



HIPPOTHERAPY: INTEGRATED APPROACH IN CHILDREN WITH CEREBRAL PALSY (CP)

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ABSTRACT

Cerebral palsy is one of the most common diseases in children's neuropathology. Improving the ability of self-service, communication and social activities for children with this problem is of the utmost importance for society, for their families and for themselves. Therefore, kinesiotherapy, in all its forms (one of which is hippotherapy), must be directed towards motor retraining as a whole and also towards the psychological state of the child. This review article aims to examine the sensorimotor and beneficial effects that hippotherapy has on the musculoskeletal system and the mental state of

children with cerebral palsy. The beneficial effect of horse lies in the fact that through it muscle tension is controlled, the flabby muscles are strengthened the shortened muscles are relaxed muscles and thus the formation of contractures is prevented. Therapeutic riding improves quality of life of such children by taking them out in the open, sets them in motion and creates interaction between the child and the horse, which improves their emotional and physical condition and has a strong positive psychological effect. In this type of rehabilitation programs it is important to include, except hippotherapy, some behavioral approaches to improve the child's psychological state; approaches helping to overcome some somatic diseases and improve healthy lifestyles through the ability to deal with their specific state. The timely awareness of this fact and the practical application of sensorimotor therapy for these children is essential to optimizing their quality of life.

KEYWORDS: hippotherapy, cerebral palsy, approaches, impacts.

1. INTRODUCTION

Effective sensory integration is closely related to one's daily activities and is crucial to the development of self-regulation, social skills, locomotion and learning ability. Especially, children with cerebral palsy exhibit dysfunctions of alertness, memory, emotional lability and insufficient differentiation of emotions and also poor motivation. The delayed enrichment of spatial visualization and slower accumulation of information about the outside world are the result of relative isolation in the early stages of ontogeny.^[1]

As a result of visual-spatial perception insufficiency it has been found that in teaching such children experience dysgraphia, dyslexia and dyscalculia. For this reason, they are often very sensitive and impressionable.^[2]

Because of the observed motor disorders in this pathology, children have limited social contact as well as fears which create emotional lability and egocentrism. Since CP is one of the most common diseases in children neuropathology, improving the opportunity for self-service, communication and social activities for children with this problem is of the utmost importance to society, their families and the children themselves. Therefore, kinesiotherapy and all its forms (one of which is hippotherapy) must be directed towards the motor retraining as a whole and towards the psychological state of the child.^[3]

Targeted retraining in the creation of certain motor habits and skills will teach young patients autonomy, initiative, communication skills and help adapting them to the social environment. Those activities must be motivated and have a positive charge. Hippotherapy is defined as such an activity - bearing joy and pleasure to children with cerebral palsy.^[4]

This review article aims to examine the sensorimotor and beneficial effects that hippotherapy has on the musculoskeletal system and the mental state of children with cerebral palsy. Hippotherapy is based on the fact that the horse becomes a liaison between the patient and the world. It has been shown on psychological level that people with disabilities more easily build relationship with a third party.^[5]

2. HIPPO THERAPY AS STRATEGY

The modern idea of hippotherapy was developed on the grounds of earlier principles that came from Germany and were common practice in Europe in the 60s. This model served as the basis of the first training course in the United States in 1987. The movement of the horse

is a strategy that therapists use to improve nerve and motor functions of the patient. The patient may be on a horse saddle facing forward or backward, sitting sideways, lying on his back or stomach. Patients interact actively following the movements of the horse.^[6]

The task of the therapist is to continuously analyze the patient and guide them according to the way in which the horse is moving. Therefore, the therapist must have a good understanding of the movement of the horse to guide an experienced instructor in therapeutic riding to change the pace and direction of the horse, depending on the patient's reactions.^[7]

Often the main focus of physiotherapy are posture and the patient's motor reactions. The positive effects of the movement of the horse can be seen in the patient's motor coordination, muscle tone, straightening posture, flexibility and strength. Changes are often seen in breathing, cognitive function, sensations, balance, emotions and speech.^[8] These changes may be due to improvements in posture and motor coordination. Very often, however, they are a direct result of the movement of the horse. The focus of therapy may not include changes in speech, but they often happen. This is a good use of the movement of the horse as a treatment strategy and the reason why different disciplines of physiotherapy, occupational therapy and speech therapy can make use of hippotherapy as a successful part of their treatment programs.^[9]

The therapist assigns tasks which are meaningful to the patient and relate specifically to certain improvements of their functions. Goals are strictly functional and do not include skills related to horses, such as riding. The movement of the horse, provides a basis for improved neuro-motor functions, which can be particularly positive outside the environment of the treatment. The effect of the movement of the horse on the patient improves the functions of the body as a whole. Owing to the fact that the environment is natural and not related to clinical settings, it further allows the therapeutic riding to have a positive effect on the integration of the patient into society.^[10]

Hippotherapy is part of a complete treatment program. It can be used as a preparatory phase, using the movement of the horse, in order to improve muscle tone and posture of a hypotensive patient prior to the actual therapy. It can also be used for movement of the spine and pelvis to allow the practice of exercises and postures on the floor. Hippotherapy can be a key strategy leading to enhanced features outside the therapeutic setting. Some examples include better orientation, better balance and improved movements and reflexes.^[11]

The movement of the horse can be used as an additional procedure after physical therapy to strengthen its effectiveness and improve the general welfare of the patient. Given that hippotherapy is part of an integrated treatment plan, initial evaluation, documentation, criteria for discharge and billing can follow the structure coinciding with the therapist's occupation. Long-term and short-term objectives should be established depending on the patient's needs.^[12]

It has been found that the success of hippotherapy is related to several factors. It is a prerequisite that the horse should be susceptible to many emotional reactions of people. For it words are not as important as the tone with which they are delivered. This animal has a good memory and is able to build habits. Its behavior is predictable enough. It may therefore give a sense of stability and this feeling is the basis for overcoming fear in children.^[13]

Trust plays crucial importance for the success of the therapy. Trusting the horse, the rider relies on the fact that it will cope with these changes in the environment, which they themselves have not yet been able to deal with. And what is even more important is that trust breeds trust - trust in the horse will lead to trust in people. The interaction of rider with horse allows a child to overcome their awkwardness, often associated with the nature of autism or infantile cerebral paralysis. All movements are adequate and necessary. Thus, the child ceases to be afraid of their instability, which leads to reduction of muscular tension.^[14]

3. SENSORIMOTOR IMPACT

In combined retention of psychomotor development with expressed impairment of muscle tone and abnormal reflex activity, stimulation of sensorimotor behavior takes place against the background of the reactions of suppression and relief of the nervous system. Therefore, by sensorimotor therapy the development of psychomotor abilities of children are affected, as an important role in correctional and compensatory therapeutic effects in children with disorders has the ability to convert existing functional systems in the body. This is accomplished through the use of sensory afferences of the functional systems, which have not disappeared functionally, but have remained "hidden" in reserve favoring the leading afference.^[15]

The reconstruction of existing functional systems in the body is also carried out through the creation of new functional systems, including work of new dormant as yet afferent units in the implementation of the given function.^[16]

Sensory stimulation in the intact central nervous system always leads to movement. In this way, tactile stimuli acting on the skin surface create some experience for touch, pressure, pain, vibration and temperature and later participate in the movement in space. On this basis, the ability to active movement and orientation in space is developed through sight, hearing, smell, as it is based on the child's "cognitive intelligence" in relation to different sensory modalities.^[17]

4. APPROACHES IN APPLYING HIPPOThERAPY IN CHILDREN WITH CP

Sensorimotor therapy is widely used in special pedagogy and psychology as psychomotor development through the use of "active functions" to move a body segment and by gradually learned exercises. These sensorimotor impacts are monitored at various issues in the departments of special education: intellectual disability; learning difficulties; attention deficit; dyslexia and dysgraphia; language disorders; retention in development; brain damage; neurosomatic diseases and sensory disabilities.^[18]

What is characteristic for children with intellectual insufficiency are various movement disorders, especially fine motor skills, providing accurate and differential movements in writing, employment, construction, disorientation in space, difficulty in understanding instructions.^[19]

The formation of a psychological approach to children with cerebral palsy is of particular importance. It is necessary to focus on building positive habits in the child: the timely initiation of work on their formation; elimination of mistakes by supporting those activities that build good habits, without the latter becoming lasting habits. Similarly, people who work with children are very important because they are included in the behavioral assessment and intervention. Especially important is the creation of effective models of parental training with the following key components:^[20]

1. Parents are first trained on the principle of behavioral modification, highlighting the importance and identification of the problem or the desired behavioral alternatives;
2. Training in communication skills with these children for giving clear, positively formulated requests and instructions;
3. Parents are instructed how to use positive reinforcement and how to use structured penalty.

Of particular importance is the choice of appropriate timing for training such children – they must be calm, motivated towards the upcoming activities; to be stimulated emotionally and

physically (through verbal or non-verbal praise). It is through the method of hippotherapy that children could be directed to getting used to the new environment, the specific contact of the child and the horse that can bring joy and peace.^[21]

5. THE EFFECTS OF HIPPO THERAPY IN CHILDREN WITH CEREBRAL PALSY

International experience categorically demonstrates that this type of therapy improves the physical and mental condition of children with physical disabilities. The first reaction of the children once they can feel the horse and the first movements, is invariably producing a smile because movement and exercise in this way is a whole new feeling. Therapeutic riding improves their quality of life by taking them out in the open, stirs them to motion and creates interaction between them and the horse, which improves their emotional and physical condition and has a strong positive psychological effect.^[22]

The horse is technically a structure that reproduces the movements and transmits them to the child, uniquely stimulating muscles and vestibular apparatus. The ride affects particularly favorably body orientation in space, dorsal muscles, coordination and the condition of the truncus muscles. The beneficial effect of horse riding is that, by it, muscle tension is controlled, the flabby muscle are strengthened and the shortened ones are relaxed and thus prevents the formation of contractures.^[23]

Hippotherapy improves control and posture. The posture and the gait are also corrected; the child is trained in correct riding seat; walks in a straight direction are made and movements involving turns and serpentines. The gait, behavior and balance are improved, as well as the posture of the head, which leads to improved salivation, speech, eating and related behaviors and enhances the feeling and perception.^[24]

Besides procedures on horseback, training is also performed regarding the care of the animal associated with: cleaning and grooming; feeding and watering; saddling and unsaddling and others. These activities are important to children because it has been established that in this way they develop an internal sense and control over their movements and behavior; building of new motor skills; a sense of the movements of one's own body; The precise execution of various movements, suitable for the development of fine motor skills; spatial orientation, self-assessment and adaptation to the environment; balancing of mental processes; motivation and willingness to work; realization of good contact with another living being and compliance with its needs are essential for the child.^[25]

6. CONCLUSION

The relationship with an animal leads to pleasure and increases children's self-esteem, stimulates their imagination. They learn to trust the animal and so overcome fear more easily. A beneficial effect is observed in movement dysfunction such as dressing, washing, feeding, moving downstairs and upstairs and communicating with family and relatives. The control of pelvic reservoirs, memory functions and decision-making ones do not undergo particular development.^[26]

Children with severe disabilities, including cerebral palsy, need to engage in activities in hippotherapy, because not only does it improve their functional activity and independence, but it also improves the ability to communicate and adapt in society and brings alleviation to the child's relatives in view of the latter constant care by stimulating the child's self-service.^[27]

Apart from hippotherapy in the rehabilitation program, it is important to include some behavioral approaches to improve the child's psychological state; to overcome some somatic diseases and improve healthy lifestyles through the ability of self-service. The timely awareness of this fact and the practical application of sensorimotor therapy for these children is essential to optimizing their quality of life.^[28-35]

7. REFERENCES

1. Rousselet-Blanc V. Les animaux guérisseurs, Paris: Lattès, 1992.
2. Bernard B. Animaux au secours du handicap, Paris: l'Harmattan, 2000.
3. Kuprian W. Hippotherapie–Ein Überblick. Krankengymnastik, 1997.
4. Gasalberti D. Alternative therapies for children and youth with special health care needs. Journal of Pediatric Health Care,– Mosby, 2006.
5. Kostova I. Psychological approaches to working with children suffering from cerebral palsy. "Neurorehabilitation", 2007; 1(2): 31-38.
6. Hamill D, Washington K, White OR. The effect of hippotherapy on postural control in sitting for children with cerebral palsy. Physical & occupational, - Taylor & Francis 2007.
7. Strauß I - Methodik der Hippotherapie. Therapeutisches Reiten, 1980.
8. Miltcheva D. "Sports for Disabled" - NSA, 1983.
9. Schmitt R. Oberflächenelektromyographisch-telemetrische Untersuchungen zur Effektivität der Hippotherapie im Vergleich zur herkömmlichen Krankengymnastik. R Therapeutisches - Hippotherapie, 1986.

10. Konstantinova K. "Love this child" - scientific and popular journal, NSA Press, 2004.
11. Riesser H. Hippotherapie. Deutsches Kuratorium für Therapeutisches Reiten, 1996.
12. Strauß I. Hippotherapie: neurophysiologische Behandlung mit und auf dem Pferd, - Hippokrates-Verlag, 2000.
13. Gencheva N. Study on the effects of hippotherapy on the functional independence of children with cerebral palsy. "Neurorehabilitation", 2007; 1(2): 7-11.
14. Exner G, Engelmann A, Lange K, Wenck B. Grundlagen und Wirkungen der Hippotherapie im Konzept der umfassenden Behandlung querschnittgelähmter Patienten, Rehabilitation, 1999.
15. Slim M, Lebib S, Dziri C, Salah FZB. La thérapie par le cheval dans la réadaptation des enfants handicapés mentaux Expérience Tunisienne, Journal de Réadaptation, 2007; 27(4): 115-127.
16. Marinov E., Tsvetkova C. Application of sensorimotor therapy in special education. "Neurorehabilitation" 2007; 1(2): 18-22.
17. Tauffkirchen E. Integration der Hippotherapie in die konventionelle Krankengymnastik, Krankengymnastik, 1983.
18. Strauß I. Hippotherapie: neurophysiologische Krankengymnastik auf dem Pferd, Hippokrates-Verlag, 1991.
19. Clement J . Hippotherapie, Köln, 1985.
20. Bouchard C, Delbourg C. Les effets bénéfiques des animaux sur la santé, Paris: Albin Michel, 1995.
21. Galletier A, Pourquoi les chevaux nous font tant de bien ?, Paris: Editions du Rocher, 2010.
22. Melson G. Les animaux dans la vie des enfants, Paris: Petite Bibliothèque Payot, 2009.
23. Montagner H. L'enfant et l'animal: les émotions qui libèrent l'intelligence, Paris: OdileJacob, 2002.
24. Roche H. Comportements et postures: que devez-vous savoir observer ?, Paris: Belin, 2000.
25. Swift S. L'équitation centrée, Paris-Belin, 2011.
26. Victor JL. Ces animaux qui nous font du bien., Paris: Delville, 2004.
27. Wailly P. Ces animaux qui nous guérissent, Paris: Alphée, 2009.
28. Willem S. L'animal à l'âme: de l'animal-sujet aux psychothérapies accompagnées par des animaux, Paris: Seuil, 2011.

29. Tzvetkova D, Klisurov R, Obreshkova D, Atanasov P. Effect of 6-O-N-[N-(3,4-dichlorophenyl)-D, L-alanyl]-L-leucyl-glycine-galantamine on 3T3 cells viability. *Pharmacia*. Sofia, 2014 Mar.; 61(1): 22-26.
30. Tzvetkova DD, Obreshkova DP, Petkova VP, Atanasov PJ, Malik R, Siddiq S, Hadjieva B, Dimitrov MV. Investigation of antiproliferative activity of galantamine peptide derivate GAL-VAL against 3T3 cell lines. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2014 Mar.; 3(3): 10-19.
31. Radencova-Saeva J., P. Atanasov. Cardiac glycoside plants self-poisoning. *Acta Medica Bulgarica*. Sofia, 2014; XLI, № 1: 99-104.
32. Ivanova St., Obreshkova D, Atanasov P, Ivanov K, Zlatcov B. Investigation of food additives containing compounds with androgenic activity and their analytical study. *Pharmacia*. Sofia, 2014 Oct.; 61(3): 17-27.
33. Petkova V, Doncheva D, Obreshkova D, Dimitrov M, Papanov S, Atanasov P. Validation of TLC-densitometric method for quality control of Amoxicillin in dosage drug products. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2014 Apr.; 3(5): 995-1008.
34. Ivanova S, Ivanov K, Pankova S, Atanasov P, Obreshkova D, Petkova V. Analytical methods for the detection of nonlabeled anabolic steroids in food supplements. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2015 Feb.; 4(03): 10-23.
35. Tsvetkova DD, Obreshkova DP, Petkova VB, Pankova SA, Atanasov PJ, Kasnakova PS. Simultaneous determination of Valsartan and Hydrochlorothiazide in tablets by thin-layer chromatography-densitometric method. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2015 Mar.; 4(04): 01-11.