

to a minor change in the environment, such as a new set of curtains, or changing the seat at the table). The autistic child often clings to "stereotypes" throughout his entire life. Stereotyped body movements involve hands (hand clapping, fluttering fingers) or their whole body (rocking, leaning and balancing). Thus, they sway back and forth or have endless episodes of jumping on the mat or spinning movements around the body axis, which stir them as a drug and create a vacuum. There is also a concern for nonfunctional routines or rituals and irrational insistence to follow routines (for example, to walk the exact same way every day).

Autistic children can be attached to some inanimate objects (for example, a piece of string, a rubber band, a sponge or a piece of paper). Nonverbal skills are usually developed with an autistic child. Their intellectual and social deficiencies stand out later, with the establishment of reciprocal social relations and verbal abstract mental operations. Their intelligence is rigid, right beyond passions. In most cases, there is an associated diagnosis of mental retardation, generally moderate, IQ 35 to 50. About 75% of the children with autistic disorder are diagnosed retarded. Also there may be abnormalities in the development of cognitive skills. The profile of cognitive skills is usually uneven, regardless of the general level of intelligence. For many children with autistic disorder who work at a high level, the receptive language level (ie language comprehension) is less than that of expressive language (for example, vocabulary). In autistic

disorder there may also be various nonspecific symptoms and neurological signs (for example, primitive reflexes, delayed development of manual dominance). The autistic child, especially when hypertonic, is presented as a lively child, independent and voluntary particularly in the first year of life. Autistic symptoms can last throughout the whole life, but they can often be relieved by proper intervention and treatment.

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## MULTISYSTEMIC WATER THERAPY - A SOLUTION IN THE RECOVERY OF AUTISTIC CHILDREN

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#### **Abstract:**

*An alarmingly increase in the incidence and prevalence of autism as well as the inability to prevent this disorder, without knowing the causes, the diversity of symptoms, the poor social inclusion and the uneffective many therapies, are the key elements that made me conduct this research. Firstly, I wanted to understand the characteristics of a child with autism, because the way in which they react to the surrounding world is very different. Therefore, I decided to find out more about these issues and I particularly studied the motility and psychomotor problems.*

**Keywords:** autism, recovery, behavior, motility, multisystemic therapy.

It is known that people with autism have severe difficulties in terms of social interaction, expressive and receptive communication, they show repetitive patterns of behavior, stereotyped interests and

restricted activities. Over the time, researchers' theories have considered various factors:

- genetic
- hereditary,
- neuropsychological

- medical problems, in order to identify a cause of autism, but so this precise cause far has not been established with certainty.

It is a generally accepted fact that autism is caused by abnormalities in the brain functioning and structure, but it is still unclear what exactly in the functioning and structure of the brain is the real cause of this disorder. It has been certainly specified that autism is not caused by the education child was provided until the time of diagnosis, and may not have a single cause only. Children with autism may have deficiencies in terms of:

- muscle strength, coordination, static and dynamic balance;
- acquiring basic motor skills;
- senso-motor functions;
- fine motor skills and the ability to relax

The motor activities are an important part of the educational programs, movements helping the child not only to be mobile but also from an emotional and social point of view. Their well-being can be enhanced if the foundations in all areas of early childhood are laid. A comprehensive physical therapy program will help these children both through the exercises done and through sustained relationship with the therapist's attitude, in order to help them know their own body better, to integrate and to relate better with other people.

#### **HYPOTHESIS**

Autism is the ultimate expression of failure in the early development of a complex network of cortex and subcortex connections. The assumption behind this work is that it is possible that this failure can be partly altered through intervention, especially an early and definite intervention.

The overall objective of this research refers to the recovery and normal development of people with autism using the physical therapy method. Starting from the idea that exercise improves the condition of the subject both physically and mentally, we seek a long-term social integration of the subject and gaining autonomy.

#### ***Objectives of the research:***

- a current qualitative study based on scientific data;
  - studying subject related literature;
  - knowledge and assessment of the subject;
  - identification of dysfunctions characteristic of this disorder and the possibility of recovery through physiotherapy;
  - choosing and adapting the physical program to the kinetic needs and capabilities of the subject;
  - constant evaluation of the subject and result interpretation.

The autistic disorder, also known as infantile autism, is the best known pervasive developmental disorder. Several synonyms are used for it, such as:

- infantile autism,
- Kanner syndrome,
- infantile psychosis.

#### **CLINICAL DESCRIPTION**

The disease progressively appears during the second year of life and becomes evident at 2-3 years of age. It is then when alterations in social interactions leading to isolation can be noticed. The child manifests refusal or avoids eye contact, there is no facial expression and no gestures modulation according to the situation, as long as no tonic-postural dialogue. The autistic child does not seek to make contact, to draw attention, to look straight into the eye, they do not imitate others. They do not express pleasure, nor do they share interests, their look seems empty and distant. The ability to speak does not occur at a certain age and the absence of it is not replaced by any attempt of gesture or mimic communication. When there is any sign of speech, some features can be noticed, such as: in addition to the delayed ability to speech there is immediate or delayed echolalia (the repetition, like an echo of what the other person said), a particular, monotonous, abrupt prosody, a reversal of pronouns (the use of the pronoun "you" to refer to themselves), a poor, delayed syntax, the expression of emotions (joy, excitement, surprise, anger) is most frequently absent. Although the level of understanding language is usually one higher than the one of expression, there are anomalies can be noticed, though:

- the child particularly understands simple orders,
  - concrete words,
  - commands to perform a simple task.

Bizarre reaction and restriction of interests, reactions of anxiety, aggression or apparent anger can occur with environmental changes (changing the usual route, the absence of a toy) or surprises (unexpected noise or the arrival of a stranger). These manifestations of anger, anxiety or despair can also occur in response to frustration, prohibition or a persistent attempt of the adult to get in touch. Habits or rituals, apparently devoid of symbolic significance dominates the everyday life, requiring a framework of immutable and robotic life. The main interests are restricted and stereotyped, limited to motor habits or strange objects:

- stereotyped and repetitive motor minierism (beats and twisting of hands, swinging, walking on the tips of the feet, spins, complex body movements)
  - use of certain objects (stones, wire, toys)
  - unusually changed use of objects (a car wheel endlessly spinning)
  - interest in a limited aspect/use of objects (e.g the smell associated with an associative

behavior, the attraction for vibration or noise that they endlessly reproduce).

Regarding the sensory and motor modulation, there is a hypo or hyper reaction to sensory stimuli:

- they allow objects to fall down
- they swing
- they clap
- they make noise while spinning, they suck their tongue, hold an object in their mouth.

### SYMPTOMS

Individuals with autistic disorder may have a wide range of behavioral symptoms including hyperactivity, reduced level of attention, impulsivity, aggression, self-destructive behaviors and tantrums, especially with young children. Throughout adolescence or early adulthood, individuals with autistic disorder who have the intellectual capacity to acknowledge the disorder may become depressed, in response to the severity of their condition.

#### *The basic symptoms include:*

- difficulty in communication – the ability to speak usually develops slowly or at all, words are often used inappropriately; the affected person is possible to use more gestures than words (or other forms of non-verbal communication); there is, also, the tendency of the subject to repeat words and phrases (for example, some of them may repeat unmistakably the news heard on TV) and there is also their inability to focus and be coherent;

- lack of sociability - a person with autism is not usually very interested in having relationships with others; the person may not willingly answer others' requests and may refuse eye contact; they spend a lot of time by themselves and make little effort to make friends (some subjects are isolated, refusing to change their environment);

- lessened or overdeveloped - some subjects with autism hardly respond to the stimuli of the main analyses (for example, a child with autism may not complain if hurt), others may have highly developed senses (for example, an individual with autism may hear a sound and then cover their ears for long); it is possible that a child with autism is not interested in playing the games with others (they avoid children and even animals) or may not be able to enter an imagination game;

- behavioral excesses - the person with autism may have exaggerated reactions or can be extremely passive and can go from one extreme to another; some people show an obsessive interest in one thing or activity (looking through a book or magazine); others repeatedly make body movements such as clapping, rocking back and forth, head (stereotypes); these children can be aggressive to

- themselves and / or to the others and may even have seizures (epilepsy, in some cases ) and depression.

Atypical characteristic behavior of children with autism is based on the following main features:

- lack of communication or very difficult and rare communication;

- absence of vowels in pronunciation;
- echolalia - mechanically repeated words heard from others (this may also occur in the form of later echolalia, when children repeat the words just heard from others)

- lack of eye contact;
- lack of attention and responsiveness, manifested by lack of response to the questions of others;

- tendency to consider others as mere objects;

- the preference to tiptoe;
- violent reactions to certain sounds that they dislike;

- refusal to touch certain textures;
- refusal to be touched;

- extremely lazy or extremely nervous behavior;

- inconvenience to certain foods violently manifested;

- aggressive behavior to others;
- disregard for any type of toy;

- desire to imitate the behavioral patterns that they have seen;

- desire to keep things in a certain pattern;
- repetitive behavior and self-flagellation tendency;

- developing extraordinary skill areas: drawing, music, memory, mathematical skills;

The essential elements of the autistic disorder is the presence of abnormal damaged development in the social interaction and communication and a considerably restricted repertoire of activities and concerns.

### DIAGNOSIS DATA

Regarding diagnosis, parents are the first to observe different behavior of their child. It is the mother who frequently complains that "the child is not normal", or "not like the others", when compared with the elder siblings or other children of the same age. When evaluating, a physician can give immediate indications about abnormal development if the child does not babble or lacks mimics or gestures by 12 months of age, if they do not use simple words (1 single word) by the age of 16 months, they do not spontaneously associate 2 words (which is not echolalia), or do not use simple sentences (formed of subject and predicate) by the age of 24 months, if the speech development in any language proves regression or stagnation at any age, and they lose social skills at any age.

Diagnosis is based, on the one hand on a clinical observation of sufficient length, which is possibly repeated to record difficulties and

capabilities, and a psychological exam, on the other hand, meant to determine the socio-intellectual and adaptive profile. In this case it is useful to use the Vineland scale, to assess the adaptive capacities and PEP-R, in order to describe a development profile. An examination of language and communication is advisable to be made, in order to assess formal, pragmatic aspects. LECSA and Whetherly grid are recommended to describe a profile of communication when the child speaks less as well as a motor and psychomotor exam, to determine motility and sensory integration. Therefore, symptoms are carefully and clinically identified, frequently involved developmental lines are assessed and supplementary exams are taken, when one of the clinical signs requires further exploration. Therefore, the following tools are used:

- the orthophonic balance for assessing hearing in relational cases and the level of language in its phonological, lexical, syntactic, semantic, pragmatic, prosodic aspects,
- the audiological balance with Auditory Evoked Potentials in the hypothesis of associated deafness
- the genetic balance for specific malformations,
- the psychomotor balance to assess possible retardation, equilibrium and kinetic features of tonic-postural kinetics (strange posture, abnormal movements, dyspraxia)
- the neurology and pediatric balance researching discrete neurological manifestations, especially related epileptic syndromes.

Rimland Scale, the autistic behavior scale: SCA Barthélemy and Lelord, Infant autistic behavior Scale, SCA-S Sauvage are also useful in setting the diagnosis. According to DSM-IV (Diagnostic and Statistical Manual of Mental Disorder), in order to establish a diagnosis of autism, the patient must show:

- decreased social interaction manifested in the form of at least two of the following aspects:
  - outstanding impediments in using some forms of nonverbal behavior, such as staring, facial expressions, postures, the lack of certain gestures commonly used in social interaction;
  - deficiencies in developing human relations close to the level of mental development;
  - lack of spontaneity in expressing joy, interest or sharing achievements with other people;
  - lack of social or emotional reciprocity experiences;
- a decrease in communication as manifested by at least one of the following:
  - delay or total lack of verbal language;
  - for individuals with appropriate language there is an impediment to the ability to initiate or sustain a conversation with others;
  - stereotypical and repetitive language;

- lack of understanding and practice of imitative social games or varied and spontaneous games of any abstract terms;

- limited, repetitive and stereotyped behavior, interests and activities, manifested in the form of at least one of the following aspects:

- reduced, abnormal interest in intensity or focus:

- apparently inflexible adherence for a specific, dysfunctional ritual and unnatural concern for one or more stereotypical activities and a few in number, as well as unnatural focus on a subject that does not require this effort;

- stereotypical, repetitive manners;

- persistent concern for some parts of the objects;

- delays or abnormal functioning in the following areas:

- social interaction;

- language similar to that of social communication;

- abstract, symbolic or imaginative play;

Symptoms appeared before the age of 3: autism symptoms can last throughout the whole life, but they can often be relieved by appropriate intervention and treatment. A patient with autism symptoms should be examined by a team of specialists, which should consist of a child psychiatrist, a psychologist, a neurologist, a speech therapist and a specialist in education problems. Further tests are required, such as:

- blood tests,

- CT scan (computer tomography) of the brain,

- MRI scan (nuclear magnetic resonance) of the brain,

- Electro - encephalogram.

Multisystemic water therapy is a therapy that uses water in a structured environmental area (pool), according to a theoretical reference model and a methodology organized in phases, which are in interdependence with cognitive, behavioral, relational and senso - motor techniques. It has been conceived mainly as a therapy for children with pervasive developmental disorders currently adapted and adjusted for other disorders too. The fear and pleasure to sit in water are reactions that the child experiences and come as emotional and relational activators used to accomplish the proposed objectives.

The goal of this therapy is not the one of learning water skills and swimming. The game comes as an instrument for promoting the ability to make friends and a better management of emotions and beyond. The child who has learned to move in water, while doing this, may establish a special relationship with the therapist and consequently with other children. Having reached a certain autonomy, the subject who, at first showed

withdrawal, avoidance and indifference, gaining some independence, can then show a higher degree of relationship with the therapist and possibly those around him. Using these new capabilities, the patient will gain self-esteem and a level of sustained efficacy constantly undertaken and improved by the family therapist. Multisystemic water therapy does not require any specified selection of patients based on swimming competencies or skills. There is no side effect on prescribing this activity because the activity is individualized and take into account the interests, the habits and the subject abilities.

#### ***The approach as a therapy***

TMA is defined as a therapy as long as it functions using an individualized and interpersonal "planning", in order to influence the pervasive developmental disorders through psychological verbal and nonverbal means, with a view to creating a developed objective that can lead to reduced symptoms, improvement in language and relational abilities. In order to achieve all these, methodologies and technical and experimental procedures are used, build on acknowledged theoretical directions. This methodology is based on human relationships and leads to alteration of communicative, emotional and social interaction schemes. Therapy acts or may act on ameliorating symptoms, positively changing the communicative-relational process, inducing significant internal changes in terms of communication and social interaction. The therapy advances a plan designed to take into account short-term, medium or long-term goals. The objectives stem from the observed and recorded empirical results. Those mainly aimed at our therapeutic approach are:

- improving body postures, and gestures to regulate social interaction;
- cooperation in games;
- recognition and representation of emotional expressions (acknowledging anger, joy, shame, fear and happiness);
- looking for and recognizing people they know (intentionally seeking a therapist, the ability to make the difference between the therapist and others);
- improve social reciprocity (collaborative social rules, recognition of the group they belong to)
- reducing problem behaviors (self-and hetero-aggressive behaviour);
- improving imitative ability;
- improving self-esteem
- improving verbal and non-verbal communication;
- knowledge of the body;
- improving personal autonomy;
- reducing stereotypes
- stimulating psycho-motor skills

The results obtained throughout the time belong to communicative, relational, senso-motor, cognitive and behavioral aspects. The therapeutic approach validity is ensured by the constant presence of a specially trained psychologist and supervising therapists. Regular meetings, their duration and the choice of some suitably aquatic spaces meant to help the child's integration, are essential elements in the child's treatment and development.

#### ***The importance of the multi-systemic water approach***

Multisystemic water therapy assesses and adjusts the child's various functional systems such as the relational, the cognitive, behavioral, emotional, senso-motor and motivational. The relational system is activated primarily by this water therapy consistently following other systems. The therapist assesses how closely to interact with the child by observing postures, how they interact with the environment and with others and the avoidance of eye contact. Water is the "relational activator" that pushes the child to first seek contact with the therapist. When in the water, the child instinctively clings to the therapist, who knows to turn this dependence into a positive one, full of relational meanings. The therapist becomes a reference figure and a successively safe base for the child from which the child goes to explore the world, relying on their own knowledge, and to which they returns in difficult and dangerous times. Adaptability to environment, stimulated by therapy, involve cognitive activation. When in the pool, the children prove important memory and attention skills showing interest and preference for certain activities and objects, they are cooperative with the kinetherapist requirements and manage to perform simple tasks or exercises even through verbal requirements. For example, some children prepare their own swimming bag and remember where the equipment is, thus showing motivational aspects related to the pleasure of going to the pool. Moreover, the children remember where they left the objects they used, as well as their function, the reference person (the therapist), they are cooperative in simple games and activities already done by imitating the therapist and even the whole group in various activities. Multisystemic water therapy, among other things, has a positive effect over the behavioral aspect, as it activates a set of behaviors which, with the help of the kinetherapist, are gradually becoming appropriate to the context, enabling attenuation of possible "behavioral problems".

The senso-motor system is also activated by water and the stimuli that the therapist can face the subject with in order to:

- learn to move in the new environment in a continuous relationship with the therapist,
- facilitate coordination capabilities;

- motor and relational games; water temperature which no other environment can provide

According to Piaget, cognitive activities result from interiorization of the motor schemes: it is in water where the child can act on what Piaget called "motor intelligence", characterized by the direct action the child manifests on objects and which becoming handled and known as a limited reality in time and space. The first phase of motor intelligence is dominated by a motor reflex activity, an assimilation of the external reality scene, already naturally possessed, which creates the transition from a purely biological to a primitive psychological activity.

- in the second phase the child creates a coordination of more perceptive and motor schemes,

- in the third phase the child moves to get a result and starts being intent to

- in the fourth stage the child uses the known schemes and applies them in new contexts,

- in the fifth phase the child manages to invent new solutions anticipating a still imperceptible situation, which means that he is able to represent himself in various situations.

The child passing all these stages reaches what Piaget called "motor intelligence".

#### *The importance of the water environment*

The importance of the environment in therapeutic schemes have been amply demonstrated: a rich environment in many and different stimuli represents an important recovery means.

Water therapy develops in a natural environment that takes the advantage of a constant possibility of full social integration of children with pervasive developmental disorders. A public swimming pool enables recovery of the subject in a natural context. Usually the autistic children undergoing the early stages of therapy can and should remain in the same environment and be immediately integrated into a swimming school. This allows us to check on the child, as well as on the relational and cognitive capacities, represented by other reference figures, in different contexts. It is known that remedial treatment to children, by providing them a cheer, playful atmosphere, bears many important advantages. The family realizes the child's abilities and potential, noticing that in that context the child is able to do, to understand, and to be in the center of a relationship. The natural environment provides motivational resources, highly stimulating socially and relationally. Among other things, the pool is by far a playful place: it is much easier to play a game through interpersonal, body and relational exchanges.

Water is easier to maintain and promote a physical and emotional interaction: the ability to appropriately relate to the therapist, even through

physical contact, increases the autistic child's potential and desire of experiencing emotional and non aggressive exchanges. Yet, I want to stress the fact that water activates those intense emotions that range from joy to fear and motivate the child to establish a meaningful relationship and push them to seek support. The answer to the question "why to adopt water multisystemic therapy?" the following can be synthesized:

- it results in being an environment rich in various stimuli, able to generate intense emotions, such as joy, fear or anger;

- facilitate the process of maintaining attention;

- facilitates the management of emotional and communicative aspects (modeling emotional responses and emotional content);

- facilitates the management of behavioral disorders (aggression, stereotypes);

- increases eye contact;

- improves quality of sound;

- stimulates the desire to explore;

- favours social integration;

- stimulates verbal and body communication;

- improves the ability to feel and use their own bodies;

- facilitates the recovery perceptive and motor potential;

- facilitates rules understanding;

- stimulates the motor coordination ability;

- promotes increased self esteem when autonomous acquired.

#### **CONCLUSIONS**

It can thus be said that using a well structured kinetic program in a playful environment and respecting the peculiarities of people with autism, all these can lead to symptoms improvement and degree of manifestation, but it should also be noted that it should be a long term approach, developed early. Returning to the issue of autism, we can say that now we only know general things about autism, but this does not mean that we can not do anything to improve the lives of people affected by this disorder. Indeed, we know that infantile autism is a disorder with an early start, characterized by the inability to initiate and develop social relationships, to express interest and emotions, to use language and communication and it is also associated with the presence of stereotyped behavior, including a restrictive and repetitive behavioral repertoire.

Children with autism have difficulty in simplifying systems, forms, charts, scripts, categories and they can not segment the information units that carry meaning, for example, they do not recognize the words in a sentence. Therefore, they do not have enough knowledge to organize and perceive the environment, which is

relevant, socially speaking. Thus, the autistic child survives, lost within the environment, with no control over events, adapting with great difficulty, clinging as far as possible to soothing, repetitive sensations, marking here and there tactile and visual rhythms.

Regarding stereotypes (rocking back and forth, jumping, spinning movements around the body axis), these voluntary and foreseeable self-stimulations, are preferable to children because they are calming and challenge their interests, they reduce brain activity and avoid overloading.

Imitation is a critical skill in the development of autistic children, which needs to be developed since lifetime learning is based on the ability to imitate. The ability to mimic has an effect on learning in every field, including social and communication skills.

Therefore, in terms of diagnosis, it is good for parents to take the child to the physician and this, after examining the child, should immediately find impairments in the development, if the child does not babble, shows no facial expressions or gestures by the age of 12 months, does not use simple words (one word) up to the age of 16 months, if, by the age of 18 months abnormalities in eye contact occur, if there are problems in focusing attention, imagination, play, nonverbal communication, if the child does not spontaneously associate 2 words or if social skills are lost at any age.

In conclusion, although there are various tests and scales for the diagnosis, currently there is no additional examination that allows making conclusive diagnosis of infantile autism. No clinical or laboratory examination proved evidence of the characteristic signs of autism. It is obvious that the diagnosis of autism has an impact on the whole life and it is very difficult to determine which will be the future skills of a child with autism.

These children's skills and adaptation to adult life depend on the child's intelligence coefficient, on the severity of symptoms, the age at which specific educational programs start and the consistency of these educational programs. Autism treatment relies primarily on education. It must be adapted to each person according to symptoms and needs. It is generally accepted that autism treatment usually lasts a lifetime. Therapeutic actions themselves are numerous and diverse. In all cases it is a prolonged treatment during a good part of childhood and sometimes adolescence. If well planned and implemented early in childhood, these

programs are effective in the long run. They will help children acquire independent functioning skills, the children will benefit from in all aspects of their life. Autistic children who benefit from such programs, later will need less intensive support.

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