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LUDOTHERAPY FOR RECOVERING CHILDREN'S NEUROMOTOR DYSFUNCTIONS

Ioana LEPĂDATU*, Rozalia DREGHICIU**

*Spiru Haret University, ioanalepadatu@yahoo.com, str. Turnului 7, Braşov

**Centrul Ansberg dreghiciurozalia@yahoo.com, Alba Iulia

Abstract: *The purpose of this research was to demonstrate that the introduction of game, playing, in general, as part of the kinesthetic therapeutic treatment under the form of ludotherapy can enhance the recovery of the neuromotor dysfunctions of the research subjects. The complex, medico-psycho-kinesthetic evaluation was the starting point for the success of the therapeutic behavior. Ludotherapy increases the stability and the balance in sitting, quadrupeds and on knees and can amplify the effects of rehabilitation in subjects with neuromotor disability. The research took into consideration the children's medical records, the social investigation, focusing on their living conditions and family relationships, the conclusions and recommendations of the multidisciplinary team of specialists, the therapeutic intervention plan for each area, the anamnestic interview, the systematic, active, intentional, structured observation, the Portage Guide, the psychomotor assessment scale, testing the playful level and the functional motor level. The data were useful in order to know the child on all levels and to determine a ludotherapeutic conduct appropriate for each child depending on his mental structure, the current deficit and his level of cognitive development. The therapy aimed at developing and educating the motor skills of the children with neuromotor dysfunctions in a pleasant way, through games, by engaging the entire range of motor actions. The experiment was conducted over a period of three months, a total of four subjects, with ages between 3 and 4, with different clinical diagnoses. The therapy through games was conducted either individually, when we sought to capture attention and voluntary control for the finesse activities, the eye-hand coordination activities, or collectively for training balance and walk in different positions. The obtained results were possible due to the introduction of ludotherapy during the kinesthetic therapeutic treatment, making a positive impact on children, recording good progress meeting by meeting.*

Key words: *ludotherapy, kinesthetic therapy, motor development, progress*

The formative valences of the game focus the attention of any observer, especially when it comes to children's game. In this case, the game makes the difference, meaning life, which can flourish or degenerate, depending on how much spiritual nourishment it is able to give. A child's image may appear charming or poor, depending on the extent to which s/he benefited, at the right time, by his/her natural right to play or the extent to which s/he was deprived of this right. What games can give the child at the right time remains a valuable acquisition throughout life. What was not provided in time can never be fully recovered, no matter how many solutions one would try. The game, even in its primary form, ennoble the child's whole psychic life, humanizes him/her and it helps him/her to be harmoniously developed from a psychophysical point of view, being used as an effective therapy for various mental disorders. The term "ludotherapy", coming from two words: "ludus" (lat. game) and "therapia" (gr. care), will be a means associated with kinesthetic therapeutic techniques to reduce deficiencies and even normalize the psychomotor and mental functions of the children with psychological and neuromotor disabilities. The game is a first and fundamental source of personality development, and the attention given to it should be great. The first references to the therapeutic role of the game belonged to psychotherapy. "Based on the functions of the mental and instinctual exercise, of the integration of the reality, of the mental assimilation of events, of socializing, of downloading, the game is used as a therapy in various psychiatric disorders. Without neglecting the sanogenetic virtues of the adult's game, ludotherapy refers primarily to a psychotherapeutic technique for children" (C. Gorgos, 1988, p. 1079). The need for specialized, medical, educational, social, instructive assistance is constantly in communication and interrelations with new areas, such as ludotherapy, occupational therapy, kinesthetic therapy, speech therapy, psychotherapy, working not only to create a closed community for the children with

disabilities, but to create a normal social life, in which human dignity should above all be respected. The game is a primary source of personality development; therefore, the education of the future man of action occurs, above all, while playing. In various forms and types of games, the share and the way of combination of the functions and the mental capabilities vary greatly, the ludic activities depending on the degree of development of the specific mental processes - perception, memory, imagination, thinking, motivation - and on the degree of the global personality features. Thus, the relationship between the ludic activity and the mental organization of the person takes the form of a closed circuit with bi-univocal influence, where conditioning is mutual.

Playing is the main activity, specific to childhood, and for children with disabilities it is often the only way to relate and communicate. Based on biological, psychological, pedagogical, ethnological, anthropological, etc. research, the play therapy was established as a scientific discipline, its research purpose being the "game", the "play" as a complex activity, fundamental in training and developing the human personality, especially in the early stages of ontogenesis. The cathartic function of play was presented and underlined by doctors and psychopedagogues who take care of children with special needs and of children with intellectual or motor disabilities. Hence, therapists studied the play further and found extremely valuable therapeutic properties in it, opening, thus, the way to a new discipline, ludotherapy or the Anglo-Saxon "Play Therapy". Currents, schools and institutions of this discipline developed worldwide, aiming at helping children with emotional, instructional, behavioral or mental health problems, dealing with the training of the parents and with the professional qualification of the specialist teachers, counselors, volunteers, psychotherapists, psychologists, therapists. Ludotherapy centered on child develops further, helping children with emotional, psychosocial and behavioral problems. Experts in child psychology believe that, by the beginning of school, playing is a form of



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activity that supports mostly the mental development by involving the psychomotor, sensory, intellectual and emotional sides – at a very specific tension - presenting for the mental development and growth the same importance as the training activities of the school years.

The effects of the ludic activities may be various, being different and special when they are organized for children with some motor dysfunctions, encouraging them to overcome their inhibitions and improving their general behavior. The psychotherapeutic aspects within the “action of complex integrated rehabilitation therapy”, the operationalization of the actions are guided by the system of objectives offered by the literature.

In the model of the action of the complex rehabilitation therapy integrated through game, C. Păunescu classifies the types of psychotherapy through game, setting out five such therapies: behavioral therapy, psycho-motor therapy, cognitive therapy, development therapy and group therapy. For the present research, the following are important: the motor debility therapy, the psycho-motor instability therapy and the therapy of motor disorders, recommending sets of games for each of these situations.

The research was conducted on a number of four children with different clinical diagnoses within the neuromotor disability. The subjects were from the “Arnsberg” Center from Alba Iulia. The purpose of this research was to demonstrate that the introduction of play into the kinesthetic therapeutic treatment under the form of ludotherapy can enhance the recovery of the neuromotor dysfunctions in the subjects of the research.

The complex medico-psycho-kinesthetic evaluation was the starting point

for the success of the therapeutic behavior. The selection of some samples and tests easy to apply, specific to disability, gives us a true picture of the existing mental and functional deficit, facilitating the selection of the means of the therapeutic intervention. The games were structured and implemented respecting the individual characteristics of each child. The affective-emotional climate conducive to carrying out the therapy is the most important element for success, highlighting the plus the game brings to the traditional therapy.

Physical deficiencies, defined as deviations from normality in the physical form and functions of the body, disturb the normal growth and the harmonious development of the body, change the physical appearance, reduce the skills and the power to adapt to physical effort and reduce the individual's ability to work productively. They are characterized by morphological changes, more or less pronounced, produced in the form and the structure of the body and manifested through a slowdown in growth or an excessive growth, a development disorder or disproportionate development, through deviations, deformations or other structural defects, followed or preceded by functional disorders. Physical deficiencies as body invalidities weaken the strength and mobility of the body through external or internal pathological changes, localized either at the whole body or at the level of its segments. The deviations from normality produced by morpho-functional disorders lead to imbalances and the installation of disharmonious development leading to frustration and anxiety, inner conflicts and tensions, with difficulties in relationships with the others and of integration in the social and professional life.

Psycho-motor function, as a complex function, integrates and subsumes mental and

motor manifestations that determine the regulation of the individual behavior, including the participation of various processes and psychic functions that ensure both the reception of information and the proper execution of the response. With a great significance in regulating voluntary actions, the psycho-motor has the following components: body schema, laterality, basic motor conduct, organization, orientation and spatial-temporal structure, perception and representation of movement.

Body schema, essential basic element of training the child's personality, is the child's representation of his own body, being a simplified model, not so much of the form, but rather of the functions and relationships of different parts of the body, forming a stable reference for the development of posture and mobility.

Laterality refers to acknowledging the two parts of the body, left and right, and expresses the functional inequality of the left or the right side of the body as a consequence of a difference in development and of the distribution of the functions in the cerebral hemispheres. The functional dominance of a part of the body on the other causes laterality (right-handedness or left-footedness or left-handedness, etc.). This lateral predominance should be perceived as a relative functional dominance, as we cannot speak of either 100% right-handed or 100% left-handed.

Space is perceived and constructed at the mental level, as a result of the notifications of positions, directions, distances, movements. The "orientation disturbances" lead to disturbances such as dyslexia, dysgraphia, dyscalculaion, etc. The disorders of the temporal structure can manifest in four distinct symptoms: the child's inability to find the order and sequence of events, the lack of perception of intervals, the absence of a regular rhythm, the inability to organize time. All these symptoms are caused by a trinomial of causes: motor, psychomotor and psychological.

The perception and representation of movement plays a really important role in achieving adequate, accurate perceptual-motor structures. The idea-motor representations are linked forever by a previous personal experience. If the goal of the activity reflected

in the brain meets the idea-motor representations of a similar experience, the action will take place more easily. Due to the conditioned character of the representations and interaction of the first system of signaling with the second, it contributes to the mental learning of those exercises for which there is a previous experience. The representations of the movements are mainly visual, especially when the child thinks of the action to be performed, when s/he memorizes the sequence of events.

The development of psychomotor is favored by several factors, the most important being: nerve maturation, learning and exercise, experience and motor behavior.

The initial evaluation of the children with neuromotor disabilities, developing individual programs of ludotherapeutic interventions and the final evaluation after the implementation of the ludotherapeutic intervention programs were the **objectives of our research**.

The **hypotheses** were based on the data from the literature, on the experience of various kinesthetic therapists and, last, but not least, on our experiences in the field of ludotherapy.

The introduction of playing under the form of ludotherapy in the kinesthetic therapy treatment for increasing stability and balance in the upright position, quadrupeds and on the knees position, can amplify the effects of rehabilitation in subjects with neuromotor disability. The movement and the emotional tonus of the games may have beneficial effects on psychological and behavioral level in subjects with disabilities.

MATERIAL AND METHOD

In order to carry out the experiment, we used the children's medical records, the social investigation, focusing on the living conditions and the family relationships, the conclusions and recommendations of the multidisciplinary team of specialists, the therapeutic intervention plan for each area, the anamnestic interview, the observation, the methods for assessing the neuromotor deficiencies. We discussed with the specialists from the center – the psycho-pedagogue, the



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psychologist, the speech therapist, the social worker, the kinesthetic therapist, the physician –, and with the children's parents in order to learn as much information as possible about the children. The data were useful for knowing the child on all levels and for determining a ludotherapeutic conduct appropriate for each child, depending on his mental structure, the current deficit and his level of cognitive development. The type of observation used in research was the systematic, active, intentional observation, structured on the attitude of the child both in different fixed positions, and while walking, in various activities; the static or dynamic balance, the presence of active voluntary or involuntary motor movements such as synkineses, the children's stability in certain positions, the adoption of some characteristic positions, the present neuromotor development stage, the eye-hand coordination, the laterality, the notion of self and partner's body schema, the spatial and temporal orientation, the presence of skills, the independence or dependence on a particular person, the form of communication, the relations with the specialists and the children, the attitude toward the group. For the functional assessments of the children from the experimental group, we used specific tests, such as the Portage Guide, the psychomotor assessment Scale, tests for the ludic level and the motor functional level. Thus, we found inter-individual features in children with similar ages and diagnoses, features that will be relevant during the therapeutic intervention description.

Using the above mentioned tests, we aimed to evaluate the research subjects objectively and fully, each test having a numerical scale, according to which at different times of the assessment – initial, intermediate and final – we noticed the subjects' favorable

development, their stationary situation or their regress. The evaluation was also necessary to compare the results, and to guide another conduct or to complete the previous one in later stages.

The Portage Guide includes both an inventory of skills that the children between 0 and 6 years must have and therapeutic educational suggestions for their acquisition. The Portage skills inventory is divided into 6 sections, areas of development, namely: infant stimulation, socialization, language, self-nourishment, cognitive and motor. In many cases, the skills can be found simultaneously in several areas. For example, all language skills require cognitive skills and motor behaviors. The self-nourishment skills need some motor skills and social behaviors. Some social skills require language that, in turn, requires cognition. Behaviors are lined sequential on each area from birth to the age of 6. During each year from 0 to 6 years old, there may be variations in the rate of acquisition of such skills.

The Guide served as a designing tool of a learning program rather than a mental age assessment tool, being accessible to any therapist who deals with children's education / rehabilitation. The Guide can be both a tool for assessing the children's motor acquisition, and a model for designing individual programs of recovery. In the case of the psychomotor assessment Scale, the psychomotor components were diagnosed: the identification of own and partner's body schema, Laterality, general dynamic coordination, segmental dynamic coordination, orientation, spatial organization and structure, temporal structuring and organization, posture control, movement control. The test of evaluation of these psychomotor components gives a true level of the psychomotor development, and for

the therapists from the special centers such evidence may be operational objectives included in therapeutic and educational programs, and, at the same time, may suggest specific types of activity in the form of the game, because it includes probes that aim at motor behavior specific to normal children. Testing the motor functional level included both the upper limb functional level, and the legs; each step having five categories different on age levels, and, depending on the score (normal 100% - for the upper and lower limb), the functional deficit is got both for the upper limbs and for the lower ones. To calculate the deficit a total of 30 points was considered normal for the upper limb and 20 points for the lower one. The deficit calculation was made according to the formula: M.I.= functional level x 20/100; M.S.= functional level x 30/100, the difference between the normal values and the pathological ones giving the value of the deficit.

The ludotherapy intervention strategy aimed to pleasantly address the motor development and education of children with neuromotor dysfunction by playing, by engaging the entire register of motor actions.

Adapting the program to the individuality of children was structured according to the psycho-motor development, the cognitive development, the type of communication, taking into account the permanent control of the educational intervention as well as its outcome expressed in specific conducts. The psycho-pedagogical methods used in the ludotherapeutic intervention were communication, focusing on non-verbal communication both for children with language disorders or mental delay and for the others, communication as a psycho-motor interaction encouraging the exchange of messages and motor behavior between subjects, achieving proposed specific objectives, directing and controlling the children's activity / play, positively influencing, waiting for positive reactions in the form of feedback; kinesthesia; the grips – the touches – being seen as basic facilitating elements, without which a movement cannot be stimulated in the case of subjects with central nervous system problems. The

affective-emotional persuasion, the determination of the child to perform a ludic task, appealing to his feelings, emotions, represented a basic strategy of the ludotherapeutic approach. Its purpose was to guide and direct the child's conscious or unconscious motivations in the direction wanted by the therapist, but also to encourage, stimulate and convince the child of his successful acts and motor skills, to support the child "morally". During the therapeutic program, we also used the "demonstration", the "example" the "imitation", the "metaphor", taking into account the individualization of the ludotherapeutic intervention according to the present deficit, the neuromotor development level, the cognitive development level, the affective-emotional state, the needed form of communication.

The experiment was conducted over a period of three months, a total of four subjects, with ages between 3 and 4, with different clinical diagnoses. The subjects were 3 girls of 3 and 4 years old, with spastic paraparesis and moderate and mild mental delay and a girl with left rudimentary hemiparesis but normal intellect, and a 4-year-old boy with rudimentary paraparesis and normal intellect, all being part of the therapeutic program for 3 months. After selecting the sample of children, the fully somato-functional assessment, the functional diagnosis as well as the structure of the intervention strategy we started activity. The play therapy was conducted either individually, when we sought to capture attention and voluntary control for finesse activities and eye-hand coordination, or collectively for balance training and for the various motor positions: quadrupeds, on knees, the orthostatic position, the game taking place while the children were stimulated verbally or tactile. Based on the planned therapy protocols each session began with games for relaxation, both general and muscular. După relaxare, urma fie antrenarea coordonării oculo-manuale, fie stabilitatea în numite poziții. After relaxation, either the eye-hand coordination or the stability in appointed positions would be trained. All the games were selected and adapted to their age, level of



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neuromotor development of the dysfunction and the mood. The game length was consistent with the child's mood: neither too short, nor too long in order not to bore the child. The therapy was achieved individually largely, but collective games were organized in order to compete between partners, taking into account the proposed objectives and the actual motor abilities available to each. If for children with neuromotor deficit, play therapy uses as learning-educational methods: the demonstration, the explanation, the sign communication, for children with neuromotor deficits associated with a mental delay the strategy is different, based more on demonstration, imitation, repetition.

The child's participation in the program of sensory stimulation before the ludotherapy sessions activated and helped the children's full participation, with fun and with speed and efficiency in performing motor acts.

RESULTS AND DISCUSSIONS

The whole ludotherapeutic approach actually wanted to educate from a psycho-motor point of view the children with neuromotor deficit. The main goal was the normalization of those children both on the motor, psycho-motor level and also behavioral, attitudinal, emotional, motivational. Therefore, the therapy focused on those components of psycho-motor that were found deficient during the somato-functional examination. Thus the ludotherapeutic intervention program there were selected games whose functions have helped to correct poor motor acts, the formation of motor skills and basic skills, the formation of appropriate conduct and behavior, some positive attitudes, the rehabilitation of breath, the education of their

body schema and their partners, of laterality. In all four children the stability and equilibrium in certain positions were re-educated: sitting, quadrupeds, on knees and orthostatic position. The eye-hand coordination training was required for acquiring autonomy in their current daily activities, as well as for some manual skills.

Following the research carried out and processing the results, we draw a number of issues which highlight the effectiveness of the methodology we used for the recovery of children with neuromotor disabilities, intervening with ludic activities in the complex process of recovery. The results were possible because the ludotherapy introduced in the kinesthetic therapeutic treatment had a positive impact on children. Noticing the effectiveness of ludotherapy, we continued the complex recovery program, good progress being recorded during and after each meeting. The hypotheses from which we started are viable and ludotherapy can be successfully applied in kinesthetic therapy.

The results obtained during the recovery treatment were influenced by the degree and type of disability, the precocity of the diagnosis and the beginning of the recovery program, the consistency of participation during the treatment sessions, the conditions offered by the material base, and, last but not least, the permanent collaboration with the entire multidisciplinary team, who contributed to this experiment. Also, the role of parents in the continuation of the ludotherapeutic program at home was very important because each and every toy can be used for a particular purpose, parents being able to improvise games to encourage movement and develop the other skills. The numeric results confirmed the hypotheses and allow the assumption that ludotherapy can

help us establish some conclusive elements, with possibilities of generalization, in the recovery of children with neuromotor disorders. Ludotherapy as a specific method of rehabilitation can be used successfully for children with neuromotor disabilities, regardless of the current deficit, the play being individualized and methodically applied. The designed programs and the use of games and play to recover the neuromotor handicapped children have proven effective. The early use of this treatment by associating the means of kinesthetic therapy with types of game specific to the age of the child under treatment, led to a more efficient and shorter recovery time, helping to prevent the installation of other diseases.

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