

вість овоїти навички психоемоційного розвантаження у соціально-прийнятних формах, формується функціональна готовність до навчання та взаємодії з оточуючими, збільшується час стійкої працездатності дитини, що позитивно позначається на процесі навчання та виховання. Сформовані на заняттях з фізичної культури психологічна основа дозволяє педагогам, що розвивають вищі психічні функції, домогтися стійких результатів.

Проведене дослідження дозволяє зробити висновок, що роль фізичного виховання дітей із аутизмом надзвичайно значуща. Дослідження вказують на широкий спектр впливу занять фізичного виховання на розвиток дітей з аутизмом, від моторних функцій до академічної успішності та успішної соціалізації дітей.

Дослідники наголошують на необхідності включення дітей з РАС у оздоровчі форми занять з фізичного виховання якомога раніше і віддавати перевагу плаванню та бігу, в силу того, що саме ці види занять виявляються більш ефективними, для зниження стереотипізації рухів у дітей із РАС.

#### ЛІТЕРАТУРА

1. Темерівська Т.Г., Ворнічеса Т.В. Особливості фізичної реабілітації дітей з розладами аутистичного спектру. *Молодий вчений*. 2018. 3.3. С. 167–170.
2. Шаповалова І., Псарьова А. Вплив засобів фізичної реабілітації на дітей з раннім дитячим аутизмом та з розладами спектру аутизму. *Фізична культура, спорт та здоров'я нації: збірник наукових праць*. 2022. 4 (23). С. 288–292.
3. Fabri M., Awad Elzouki S.Y., & Moore D. Emotionally expressive avatars for chatting, learning and therapeutic intervention. *HumanComputer Interaction*. 2023. Part III. Vol. 4552. P. 275–285.
4. Pan C.Y. The efficacy of an aquatic pro-program on physical fitness and aquatic skills in children with and without autism spectrum disorders. *Research in Autism Spectrum Disorders*. 2021. Vol. 5. Iss. 1. P. 657–665.
5. Segal D.L.S. Diagnostic and Statistical Manual of Mental Disorders (DSM-IVTR). DOI: 10.1002/9780470479216.corpsy0271. *Corsini Encyclopedia of Psychology*. N.Y.: John Wiley & Sons, 2020. P. 495–497. URL: <https://www.researchgate.net/publication/230002115>

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#### THE IMPACT OF SWIMMING ON MOTOR COORDINATION IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

Today, it is well-known that autism is a consequence of a disruption in the development of the morphofunctional structure of the brain, characterized by deficits in social interaction, communication, restricted interests, and repetitive behaviors. Current educational practices are actively integrating children with disabilities into mainstream environments, ensuring their rights and fostering social involvement. Inclusive education recognizes the needs, conditions, and support necessary for both students and teachers to achieve success, including participation in physical activities such as swimming.

Swimming, as a rehabilitation tool, has a significant positive impact on the physical and mental health of children [2, 3].

Children with autism spectrum disorders (ASD) often have higher susceptibility to various medical conditions, more frequently experiencing allergies, gastrointestinal problems, and sleep disturbances than their typically developing peers. Increased care from adults, minimized external environment interactions (such as outdoor activities, physical activity, etc.), contributes to physical inactivity, leading to muscle mass discrepancies compared to their age norms. Physical growth challenges are often associated with spatial orientation difficulties and the complexity of synchronized movements (e.g., with hands and legs). Proprioceptive sensory system abnormalities are frequently observed, which provides the brain with information about body movement and position. It has been noted that the more anomalies in the cerebellum's operation, the more pronounced the symptoms of autism [1].

Therefore, it can be assumed that incorporating swimming into the development of children with ASD can enhance their physical and mental well-being, especially concerning coordination problems. Coordination abilities allow for organizing various forms of physical activity and adjusting movement coordination to the demands of changing conditions [4].

For children with disabilities, physical education is not only about health improvement and physical readiness but also a leading factor in the correction and compensation of impaired functions [4]. Developed coordination skills are considered a necessary condition for preparing children for life, work, socialization, and are essential for effectively performing everyday activities, enabling them to react optimally to unexpected complex and sometimes dangerous situations [5].

Coordination abilities enable efficient energy expenditure, as precise dosed muscle efforts and optimal relaxation lead to rational energy consumption. A variety of exercises for developing coordination skills help avoid monotony in classes, ensuring a positive emotional mood. High-level coordination skills are the foundation for success in various areas of human motor activity (sports, work, professional, etc.).

Despite numerous rehabilitation techniques and sets of therapeutic physical exercises for correcting behavior and physical development in children with ASD, swimming remains one of the most effective therapeutic means that does not require medication. Swimming lessons primarily affect a child's physical development, which directly impacts the cognitive and psychological development of children with ASD. Children with swimming skills adapt better to modern societal demands and also act as a preventive measure to reduce the risk of injury and accidents in aquatic environments [2].

In organizing activities for children with ASD, it is essential to rely on the method of fragmented exercise. This allows enhancing the positive results in learning. The fragmented exercise method involves dividing each stage of swimming into separate parts. Each part should be mastered by the child and automated independently or, if necessary, with minimal cues.

Swimming satisfies the natural need for movement, contributing to physical development and hardening, resulting in the overall improvement of children's health. Experts have found that the acquisition of swimming skills has a positive impact on the

nervous system, emotional stability, sleep, and appetite. During swimming classes, children with ASD demonstrate reduced irritability and negative behavior that is often observed in non-aquatic environments. Swimming lessons enhance cognitive performance and psychological well-being, acting as a preventive measure for depressive states.

Based on theoretical and practical principles of physical education and considering its various functions such as curative, recreational, educational, and sports, and analyzing the experience of conducting swimming lessons for children with disabilities, it was found that in this case, swimming meets all the requirements of health improvement for children with ASD. It can be assumed that swimming can influence psychomotor characteristics, personality development, work capacity, and inclusion in full social life. Therefore, the issue of physical health and psychomotor correction for children with ASD is currently relevant, and the development and implementation of a comprehensive methodology for initial swimming education aimed at improving coordination abilities in these children is one of the most important tasks of today.

## REFERENCES

1. Мусієнко О.В. Досвід застосування біомеханічних принципів керування рухами у адаптивному фізичному вихованні дітей з розладами спектру аутизму. *Освіта осіб з особливими потребами: шляхи розбудови: наук.-метод. зб.* 2019. Вип. 13. С. 175–188.
2. Хамаде А, Боднар І. Фізична підготовленість школярів із розладами аутичного спектру. В: Приступа Є, редактор. *Молода спортивна наука України.* Зб. тез. доп. Львів, 2020. Вип. 3. С. 81–82.
3. Bassette L. The Use of a Multicomponent Behavioral Intervention to Promote Physical Activity in Adolescents with Autism Spectrum Disorders across Inclusive Community Settings. *Behav. Anal. Pract.* 2018. V. 11. #4. P. 358–369. DOI: 10.1007/s40617-018-00285-7.
4. Bricout V.A. Reduced Cardiorespiratory Capacity in Children with Autism Spectrum Disorders / Bricout V.A., Pace M., Dumortier L., Baillieul F., Favre-Juvin A., Guinot M. *J. Clin. Med.* 2022. V. 7. # 10. P. 259–283. doi: 10.3390/jcm7100361
5. Prevalence and Characteristics of Autism Spectrum Disorder Among Children Aged 8 Years – Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2018. URL: <https://www.cdc.gov/mmwr/volumes/70/ss/ss7011a1.htm>
6. Schmitz O.S. The Effects of Exercise Dose on Stereotypical Behavior in Children with Autism / Schmitz O.S., McFadden B.A., Golem D.L., Pellegrino J.K., Walker A.J., Sanders D.J., Arent S.M. *Med. Sci. Sports Exerc.* 2021. V. 49, N 5. P. 983–990. DOI: 10.1249/MSS.0000000000001197.