

COOPERATION OF OCCUPATIONAL THERAPY, PHYSIOTHERAPY AND SPEECH THERAPY IN THE THERAPY OF CHILDREN WITH CEREBRAL PALSY

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Abstract

Aim: The project is focused on the problem of the cooperation of physiotherapy, occupational therapy, and speech therapy during the therapy of children with cerebral palsy.

Materials and methods: In the study, 20 children with cerebral palsy were chosen. According to the physiotherapy, occupational therapy and speech therapy entrance examination, an eight-day rehabilitation intervention was assigned. Individual physiotherapy and occupational therapy treatment took place three times per week for 45 minutes. Speech therapy intervention was once a week under the direct charge of a speech therapist, and the practice was three times per week as part of an occupational therapy treatment, where the occupational therapist worked according to the instructions of the speech therapist.

Result: Individual therapy was connected in the following order. First there was physiotherapy, with a focus on the stabilization of the truncal muscles and the improvement of breathing habits that leads to better posture. This was followed by logopedics oriented on motorics of the orofacial area. Finally there was occupational therapy, which connected elements of physiotherapy and logopedics during the activity of daily life training with a focus on basal activity of ADL.

It was confirmed that the motivation of clients and their parents plays a big role in accomplishing positive results.

Conclusion: Coordination of care is essential if a patient is to benefit from multiple health care services provided by various health care professionals. The therapy in children with cerebral palsy is a long-term and life-long process. The results of our project confirmed the necessity of close cooperation between the physiotherapist, the occupational therapist and the speech therapist with a possible continuity and unification of the therapy.

Key words: activities of daily living; cerebral palsy; diparetic form; hemiparetic form; movements occupational therapy; physiotherapy; quadruparetic form; speech therapy

INTRODUCTION

The role and competences of the occupational therapist in the area of self-sufficiency often overlaps with other professions in the rehabilitation team, e.g. with the physiotherapist in the area of mobility, and with the speech therapist within the framework of personal ADL in the area of food intake and communication. In the therapy of children with cerebral palsy, a close cooperation between the physiotherapist, speech therapist and occupational therapist is necessary (Krivošíková 2011).

Main aim

The aim of the project was to contribute to the problematic issues associated with the participation of occupational therapy, physiotherapy and speech therapy in the therapy of children with cerebral palsy.

The following *partial objectives* have been laid out:

- to describe possible areas of mutual cooperation between the physiotherapist, speech therapist and occupational therapist within the framework of therapeutic procedures used for children with cerebral palsy;
- to describe the basic approaches used in the practice of the physiotherapist, occupational therapist and speech therapist;

- to apply selected physiotherapeutic, occupational and speech therapeutic methods in children with cerebral palsy, with a common goal of increasing the quality of fine motorics and orofacial motorics;
- to highlight the interconnectedness and continuity in the use of individual methods used by the physiotherapist, occupational and speech therapist.

MATERIALS AND METHODS

Characteristics of the monitored set

Monitored set included 20 children in age 3 to 15 years old who were diagnosed with cerebral palsy (hemiparetic form, diparetic form and light degree of quadraparetic form) The children all have a diagnosis of cerebral palsy in common, with a differing degree of infliction of fine motor skills. Five children were diagnosed with CP – the diparetic form, 8 children with the diagnosis of CP – the hemiparetic form, and 7 children with the quadraparetic form of CP.

The target group were children aged between 3–15 years (Chart 1). These children were diagnosed with cerebral palsy and have different stages of defects of fine motor skills. The percentage of forms of cerebral palsy included in the therapy is shown in Chart 2.

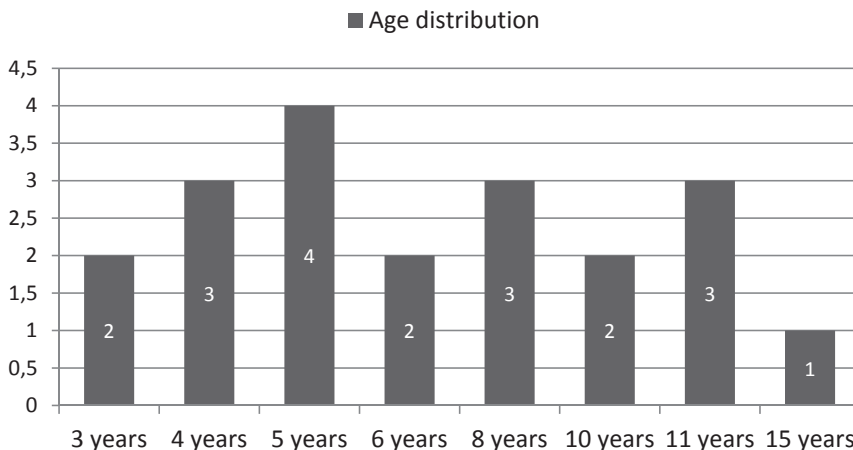


Chart 1. Age distribution of involved clients

⌘ hemiparetic form ■ diparetic form ■ kvadraparetic form

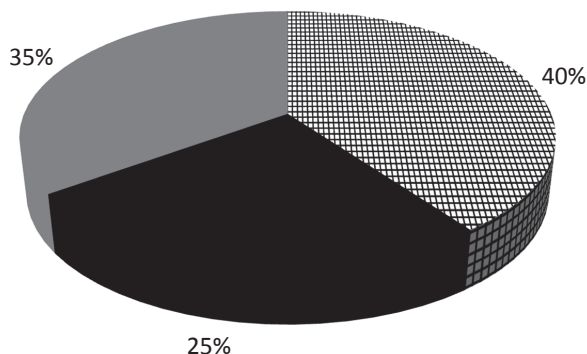


Chart 2. Cerebral palsy distributions

Addressed institution

Nové Lázně Teplice (in the Czech Republic) was addressed and requested to cooperate. They specialize in the treatment of children ranging from 3 months to the age of 18. They concentrate on the treatment of all kinds of illnesses relating to the musculoskeletal and nervous systems.

Description of the project

Physiotherapeutic examinations were carried out by means of the above-mentioned methods (goniometric, anthropometric, kinesiology analyses, maximum posture, maximum locomotion). The occupational therapy examinations included standardized tests for fine motor skills – the Purdue Pegboard Test, the test for ADL, the Ashworth scale of spasticity and the orientation examination of manipulation abilities. Speech diagnostics were aimed at the level of eye perception, auditory perception, oromotor, laterality, vocabulary, way of communication, articulation, level of grammar, resonance and phonation, salivation and capabilities relating to self-nourishment. The following test was employed: the Test of active mimic psychomotory – Kwint and other orientation examinations according to the needs of individual clients.

On the basis of the results from the individual measurements and examinations, an eight-month physiotherapeutic, occupational and

speech therapy intervention was carried out. Physiotherapeutic intervention included: proprioceptive neuromuscular facilitation and spiral dynamics. The occupational therapist in cooperation with the physiotherapist applied the concept of Spiral dynamics. They further concentrated on fine motor skills training and ADL. In the area of ADL training – self-nourishment, the occupational therapist worked according to speech therapist instructions. The speech therapy intervention included orofacial stimulation and the development of communication skills. Rehabilitation took place under the guidance of the academic staff of the Faculty of Health Studies of Jan Evangelista Purkyně in Ústí nad Labem. Individual occupational therapy was carried out 3 times a week for 45 minutes. Physiotherapy was carried out 3 times a week for 45 minutes. Overall there were 24 occupational therapy and 24 physiotherapy meetings. Speech therapy intervention was once a week under the guidance of the speech therapist, and there was training 3 times a week within the framework of occupational therapy, where the occupational therapist worked according to the speech therapist's instructions. There were 8 meetings with the speech language therapist under his charge. Chart 3 shows the number of therapies during the 8-week intervention. After this, the children underwent a control evaluation by means of the above mentioned examination

methods. In relation to successfully coping with ADL in children with CP, the necessity of a coordinated cooperation between the physiotherapist, occupational therapist and speech therapist was confirmed. In the ADL training, the physiotherapist and the

occupational therapist concentrate on the acral and terminal mobility of extremities, and the speech therapist pays attention to swallowing, which is connected to ADL – self-nourishment. The total frequency of individual therapy is shown in Chart 4.

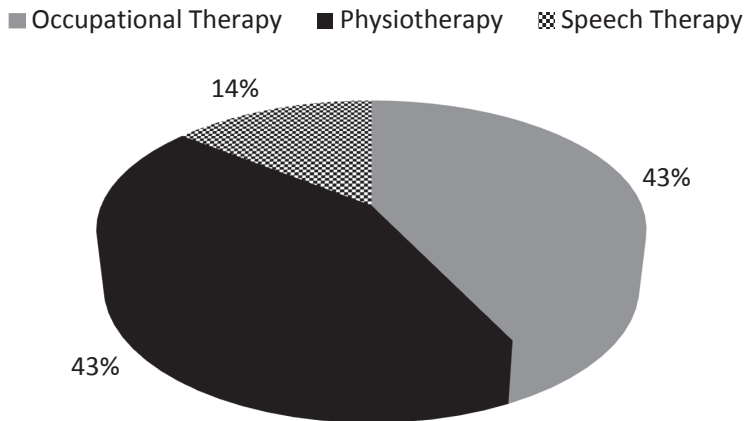


Chart 3. The number of therapies with one client during 8 weeks

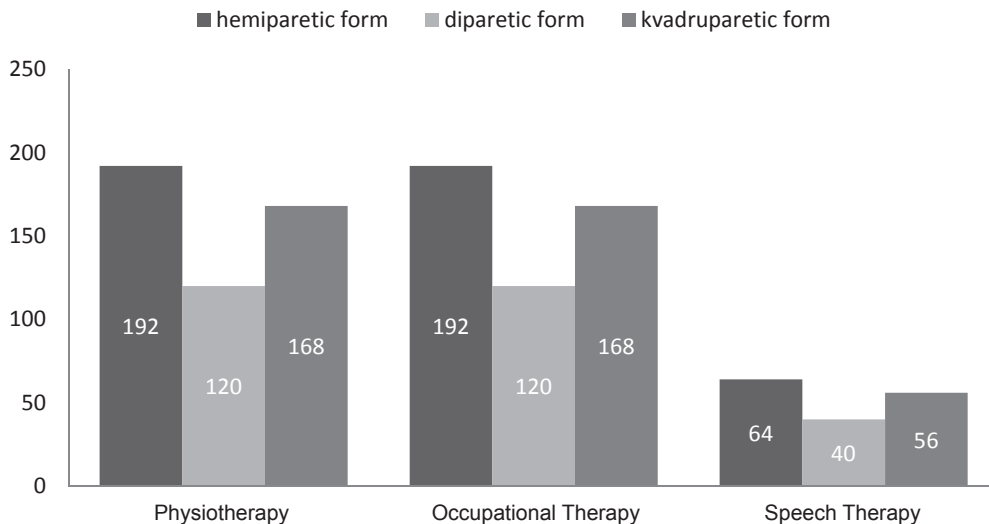


Chart 4. Total frequency of therapy for specific diagnosis

Therapeutic plan

Cooperation between the occupational therapist and the speech therapist

The most frequent areas of cooperation between the occupational and the speech therapist are: the area of communication, graphomotory and writing, cognitive functions (training of memory and attention ability), orofacial stimulation (possibly training of oromotory), disorders surrounding swallowing, compensation aids, therapy of upper limb functions, effort for the unification of approach and therapy for clients, motivation of children and families (Krivošíková 2011, Vyskotová and Macháčková 2013).

The speech therapist, in cooperation with the occupational therapist, contributes to the improvement in the individual realization of activities of daily living, which are related to his or her competences (food intake, ensuring a drinking regime, hygiene of the orofacial area, etc.). The occupational therapist has the possibility of using real life situations (e.g. in training dressing, eating, hygiene, etc.) and thus makes the client and his family aware of the practical use of the achieved skills in everyday life. Another area where cooperation between the occupational and speech therapist is necessary is the choice of compensation aids (special bottles, cups, teethers, probes, thickeners, modified toothbrushes, plate attachments, ergonomically modified cutlery, non-skid mats,) ... and training for their usage (Krivošíková 2011).

The occupational therapist attempts, within the direct work with the client and in cooperation with the parents or the client him or herself, to fix newly ordered elements in speech therapy and gradually and subsequently automate them in their everyday lives. The client profits from this cooperation by improving the quality of his or her life (Krivošíková 2011).

Cooperation between the occupational therapist and the physiotherapist

Generally, for the training of the activities of daily living, ensuring correct posture is essential. For the mutual cooperation between the above-mentioned two professions, the training of feeding was found to be the most important area. The movement of the hand to the mouth is one of the archaic movements,

which is necessary for the performance of activities of daily living. Another archaic movement, necessary for ensuring mobility and stability, is the support of the upper limb. The training of those two skills was included in the therapeutic programme (Krivošíková 2011, Vyskotová and Macháčková 2013).

The occupational therapist, in cooperation with the physiotherapist, recommends also appropriate compensation aids (chairs Aris, seats Tobi, individual braces for sitting, verticalization stands, etc.). Stress is placed upon the stability of the body, pelvis, lower limbs (feet in solid ankle boots) leaning against the mat, the support of upper limbs – hands leaning against the mat, preferably with open palms. We endeavour to ensure a suitable control of the head of the child, this should not be in extension (leaning back) because of the danger of aspiration, nor in flexion (leaning forward) where biting into the spoon or glass is emphasised, etc. (Krivošíková 2011).

Cooperation between the physiotherapist and the speech therapist

With regard to the complexity of the problems related to cerebral palsy, a transdisciplinary approach, involving physiotherapy, occupational therapy, speech therapy and other branches of medicine is optimal. Only a complex approach on the part of the physiotherapist, together with the speech therapist in the therapy aimed at the orofacial area, brings quality results influencing not only the functions of individual segments, but also the integration of learned skills into the activities of daily living (food intake, communication...) (Gisel et al. 2000).

The activation of masticatory muscles is used in the lifting of the body from the supine position. Performing this movement, abdominal muscles, m. iliopsoas, muscles on the front part of the neck, including muscles below and above the hyoid become activated, which supports the flexion of the head, and at the same time the tendency to open the mouth develops (Gross et al. 2005). This is prevented by the activation of masticatory muscles, which close the mouth and thus support the flexion of the head and the nape. At the same time, back nape muscles are activated to ensure a dynamic process of the head flexion. Masticatory muscles are functionally

connected to the activity of swallowing and the dysfunction of this connection can lead to various swallowing disorders. The muscles of the oral bottom are significantly activated even while breathing. The physiotherapist in cooperation with the speech therapist aims to achieve an improvement in the quality of the breathing stereotype (Kraus et al. 2005).

Use of the elements of the concept of Spiral dynamics

One of the concepts, which interconnect the work of the occupational therapist with that of the physiotherapist, is the concept of Spiral dynamics. In children, we attempted to teach a coordinated movement, which leads to the application of ADL step by step. The elements of this concept were chosen appropriately to the age of the client and to the severity of his or her diagnosis. In children with a quadraparetic and hemiparetic form of CP, we concentrated on the centralization and stabilization of the shoulder girdle and later proceeded to the acre of the limb. In individuals with a diparetic form of CP, the examination revealed a slight symptomatology in the hands. Here we concentrated on the activation of the arch of the hand, basic manipulation skills, the aiming and coordination of hand movement (Lauper 2007, Larsen et al. 2010).

Individual steps included: perception with the aspect of awareness and alteration (motion sequence), mobilization, relaxation of hypertonic structures, straightening of the axis of the body, upper and lower limbs, activation of impulse centres, activation/strengthening of weakened structures, guidance for the coordinated movement/impulses for movement, conscious and varied exercises, integration of coordinated movement patterns connected with daily and movement activities (Lauper 2007).

Therapeutic plan (Lauper 2007, Larsen et al. 2010)

- Straightening
 - In the sitting position, we place stress on the straightening – head, body and upper limbs.
- Stabilization of the scapula
 - In order to stabilize the scapula, we also worked in a sitting position. We used a micro S ball, by means of

which we guided the basic movement of the scapula around the sagittal, longitudinal and transversal axes.

- We also practiced the internal and external spiral of the scapula, the octal movement of the scapula both in a sitting and lying position.
- The training of the octal movement of the scapula and the counter-movement of the upper ribs were practiced in the sitting position.
- In the sitting position, the training of the external and internal spirals with a 3D movement of humerus was also practiced.
- Spiral bolting of the upper limb
The training of the spiral bolting of the upper limb in a spiral flexion:
 - The training of the movement of the upper limb towards the mouth started as a guided movement with the assistance of the physiotherapist. Stress was placed on the spiral bolting of the upper limb, where the scapula is in the external spiral, the arm in an internal rotation and the forearm in a supine position.
 - The training of the movement of the upper limb towards the mouth was further practiced by means of a massage ball and a Theraband.

The training of the spiral bolting in the spiral extension:

- The training of the movement of the upper limb as support started as guided movements by means of the hand of the physiotherapist. Here, we placed stress on the spiral bolting of the upper limb, where the scapula is in an external spiral, the arm in an external rotation and the forearm in a supine position.
- The movement into the support was practiced both on all fours and sitting at the table.
- Forming the arch of the hand
The spherical hand arch was practiced by means of a micro S ball. Physiotherapist and client each held the S ball by one of their hands in the same time. When the physiotherapist pressed the S ball, the client was given impulses for the activation of the hand arch.

- Integration in daily activities
 - *Placing the head of the humerus backwards, downwards and outwards.* Children were sitting at the wall. The juggling ball was placed between the ball and the head of the humerus. The movement was performed only by the arm so that the ball would not fall. Children practiced the movement of the arm when greeting, eating – movement towards the mouth, bringing and holding the arm up and stretching it.
 - *Opening the shoulder girdle into width.* The mother was sitting behind the child. She used the shoulders of the child as if they were the handlebars of a bike. She grasped the shoulders from behind and turned them slightly to the back (accelerating) and pulling slightly away from herself (outwards). The child straightened the backbone at the same time.
 - *Hand towards the mouth and coordinated support – walking on all fours.* The children were assigned the task of gradually collecting small treats off the floor – fruit, candy, crumbs and to smell or eat each item. For this activity, support by the left hand was needed and the right hand performed the movement towards the mouth.
 - *Forming the hand arch – the game Ťuky-řuk (Mouse is here).* The starting position is sitting at the table. After hearing a “Ťuky-řuk”, the children knocked their index finger on the table, after hearing “the Mouse is here,” they opened their fists on the table, and after hearing “the Mouse is in the house,” they formed a small sphere with their hands.
 - *Moving something – support.* The mother acted as a boulder, which is to be pushed away. The child controlled the right positions of the upper limbs (forearm in pronation, elbow pit heading up, head of the humerus towards the back, down and outside) and pushed the mother.

The use of the proprioceptive neuromuscular facilitation concept

In children with hemiparetic and quadruparetic forms of CP, we concentrated on the

training of the 2nd diagonal of the flexion type in the upper limbs with the use of facilitation mechanisms and a strengthening technique – the pumping effect. We employed the opening and clenching of the fist for the re-education of the grip; we further used pushing with a radial and ulnar extension. For re-education of the function of the scapula we used a movement in the direction of posterior depression, where *Mm. rhomboidei* and *M. latissimus dorsi* were significantly activated. Children with the hemiparetic form of CP reacted well to the training of the diagonal flexion of the upper part of the body by means of rotation to the left and right, by which they strengthened *mm. obliqui* and the diagonal extension of the upper part of the body, where they applied the strength of the back muscles. In the diparetic form of CP, training of the 2nd diagonal of the flexion type in the lower limbs with the variation of knee extension proved to be advantageous (Holubářová and Pavlí 2013).

Use of orofacial regulation therapy and elements of myofunctional therapy

Individual elements of the above mentioned therapies were used in all clients. In clients with diparesis, we concentrated especially on improving speech performance by the training of articulation and mimics. In children with hemiparesis and especially with quadruparesis we used these techniques primarily for the elimination of gag reflex, ensuring the transfer from mixed food to solid food, improving the processing and transfer of food in the mouth, the swallowing and diminishing the frequency of aspiration and the lowering or diminishing hypersalivation. Consequently we used the techniques for ensuring communication.

In the monitored group, there were children with hyper or hyposensibility in the orofacial area. For this reason, we used light touches with a gradual increase in the pressure, where we carried out the therapy in the direction from the ears towards the lips. In the course of the therapy, according to the reactions of children, we used different materials for improving the sensors in the facial area. In clients with a lowered sensibility, intermittent movements were used in the so-called stimulation by means of tapping,

where stimuli have a higher irritation effect. This technique leads to the improvement of the blood supply in the stimulated area, and thus to the improvement of the muscle tonus. These massages were used by the speech therapist, the occupational therapist and the trained parent before serving food or drinks and before the training in communication.

In children with an increased gag reflex, we also used massages in the area of the oral cavity, where we gradually “hardened” the area of the outer gums and gradually, after acquiring confidence, we continued into the internal space of the oral cavity. We used first just the fingers of the physiotherapist or parent, and later on, tooth brushes, swabs and other aids.

In some clients, we were solving the problem of hypersalivation and the disability of keeping the mouth closed with the correct peaceful position of the tongue and lips by means of orofacial regulation therapy. We carried out the training of closing the mouth with subsequent swallowing, with the use of the control of the mandible by the physiotherapist or parent. The effort was to automate closing the mouth gradually and to minimize the control of the position of the mandible (Castillo-Morales 2006).

In the training of eating, we concentrated especially on the two most frequent problems: the pushing of food out of the mouth by the tongue, and retaining the food in the oral cavity. The child was always placed in a stabilized position for the training of eating and drinking (sitting, increased lying position). Subsequently, the training of removing the food from the spoon was carried out by means of putting pressure onto the tongue, closing the mouth with the control of the mandible position, and the stimulation of the tongue by the movement of the fingers of the therapist from the chin to the neck, thus ensuring swallowing. In older clients, where the problem of removing the food from the spoon or fork prevented the ability of independent eating, we tried to improve the quality of food intake by putting pressure on the tongue with the cutlery. If the child did not process the food correctly, we used a passive movement of the lower jaw with the ongoing bend forward and its return to the central position (Gisel et al. 2000, Castillo-Morales 2006).

RESULTS

The total goal was set individually for each client by securing the cooperation of the following three specialities, the goal was focused on the improvement of fine motorics and orofacial motorics. Individual therapies were connected in the following order. At first there was physiotherapy with a focus on the stabilization of the truncal muscles and the improvement of breathing stereotype that leads to better posture. That was followed by logopedics oriented on motorics of the orofacial area. Lastly there was occupational therapy, which connected elements of physiotherapy and logopedics during the activity of daily life training with a focus on basal activity of ADL.

There were 5 children with diparesis form. We were training with these children according to the Proprioceptive neuromuscular facilitation (PNF) concept – 2D of the flexion type for lower extremities with variant of the extension in the knee. In the entrance examination of four children, a small symptomatology in the hands was found. Therefore we were focused on the activation of the hand vault, basic manipulative skills, targeting and the coordination of hand movement. The speech therapy intervention was advised for two children. This was focused on the better quality of speech, training of the articulation and mimicing.

One child took part in the treatment according to the PNF concept. The child trained the fine motoric, articulation and mimicing. The therapeutic plan for the next three children consisted of elements of the PNF concept and the training of fine motoric skills. For the last child, the program focused on the training of articulation and mimicing, and the PNF concept was also used.

Eight children had the hemiparetic form of cerebral palsy. The occupational therapist and physiotherapist focused on the centralisation and the stabilisation of the pectoral girdle and the rest on the upper extremity with the course towards the fingertips. In some cases, the occupational therapist focused on the activation of the hand vault, basic manipulative skills, and the targeting and coordination of hand movement. Concepts such as PNF and Spiral dynamics were used by both the occupational therapist and the

physical therapist. The speech intervention was focused on the better quality of speech with the training of articulation, mimicing and the relief or reduction of hypersalivation. The occupational therapist also took part in the treatment for the affection of hypersalivation. The therapeutic plan for these eight children was focused on the stabilisation and the centralisation of the pectoral girdle. With five children, we were focused on the training of fine motor skills. The focus on better quality of the speech with the training of articulation was applied in the treatment for six children. With three of them the therapy for the affection of hypersalivation was used.

The therapeutic plan for three children contained the centralisation and the stabilisation of the pectoral girdle, training the fine motor skills, and better quality of speech with the training of articulation and mimicing. For the next three children the plan consisted of the centralisation and stabilisation of the pectoral girdle and the rest of the hand with the course towards fingertips, training a better quality of speech, articulation and mimicing and the relief or the reduction of hypersalivation. The therapeutic plan for two children was focused on the stabilisation and the activation of the pectoral girdle, activation of the hand valid, the basic manipulative skills, targeting and the coordination of hand movement.

There were seven children with the quadruplegic form of cerebral palsy. The techniques used in the speech therapy were: getting rid of the pharyngeal reflex, the supply of the transition from the liquid diet to the solid one, the improvement of mastication and translation of the meal in the oral cavity, swallowing and the reduction of aspiration, and relief of the hypersalivation. In the treatment of the children with the quadruplegic form of cerebral palsy, we were focused on the stabilisation and centralisation of the pectoral girdle and the rest of the hand. Part of the treatment was also the activation of the hand valid, basic manipulative skills, the targeting and movement coordination of hands. The speech therapy intervention for four children was focused on the elimination of the pharyngeal reflex, the supply for the transition from the liquid diet to a solid one, the improvement of mastication and translation of the meal in the oral cavity, swallowing and

the reduction of the possibility of the aspiraton and the ease of the hypersalivation. For one child the speech therapy was not necessary and we tried to ease the hypersalivation during the treatment of two children.

All these children worked with the centralisation and stabilisation of the pectoral girdle with the proceded participation of the hand with the course towards fingertips. Three children trained the activation of the hand arch, basic manipulative skills, and the targeting and coordination of movements in the hand.

The therapeutic plan for three children consisted of the treatment for getting rid of the laryngeal reflex, supply for the transition from the liquid diet to the solid one, the improvement of mastication and translation of the meal in the oral cavity, swallowing, and the reduction of the possibility of aspiraton and easing the hypersalivation. Furthermore, the plan was focused on the centralisation and the stabilization of the pectoral girdle and the rest of the upper extremity with the course towards fingertips. We were dealing with the stabilisation and centralisation of one child's pectoral girdle, and also with the activation of his hand valid, the basics of manipulative skills, targeting and the coordination of hand movement. During the treatment for two children we were focused on the centralisation and the stabilization of the pectoral girdle with the course towards fingertips. We were training centralisation and the stabilization of the pectoral girdle. The speech therapy intervention was focused on the improvement of hypersalivation.

DISCUSSION

Cerebral palsy is one of the most common disorders of movement apparatus in children. The key for the diagnostics is key to the child's level of motorics development, but cerebral palsy also brings a lot of other neurological deficits. Specialist from paediatrics rehabilitation are facing different issues connected to the child, but also the family (physical, psychological, communicative and social), and that is the reason for treatment in the multidisciplinary approach (Becher 2002, Kraus et al. 2005, Jankovský 2007, Pfeiffer et al. 2014).

In his article, Günel (2009) summarizes the current rehabilitation procedures and especially the physio-therapeutic approaches for children with cerebral palsy. He looks at physiotherapy as one of the areas of rehabilitation treatment, whose goal is to normalize the sensory and motor functions, provide physiological posture and independence in functional activities, regulate muscle tone, improve sight and hearing reactions, support the physiological development of motor function management, improve walking and perseverance, increase the quality of existing movements, support orthopaedic and surgical procedures, and prepare the child for puberty and adulthood. It puts emphasis on a multidisciplinary team in paediatric rehabilitation. The setting of realistic goals, the assessment of priorities, informing family and the supporting participation of family in physio-therapeutic program increase the success of physiotherapy. Also Ketelaar et al. (2001) in the study: "The effects of a functional therapy program on motor abilities of children with cerebral palsy," point to the importance of family members during a child's diagnostics in activities of daily living. Through a standardized interview with one of the parents, with the use of a PEDI test, the child's skills and efficiency in everyday life were evaluated. In conclusion, it puts emphasis on parents' involvement in the rehabilitation program. They know the goals of therapy, and they know how they can participate in helping their child to become as independent as possible in skills related to a specific goal, with the focus on active problem solving by the child in natural situations.

According to Jankovský (2007), the treatment should not be focused only on the child with the disability, but also on the other members of the family. In this team they play an irreplaceable role in the treatment for children with disabilities. In the field of rehabilitation with occupational therapy, physiotherapy and speech-language therapy, it was confirmed, that the collaboration of at least one of the parents is important for the successful rehabilitation of the child. Parents considered it as a positive thing that they were a part of the team and were instructed in how to help the child in the therapies, so the habilitation and the aims of the therapy were related.

In their 2005 study, the evaluation of primal treatment for children with special needs was pursued by Farmer et al. They were focused on the smaller country regions. The results of this research show that comprehensive care has a positive influence on children with chronic diseases and also brings a positive influence for the rest of the family.

Becher (2002) in his article: "Paediatric Rehabilitation in Children with Cerebral Palsy: General Management, Classification of Motor Disorders," indicates the use of an international classification of functional skills, which provides a framework for managing teams in the treatment of children with cerebral palsy. Based on this concept, the Children's Rehabilitation Activities Profile (an instrument for team conferences) is described. This instrument can be used for a systematic evaluation of the needs of the children and parents, the total development and evaluation of the goals of rehabilitation on the level of activities.

Siebes et al. (2009) dealt with the transparency and adjustments for habilitation treatment (physiotherapy, occupational therapy, speech language therapy) for children with cerebral palsy with the usage of ICF. For every child, the result was a form where the identified problems, the aims of the treatment and therapeutic activities were described. We did not use ICF method in our project, but we find its usage as a significant method for the coordination of the habilitation.

Thylefors et al. (2000) evaluate team coordination in the Swedish neuropaediatric habilitation. The study was focused on the professional cooperation and the interaction during formal meetings. The aim of this study was to describe a present cooperation in the team in the Swedish habilitation thanks to the analysis of the perception of seven professional groups. Lack of time was found to be one of the obstacles in cooperation in the team. In spite of that, it is important to find time for the participation between particular professions. We verified that a mutual relationship between the individual therapists, clients and parents increased the effectiveness of the results of the therapy.

Even though the parent became a fully equal part of the team, we have to realize that it is his/her child and he/she is emotionally

the person closest to the child from the whole team of specialists. Also related to this is the issue of a caretaker's quality of life. Only in the last few decades have the change in the quality of life of people taking care of a child with a disability been discussed (Vařurová 2006). Families need assistance from professionals who listen to their perspective, respond to their child's and family's needs and problem solve with them. Families need information about new interventions, research, services and funding that may be appropriate for their family member (Bourke-Taylor 2009). The key person who takes care of the child, raise him/her and spends the most time with him is in most cases the mother. That is the reason why we assume that her quality of life will be affected the most (Vágnerová et al. 2009). Even in our study the caring person was the mother in every case.

CONCLUSION

Coordination of care is essential if a patient is to benefit from multiple health care services provided by various health care professionals (Zwarenstein et al. 2009). A multidisciplinary team is composed of individuals representing professional disciplines that serve the client. In this team, each professional is responsible for identifying and carrying out one's own discipline-related evaluation and intervention (Jankovský 2007, Jessup et al. 2007). The interdisciplinary team is distinct from a multidisciplinary team. Although similarly composed of members using and representing the skills and knowledge of their respective disciplines, the team members identify goals and plan intervention collaboratively. They discuss with each other how their intervention plans will be implemented (Jankovský 2007, Jessup et al. 2007, Cartmill et al. 2011). Our

research was focused on the participation of occupational therapy, physiotherapy and speech therapy in therapy for children with cerebral palsy. During mutual cooperation the importance of regular consultations and sharing newly obtained information from ongoing intervention in a way so the goal of therapy would be beneficial for the client and family member, and the quality of life would be increased for the child and his family was confirmed.

The therapy in children with cerebral palsy is a long-term and life-long process. The results of our project confirmed the necessity of a close cooperation between the physiotherapist, the occupational therapist and the speech therapist with a possible continuity and unification of the therapy. The results of teamwork, including individual specialists, showed not only an improvement in clients' conditions and their self-sufficiency; this participation was also positively accepted by the parents of individual clients. The main effort of our operation was the motivation of both individual clients and their parents, especially in small children.

The cooperation was very positively evaluated by the therapists themselves, who have seen the main benefit in the interconnection of individual concepts, leading to the achievement of individual therapeutic goals. The common aim for the therapists, clients and their parents was an improvement in the quality of life. With respect to the age of the clients, individual therapies were applied in the form of games, which helped in the automatization of acquired skills.

CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

REFERENCES

1. Becher JG (2002). Pediatric Rehabilitation in Children with Cerebral Palsy: General Management, Classification of Motor Disorders. *Journal of Prosthetics & Orthotics*. 44/4: 143–149.
2. Bourke-Taylor H (2009). Understanding the family's perspective: parenting a child with cerebral palsy. In: Dodd KJ, Imms CH, Taylor NF (eds). *Physiotherapy and Occupational Therapy for people with Cerebral Palsy*. London: Mac Keith Press, pp. 31–39.
3. Cartmill C et al. (2011). Interdisciplinary Team. In: Boyt Schell B, Gillen G, Scaffa ME (eds). *Willard & Spackman's Occupational Therapy*. 12th ed. Philadelphia: Lippincott Williams & Wilkins, p. 458.
4. Castillo-Morales R (2006). Orofaciální regulační terapie: metoda reflexní terapie pro oblast úst a obličeje [Orofacial regulatory therapy: reflex therapy methods for the face and mouth area]. Praha: Portál, 160 p. (Czech).
5. Farmer JE, Clark MJ, Sherman A, Marien WE, Selva TJ (2005). Comprehensive Primary Care for Children with Special Needs in Rural Areas. *Pediatrics*. 116/3. [online] [cit. 2014-03-15]. Available from: <http://pediatrics.aappublications.org/content/116/3/649>
6. Gisel EG, Schwartz S, Petryk A, Clarke D, Haberfellner H (2000). "Whole Body" Mobility After One Year of Intraoral Appliance Therapy in Children with Cerebral Palsy and Moderate Eating Impairment. *Dysphagia*. 15/4: 226–235.
7. Gross J, Fetto J, Rosen E (2005). Vyšetření pohybového aparátu [Examination of the musculoskeletal system]. Praha: Triton, 599 p. (Czech).
8. Günel K (2009). Rehabilitation of Children with Cerebral Palsy from a Physiotherapist's Perspective. *Acta Orthopædica et Traumatologica Turcica*. 43/2: 173–180.
9. Holubářová J, Pavlů D (2013). Proprioceptivní neuromuskulární facilitace [Proprioceptive neuromuscular facilitation]. Praha: Karolinum, 116 p. (Czech).
10. Jankovský J (2007). Možnosti a podmínky mezioborové spolupráce v rámci multidisciplinárního týmu [Possibilities and conditions of interdisciplinary cooperation within a multidisciplinary team]. Sociální práce: Časopis pro teorii, praxi a vzdělávání v sociální práci. [online] [cit. 2014-06-03]. Available from: <http://www.socialniprace.cz/index.php?sekce=2&ukol=detail&id=31&clanekid=563> (Czech).
11. Jessup et al. (2007). Multidisciplinary Teams. In: Boyt Schell B, Gillen G, Scaffa ME (eds). *Willard & Spackman's Occupational Therapy*. 12th ed. Philadelphia: Lippincott Williams & Wilkins, pp. 457–458.
12. Ketelaar M, Vermeer A, Hart H, van Petegem-van Beek E, Helders PJM (2001). Effects of a functional therapy program on motor abilities of children with cerebral palsy. *Physical Therapy*. 81/9: 1534–1545.
13. Kraus J a kol. (2005). Dětská mozková obrna [Cerebral palsy in children]. Praha: Grada, 344 p. (Czech).
14. Krivošíková M (2011). Úvod do ergoterapie [Introduction to occupational therapy]. Praha: Grada, 364 p. (Czech).
15. Larsen CH, Larsen C, Hartelt O (2010). Držení těla: analýza a způsoby zlepšení [Body posture: analysis and methods of improvement]. Olomouc: Poznání, 143 p. (Czech).
16. Lauper R (2007). Dítě od hlavy až k patě v pohybu: pohybové hry a práce s tělem pro předškoláky a školáky [The child from head to toe in motion: movement games and body work for pre-school and school children]. Olomouc: Poznání, 368 p. (Czech).
17. Pfeiffer J a kol. (2014). Koordinovaná rehabilitace [Coordinated rehabilitation]. České Budějovice: ZSF JU v Českých Budějovicích, 176 p. (Czech).
18. Siebes RC, Ketelaar M, Gorter JW, Wijnroks L, De Blécourt AC, Reinder-Messelink HA (2009). Transparency and Tuning of Rehabilitation care for children with cerebral palsy: A multiple case study in five children with complex needs. *Developmental Neurorehabilitation*. 10/3: 193–204.
19. Thylefors I, Price E, Persson O, von Wendt L (2000). Teamwork in Swedish neuropaediatric habilitation. *Child: Care, Health and Development*. 26/6: 515–532.
20. Vaňurová H (2006). Sociální aspekty kvality života v onkologii [Social aspects of quality of life in oncology]. Brno: MSD, spol. s r. o. 148 p. (Czech).
21. Vágnerová M, Strnadová I, Krejčová L (2009). Náročné mateřství: být matkou postiženého dítěte [Challenging motherhood: to be a mother of a disabled child]. Praha: Karolinum, 333 p. (Czech).

22. Vyskotová J, Macháčková K (2013). Jemná motorika: Vývoj, motorická kontrola, hodnocení, testování [Fine motor skills: development, motor control, evaluation, testing]. Praha: Grada, 176 p. (Czech).
23. Zwarenstein et al. (2009). Multidisciplinary Teams. In: Boyt Schell B, Gillen G, Scaffa ME (eds). Willard & Spackman's Occupational Therapy. 12th ed. Philadelphia: Lippincott Williams & Wilkins, pp. 457–458.

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