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INDIVIDUAL –DIFFERENTIATED APPROACH- IN THE MOTOR RECOVERY SYSTEM OF PRESCHOOL CHILDREN WITH INFANTILE CEREBRAL PALSY

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Abstract

In this study we refer to an individual-differentiated approach in the motor rehabilitation system of preschoolers with Infantile Cerebral Palsy (ICP) which is one of the main conditions for effective application of the recovery system. This consists in the complex examination of motor disorders, their differentiation and the individualization of the recovery process. In this sense, we propose a rehabilitation system through the means of physical education of preschoolers with CP depending on the severity of the motor disorders. To select the sets of physical exercises intended for individual or group recovery programs, it is not enough to classify motor disorders according to the maximum or final manifestation level. There is a need to differentiate and analyze the causes that led to the reduction of the final motor result, for this examining the temporal, spatial and energetic parameters.

Keywords: infantile cerebral palsy, motor disorders, physical exercises, recovery, program.

1. Introduction

The formation of motor skills is complex, what entails the cumulative action of the teacher who transmits the knowledge, directs and organizes the practice of the movement and that of the child who perceives, analyzes and performs the skill. Forming motor skills is their cumulative result and involves the participation of the nervous, sensory, muscular, bone and ligament systems and internal organs. These motor skills are learned during ontogenesis and are the consequence of the formation of representations on the cerebral cortex, in the motor area, regarding the way of movement (Rață, 2008). Each child has an individual pace of development of motor skills and plasticity. A child whose rate of development is lower than the typical level may benefit from early intervention programs. These programs contribute to the early detection of developmental delays in order to be able to correct them optimally and also to prevent their worsening. The mission of motor rehabilitation system is to help the child in realizing his potential as best as possible (Puiu, Calac, 2004). One of the most important conditions for effective system implementation of recovery resides in the individual-differentiated approach to the objective of planning the motor regime for the specific child or for the specific group of children with cerebral palsy. Compliance with this principle involves the following steps:

1. Complex examination of motor disorders, including the morphofunctional status.
2. Differentiation of motor disorders - according to character, level of manifestation, degree of severity, etc.

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3. Individualization of the recovery system (taking into account the particularities of motor disorders and the proposed result as a goal).

In this context, it is necessary to develop a new classification of motor disorders according to the degree of severity. By the notion of motor disorders (at the higher level of their examination) we mean the reduction by more than 10% (relative to the age norm) of the finality of any motor act performed at the usual, playful, school, work level (Barna, Agapie, 2019). At this level of examination of the motor disorders of preschoolers with cerebral palsy, rational criteria for classifying their degree of severity can be:

1. The extent to which conventional motor levels are formed, as follows:
 - Level I – the basic stato-locomotor functions, conditioned by ontogenetic development (holding the head, grasping objects, sitting, crawling, vertical position, walking, etc.);
 - Level II – the set of main movements (motor base): crawling, climbing, walking, running, throwing and catching, jumping, swinging in place and in motion);
 - Level III – motor actions oriented towards the proposed goal (socially conditioned) – self-service, fun, school, work.
2. The volume and character of the dependence of children with cerebral palsy on the help of others.
3. The purpose (efficiency) of motor actions.

The criteria based on this classification allow us, first of all, to establish the relationship between the degree of dysontogenesis of motor functions and the degree of severity of the condition. Thus, the presence of level I motor disturbances (for example, the child does not sit, does not walk), which characterizes the extent of the formation of early involuntary movements, speaks of an advanced (severe) degree of motor disorders. At the same time, the detection of insignificant disturbances only at level III of motricity allows us to conclude that the motor disturbances are mild or of medium severity.

Of major importance in the classification of motor disorders is the aspect related to the dependence of children with cerebral palsy on the help of adults around them (Mic, Cârçu, 2016). This aspect is of defining importance in the following situations:

- a) examination of children by the medico-pedagogical committee in order to enroll in the specialized preschool institution (kindergarten, sanatorium with a psychoneurological profile, placement centres for people with disabilities, etc.);
- b) planning the completion of the groups for children with cerebral palsy and the teaching and non-teaching staff intended for them;
- c) selection of the strategy and methodology of training/education of the specific group of children.

Most of the deficiencies depend on the conformation and functions of the growing organism, their causes existing either as predispositions or as peculiarities which might favor these deficiencies. Carefully performed and regularly repeated clinical examinations, as well as observations of the child's behavior, can discover predisposing or contributing causes in time, catching deficiencies in the early phase (Moțet, 2011).

Dominant orientation of recovery system is determined based on the severity of the motor disorders of the children's quota. Thus, in the case of children with severe motor disorders, the recovery system must be oriented to a greater extent towards expanding the range of motor manifestations to the minimum necessary. And in the case of children with medium and, above all, mild forms of motor disorders, the orientation towards increasing the final result of motor actions must prevail.

However, for the full implementation of the principle regarding the individualization of the recuperative activity with this contingent of children, it is also necessary to determine the methodical particularities of applying the types of physical exercises according to the topography of the locomotor apparatus. It is only known that, in the case of children with hemiparetic form of cerebral palsy, with spastic diplegia, with hemiparesis on the right or left, the motor actions with the involvement of objects are formed in different ways, others being the orientation and the

consecutiveness of the procedures applied. In addition, the topography of the disturbances at the level of the locomotor apparatus must be related to the necessary degree of involvement of the concrete biolinks of the child's body in concrete motor situations. For example, learning to hop and skip will be much more difficult for children with moderate spastic diplegia than for those with mild arm monoparesis.

2. Material and method

The degree of social adaptation of children with cerebral palsy is determined, to a large extent, by the final results of motor actions, frequently performed in daily activity. On the one hand, the finality of the concrete movement reflects the depth of the motor disorders, and on the other hand, it allows recovery activities to be carried out in order to overcome the detected motor disorders.

When classifying motor disturbances according to the degree of severity, it is necessary, as a matter of priority, to determine the motor level at which these disturbances occur and, starting from this aspect, the indicative diagnosis will be carried out:

- a) conditions of level III correspond to the mild degree of severity;
- b) conditions of levels III and II correspond to the average degree of severity;
- c) conditions assigned simultaneously to levels III, II and I correspond to serious motor disorders. (Tab. 1)

Table. 1 Prior classification of the motor disorder severity in children with cerebral palsy

Severity of motor disorders	Diagnostic parameters		
	Manifestation of disturbances in levels of motricity	The child's dependence on the help of others	The final result of motor actions
Easy level	Disturbances occur only at level III of motricity	From a motor point of view, the child does not depend on the help of the educator	The final result of motor actions is 67-90% of the norm
Medium level	Disturbances occur at levels III and II of motricity	The child depends partly on the help of the educator	The final result of motor actions is 34-66% of the norm
Sever level	There are disturbances at all three (I, II, III) levels of motricity	The child is practically totally dependent on the help of the educator	The final result of motor actions is below 34% of the norm (until the inability to perform the movement)

The next stage of building the rehabilitation system through the means of physical education of preschoolers with cerebral palsy was the elaboration of the basic principles of the individualization of the process of recovery of motor functions in children from the given contingent.

Here are some of those principles:

1. The directed nature of the recovery process.
2. The dynamic character (intensity) of the recovery of deregulated motor functions.
3. Content of complex recovery programs.

4. The methodical peculiarities of applying the recovery exercises.

The dynamic character of the recovery of motor functions in preschoolers with cerebral palsy, on the one hand, is determined by the proposed motor result that must be achieved by the child or the specific group of children with cerebral palsy. In the practice of motor function recovery for children's contingent, there are three essential options for planning the expected end result, which ultimately determine the dynamics of the recuperative process.

The typical option – is the most common and involves the achievement by children with cerebral palsy of motor results which, although they yield to the results recorded by their peers without impairments, would allow them to successfully adapt to the conditions of daily life, school and, in perspective, to the professional one.

The selective option- implies that children with cerebral palsy achieve results identical to those of their peers without deficiencies in some types, parameters or motor functions. For example: obtaining by children with hemiparetic form of cerebral palsy who act with the less affected hand some normative indicators (in manual dynamometry, manipulative capabilities of the hand, speed of movements, etc.) identical to those of children without impairments.

The specific option – assumes that, for a series of types of movements and motor qualities, it is planned to achieve a level that exceeds the normative one assigned to the respective age group of children without impairments. This variant benefits from a physiological foundation deeply motivated by the existing scientific information regarding the presence in the child's body of the mechanisms to compensate for the disturbed functions by substituting them with the preserved functions (due to the intensification of their activity). It is applicable, for example, to children who move only with the help of crutches, canes, walkers, etc. In these children, due to permanent training, the strength of the muscles of the upper limbs, as a rule, exceeds the normative age index of children without deficiencies.

In practice, the planning variants of the recuperative system, which we referred to above, are used "in their pure state" very rarely, most of the time the strategy of recovery of motor functions presupposes the simultaneous application, in a complex, of two or three variants. By increasing movement performance, the child's response to the environment becomes more adapted, facilitating accessible contact with the environment (Popovici, Racu, 2012).

The persistence of motor disorders in preschoolers with cerebral palsy is determined by several essential factors, as follows:

1. The time that has passed since the installation of the disturbance of the concrete type of function or movement in the process of phylo- and ontogenesis.
2. The level of localization of the primary defect that is the basis of the disorders of concrete motor skills: central; peripheral (trophic-related); mixed.

Motor disorders, which are the result of damage to certain central regulatory mechanisms, located in the cerebral cortex, can often be partially remedied, but the process of rehabilitating the respective functions is staggered over long periods of time. At the same time, for example, rigid mobility in the shoulder joint, which is the consequence of insufficient training of the arm, can be overcome in a shorter time frame by applying a series of specially developed recovery exercises.

The age of the child has a considerable influence on the effectiveness of the activity of restoring the motor functions of preschoolers with cerebral palsy. When planning the system of recovery with the respective contingent of children, the following moments will be taken into account:

Age of the child - in the opinion of the majority of specialists and in accordance with the results of our own research, we can conclude that, when other conditions are equal, the young age of the child increases the efficiency of the recovery process. This statement is determined by the specifics of cerebral palsy and has a deep physiological foundation: towards high preschool age, and then towards school age, the faulty positioning, which were initially not persistent, gradually become fixed, forming contracts and stable deformations. At the same time, degeneration of tissues and muscle fibers takes place, which makes motor rehabilitation of the child extremely difficult and long.

The start of recuperative activities – the efficiency of the recovery activities will be the higher, the earlier they start. This is why, having the same age, some children record remarkable successes, and others - insignificant, and this is because the first started recovery activities as soon as they were diagnosed with infantile cerebral palsy, and the others, for various reasons, have missed early period, starting recovery later.

Taking into account the level of neuromotor development, the rehabilitation system is followed the development of neuromotor skills, the prevention of contracts and the appearance of vicious habits, the re-education of normal posture, the development of motor skills and the re-education of balance (Constantinescu, 2019).

3. Conclusions

In the given context, for the recovery of the motor functions of children with cerebral palsy, the principle of spatial reflection of the goal is of particular importance, because the systematic application of recovery exercises, suitable from the point of view of spatial parameters, will allow the body to achieve adequate morphofunctional transformations. At the same time, the body will condition the respective intensification of the energy flow, which will determine the simultaneous improvement of the peripheral circulation. The above will contribute to perfecting the process of organizing the functional motor systems, which, being activated, perform the intended exercise. However, this is one of the main factors of increasing the final results of the motor activity.

4. References

- Barna, I., Agapie, E. (2019). Language education through motor and psychomotor activities for autistic children. In: *Journal of Romanian literary studie*, 18, 188-192
- Constantinescu, M.. (2019). Kinetoterapia în afecțiuni pediatrice. 34.
- Mic, M., Cârțu A. (2016). *Intervenția timpurie la copilul cu dizabilități neuro-psiho-motorii*. Ghid practic, 17.
- Motet, D. (2011). *Kinetoterapia în beneficiul copilului*. Editura Semne. 31-32.
- Puiu, I., Calac, M. (2004). *Copilul cu dizabilități. Aspecte de dezvoltare și comportament*. Ghid practice, 47-55.
- Popovici, D. V., Racu, S. (2012). *Recuperarea copiilor cu polihandicap*. 232.
- Rață, G. (2008). *Didactica Educației fizice și Sportului*, Editura PIM, 99-100