own characteristics related to the specific course of the disease, the goals of therapy, and the anatomical and physiological characteristics of the body. In addition, regular exercise therapy improves the functioning of the heart, lungs and pelvic organs, stops the further development of deformation and prevents the development of complications.

Complexes of physical exercises are designed for scoliosis with different degrees of spinal curvature and chest deformation. Classes are conducted by individual choice. They can include active exercises performed directly by the patient himself and passive exercises performed with the help of someone else's hands or special devices and mechanisms (mechanotherapy). Active exercises can be light, performed with the help of various tools, for example, a special table, with free, dynamic and statistical movements.

Therapeutic gymnastics in water (hydrokinesitherapy) is useful for scoliosis. It is easier to perform exercises due to the mechanical and thermal effects of the water environment. In addition to the general strengthening effect on the musculoskeletal system, water cleans the skin, improves the condition and functioning of internal organs, and stimulates physiological processes.

Below are described possible general development and stretching exercises.

General development, warm-up exercises:

1. "Writing while leaning on the hands and bending the elbows" exercise. Plank exercises on your knees, hands shoulder width apart, back straight, 10-20 repetitions.
2. "Sit down." Initial position: standing, arms extended down along the body, feet shoulder width apart. Slow down and stand up, arms forward, back straight, head straight. Do the exercise 5-10 times.
3. "Spring". We strengthen the upper thoracic vertebrae. Initial position: standing. Pull the top of your head to the ceiling, press your chin to your neck, relax. Then, tighten your back muscles, pull your chin up. Repeat 5-7 times.
4. Exercise to stretch all parts of the spine. Raise your arms to your sides, palms facing the ceiling, chin up, stay in this position for a few seconds.
5. Exercise for writing shoulder girdle, arm and neck muscles. In a standing position, raise your hands above your head at the level of your ears, join your palms, tighten your neck and shoulder muscles as much as possible, turn your head as far as possible to the left, hold for a few seconds, then turn to the right. Repeat 5 times.

Stretching exercises:

1. Initial position: standing. Raise one hand to the side by your ear, tilt your head towards the raised hand and pull. Do 10 times with each hand.
2. Initial position - standing, hands on the back of the head, put your chin on your chest, lower your hands and relax. Repeat 5 times.
3. Initial position - lying on the back, hands along the floor, legs raised 10-15 cm from the ground. As you inhale, lift your straight left leg up and as you exhale, lower it. Repeat the same with the right leg. Do 6 repetitions of three on each leg.
4. In a standing position, straighten your arms along your body, tighten the back muscles of the chest and squeeze the shoulder blades as painlessly as possible, hold for 10-20 seconds. Relax your muscles and repeat the exercise 5 more times.
5. Standing on all fours, hands and feet shoulder width apart, bend your back and then lift it up. Do it 5 times.

Breathing exercises: In people with curvature of the spine, the chest is often deformed: it is sunken to the side, flattened and with limited mobility. It is important to include chest-breathing exercises in training to correct posture. Breathing exercises for scoliosis have a positive effect on the whole body:

- reduces deformation of the chest and spine;
- improves the neuropsychic condition of a person;
- normalizes lymph nodes and blood circulation;
- normalizes respiratory functions;
- increases the mobility of the chest and diaphragm;
- increases vitality tone;
- stimulates metabolism;
- improves the condition and functions of nervous, cardiovascular, endocrine systems;
- prevents air congestion in the lungs.

Special breathing exercises against scoliosis are performed according to the method of Katharine Schroth. It is prescribed for any degree of spinal deformity. The principle of exercises is based on asymmetric breathing. To correct the curvature of the spine, restore the physiological condition of the vertebrae and prevent the development of deformation, it is necessary to breathe consciously only with the concave half of the chest.

According to Schroth's experience, the main goal of breathing gymnastics is to teach the patient to independently take the correct position of the body and maintain it throughout the day.

Exercises affect the spine in the pathologically changed part of any plane - horizontal, vertical, frontal, and at the same time have a beneficial effect on the general condition and functions of adjacent internal organs.

With the help of additional tools - a ball, a Swedish wall, a roller, the doctor sets a certain position of the patient's body. By performing stretching exercises with breathing, stretched intercostal muscles are strengthened, enlarged intercostal spaces are reduced, as a result of which curvatures and deformities are corrected. Exercises are performed standing, sitting, lying down.

The effectiveness of training depends on the causes and development of the disease, as well as the behavior of the patient. To achieve a positive result, it is important to follow the following:

- maintain the correct position of the body: straight body, shoulders, neck vertebrae and their free grip;
- take a long breath through semi-tightened lips;
- during exhalation, it is necessary to perform exercises aimed at reducing the elongated spaces on the concave side;
- Drink a liter or more of water during training;
- repeat the exercises at least 25-30 times a day in front of the mirror.

Air has a beneficial effect on the child's body, stimulates the growth and development of the body. The effect of air is felt by the nerve hairs of the skin and mucous membranes of the respiratory tract. The nature of the effect of air on the body is determined by the ratio of its quality indicators: temperature, humidity, movement, pressure, ionization. On hot days, it is better to start air baths in places protected from the wind. The duration of the procedure is individually dosed depending on the level of health of the child, as well as air temperature and humidity.

Treatment by water: Systematic washing and bathing, especially cold. About the importance of performing therapeutic gymnastics exercises with a specialist.

The set and dosage of physical exercises should be recommended individually for each patient by an orthopedic or rehabilitation medicine specialist. When creating a training program, it is necessary to take into account the causes and characteristics of the development of scoliosis, the type, location and degree of curvature, the age of the patient, the presence of concomitant diseases, the body's response to treatment and the level of physical fitness. In the initial period, training should be supervised by a specialist, later independent training is allowed. Individual or group lessons are available.

The doctor monitors the correctness of exercises and breathing techniques, evaluates the patient's movements. Incorrect training techniques and insufficient loads can aggravate the course of the disease, cause pain, increase the angle of curvature and cause additional load on the spine, which in turn causes great discomfort. During the treatment of the disease, it is necessary to pay special attention to the nutrition of children. Their body weight should always be under control. The curvature of the spine greatly affects the

weakening of its spring function. Due to the damage of its elasticity, the functions of the spinal cord are also damaged.

Contraindications to therapeutic gymnastics in scoliosis

If the patient has the following diseases and pathological conditions, physical activity and physiotherapy exercises are prohibited:

- heart aneurysm;
- heart failure 3rd stage;
- malignant neoplasms;
- severe hypertension;
- venous thromboembolic complications;
- acute inflammatory processes;
- fever condition;
- bleeding tendency;
- in disorders of heart rhythm and blood flow.

In scoliosis 3.4 degrees, running and jumping exercises are prohibited at all. Due to the deterioration of the spring function of the spine in children, it is necessary to prevent spinal cord injuries.

Regardless of the degree of scoliosis, children are not allowed to jump from a rope, that is, to jump after hanging on the turnstile. In this case, the spine, ligaments are in a written position, and the load given when jumping is not evenly distributed to the vertebrae. As a result, we can turn normal scoliosis into S-shaped scoliosis. In such cases, one-handed exercises are also impossible.

In addition, all sports and active games are prohibited for children with scoliosis

Summary

1. In cases of curvature of the spine, the mobility of the spine increases through the above-mentioned therapeutic gymnastics exercises for children. Along with these exercises, regular breathing exercises based on Schroth's experience show good results. Anthropometric measurements were used to determine the mobility of the spine in scoliosis. The procedure for carrying it is measured from the 7th cervical vertebra to the back of the coccyx.

2. In addition to the exercises used above, swimming exercises were carried out once a week for 50 minutes.

3. Children suffering from spinal disorders are now the majority. The development of scoliosis disease, which is considered one of the current problems, develops from childhood, and if necessary operations are not carried out, it develops slowly and later leads to the emergence of very big problems. In rare cases, scoliosis can be congenital, that is, through adverse effects on the developing fetus in the mother's womb. In acquired cases, there are many causes of the disease, such as improper growth of the child, carrying the child by one arm for a long time, not controlling the correct sitting by teachers in schools, wearing the bag incorrectly. In short, the researches on the treatment of scoliosis are bearing fruit, in addition, during the organization of physical education classes in our country, we have increased the performance of exercises that help straighten the children's spine.

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