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STUDY OF HYGIENIC FACTORS AND DIAGNOSTICS OF POSTURE DISORDERS IN SCHOOL CHILDREN

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Abstract

Diseases of the musculoskeletal system in children are among the most common health problems among schoolchildren. The incidence of this

The prevalence of scoliosis among students fluctuates between 7.4% and 54%, and during schooling the prevalence of scoliosis among students increases by 3.5-4 times. A comparative analysis of preventive examination data over 10 years shows a threefold increase in the prevalence of scoliosis among first-graders (from 7.4% to 22.7%), among 4th-5th grade students by 2.4 times (from 14.1% to 34.6%); among 15-year-old students by 1.7 times (from 32% to 54.4%; among 11th grade senior students - by 1.4 times from 32.3% to 45.45%).

Posture disorders in schoolchildren are even more common and occur 3-6 times more often than scoliosis. The prevalence of these functional disorders increases in children from the 1st grade to the transition to subject-based learning by 5-6 times (from 18-22% to 85-137.9%). In adolescence, the frequency of posture disorders decreases to 84.3-94.7%, and the number of children with scoliosis increases first of all.

Keywords: Musculoskeletal system, health disorders, social and hygienic factors, vital capacity of the lungs.

Introduction

Purpose of the study:

To study the frequency and prevalence of postural disorders in the dynamics of school education and to study the influence of various modes of organized physical activity on the state of health and correction of myofascial insufficiency as the main cause of the development of postural disorders in primary school children.

Results of the study

In the work for a comprehensive assessment of the health status of 7-year-old children, an analysis of medical documentation f. 112u; f.02u was used. A study of physical development and physical fitness was conducted twice (at the beginning and end of training in the first grade). The analysis of social and hygienic factors was carried out using questionnaire developed by us for parents. The program for studying the physical development of first-graders included measuring body weight and length, chest circumference, head circumference, strength of the flexor muscles of the hand (wrist dynamometry), strength of the extensor muscles of the back (back dynamometry), and vital capacity of the lungs. To determine physical fitness, motor tests adopted in the practice of the

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educational process in the subject of "physical education" were used, in compliance with the requirements for such studies, in school lessons (together with the physical education teacher): 1) track and field running at a distance of 30 meters (per second) - speed abilities;
2) standing long jump (in centimeters) - speed- coordination abilities; 3) shuttle run 3 x 10 meters (per second) - speed-coordination abilities; 4) pull-ups on a high (for boys) or low (for girls) bar (number of times) - strength endurance; 5) forward bend from a sitting position on the floor (in centimeters) - flexibility.
Clinical examination of children in the dispensary group included:
- study of the anamnesis of life and disease;
- study of subjective and objective neurological status;
- determination of the strength endurance of the trunk muscles;
- determination of the mobility (flexibility) of the spine in the lumbar region
- sagittal plane;
- determination of aerobic performance;
- thermal imaging research;
All children with OI underwent an assessment of the patient's myofascial status. To assess the myofascial status, a map developed by SM Bubnovsky was used.
myofascial topographic diagnostics, schematically reflecting the following evaluation parameters:
- Presence and localization of pain.
- Violations of the statics of the spine (violations of posture in the sagittal and frontal
planes, smoothing of physiological curves, kyphosis);
- Hypertonicity / hypotonus paravertebral muscles;
- Rigidity of the myofascial system;
- Condition of the shoulder, knee, ankle joints (limitation
movements, hypermobility , pain when flexing and extending);
- Condition of the muscles of the lower leg and foot (pain, rigidity);
- Condition of the hip joints (incomplete rotation, stiffness);
- Symptoms of tension.
Determination of the functional status (class) of motor activity.
The functional class of motor activity was assessed according to the criterion
the actual physical activity performed in relation to its usual level in a healthy state at three levels
Class 1 - normal motor activity with performance of usual daily professional and household activities without difficulty;
Class 2 - moderate decrease in motor activity - performing daily motor activity with minor restrictions and difficulties;
Grade 3 - significant decrease in motor activity, cessation
professional activities outside the home, limited amount of physical activity and recreational activities;
To implement the program of correction of HO, we proposed the use of multifunctional training units. Kinesitherapeutic impact on persistent disorders of the child's posture was complex and included:

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1. Work on special rehabilitation training devices (RTD), allowing precise dosing of the load on individual muscle groups, stretching of muscles and ligaments, providing a decompression training mode. Each training session on the training devices takes place under the supervision of an instructor according to an individual treatment program, the basic principles of which are set out below.

2. Teaching the principles of correct breathing - exhalation at the moment of maximum tension - which prevents an increase in intra-abdominal pressure, overload of the cardiovascular system, and improves ventilation of the lungs.

3. Joint gymnastics, which is carried out according to the principles of parterre aerobic gymnastics (lying down, standing, on all fours) and is aimed at fully working out the abdominal muscles, restoring muscle elasticity, and teaching relaxation after completing a comprehensive treatment program.

4. Teaching patients the correct static-dynamic regime during classes at school and at home, in everyday life and forming a conscious attitude towards regular maintenance of the body's muscular constant. Basic principles of drawing up an individual treatment program for children:

• Exercises on exercise machines are conducted every other day, maximum every two days, for no more than an hour of pure time.

• The first 6 sessions include a general set of exercises (all muscle groups are included) with systematic preparation for accents (repeating the same exercise in 3-4 approaches). The set begins with performing each exercise

1 approach. From 3-4 sessions on those muscle groups that need emphasis, give

2 approaches, introduce sessions of joint gymnastics.

• During these introductory classes, the child's body adapts to exercise training, joint gymnastics, muscle tissue restoration processes are activated, the activity of the cardiovascular system is enhanced, and microcirculation is improved. The child learns to breathe correctly, perform exercises correctly , and movements.

• From the 6th lesson after the adaptation period, accents are assigned (3-4 approach) depending on the main problem (interscapular region, back extensors, pectoral muscles, muscle groups that control the position of the pelvis – abdominal press, iliopsoas muscle, muscles of the lumbar region, posterior group thigh muscles, calf muscles).

• When training on exercise machines, groups were alternated for adequate recovery muscles: 1) back-legs; 2) chest-shoulders- legs. After the gym exercises, if possible, we used short-term relaxation on fitballs in order to increase the elasticity of the spinal ligaments.

Our methodology necessarily included teaching the child to control his posture, control the muscles that he develops in kinesitherapy classes, the correct position at the table, when walking. In cases of persistent disorders and the transition of OI/scoliosis of the first degree, detorsion exercises were prescribed .

Detorsion exercises were prescribed one approach after the adaptation period and the patient's experience of working on the training equipment. During the rehabilitation cycle, the treatment program was adjusted depending on the child's condition, myofascial diagnostic data, and the dynamics of anthropometric indicators.

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Based on the survey, 262 first-graders were divided into three groups depending on their physical activity regime:

- Group "A" (27.1%): children involved in Physical Education during school lessons (2 hours per week), in combination with additional mental loads
(music, art schools, technical modeling clubs, foreign language courses) from 3 or more hours per week;
- Group “B” (46.2%): physical education classes only during school lessons (2 hours per week);
- Group "B" (26.7%): children involved in physical education during school lessons (2 hours per week) in combination with additional classes in sports sections for 2 or more hours per week.

When analyzing the characteristics of the social and hygienic anamnesis, it was found that 6.9% of first-graders have appetite disorders, 11.8% have sleep disorders, and 19.9% do not follow the daily routine. All those examined sleep for an average of 9-10 hours. Only 11.8% do morning exercises, and only 22.1% of primary school children undergo hardening. The amount of time spent outdoors is on average 2-3 hours a day, with unorganized physical activity (outdoor games) accounting for about 1-2 hours a day. 98.8% of parents consider physical education classes useful. Among the reasons that negatively affect the health of children, parents point to material and everyday difficulties - 21.4%; excessive mental stress - 9.9%; other reasons - 27;1%5 including: poor environmental conditions (6%), excessive passion for computer games, watching TV (3.8%), additional physical activity (3%); in 43.6% of cases, parents did not answer the questions in the questionnaire.

Conclusions:

Functional disorders and diseases of the musculoskeletal system in children and adolescents occupy the 2nd place in the structure of childhood pathology with an increase from 3 years to 18 years by more than 10 times. The structure of pathology is mainly represented by flat feet, posture disorders and scoliosis.

Pathological posture is observed in 8% of first-grade schoolchildren and is represented by functional disorders in the sagittal plane; in 4th-5th-grade schoolchildren, there is an almost twofold increase in posture disorders, and in a third of cases, signs of scoliotic posture are noted.

Every fifth senior school student shows clinical signs of pathological posture, with half of the cases being postural disorders in the frontal plane, the majority of which can be considered as grade I scoliosis.

children entering school, 22.7% have a level of physical development below average; 28.7% have disharmonious development; 32% have a lag in biological age from the passport age. Physiometric indicators of physical development (wrist dynamometry, standing strength, vital capacity of the lungs) are significantly reduced in first-graders compared to their peers in the 90s. In a comprehensive assessment of physical fitness, 22.1% of first-graders do not meet age standards.

It was found that 46.3% of children engage in physical education only during school lessons (2 hours per week); 27% engage in physical education during school lessons in combination with additional mental loads (more than 3 hours per week); 26.7% of first-graders combine physical education during school lessons with additional classes in sports sections.

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By the end of the 1st grade, the pathology of the nervous system in first-graders increases by 10%; respiratory diseases - by 9.9%; diseases of the digestive system - by 6.2%, visual disorders - by 6.1%, diseases of the musculoskeletal system - by 2%). At the same time, the growth of physiometric indicators by the end of the school year is significantly higher than the growth of somatometric ones (respectively 27.5 ± 12.0% and 5.6 ± 3.8%). At the same time, the average growth of strength endurance is 48.4 ± 11.0%, flexibility - 8.5 ± 5.3%, and speed-strength abilities - 7.6 ± 1.6%.

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