

the Volyn region. [in Ukrainian].; **3. Mykhalskyi, A. V., Zhyhulova, E. O., Mykhalska, Y. A. (2020).** Health-preserving technologies for working with children with special educational needs: A textbook. Kamianets-Podilskyi : Medobory-2006. [in Ukrainian].; **4. Nahorna, O. B. (2014).** Features of the use of health-preserving technologies to children with special educational needs. *New pedagogical thought: scientific and methodical magazine.* № 2 (78). [in Ukrainian].; **5. Modern health-saving technologies (2018).** Monograph edited by prof. Y. D. Boychuk. Kharkiv: Original. 2018. [in Ukrainian].

Авторський внесок: Михальська Ю.А. – 50%, Рудзевич І.Л. – 50%.

Стаття отримана 24.04.2022 р.

УДК: 376 - 053.4: [796.012.1:616 -711]
DOI 10.32626/2413-2578.2022-19.201-217

М.Д. Мога
moga2003@ ukr.net
<https://orcid.org/0000-0001-6463-9426>

THE ROLE OF SITTING FUNCTION IN THE CORRECTION OF MOTOR DISORDERS OF PRESCHOOL AGE CHILDREN WITH LOWER SPASTIC PARESIS

Відомості про автора: Мога Микола, доктор пед. наук, професор, кафедри педагогіки та спеціальної освіти, факультету психології та спеціальної освіти, Дніпровського національного університету ім. Олесь Гончара, Дніпро, Україна. У колі наукових інтересів: корекція розвитку моторної сфери дітей раннього віку, реабілітація та інтеграція осіб з ООП. Email: [moga2003@ ukr.net](mailto:moga2003@ukr.net)

Information about the author: Moga Mykola, Doctor of Pedagogical Sciences. Sciences, Professor, Department of Pedagogy and Special Education, Faculty of Psychology and Special Education, Dnieper National University. Oles Honchar, Dnipro, Ukraine. Research interests: correction of motor development of young children, rehabilitation and integration of people with PDO. Email: moga2003@ukr.net

Відомості про наявність друкованих статей: Мога М. Д. (2019) Корекційна стратегія в фізичному вихованні дітей раннього віку зі спастичним типом рухових порушень. Актуальні питання корекційної освіти. Серія: Педагогічні науки. Вип. 14. Кам'янець-Подільський: Вид-во Медобори-2006, С. 228-238. **Moга N.** (2019). Muscle spring and its connection to the myophasic system in children with central pares. *EUREKA : Social and Humanities*. № 4 (22). PUBLISHER OU «Scientific Route». p. 35-41. **Мога М. Д.** (2019) Корекція моторної сфери дітей раннього віку зі спастичним синдромом: [монографія]. Вінниця : Вид-во «ТВОРИ». 396 с.

Мога М. Д. Роль функції сидіння в корекції рухових порушень у дітей раннього віку зі спастичними формами нижніх парезів. У статті зроблено огляд досліджень щодо формування функції сидіння у дітей з порушеннями опорно-рухового апарату засобами адаптивного фізичного виховання та лікувальної фізичної культури. Розкрито загальнометодологічне значення функції сидіння у дітей віком як своєрідного перехідного етапу від чотириопорного тваринного становища до двоопорному ортоградному становищу людини у просторі: філософський аспект, біомеханічний, соціальний. З'ясовано недостатнє використання практиками педагогічних (ігрових) можливостей цілеспрямованого застосування різних положень сидячи для подолання рухових порушень у дітей 1 – 3 років. Сформульовані та описані основні принципи формування функції сидіння у дитини: цефало-каудальний, «триповерховості», «розтискаючий пружини», вісцеральний та ортоградний. Підкреслено важливе значення самостійного сидіння для вивільнення рук дитини для ефективної предметно-практичної діяльності, що створює умови для подальшої успішної соціалізації.

Обґрунтовано необхідність системного використання потенціалу корекційних вправ у положенні сидячи як при індивідуальній роботі, так і на групових заняттях у дошкільних навчальних закладах. На основі практичних досліджень (педагогічних спостережень) були сформовані спеціальні комплекси вправ щодо формування функції сидіння у дітей раннього віку зі спастичним типом рухових порушень у нижніх кінцівках. Представлені вправи для згинального варіанта спастичних порушень, для розгинального і для того, що приводить, в яких врахована біомеханічна специфіка цих порушень. Після кожного

комплексу вправ наведено методичні прийоми, що підвищують педагогічну ефективність формування функції сидіння даного контингенту дітей.

Відзначено специфіку формування функції сидіння в дітей віком раннього віку залежно від кута нахилу таза (переднього чи заднього).

Відзначено, що перспективи досліджень у цьому напрямку лежать у подальшій розробці ігрових вправ для формування функції сидіння у дітей зі спастичним синдромом залежно від особливостей м'язової спастики у нижніх кінцівках.

Ключові слова: корекційна педагогіка, адаптивне фізичне виховання, діти раннього віку, спастичні розлади опорно-рухового апарату, функція сидіння.

Moga M. D. The role of sitting function in the correction of motor disorders of preschool age children with lower spastic paresis. The article describes the formation of the function of sitting in children with musculoskeletal system disorders by means of adaptive physical education and therapeutic physical culture. The general methodological significance of the sitting function in children as a kind of transitional stage from the four-support position of the animal to the two-support orthograde position of a person in space is revealed: philosophical, biomechanical, social aspects. Insufficient use by practitioners of pedagogical (playing) opportunities for the purposeful use of various "sitting" positions to overcome motor disorders in children aged 1–3 years has been found out.. The basic principles of the formation of the sitting function in a child are also formulated: cephalo-caudal, "three-story", "expanding springs", visceral and orthograde. The importance of independent sitting is emphasized for the release of the child's hands for a large object-practical activity that creates conditions for future successful socialization.

The necessity of systematic use of the potential of corrective exercises in the sitting position, both in individual work and in group classes in preschool educational institutions, is substantiated. On the basis of practical research (pedagogical research), special sets of exercises were formed to form the sitting function in preschool-age children with spastic type of movement disorders in the lower limbs. Exercises for the flexion variant of spastic disorders, for the extensor and for the adductor, are presented, in which the biomechanical specificity of these disorders is taken into account. After each set of exercises, methodological techniques are given that increase the pedagogical efficiency of the formation of the sitting function in this contingent of children.

The specificity of the formation of the function of sitting in preschool-age children was noted depending on the angle of the pelvis (anterior or posterior).

It is noted that the prospects for research in this direction lie in the further development of game exercises for the formation of the sitting function in children with spastic syndrome, depending on the characteristics of muscle spasticity in the lower limbs.

Key words: correctional pedagogy, adaptive physical education, young children, spastic disorders of the musculoskeletal system, sitting function.

The relevance of research. One of the most common diseases of central nervous system are disorders of the motor sphere. The results of numerous scientific studies and our own experience indicate that the effectiveness of correctional and developmental methods in education of children with musculoskeletal system disorders can be increased through the use of an arsenal of adaptive physical education (R. Babenkova, S. Bortfeld, S. Evseev, N. Efimenko, E. Mastjukova, L. Zhurba, I. Myakisheva, V. Polskaya, K. Semenova, A. Shterengerts and others).

Today, in special pedagogy focused on children with spastic forms of movement disorders, the most productive method of correcting motor skills is recognized, which is based on the use of physical exercises in the prone position, on all fours, in the sitting position, with a gradual verticalization of the body in space to a standing position, then to walking, climbing, running and jumping (an evolutionary complication of the main motor modes) [1, 2, 8].

At the beginning of 1980 years, N. N. Efimenko began to search for new approaches to the correction of motor disorders of preschoolers by means of physical education. The innovative methodology was based on the phylogenetic principle of the biological maturation of the child, a particular manifestation of which was the evolutionary method of the children physical development. This method is based on the ontogenetic sequence (as in an infant of the first year of life) of mastering eight basic motor modes: lying - crawling - sitting - standing - walking - climbing - running - jumping. In contrast to the traditional methods of physical education of children of early and preschool age (E. S. Vilchkovsky, N. F. Denisenko, etc.), the author refers the “sitting” position and exercises in it to a full-fledged basic motor mode and pays special attention to it during verticalization child's body in space.

Children with cerebral palsy experience significant difficulties even when mastering the initial, biologically programmed motor functions, such as crawling, sitting independently, standing with and without support, walking, climbing, etc. [3, 4, 5, 6, 10, 11, 12]. Variations of motor functions adversely affect the overall development of the child, make it difficult for him learn, domestic and social adaptation. In their works, the authors offer various options for the formation of the sitting function in children with cerebral palsy, however, in our opinion, the aspects of the formation of this function in preschool children are insufficiently represented, taking into account the specifics of three main types of spastic movement disorders. In addition, at an early age, the problem of children's motivation for corrective motor-playing activity is serious. In this regard, medical approaches need to be strengthened by playing and pedagogical approaches. All of the above predetermined the relevance of this research.

The purpose of the study is to substantiate methodologically and methodically the importance of the formation of the sitting function in the correction of the physical development of young children with spastic forms of lower paresis.

In the process of research, we used the following main methods:

1. Analysis of the available information on the problem of the formation of the sitting function in children in normal and pathological conditions.
2. Opening and hiding observations of the motor-playing activity of children.
3. Photo and video recording of the degree of mastering the sitting function by children.

Presentation of the main material. In our opinion, the function of sitting is very important in the development of the child. From a **philosophical point of view**, the ability of a human child to sit on a raised platform with double support on the pelvis and feet, with balance maintaining and free hands for manipulation is a kind of transitional step from the animal position on all fours to the human upright posture. In evolutionary terms, the significance of this transition from the animal world to human society can hardly be overestimated. In the sitting position, for the first time, biomechanical conditions are created for releasing the upper limbs from the support and conditions are created for free and varied manipulation with two hands, including manipulations with objects, object-practical activities. Two-handed coordination begins to form intensively, which stimulates the construction of interhemispheric neural coordination in the

cerebral cortex. The neural substrate and the corresponding neural networks develop and improve, which ultimately leads to a higher level of maturity in both hemispheres. This, in turn, creates excellent conditions for improving the overall brain activity of the child (Fig. 1).



Fig. 1

The second important aspect of the sitting function is its *anatomical and physiological significance* - in the sitting position, the spine for the first time assumes a vertical position in space, which contributes to the formation of the corresponding physiological curvature of the spine.

It is well known that the vertical position is carried out, to a greater extent, due to the work of the extensor muscles of the body, as well as the anatomical and physiological features of the spine itself. Its physiological curves (lordosis and kyphosis) are important in maintaining the vertical position of the body. By the time of birth, the child in a horizontal position retains only one section of the spine with a curvature facing the bulge backwards - this is sacrococcygeal kyphosis.

The remaining physiological curves begin to form after the birth of the child. The spine has four curvatures: cervical and lumbar (lordosis), thoracic and sacral (kyphosis). Their occurrence and change is associated with the functional development of the muscles of the body, and primarily with the muscles of the spine.

There are several basic options for sitting: sitting on the floor in the “embryo” and / or “lotus” position, sitting on the floor with straight legs (closed or spread, with or without manual support), sitting on bent legs, sitting on a stool (elevation) without lower foot support on the floor and sitting on an elevation (for example, a high chair) with lower foot support on the floor.

There are several fundamental principles underlying the formation of the sitting function, which will be described below.

Cephalo-caudal principle, which reflects the natural, biologically predetermined sequence of formation of the muscular corset of the body in

the direction from top to bottom, in this situation from the head (cervical lordosis - I), to the body (thoracic kyphosis - II) and to the pelvis (lumbar lordosis and sacrococcygeal kyphosis - III-IV) and at the end with the connection of the lower extremities (Fig. 2). The formation of a stable position of the head is the primary impulse to the further formation of the sitting position, and then standing.

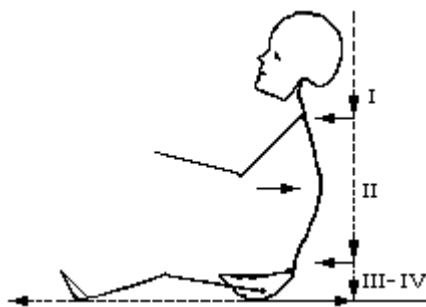


Fig. 2

This is about the **principle of "three-story"** (Fig. 3) – it implies a three-level construction of a sitting position. This refers to the following algorithm for forming the child's skeleton from top to bottom:

- I. Bringing the head into a stable vertical position.
- II. Stabilization of the trunk (in the sagittal and frontal planes) in orthograde status.
- III. Formation and development of the support ability of the pelvic girdle and lower limbs, maintaining a stable sitting position.

It can be conditionally argued that what is the neck - such is the pelvic girdle.

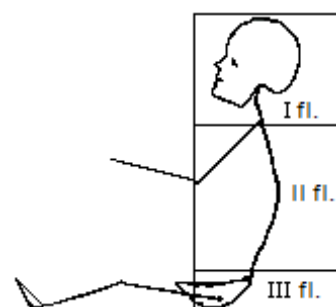


Fig. 3

Raising and holding the head from a prone position contributes to the formation of cervical lordosis in the first months of life (Fig. 4-A) and is achieved automatically when the cervical-collar muscle corset is normalized. Natural anatomical cervical lordosis continues to form when crawling on the stomach, on all fours under the influence of the muscles of the neck and back (Fig. 4-B). The transition of the child to a sitting position

and the preservation of this posture contribute to the formation of thoracic kyphosis.

The principle of the "expanding spring", the essence is that after the birth of the child, the flexor muscles of the trunk and limbs are dominated, which are in natural physiological hypertonicity – thus maintaining the position of the "embryo" (or "compressed spring"), in which is only pelvic (sacro-coccygeal) kyphosis. Further structuring of the spinal column and skeleton should be aimed at extension of the spinal column (by reducing the superficial posterior muscular-fascial line SPL), which will gradually form first the cervical and then the lumbar lordosis.

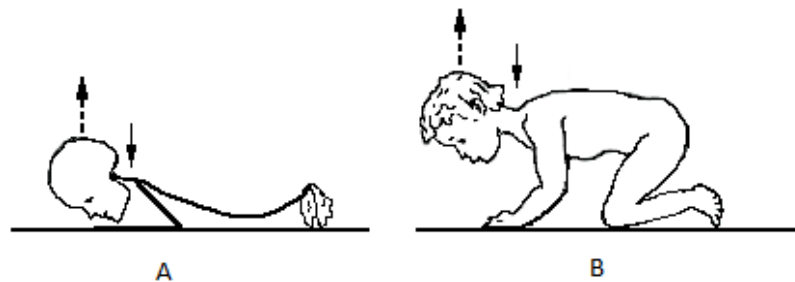


Fig. 4

↓ – solid arrow, major curves of the spine;

↑ – dashed arrow, basic movements of the spine;

It should also be noted the **visceral principle** in the development of the sitting function. With the verticalization of the spine and the formation of the supporting ability of the pelvic girdle, when mastering the sitting function, the internal organs of the child begin to modify their location in space relative to the skeleton, as if to descend somewhat, in order to subsequently fix their natural anatomical position in the orthograde position of the maturing child.

The importance of the sitting function is also explained by the third, orthograde aspect of the construction of the child's skeleton, since sitting is the threshold for kneeling, then standing upright, and in the future such an important locomotion as walking. Thus, it is with the sitting function that the global verticalization of the child's skeleton in space begins, its functioning is already in a different, orthograde position. We can talk about the principle of ontogenetic verticalization of the child's skeleton (about the **orthograde principle**) (Fig. 5). All of the above principles predetermine the relevance of the formation and correction of the sitting function of preschool children with spastic type of movement disorders.

In the main classifications of spastic forms of movement disorders and many of its combined variants, three main types of spasticity can be distinguished.

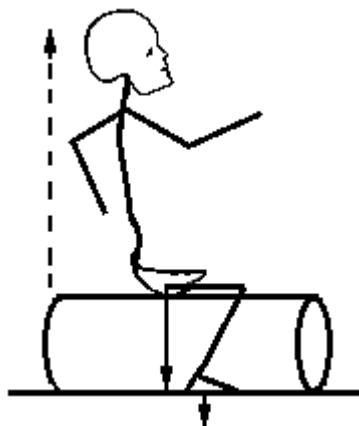


Fig. 5

1. ***Flexor type*** (flexion), associated with an unnatural increase in the tone of the flexor muscles when the limbs are bent at the joints and when they are raised.

2. ***The extensor type*** (extensor) is observed with an excessive increase in the tone of the muscles of the extensors of the limbs in the process of their extension in the joints.

3. ***Adductor type*** (leading), associated with an increase in tone when crossing in the area of the legs and closing the knees, especially when standing and trying to walk.

Already in the first months of life in children with spastic forms, there is a noticeable lag in the formation of basic biological locomotions, such as: search movements of the head in the supine position, verticalization of the head and the formation of support-rectifying reactions of the hands in the supine position, independent turning from back to stomach and vice versa, crawling on the stomach, taking postures on all fours, crawling on all fours, the function of sitting down and sitting [5, 6]. All of the above does not allow the child to master the independent adoption of the first vertical position - sitting with free manual manipulations using various objects. This is extremely important both in physiological maturation and in methodological terms, since it establishes the development of speech, intellectual, psychological, logical processes, etc. - the *supremacy of manual activity*.

First of all, we can observe a violation of the sitting functions in spastic diplegia, in which the arms and legs are affected, but the legs to a greater extent. This spastic form is characterized by a pathological increase of muscle tone in the trunk and limbs. There are two main variants of muscle hypertonicity in spastic diplegia. In some cases, which is more common, an

increase of the tone of the flexor muscles predominates, which from an early age forms a typical adductor-flexor posture in the child. Therefore, the range of motion in the hip joints is sharply limited, which leads to the gradual formation of vicious attitudes both in the limbs and in the main physiological curves of the spine. In general, the biomechanics of the child's skeleton undergoes significant modifications [9, 11, 13], especially in a young child, an unnatural formation of the body is observed as a result of a violation of muscle tone, which further leads to violations of antigravitational reactions, natural verticalization of the body, and there are also obvious disorders functions of static/dynamic balance and orientation in space that do not allow the child to independently move from a lying position to a sitting position.

As the child acquires the skills of crawling, sitting, standing and walking, more and more attention should be paid to training balance reactions. The imperfection of the reactions of static and dynamic balance causes fear of falling, which leads to an increase in muscle tone and, as a result, to pathological friendly movements.

Below will be a list of exercises and a brief description of the methodological methods for the formation and correction of the sitting function in babies, depending on the age and type of spastic disorders.

Flexion type of spastic disorders

With an unnatural increase in the tone of the flexor muscles and when they are lifted, the dominant exercises will be movements for extension, dilution, and straightening of the lower limbs. Below is an approximate set of basic exercises to overcome the flexion position. These include the following movements:

1. "Lift" – exercises to strengthen the abdominal muscles. For example, in the initial position lying on the back with the fixation of straight legs, the child tries to rise to a sitting position with the help of an adult.

2. "Potygyysi" – exercises using a large ball – "Fitball", lying on the ball with his back, an adult holds the child's ankles, the movement is performed in all directions.

3. "Poprigusha" – smooth jumping movements in a sitting position with holding on to the pelvis. The child tries to maintain a sitting upright position on his own.

4. "Posidelki" – exercises in a sitting position with fixation of straight legs with weights (weight 3-5 kg) on knees.

5. "Hill" – exercises using an inclined surface, setting the angle of inclination for each child based on the degree of stiffness, tightness and

tension. At the same time, the muscles of the body are being worked out. The child tries to maintain a sitting position, at first the legs are located below, and then in front.

6. "Back" – exercises in a sitting position with the back touching the back support with the fixation of straight legs, while the child works with his hands in the anterior-upper position.

7. "Strong legs" – exercises in a sitting position on a trolley, pushing off the wall with your feet and overcoming the resistance of a rubber band.

8. "Seated football player" – from starting sitting position with bent legs, resting his back against the wall – kick the ball alternately with the left and right legs by quickly straightening them.

9. "Reverse" – from starting sitting position on a pedalless trolley, move backwards on it with the help of straightening-repulsing movements with the legs.

10. "Uklonchik" – exercises in a sitting position on an inclined chair (rear legs are longer than the front ones) due to the accentuated straightening of the legs.

11. "Cosmonaut" – exercises in a sitting position on the "Spinning board" in a sitting position, rotation by 360 ° with fixation of straight legs together with weighting agents of 3-5 kg on the knees.

For this section of the exercises, methodological techniques should become characteristic, stimulating slow, and then fast extension of the legs to a straightened position ("rays"), kicks with the legs of various objects ("karate with the legs"), repulsion by straightening the legs with advancement on a cart or trolley ("motor").

The extensor type of spastic disorders

1. "Kolobok" – exercises in the position of the "embryo" in all directions with the fixation of the child by an adult by the hands-shins.

2. "Folding knife" – exercises of a different nature in a sitting position – stretching the muscles of the lumbar region and the back of the legs. The child performs forward bends himself, and with the help of.

3. "Observer" – exercises in the supine position – first, lifting the head is practiced, then lifting the body with the help of the hands and fixing the sitting position (holding the pose) by holding straight legs.

4. "I sit high, so I look far away" – holding a sitting position on knees with holding on to the pelvis, and on my own.

5. "Stool" – exercises in a sitting position on an age chair, then the backrest is located between the legs.

6. "Upside down" – exercises in a sitting position on an inclined support (angle of inclination 45° -55 °) forward with bent legs (using weights).

7. "Tumbler" – holding a sitting position with bent legs without manual support.

8. "In the mink" – exercises in the sitting position in the "embryo" position on the buttocks, bending between the wall (back to the wall) and a stack of mats, both with the help of an adult and on your own.

9. "On a raft" – exercises in a Turkish sitting position in a car chamber, both with an adult holding on to the pelvis, and on their own.

10. "Magic bowl" – exercises in a sitting position with bent legs using a large bowl.

11. "Pump" – from initial sitting position on a cart, resting straight legs against a wall or shield, pull yourself to the wall (ladder) with hands, bending legs at the same time.

For this section of exercises, methodological techniques should be recognized as effective, stimulating slow flexion of the lower limbs ("hide the paws"), their relatively fast flexion ("hot-hot!"), passive (with the help of an adult) adoption of a sitting position in the "embryo" position ("gnome in the house"), active (independent) adoption of a sitting position in the position of "embryo" ("cuckoo!").

Adductor type of spastic disorders

1. "Twist-twist" – exercises in a sitting position on the floor, the legs are spread to a possible angle and are fixed straight – turns left and right with fixing the legs with help of adults.

2. "Come on, turn around!" – the same thing, sitting on a bench, maximum turns left and right.

3. "Cossack on a horse" – exercises sitting on a bench "on a horse" – performing various tilts left and right, back and forth both with help of adults and independently.

4. "Carousel" – rotation on the "rotary board" in the sitting position "in Turkish".

5. "Kruzhilka" – the same thing, sitting on a roller with adherence.

6. "Swing" – swaying back and forth, sitting on an age chair with adherence using the "Boat" simulator.

7. "On a horse" – exercises in a sitting position with a roller located between the legs along. The child performs object-manipulative actions with one hand, leaning on the floor with the other.

8. "Leg rays" – holding a sitting position on a movable support with an emphasis on the hands between the spread legs to the sides.

9. "Gatherings on a stump" – exercises in a sitting position without foot support.

10. "Rider" – riding with support on a donkey or pony (ippotherapy).

When implementing the exercises in this section, it is advisable to use the following methodological techniques: for the maximum possible breeding of straight legs ("rays"), a large object between the legs ("big apple"), sitting astride a support with the breeding of bent and straightened legs ("rider").

Through the above corrective exercises, the teacher (parent) develops the following **physical properties** in the child: the strength of the abdominal muscles, the strength of the extensor muscles of the back, the strength of the pelvic muscles (ilio-lumbar flexors and gluteal extensors); supporting ability of the pelvic girdle; static balance; static-dynamic balance; supporting ability of the lower limbs (feet); visual-motor reactions in connection with the upper (pelvis) and lower (foot) supports.

Training must be systematic and consistent. It is necessary to deal with the child every day at about the same time, adhering to the same manner of learning that is acceptable to the child. Make small changes every day so your child doesn't get bored. Praise and encourage your child often to help them feel more confident and secure. To prepare your child for greater independence, avoid overprotection.

When forming the sitting function in children, the main style of classes is **playful, theatrical**, when the lesson turns into a fascinating *physical culture fairy* tale with its plot understandable to the child, the main characters, their role manifestations, emotionally rich and quite dramatized. It is the dosed dramatization of the plot modeled by the teacher that can significantly increase the motivation of motor-play corrective actions in the child [3].

It should be borne in mind that the process of formation of physiological curves of the spine and their severity depend on the angle of inclination of the pelvis, which changes as the child grows. In preschoolers, there is no particular difference between boys and girls, it is 22°–25° [9]. The final formation of the angle of inclination of the pelvis depends on the degree of development of the muscles of the anterior wall of the abdominal press, the iliopsoas muscles, and also on the ligamentous apparatus of the pelvis. Figure 6 shows two pathological positions: anterior (A) and posterior

(B) pelvic tilt. These options should be considered when formation the sitting function of particular child.

Since the spine and pelvis are the main support of the body, therefore, the first year of life is the most crucial stage in the child`s development, especially whose born physically weak. In the first year of life, the baby's body is plastic, has great potential for restoring damaged or delayed functions in its development. It is important not to miss this time, to help the child adapt to new living conditions, cope with physical and functional disorders and catch up with normally developing peers in his development.

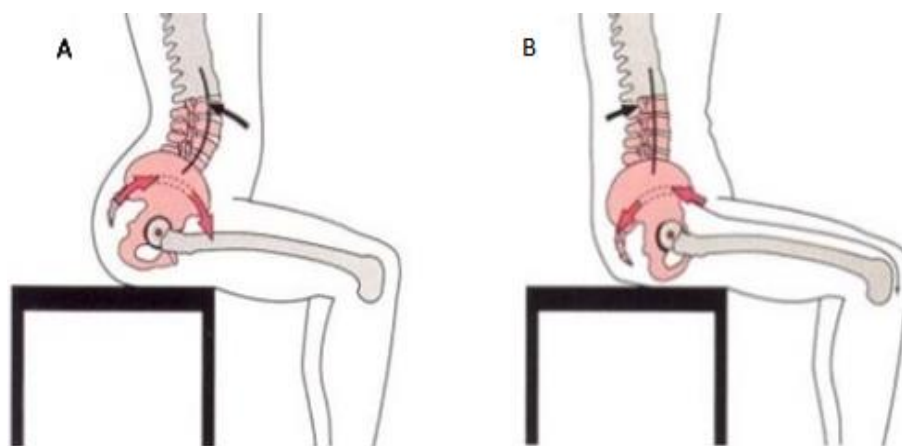


Fig. 6

Conclusions. Prospects for research in this direction are in a more thorough development of the "sitting" basic motor regimen for various types of nosologies in children, the systematization of the arsenal of exercises in the sitting position according to age, according to the level of physical development and the specifics of existing motor and concomitant disorders. It is also interesting to form the variability of the sitting skill in non-standard, unusual, and changing conditions.

Бібліографія

1. Бєсєда В. В. (2022). Корекція фізичного розвитку дітей раннього і дошкільного віку з психомоторними порушеннями: монографія. Вінниця : ТВОРИ, 476 с. **2. Єфименко М. М.** (2014) Основи корекційно-спрямованого фізичного виховання дітей з порушеннями опорно-рухового апарату: дис. док. пед. наук. Спеціальність 13.00.03 – корекційна педагогіка. Національного педагогічного університету імені М. П. Драгоманова. Київ, 441 с. **3. Єфименко Н. Н.** (2017). Коррекционный театр развития

дошкольников с нарушениями опорно-двигательного аппарата: [методическое пособие]. Винница: ТОВ «Нилан-ЛТД», 340. с. **4. Козьявкин В. И.,** Сак Н. Н., Качмар О. А., Бабадоглы М. А. (2007). Основы реабилитации двигательных нарушений по методу Козьявкина. Львів : Українські технології, 192 с. **5. Кожевникова В. Т.** (2013). Современные технологии физической реабилитации больных с последствиями перинатального поражения нервной системы и детским церебральным параличом: монография. Москва : Маджента, 566 с. **6. Мاستюкова Е. М.** (1997). Лечебная педагогика (ранний и дошкольный возраст). Москва : ВЛАДОС, 304 с. **7. Мога М. Д.** (2019). Корекційна стратегія в фізичному вихованні дітей раннього віку зі спастичним типом рухових порушень. *Актуальні питання корекційної освіти*. Серія: Педагогічні науки. Вип. 14. Кам'янець-Подільський : Вид-во Медобори-2006, С. 228-238. **8. Мога М. Д.** (2019). Корекція моторної сфери дітей раннього віку зі спастичним синдромом: [монографія]. Вінниця : Вид-во “ТВОРИ., 396 с. **9. Потапчук А. А.,** Дидур М. Д. (2001). Осанка и физическое развитие детей: [программы диагностики и коррекции нарушений]. СПб. : Речь, 162 с. **10. Приходько О. Г.** (2006). Ранняя помощь детям с двигательной патологией в первые годы жизни: [методическое пособие]. Санкт-Петербург : КАРО., 112 с. **11. Шапкова Л. В.** (2007). Частные методики адаптивной физической культуры: [учебник]. Москва: Советский спорт, 608 с. **12. Ashish W. Bele** (2021). Comparative study of efficacy of cryotherapy and myofascial release technique in calf muscle spasticity in spastic diplegic cerebral palsy children. *Journal of medical pharmaceutical and allied sciences*. Vol. 10(4), p. 3404-3407. **13. Khan M.,** Petrova M., Degtyareva M., Mikitchenko N., Smotrina O., Shungarova Z. (2021). Modern physical rehabilitation technologies for children with perinatal lesions of the central nervous system. *Rehabilitation of Rehabilitation Medicine*. Vol. 20 (4), p. 57-64. **14. Viktor Hladush,** Alla Symko, Oleksiy Havrilov & Viera Šilonová. *Level-balanced psychomotor support program for preschool children with Intellectual Disabilities / Life Span and Disability XXIV*, 1 (2021), 113-131 (Journal promoted by the Unit of Psychology Oasi Research Institute – IRCCS, Troina, Italy) **Scopus ISSN 2035-596 (Web of Science CC, Scopus)**

http://www.lifespanjournal.it/Client/rivista/ENG103_Full%20Issue_Vol.%20XXIV%20n.1%202021.pdf

References

- 1. Byesyeda V. V.** (2022). Korekciya fizichnogo rozvitku ditej rannogo i doshkilnogo viku z psihomotornimi porushennyami: [monografiya]. Vinnicya : «TVORI», 476 s. [in Ukrainian].
- 2. Yefimenko M. M.** (2014) Osnovi korekciynno-spryamovanogo fizichnogo vihovannya ditej z porushennyami oporno-ruhovogo aparatu: dis. dok. ped. nauk. Specialnist 13.00.03 – korekciyna pedagogika. Nacionalnogo pedagogichnogo universitetu imeni M. P. Dragomanova. Kiyiv, 441 s. [in Ukrainian].
- 3. Efimenko N. N.** (2017). Korrekcionnyj teatr razvitiya doshkolnikov s narusheniyami oporno-dvigatel'nogo apparata: [metodicheskoe posobie]. Vinnica: TOV «Nilan-LTD», 340. s. [in Ukrainian].
- 4. Kozyavkin V. I., Sak N. N., Kachmar O. A., Babadogly M. A.** (2007). Osnovy reabilitacii dvigatelnyh narushenij po metodu Kozyavkina. Lviv : Ukrayinski tehnologiyi, 192 s. [in Ukrainian].
- 5. Kozhevnikova V. T.** (2013). Sovremennye tehnologii fizicheskoy reabilitacii bolnyh s posledstviyami perinatalnogo porazheniya nervnoj sistemy i detskim cerebralnym paralichom: [monografiya]. Moskva : Madzhenta, 566 s. [in Russian].
- 6. Mastjukova E. M.** (1997). Lechebnaya pedagogika (rannij i doshkolnyj vozrast). Moskva : VLADOS, 304 s. [in Ukrainian].
- 7. Moga M. D.** (2019). Korekciyna strategiya v fizichnomu vihovanni ditej rannogo viku zi spastichnim tipom ruhovih porushen. Aktualni pitannya korekciynnoi osviti. Seriya: Pedagogichni nauki. Vip. 14. Kam'yanec-Podilskij: Vid-vo Medobori-2006, S. 228-238. [in Ukrainian].
- 8. Moga M. D.** (2019). Korekciya motornoyi sferi ditej rannogo viku zi spastichnim sindromom: [monografiya]. Vinnicya : Vid-vo “TVORI”, 396 s. [in Ukrainian].
- 9. Potapchuk A. A., Didur M. D.** (2001). Osanka i fizicheskoe razvitie detej: [programmy diagnostiki i korrekcii narushenij]. SPB. : Rech, 162 s. [in Russian].
- 10. Prihodko O. G.** (2006). Rannyaya pomosh detyam s dvigatel'noy patologiej v pervye gody zhizni: [metodicheskoe posobie]. Sankt-Peterburg : KARO, 112 s. [in Russian].
- 11. Shapkova L. V.** (2007). Chastnye metodiki adaptivnoj fizicheskoy kultury: [uchebnik]. Moskva: Sovetskij sport, 608 s. [in Russian].
- 12. Ashish W. Bele** (2021). Comparative study of efficacy of cryotherapy and myofascial release technique in calf muscle spasticity in spastic diplegic cerebral palsy children. Journal of medical pharmaceutical and allied sciences. Vol. 10(4), s. 3404-3407.
- 13. Khan M., Petrova M., Degtyareva M., Mikitchenko N., Smotrina O., Shungarova Z.** (2021). Modern physical rehabilitation technologies for children with perinatal lesions of the central nervous system. Rehabilitation of Rehabilitation Medicine. Vol. 20 (4), s. 57-64.
- 14.**

Viktor Hladush, Alla Symko, Oleksiy Havrilov & Viera Šilonová. *Level-balanced psychomotor support program for preschool children with Intellectual Disabilities / Life Span and Disability XXIV*, 1 (2021), 113-131 (Journal promoted by the Unit of Psychology Oasi Research Institute – IRCCS, Troina, Italy) **Scopus** ISSN 2035-596 (**Web of Science CC, Scopus**)

http://www.lifespanjournal.it/Client/rivista/ENG103_Full%20Issue_Vol.%20XXIV%20n.1%202021.pdf

Стаття отримана 08.04.2022 р.

УДК 376-056.2/.3:004

DOI 10.32626/2413-2578.2022-19.217-227

О.М. Опалюк

sedoy74@ukr.net

<https://orcid.org/0000-0002-5956-0163>

ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ОСВІТІ ДІТЕЙ З ОСОБЛИВИМИ ОСВІТНИМИ ПОТРЕБАМИ

Відомості про автора. Опалюк Олег, кандидат педагогічних наук, доцент кафедри психолого-медико-педагогічних основ корекційної роботи факультету спеціальної освіти, психології і соціальної роботи Кам'янець-Подільського національного університету імені Івана Огієнка, Україна. E-mail: sedoy74@ukr.net

Contact: Opalyuk Oleh, Candidate of Pedagogical Sciences, Associate Professor of the Department of Psychological, Medical and Pedagogical Fundamentals of Correctional Work, Faculty of Special Education, Psychology and Social Work, Ivan Ogienko Kamyants-Podilsky National University, Ukraine. E-mail: sedoy74@ukr.net

Відомості про наявність друкованих статей. Опалюк О.М., Вержиховська О.М., Михальська Ю.А. Сучасні комунікативні технології. Навчально-методичний посібник. Кам'янець-Подільський: СОПСР, 2021. 203с.