

MODERN HEALTH-SAVING TECHNOLOGIES USED IN PRESCHOOL INSTITUTIONS

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Abstract

Children's physical health is inextricably linked to their mental health and emotional well-being. It is believed that at present it is impossible to solve the problem of educating a socially adapted personality without implementing a system of measures for recreational work and physical education of children with the help of their parents. Therefore, today, the use of health-saving technologies in preschool educational institutions is defined as one of the priority areas of pedagogical activity. The health-saving pedagogical technologies used in the work of preschool educational institutions make it possible to increase the effectiveness of educational. The purpose of the study was to preserve and strengthen the health of preschool children with impaired posture and arch of the foot based on integrated and systematic approaches to physical education, optimization of motor activity. The objectives of the study included the protection and strengthening of the health of children with impaired posture and arch of the foot; formation of motivation to strengthen the muscles and ligamentous apparatus of the skeletal skeleton in preschool children; creation of optimal conditions for the physical and mental health of children; organization of assistance to parents of children of this group on recreational activities at home and educational activities among teachers and parents, to consolidate value orientations aimed at preserving and strengthening the health of the younger generation. For these purposes, special conditions should be created for the use of pedagogical technologies, depending on the specialization of preschool institutions and specific conditions.

This article presents materials on health-saving technologies used by the authors in the activities of a preschool educational institution in Izhevsk, specializing in strengthening the physical development of children with impaired posture and arch of the foot. The study involved 52 children aged 6–7 years with various postural disorders (58,60%), arch disorders (28,80%) and a simultaneous combination of these disorders (12,60%). Of the total number of children, boys accounted for 34 (65,38%), girls – 18 (34,62%). We have used medical and preventive, physical culture and health-improving types of health-saving technologies, as well as valeological education of parents, health-saving educational technologies used in this preschool institution. Modern health-saving technologies used in preschool institutions attended by specially trained educational workers, methodologists, a pediatrician, a podiatrist, a physical training instructor, and a music worker.

Keywords: *Health-saving technologies, preschool educational institution, pedagogical technologies, posture disorders, arch disorders.*

Relevance. Currently, there has been an update of preschool education in terms of protecting and strengthening the physical and mental health of preschool children, and the full development of the child's personality. The Federal State Educational Standard of Preschool Education (FSES DO) is aimed at protecting and strengthening the physical and mental health of children, including their emotional well-being, the formation of a general personal culture, as well as the values of a healthy lifestyle, and the development of their physical qualities [2]. For the successful organization of the activities of a preschool educational institution for physical education of preschoolers, it is important not only to comply with the requirements of the FSES DO, the psychological and pedagogical conditions for the implementation of the proposed programs, but also the level of professional skill of individual specialists [1]. Physical education with elements of medical and preventive measures, taking into account age, anatomical, physiological and psychological characteristics, concerns not only the field of healthcare, but above all, education and learning goals [1, 3, 5]. They are aimed at the formation of rational, conscious exercises in the child, the accumulation of motor-active experience and its transfer to further everyday life.

To understand preventative education for children and their parents, it's first necessary to understand the causes of posture and foot arch disorders [4]. A fundamental factor in the development of spinal deformities is the progressive weakness of the muscular corset (the muscles surrounding the spine), which is unable to perform its supporting function. Therefore, physical exercise, gymnastics, and many early childhood sports are essential for children. It's also important to instill an interest in physical exercise in children, taking into account their interests, without imposing your own preferences. When working with a physical education instructor in a preschool, it's important to use demonstrative movements, explanations, preliminary orientation, and the promotion of a conscious and creative approach to the task at hand.

Purpose of the study. Maintaining and strengthening the health of preschool-aged children with posture and foot arch disorders based on a comprehensive and systemic approach to physical education and optimization of motor activity.

Research objectives. Protecting and promoting the health of children with posture and foot arch disorders; fostering motivation to strengthen the muscles and ligaments of the skeletal system in preschool children; creating optimal conditions for the physical and mental health of children; and providing assistance to parents of children in this group with health-improving activities at home.

Material and research methods. The authors used materials on health-preserving technologies in the activities of a preschool educational institution in Izhevsk, specializing in strengthening the physical development of children with posture and foot arch disorders. The study involved 52 children aged 6–7 years with various posture disorders (58,60%), foot arch disorders (28,80%) and a simultaneous combination of these disorders (12,60%). Of the total number of children, 34 were boys (65,38%), 18 were girls (34,62%). We used medical and preventive, physical education and health-preserving types of health-preserving technologies, as well as valeological education of parents, health-preserving educational technologies applied in this preschool educational institution. Specially trained educational workers, methodologists, a pediatrician, a podiatrist, a physical education instructor, and a music teacher participated in the classes. Classes were held in accordance with SanPin three times a week, lasting 30 minutes in a gym with musical accompaniment.

The study was conducted in three stages. During the first stage, we analyzed domestic and international scientific literature on the topic under study, set the goal, and defined the research objectives. Data was obtained for each child with informed parental consent, and records were made in the children's "Health Records". The goal of this stage was to determine the level of development of correct posture skills in children. We used methods including parental questionnaires, determination of spinal deformity using a Billy-Kirchhofer scoliometer, and methods for identifying true scoliosis developed by the N.N. Priorov Central Institute of Traumatology and Orthopedics. During the second stage, we organized work to develop correct posture and prevent its disorders through physical education and health-improving activities. The third stage allowed us to analyze the obtained results and formulate conclusions.

While analyzing the scientific literature on the prevention and correction of postural disorders, we noted that most authors noted a close correlation between poor posture and foot deformities. Therefore, special attention was paid to exercises to develop correct posture. A specialist, a podiatrist, was also involved in the work. He recommended using specially selected orthopedic insoles to develop a proper foot arch, rather than the simple insoles typically used by parents. Based on the literature, we developed a series of preventive exercises aimed at improving posture and foot arches in preschool-aged children, working with a children's physical education instructor.

We used the following diagnostic methods: visual assessment, foot measurement with a metric tape (podometry), and a child's posture assessment method. These revealed that 31.01% of children had a postural disorder in the form of scoliosis, while 11.22% had severe postural disorders. According to the degree of postural disorder, degree I was determined when the child controlled himself and tried to stay upright; this degree was practically unnoticeable; degree II – deviation from the norm manifested itself in impaired muscle function; degree III, when disorders affected the skeleton, were not detected. A combination of foot pathology and postural disorder was detected in 12.60% of children, including 6.50% of girls and 6.10% of boys. The anamnesis revealed that 4.50% of children had a hereditary predisposition, overweight was noted among 12.30%, early walking at the age of up to 8–9 months – 3.0%, rickets – 2.90%, endocrine diseases – 1.82%, different leg lengths at birth – 1.72%, wearing improperly selected shoes since childhood – 42.20%. The study of plantography indicators made it possible to obtain images of the contact zone of the plantar surface of the foot, and then calculate the indices and indicators of disorders. Posture disorders were also identified based on the ratio of the shoulder width and the back arch. Based on these, an index characterizing the state of posture was calculated using the formula: $PO = \frac{ShP}{DS} \times 100\%$, where PO is the posture indicator (%); ShP is the shoulder width (cm); DS is the back arch (cm). PO equal to 100–110% corresponds to the norm; 90–99% indicates a disorder; a decrease to 85–90% or an increase to 125–130% indicates serious disorders requiring consultation with an orthopedic surgeon. Analysis of the obtained plantogram results showed that only 58.60% of children had a normal arch of the feet, of which 32.10% were girls and 26.50% were boys, respectively; 41.40% had various deviations from the norm, mainly grade 1. Flat feet were found in 24.60% of children in the form of flattening of the foot and in 3.50% – feet with an elevated arch, pronounced flat feet were observed in 13.30% of observations. After monitoring the state of the mus-

culoskeletal system among preschool children, we outlined plans for corrective work with this group. Preventive measures to prevent the progression of disorders included a comprehensive approach. To correct posture disorders and normalize the condition of the arch of the feet, together with the parents, we individually selected shoes for the child that fit the foot exactly (the medial edge of the shoe is straight, so as not to move the first toe outward, the toe is spacious, the heel is no more than 4 cm), together with the podiatrist, we installed corrective insoles and insoles-arch supports not on the inner

The sole of the foot, not the heel bone. An important step was teaching preschool-aged children and their parents a relaxation exercise (crossing their feet and leaning on their outer edges), standing on the outer edges of their feet at least 3–4 times a day, and holding this position for at least 30–40 seconds. Warm foot baths were recommended every evening, followed by a massage of the arches and muscles (water temperature 35–36 degrees Celsius). Walking barefoot, especially on uneven surfaces, and tiptoeing were mandatory.

Teachers, in turn, monitored the children, tracking their activity levels, the number of classes missed due to illness, and their attendance at sports clubs and physical education and health clubs. At the same time, they paid close attention to the children's correct posture in various situations. They taught them how to walk correctly, stand without leaning on one leg, sit at the table during meals and during school hours, maintain proper posture by placing both feet flat on the floor, and corrected their posture during play and free activities.

At the initial stage, postural abnormalities such as slouching, drooping shoulders, and protruding abdomen, as well as protruding abdomen and slouching, were identified using various proprietary methods. The examination revealed that 40,25% of preschool-aged children exhibited initial defects such as drooping shoulders, protruding abdomen, and slouching. Individual preventive interventions were subsequently conducted with these children. In the remaining clinical cases, weakness of the muscular corset was detected, which will subsequently lead to immediate bone pathology and the development of foot arch deformities. This group of children underwent physical exercises to strengthen the muscles of the back, abdomen, lower legs, and feet.

In our work we used exercises performed in a lying position, exercises against a wall, exercises performed while standing in place, walking exercises, relaxation exercises, and active games.

The lying exercise routine was performed slowly and with a large amplitude. The hold time was gradually increased from 4–5 seconds to 20–30 seconds. Classes began with 3–4 exercises, repeated up to 45 times, and then 1–2 exercises were added to the routine.

The wall exercise was performed with a gymnastic stick, alternating with a ball. The training routine was repeated over the course of two weeks, gradually adding 5–6 new exercises.

The walking exercise involved arranging the children in various formations, forming a stream. The relaxation exercise involved relaxed arms and legs, testing their relaxation with their eyes open and closed. Active games were widely used. For this, we used well-known games for preschool children, in accordance with the methodological guidelines. The success of the game depended on adherence to the rules, which defined the entire course of the game, regulated the children's actions and behavior, and, in other words, provided the conditions within which the child could demonstrate their acquired skills.

Efforts to develop good posture skills and prevent postural disorders involved not only working with children but also with their parents. We provided recommendations on hygiene practices and exercise programs outside of preschool at group and individual parent meetings, and developed methodological guidelines. Children were examined weekly by a podiatrist and pediatrician, and parents were involved when treatment and prevention issues became necessary. It was believed that joint parental involvement would increase the effectiveness of the interventions.

We conducted pedagogical testing during training sessions in the gym, both at the beginning of the study and during the follow-up. We used tests to determine static muscle strength in seconds and spinal mobility in centimeters. The study results were statistically processed using the Excel statistical software package.

Results and discussion. A study of the "Health Records" of children in the study group revealed that 30,21% of children fell ill once a year; 40,52% fell ill up to 3 times a year; and 32,30% fell ill frequently (more than 3 times a year). The leading disease in 72,20% of cases was a viral upper respiratory tract infection. Second place was occupied by poor posture and arch alignment, or flat feet (40,55% of cases). Third place was occupied by various childhood infectious diseases (20,50%), and hearing and vision impairments were noted in 10,44% of cases.

According to the parent survey, in 20,04% of cases, children complain of fatigue in the arms, legs, lumbar region, and neck muscles after performing physical exercise. 10,50% of children complain of poor appetite; 10,60% of children complain of irritability; and 5,50% of children complain of lethargy and drowsiness, respectively. Physical exercise is performed systematically in 60,32% of families. Fathers and mothers are equally involved in following teachers' recommendations with their children (30,30% of families), and only in 10,0% of cases does the father alone engage in exercise. Moreover, it was noted that girls engage in physical exercise only on weekends, while boys do it regularly ($p \leq 0,05$). An analysis of the reasons for unsystematic exercise revealed that the main reasons are lack of time (in 60,75% of cases) and long working hours of parents (in 30,17%). The leading forms of physical education and health activities were walking in 70,30% of cases; outdoor games – only 15,43% of cases; swimming in a pool or open water in summer – 28,86% of cases; tubing, sledding, skiing, and skating in winter – 25,58% of cases. Among favorite activities, among both boys and girls, using computers and gadgets was revealed in 60,20% of cases, drawing – only 20,25% of cases, playing with toys – 40,0%, respectively. Summarizing the questionnaires, it can be noted that pastimes have a negative impact on the development of the musculoskeletal system and posture of the child. Only 20,45% of parents answered positively to the question, "Do parents monitor their child's posture at home"? Bad habits were identified among children that adversely affect posture development, including: reading while lying down (40,20%), drawing while lying in bed (37,60%), and sitting on a chair with one leg tucked under it (25,50%). Of no small significance is the fact that in 80,99% of cases, parents

Leading their child by the same hand negatively impacts posture development. A study of the most common sleeping positions for children at night found that 45,50% of children prefer to sleep on their back, 34,54% on their side, and 18,50% on their stomach.

At the end of the research work on conducting health-improving medical and preventive measures, the following results were obtained: in the study group of children, according to testing data before and after the use of a set of physical exercises for testing statistical muscular endurance, the values before the start were $17 \pm 0,5$ seconds, and after – $42,1 \pm 0,7$ seconds; the average result increased to 18,0% ($p \leq 0,05$). Spinal mobility testing showed an improvement in the result to 22,80%, the average result at the beginning of the study was $44,0 \pm 0,1$ cm, and at the end – $5,4 \pm 0,1$ cm.

Conclusions. A review of the scientific literature revealed an increase in posture and foot arch disorders among preschool-aged children associated with a decrease in the child's motor activity, decreased motivation for physical education, recreational, and therapeutic and preventive measures aimed at improving health, strengthening the paravertebral muscles and ligamentous apparatus of the feet. A set of physical exercises developed and applied individually or in group classes in preschool-aged children contributes to the development of correct posture, and the correct use of foot exercises and wearing individually selected orthopedic insoles under the heel bone by a podiatrist helps to avoid flat feet. Working with parents is the main component in the formation of a healthy lifestyle in the child and the subsequent development of normal physical and mental health or health preservation.

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