ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-1

APPLICATION AND EVALUATION OF THE EFFECTIVENESS OF TRADITIONAL GYMNASTICS ELEMENTS IN THE COMPLEX REHABILITATION OF CHILDREN WITH OLDER STRUCTURAL DISORDERS

(Literature review)

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Annotation

One of the indicators of the physical development of children is the state of their musculoskeletal system (Kashuba et al., 2017; Ivanchykova et al., 2018; Metalnikov, 2020). Its correct position is evidence of the child's harmonious physical development. The analysis of scientific literature sources indicates a significant prevalence of deviations from the musculoskeletal system in children and adolescents in various countries (Balkó et al., 2017; Kashuba et al., 2019). Musculoskeletal system disorders are most often recorded during the period of intensive growth and puberty of a young organism (Metalnikov et al., 2021) The correct formation of a child's postural status largely depends on the body muscular system development, which performs the function of a muscular corset. The ability of the muscular system to work effectively and for a long time in static mode allows maintaining the correct position of the trunk (Kotliar et al., 2019). One of the causes of disorders in the musculoskeletal system in children is flat feet, which shifts the center of gravity of the trunk, which causes vertebral column deformation (Romanova et al., 2022a). In more than 90% of children, flat feet occur simultaneously with a violation of postural status. Heredity and numerous environmental factors influence musculoskeletal system disorders. Various deviations from the child's spine negatively affect the work of the cardio-respiratory, digestive, nervous and other functional systems of the body. As a result, physical performance, cognitive abilities decrease and the quality of life deteriorates (Kozina et al., 2017; Timnea et al., 2019). At the first stages of posture disorders occurrence, pathological abnormalities are of a functional nature and do not require surgical treatment (Metalnikov et al., 2022). Disorders in the musculoskeletal system can be effectively corrected by physical exercises with orthopedic correction (Yarmak et al., 2017; Kashuba et al., 2019). Static exercises (Kukoba, 2011), various fitness technologies (Ivanchykova et al., 2018; Chekhovska et al., 2018), Pilates (Mischenko et al., 2020b), Fitball (Mischenko et al., 2021), health-improving gymnastic exercises (Cruz-Ferreira et al., 2013), means and methods from martial arts are practised (Mischenko et al., 2020a; Romanova et al., 2022b). According to Eidelman (2020) and Grygus et al. (2020) the effectiveness of using choreography and dance tools aimed at preventing and correcting spinal abnormalities, weight loss, improving psycho-emotional state and life satisfaction is noted. Bendíková et al., (2020) proposed an effective set of physical exercises aimed at improving the dynamic function of the spine. The approbation of these exercises showed a positive result in postural disorders correction among Czech and Slovak adolescents. The use of physical exercises to correct posture in children is aimed at developing the strength abilities of the trunk and abdominal muscles, which form the muscular corset. It is necessary to develop the flexibility of the joints and spine to correct the pathology of the postural status in children (Kashuba et al., 2019). Primary school education is characterized by intensive growth and development of the main body systems, mental and cognitive abilities, during this period a child is socialized. Under these conditions, physical activity plays an important role in the upbringing and development of all functional systems of

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THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

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children's body (Butenko et al., 2017; Afanasiev et al., 2018). According to the WHO recommendation, during this age period, children's daily physical activity should be at least 60 minutes. Numerous studies by scientists indicate low rates of children's and adolescents' physical health in many countries of the world (Yang,, Dong, 2017; Görner, Reineke, 2020; Nesterchuk et al., 2020). There is a low motivation of young people to physical activity, therefore, it reduces the healing effect of physical exercises (Andrieieva et al., 2020). Especially low indicators of motivation of children are registered in traditional PE classes (Galan et al., 2021) [1].

Moderate physical activity has a positive effect on the development of the musculoskeletal system in adolescents, contributing to the growth of bone mass (Dmytriiev, 2018; Latka et al., 2021). Low physical activity, on the contrary, negatively affects the formation of the skeleton. It is noted that insufficient physical activity is observed in 35–40% of primary school children and 75–85% of senior schoolchildren. As a result of insufficient motor activity, hypokinesia develops, which leads to hypodynamia. The latter condition is characterized by a number of negative structural and functional changes in many organs: muscular atrophy, general physical detraining, detraining of the cardiovascular system, decreased orthostatic stability, changes in water and salt balance, circulatory system disorders, bone demineralization, etc. As a result, there is a decrease in the functional activity of organs and systems, as well as the activity of regulatory mechanisms, which reduces resistance to adverse factors. In addition, there is a decrease in the intensity and volume of afferent information associated with muscle contractions, as a result of which there is disruption of movement coordination, decrease in muscle tone, endurance and strength parameters. Anti-gravity muscles (neck, back) are the most resistant to the development of hypodynamic states. In the abdominal muscles, atrophy develops quite quickly, which negatively affects the functional state of the circulatory, respiratory and digestive systems. With hypodynamia, there is a decrease in the force of heart contractions due to a decrease in venous return to the atria, weakening of the heart muscle, a decrease in the amount of circulating blood due to its stagnation in pools and capillaries. There is also a weakening of the arterial and vascular tone, a drop in blood pressure, development of hypoxia and general metabolic disorders. Currently, the pathology of musculoskeletal system occupies a leading place in the structure of morbidity along with diseases of the organs of vision and diseases of the gastrointestinal tract. According to the GBD (Global Burden of Disease), approximately 1.71 billion people worldwide suffer from musculoskeletal system diseases (Cieza et al., 2020). The highest prevalence of these diseases is noted among the population of high-income countries — 441 million people, followed by the WHO Western Pacific Region with 427 million and the South-East Asia Region with 369 million. Musculoskeletal system pathologies also contribute significantly to disability of the population, which amounts to 149 million people (17%) worldwide (Hartvigsen et al., 2018). In Ukraine, musculoskeletal system diseases rank third after cardiovascular and oncological pathologies (sereda and Liannoy, 2013). Among adolescents, there is an increase in functional and chronic pathologies of the musculoskeletal system by 10–25%, scoliosis in particular (Mansurova et al., 2019) [2].

The problem of the incidence of infantile cerebral palsy (CP), which is the main cause of childhood disability, remains an urgent issue in pediatric neurology, as the incidence rate does not tend to decrease both worldwide and in Ukraine. In most children with cerebral palsy, organic lesions of the central nervous system cause motor impairments associated with sensory and mental disorders. Furthermore, somatic health, physical development, and regulatory mechanisms of the body are also affected (Bogdanovskaya et al, 2014). The issue of physical rehabilitation of children with cerebral

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

palsy is being actively studied by modern scientists all over the world. According to the researchers, physical rehabilitation is the main part of the complex of rehabilitation measures, which is realized through the use of physical culture, which utilizes movements as the main biological function of the body and provides stimulation of growth and development and maintenance of homeostasis (Bobath, 1966). The main task of physical rehabilitation for cerebral palsy in children is to develop motor abilities and motor function through the integrated application of physical rehabilitation methods (Imas et al, 2018). All of the above and the diversity of the clinical picture of cerebral palsy form the basis for the creation of modern programs combining different methods of physical rehabilitation, the primary means of which is physical exercise, that is confirmed by a large amount of scientific research (Vasilenko et al, 2015). It is appropriate to underline that, according to the results of modern scientific researches, application of the Bobath approach in physical rehabilitation of children with cerebral palsy promotes formation of motor skills and free movement in space, both independently and with the additional equipment. Despite the proven positive effects of Bobath therapy techniques (exercise, positional treatment, teaching self-care and child-care skills) on physical rehabilitation of children with cerebral palsy, the issue of their use in many aspects is still unresolved, and there is no differentiation of the means according to the severity of motor impairments (Imas et al, 2018) [3].

A serious orthopedic disease of a person is flat foot, which negatively affects the function of the entire musculoskeletal system, violates posture, worsens well-being, and reduces endurance to physical exertion and performance. Musculoskeletal system disorders are often found among the child population of many countries: in Russia (Chernozemov et al., 2017), Ukraine (Kashuba et al., 2019; Hakman, 2020), the Czech Republic (Balkó et al., 2017) and other states. The number of musculoskeletal system disorders in childhood increases during the period of active growth, as well as during puberty. Kirillov's research works (2003) proved that flat foot occurs as a result of congenital weakness of the lower leg and foot muscles, ligamentous apparatus or increased loads on the legs (obesity, weightlifting), rickets or foot injury. People suffering from flat foot are more likely to develop dystrophic disorders in articular cartilage, in intervertebral discs (osteochondrosis). Due to the displacement of the center of gravity of the human body caused by flat foot, this state leads to the vertebral column deformation and the formation of scoliosis (Erdenebileg et al., 2015). In 90% of cases, flat foot and scoliosis occur simultaneously. Therefore, recovery from flat foot reduces the risk of a person developing posture disorders.

here are known approaches to solving the problems of educational activity, including working with parents (Giuseppe Madonna & Patrizia Belfiore, 2020). There are training programs in which there is a section on the joint participation of teachers, coaches and families in increasing the children's physical activity. Such physical training technologies have shown a high positive result (Kriemler, 2011). However, the issues of using corrective gymnastics with the involvement of parents to correct flat foot and posture in children have not been fully studied. This fact does not allow achieving a high effect of correctional, pedagogical and health-improving effects of physical exercises on correcting violations of the arch of the foot and posture in children aged 6. Therefore, improving the methods of correcting flat foot and posture at an early age by means of physical culture and participation of parents in this process seems to be an urgent task. The purpose of this research is to test and evaluate the effectiveness of the use of means and methods of physical education for the correction of flat feet and posture disorders in 6-year-old children through a comprehensive online program for parents [4].

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THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

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A person's physical activity is an effective non-medical product for preserving and promoting health (Potop et.al., 2017; Zurita-Ortega et.al., 2019). Human physical health foundations formation is particularly intensive in the preschool age period (Marouli et. al., 2016). During this age period of the child's development, physical culture and health education in children's educational institutions is of great importance. A child's health potential depends on its physical qualities (endurance, strength, speed, speed, flexibility), which determine the child's body morphofunctional development. An analysis of the literature indicates that many children who attend preschool educational institutions have low physical fitness (Karpov et. al., 2019). In the literature, there are materials on insufficient physical activity of a person (Chekhovska et. al., 2020; Bakiko et. al., 2020), may be the causes of some non-communicable diseases (Metalnikov et al., 2020). Reduced physical activity leads to an adverse effect on children's health and functional performance (Global Recommendations on Physical activity for Health, 2010; Piercy et.al., 2018). The level of children's physical inactivity increases in primary school. 6-11-year-olds attending primary school classes in Russia have low physical activity, note the absence of a developing and teaching effect in PE lessons (Kondakov et. al., 2020). In recent years, there has been a decline in children's, adolescents' and young people's interest in the generally accepted forms of PE classes (Kuśnierz et. al., 2020). One of these areas of children's physical fitness improving and preventing various diseases is fitball aerobics classes (Sbitneva, 2018; Mishchenko, Badretdinova, 2019 The results of the authors' research indicate the need to improve children's physical education even before entering school. An innovative approach to the content and technology of conducting a PE training session is a promising direction for the modernization of the system of physical education in educational institutions (Andrieieva et. al., 2020). Exercises on large gymnastic balls cause an emotional and health-improving effect, which is confirmed by the experience of working in specialized correctional and rehabilitation medical centers (Pesina, Mishchenko, 2019). The use of fitballs in physical education provides a comprehensive development of the vestibular, auditory, visual, tactile and olfactory analyzers. Fitball aerobics forms the correct posture, increases the joints and spine mobility, strengthe ns the cardiovascular system, activates the sensory systems, normalizes the child's psycho-emotional state and arouses great interest in children, educates children's strength, agility, speed, flexibility, endurance and coordination abilities (Gorbunova, Steblius, 2015; Safronova et.al., 2016). The effectiveness of the gymnastic exercises with fitball is confirmed by scientific studies (Lavrukhina, Gorbunova, 2018). However, there are few reports of the use of phytballs aerobics in the system of preschool children's physical education, aimed at developing their reserve and adaptive capabilities of the body before entering school [5].

Medical scientific community has always avoided admitting that the performance sports practice may cause health-related issues and this because nothing could be said against the physical exercise which is, as we all know, recommendable. Recent investigations conducted by Australian researchers from the University of Melbourne, who analyzed the evolution of 40 Australian elite athletes performing endurance sports disciplines (marathon, alpine cycling, triathlon etc.), have arrived at the conclusion that exceeding some limits in the performance sports practice has a negative impact on health. The respective research investigated the effort influences that may induce long-term negative alterations in the heart morphology. Doctor André La Gerche, the main author of this investigation, specifies that the possible implications cannot be extrapolated to all the performance athletes, without asserting that the intense physical exercise should be avoided for health reasons. The research findings suggest that some athletes can be congenitally more susceptible to suffer from

cardiac damages after the practice of endurance sports over a long period of time (La Gerche et al., 2011).

Our interest in this topic is related to the specific effort implications on the spinal column health. Practical reality is supported by data from the specialty literature provided by the physical education, sports and kinesitherapy fields, which presents the impact of the different effort types on the vertebral column (Liebenson, 2002; Liemohn, 2005; Pretince, 2001). Balius et al. (1987) and Martin Recio (2009) classified sports disciplines according to their impact on the vertebral column. In the "sports with a negative impact" category, one of the sports branches nominated by the authors was gymnastics, with all its component disciplines, and this aspect determined us to use, as subject of our study, a female athlete practicing performance aerobic gymnastics. In performance gymnastics, the sports activity interruption, particularly for medical reasons, has a negative impact on the performance capacity, that is why we should implement a complex recovery and rehabilitation program which allows the athletes to restart as soon as possible their specific activity and also to maintain an optimum health condition. The program conceived for our female gymnast includes the following complementary kinetic means: shiatsu, yumeiho, reflexotherapy and qigong. Shiatsu is a complementary kinetic means specific to the Japanese traditional medicine, which synthesizes and associates the occidental scientific-medical knowledge to the oriental millenary wisdom of medicine. It consists of pressure application with thumb or palm to certain points called "tsubos", for the health condition maintaining and enhancement. Its contribution allows the improvement of some imbalances and the activation of the body self-healing capacity, with no side effects (Shigeru, 1998) . This technique, which aims at making the "Qi" vital energy re-circulate in the body zones where this is either missing or in excess, is practiced by exerting a stronger or a less strong pressure with fingertips, but also with fists, elbows, knees and feet over some precise points located along the energetic meridians corresponding to a specific organ or function [6].

References

1. Mischensko N., Kolokolcev M., Tyrina M., Mansurova N., Chalaya E., Vrachinskaya T., Balashkevich N., Zhunussova A., Aganov S., Anisimov M. Correction of posture disorders using methods of rhythmic gymnastics in 8-10-year-old girls // Journal of Physical Education and Sport. – 2023. – Vol. 23. – P. 837-838. DOI:10.7752/jpes.2023.04106 [1].

2. Geng Y., Trachuk S., Ma X. M., Shi Y. J., Zeng X. Physiological features of musculoskeletal system formation of adolescents under the influence of directed physical training // Physical Activity and Health. – 2023. – Vol. 7(1). – P. 1–12. DOI: https://doi.org/10.5334/paah.217 [2].

3. Kashuba V., Dolynskyi B., Todorova V., Bukhovets B., Andrieieva O., Shankovskyi A., Salatenko I., Lutskyi V., Kovalchuk L. Bobath therapy for physical rehabilitation of children with cerebral palsy // Physical Activity and Health. – 2023. – P. 1-2 [3].

4. Comprehensive program for flat foot and posture disorders prevention by means of physical education in 6-year-old children // Journal of Physical Education and Sport. – 2022. – Vol. 22. – P. 2655-2656. DOI:10.7752/jpes.2022.11337 [4].

5. Mischensko N., Kolokolcev M., Romanova E., Vorozheikin A., Tonoyan K., Aralbayev A., Bekmaganbetov O., Vedyushkina D., Skali Y., Vorobyeva O., Gryaznykh A.

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

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Additional physical training for children over five years old // Journal of Physical Education and Sport. – 2021. – Vol. 21. – P. 1444-1445. DOI:10.7752/jpes.2021.03184 [5].

6. Acasandreia L., Macoveia S. Modalities to improve the spinal column dysfunctions by using some complementary kinetic means // Conference Proceedings of ICSPEK 2013. – 2013. – P. 548 [6].