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COMPLEMENTARY THERAPIES IN THE RECOVERY OF PRE-SCHOOL CHILDREN DIAGNOSED WITH CEREBRAL PALSY

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Abstract. *The aim of this research is to highlight the conceiving and the application, in parallel to classical international therapies and other forms of complementary therapies and alternative medicine based on established diagnosis, of the movement. Also, more than that, the joy and attention for something new and interesting it is a great gain for the children with CP. The most common used therapies in many countries, in the benefits of recovery of children with CP are: hippotherapy (therapeutic riding), hydrotherapy with adapted methods including and therapeutic swimming, Craniosacral therapy, Vojta Method, Feldenkrais method, Anat`s Baniel Method (ABM, Space Suit Therapy, Martial arts and many other sports activities from Athletics.*

The objective of this study focused primarily on the general relaxation and the decrease of the spasticity, also bringing their interest, attention and joy.

Keywords: *complementary therapies, hippotherapy, riding, rhythmic techniques, increasing the quality of life.*

Introduction. Cerebral palsy (CP) is defined as "a disorder of motor function and posture due to immature brain "or" a group of neurological non-progressive disorder characterized by a motor control deficit disorder, postural and tonus due to causes what the acts pre-, peri-, postnatally, in the first 3-5 years of life – the initial period of brain development" [2, p. 123].

Worldwide statistics have been recorded an annual appearance of 3 CP cases per 1,000 live birth and in the US one case per 500 newborns or 1 of 3 born babies prematurely. In Romania the number of children affected annually of this disease is 500, a total of the estimated 5,000 children affected by motor deficits caused by cerebral palsy. From various clinical types of CP, the most frequent found is the spastic form, accounting for 70-80% of total cases [1, 3, 5].

The goal of the work is to highlight and design the application to classical interventional therapies, parallel and other forms of complementary therapies, on the base of established diagnosis, of the functional rest, for the growth quality of life and the independence movement. Children with CP, the spastic form have benefited as a form of complementary therapy, by **riding** on pony to horses at a farm, in the city neighborhood. These trips were made unfortunately only a few so being so they, may not be considered to be a form of therapy, but brought a touch if novelty which awakened enthusiasm and interest. This method is one part of -an integrated program of treatment for improving and regaining function in general. These rhythmic techniques like one being the riding, have caused temporary decrease in spasticity, the same effect being reported in the cases of navigations on craft, in other centers.

Material and method

The study was conducted into the period July 2017 – July 2018, on a batch of 3 children diagnosed with CP, spastic type, selected from –a group of 11 children aged between 4-6 years after entry into the study.

No. Crt.	Name and first name	Diagnosis	Age	Sex
1	C.M.	Cerebral palsy, Spastic tetraparesis	4 years	M
2	S.A.	Left side Spastic Hemiparesis, Prematurity gr.II	4 years	F
3	G.M.	Cerebral palsy, Spastic paraparesis	6 years	F

Objectives followed into the recovery of these children are:

- Decrease spasticity of the spastic muscles and increase of range of motion (ROM);
- Increase mobility of the joints at MS and MI level;
- Improvement of static and dynamic equilibrium;
- Walking reeducation and in the orthostatic position;
- The growth of self esteem and confidence, and improvement relationships with others.

The therapy in CP uses the physical therapy techniques such as active and passive movements of the joints along with others activities for children with spasticity form of CP. It was found that those children receiving treatments like passive stretching a large number of hours, have received a higher lower spasticity and a better amplitude of articular motion compared to the children who benefited very little by the same daily treatment. But the specialists agree that it is unpractical and unhealthy for a sick child need treatment a large number of hours, every day.

Children with CP, the spastic type of it, have benefited as a form of complementary therapy by **riding** on pony horses at a farm in the city neighborhood.

Through such techniques the kids benefit by movement and novelty. Following such activities were noticed improvements into coordination regarding the legs positions, balance and equilibrium, similar to that of the children who practiced on the Bobath ball, during the time of therapy for neurological development. This one form of therapy offers to the child an olfactory simulation which is warm and pleasant as a platform "on four legs", through which a good prepared and experienced therapist may increase the efficiency of motor control, balance, stretching of the tendons and muscles. The North American Riding Association for Handicapped defined hippotherapy as "the use of horse motion as a tool for education (recovery) by a physiotherapist, an occupational therapist and a speech therapist who educate and correct and deal with functional limitations and disabilities of the patients with musculoskeletal dysfunctions [3, 5].

The classical and traditional therapy applied long time may become ineffective and boring for the patient and for the therapist, too. The hippotherapy offers children and therapists something new and effective as a treatment modality that can wake up enthusiasm and interest. The therapist will evaluate very detailed the possibility of the respective child to benefit by this type of therapy. The initial evaluation, notes for progress and a notice of termination of the treatment will accompany the child's file, if this one was approved for this type of treatment. This type of treatment is not indicated for children with spinal instability, severe osteoporosis, hip dislocation, risk of failing or fainting, poor balance, increase of spasticity after riding (due to an emotional condition). The researchers formulate the idea that the walking on a horse stimulates the 3D pelvic movement of the human during the

walking, while the warmth of the horse body and the rhythmic walking of a horse decrease the tonus and promote the relaxation. Theoretically the hippotherapy gives, to a child with CP, the possibility to experience the rhythmic movements which diminishes the disease and permit the child with CP to organize his own movements in functional strategical session. A session of hippotherapy takes between 45 minutes and one hour, but it would be ideal to be a 30-minute session of two or one week with a duration of 10 weeks. The preparation of the child is very important before riding. This may include stretching exercises and general relaxation. Instead of using a saddle, a soft blanket is better to be used because, this one allows the child to be treated from any position on the back of the horse, face up, face down, four paws, on his knees or on side lying, sitting. From the beginning, the child and the horse are accompanied by three people. The therapist can be on horseback with the child laterally, a person walking side by side, and a group leader. The main role of the group leader is to master the behavior of that horse. The person going next to the child helps to position and supervises the child. The therapist seated on the horse or walking on the side of it may do maneuvers, positioning the child.

Parallel to hippotherapy there are used reeducation neuro-motor methods, among which the methods Kabat, Bobath, Le Mayer, Vojta, who contribute to improve the life quality, by winning functional independence.

Subject C.M. Cerebral palsy. Tetraparesis, predominant paraparesis. shows extensive motor deficit hypertonia of the flexors of the MS characterized by the phenomenon of the "knife blade", mainly on the left side. There is hypertonia at the level of the extensors of MI, high plantar dorsiflexion deficit.

Methods and techniques used: PROM of UL and LL, FNPs, rhythmic rotation, reflex stretch, Bobath method for global relaxation, exercises with different portable objects in front of the mirror, correction of the position of the trunk from different positions, placed on the knee, orthostatic with support, maintained with the back to the ladder and correction of the position of the sole on the ground; variants of walking on different surfaces with bilateral support of the parallel bars; exercises on apparatus (belt, air walker) with correction of

trunk position and LL; relaxation exercises on Bobath Ball;

Mobilizations are made from DD and DV to the matt, the spastic muscles are relaxed after PROM. The child is cooperative in carrying out active-passive mobilizations, performs better the exercises on the stick and at the ladder.

S.A. Cerebral palsy, spastic hemiparesis, prematurity second grade, motor Retardation, shows spasticity in predominantly left limbs. The left of UL, tickled, in adduction position, tight fist. Predominant contractures on the flexors. LL, in maximum extension, decreased joint mobility gait on the tips of the toes, knees in hyperextension, more pronounced at the left LL level. Moving in independent orthostatic, much better, walking is specific to the hemiplegic walking diagnosis. It has a hyperlordosis that compensate the walking on the tips of the toes. Hypotonic abdominal muscles. It is insisted on methods and exercises to correct knee hyperextension. Exercises for toning the abdominal muscles as, it was taken into account the diversification of the walking variants aimed at re-training the walking.

G.M. Cerebral palsy. Spastic paraparesis

Kinetotherapeutic examination: decreased joint mobility at the ankle level, equine foot, shortened Achilles tendon, left anterior LL more visible, tense ileopsoas and quadriceps, anterior tibial muscle is hypotonic, tense muscles at the calf level, static and improved dynamic balance, walking is on the tips of the toes.

Methods and means: therapeutic massage of the calf muscles, applications of Kinesio tape methods: application of kinesio tape strips on the calf and foot for corrective purposes, exercises of the AROM, to increase the dorsal flexion of the foot, variants of walking on different surfaces, psychomotor trails. The Hippotherapy brings a large number of benefits visible and demonstrated in the statistics: the improvement of joints retractions (due to muscles contractures), helps to decrease the muscle tonus, decrease the excess of the energy with the movement, improvement of stability, facilitation of the posture and equilibrium, increase of visual perception, increase of self esteem, improvement of the respiratory apparatus, improvement of the general coordination, increase the attention, pelvis mobilization also the hips and spine big improvement in their coordination while walking, increase of joints AROM, flexibility and strength, improvement of self body awareness, walking improvement and improvement of the relationships with people around.

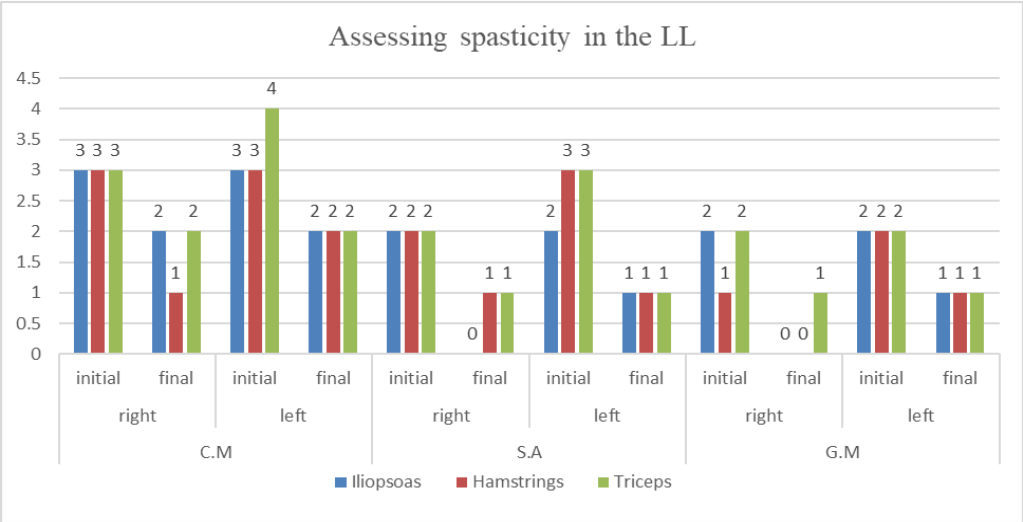
Results and discussions. The understanding of pathology specific for each child may help to find the most efficient options of treatment methods. It is very important for the specialists who treat the children with CP to understand the difference between the movement diseases and the diseases of the muscle tone, meaning the spasticity.

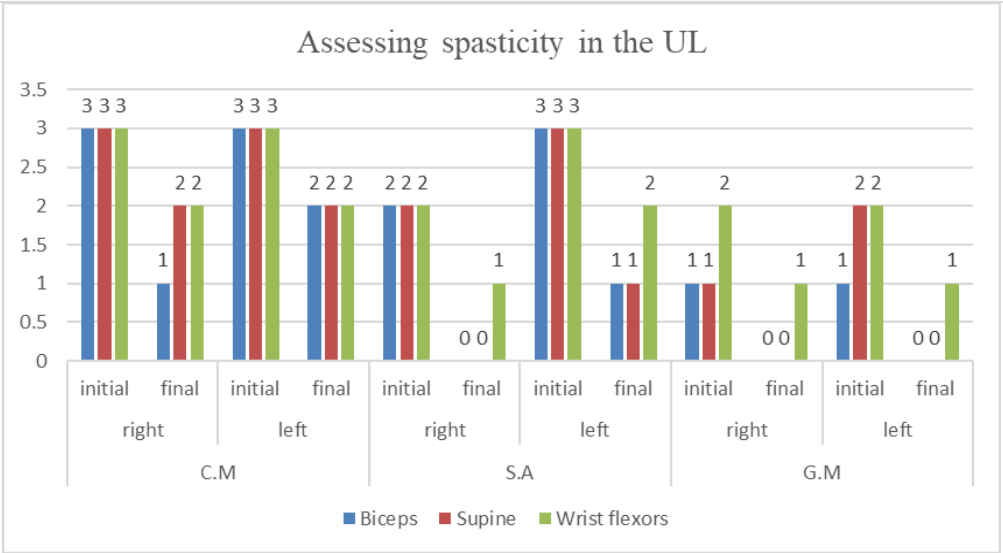
In the studied children cases were obtained the next result: **C.M**. maintains the orthostatic position without help and independently moves in standing position. There is an improvement in the position of the trunk in the seated position and in the orthostatism, the static and dynamic equilibrium were improved. From the point of view of general motricity, the child during this period had a good evolution. Personalized orthotics were used during walking.

S.A.: the child keeps the position on the knees, moves on the knees independently, with slight unbalance. Walking is specific to a hemiplegic walking type, there is an improvement in dynamic balance.

G.M. Joint mobility is improved, there is a relaxation of the muscles of the calf, walking is easy on the tips of the toes, a correction was observed, the child maintains its orthostatic position with equal support on both legs with very slight imbalances.

Regarding the assessment of muscle tone in all studied cases from the initial assessment to the final evaluation, there is an improvement in the tone, which consists in decreasing the resistance to mobilization in all the tested muscle groups.

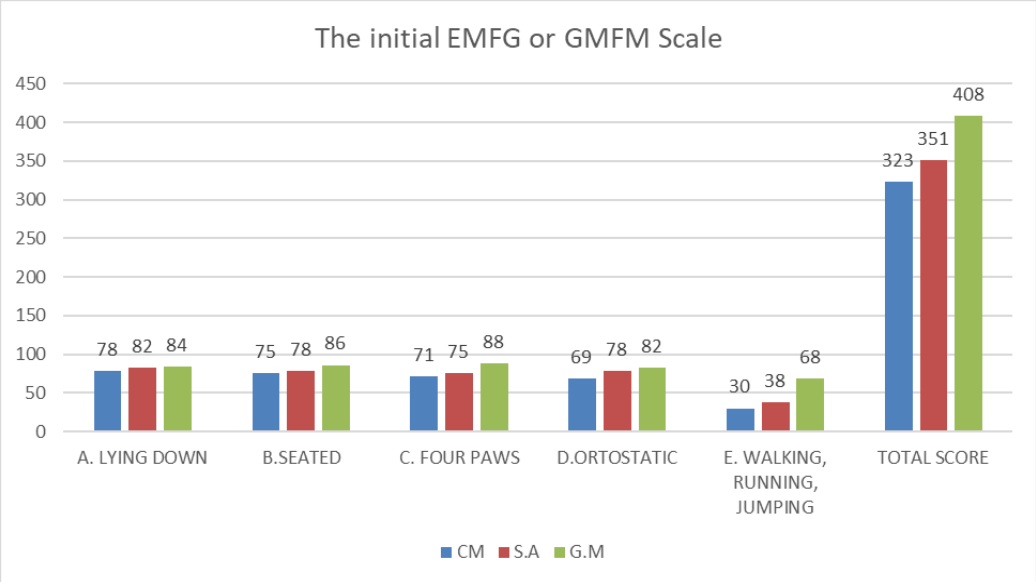


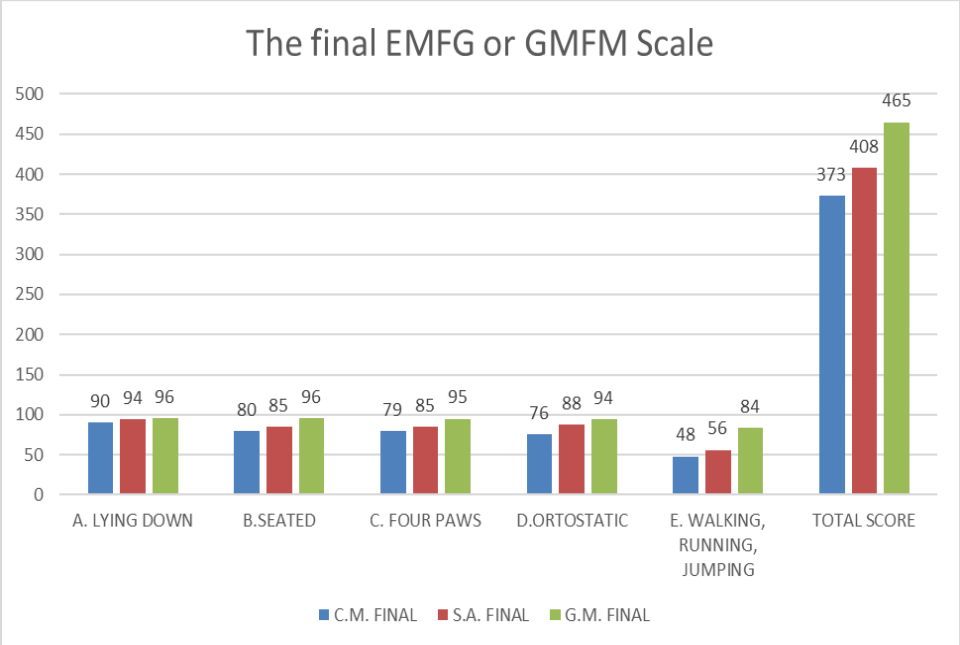


For Global Motor Assessment, the initial and final EMFG or GMFM Scale was used.

THE POSITION	C.M.		S.A.		G.M.	
	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL
A. LYING DOWN	78	90	82	94	84	96
B. SEATED	75	80	78	85	86	96
C. FOUR PAWS and ON KNEES	71	79	75	85	88	95
D.ORTOSTATIC	69	76	78	88	82	94
E. WALKING, RUNNING, JUMPING	30	48	38	56	68	84
TOTAL SCORE	323	373	351	408	408	465

For children with CPs, the mean baseline scores were: A (decubitus) 81.3 (± 3.05505), B (Seated) 79.6 (± 5.686241), C (on knees) 78 (± 8.888194) D (orthostatic) of 76.3 (± 6.658328), E (walking) of 45.2 (±20.03331); The mean final scores were: A (decubitus) 93.3 (± 3.05505) , B (seated) 87 (± 8.185353), C (on knees) 86.3 (± 8.082904) , orthostatic 86 (± 9.165151), E (walking) of 62.2 (± 18.90326); After the percentage score of five sections in the three children with CP, the mean total initial value was 72.1 (± 8.663333) and the final total mean value was 83.06 (± 7.583022); The lowest values were presented to the CM at both the initial and final stages, the tetraparesis being the most severe form of CP in the studied cases of children with CP.





Conclusions

Hipotherapy has proven to be beneficial along with the application of other complementary and classical therapies to pre-school children diagnosed with CP, the spastic form. Improving communication and child-therapist relationship and the possibility of implementing other recuperation techniques in parallel represent a step forward when the child is more attentive and receptive. This happens when the therapist and the child's with PC create a positive state of mind, stimulating emotions and joy for something new and unique. The real contact of a child with CP with an animal, the horse good friend of humans, and only the fact that he can touch it creates a special state of joy, interest and curiosity, helping to increase attention and verbal communication, hearing and self-esteem . In this study, general and segmental relaxation was achieved, so it was possible to approach and apply more difficult recovery techniques along with therapies, all for the benefit of those children who need independence in the daily activities and communication as they grow up and develop to maturity. In conclusion, the aim and objective of this study were achieved and the main achievement on decreasing the spasticity and the creation of a positive state of mind is evidence that this therapy is indicated and should be tried and applied to other children with PC. The implementation of a new positive therapy, especially through the presence of this funny miniature horse called pony, stimulates the brain, interest, attention, senses, balance, stability and more, the possibility of "awakening" some hidden, "sleepy" abilities. Making new, interesting and beneficial treatment techniques, general relaxation and positive results from a functional point of view clearly contributes to the integration of the child into society - the community where the child live in where he performs the daily activities..Independence of the movement is essential and this is the main goal targeted by therapists, family and community in a child recovery with CP. Hipotherapy combined with prolonged stretching, active-passive physical exercise, as well as neuro-motor reeducation methods lead to decreased spasticity, increased amplitude of movement, increased self-confidence, and improved communication with others.

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