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## **Sensory Integration - the weight of stimuli. The role of parents**

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### **SUMMARY**

**INTRODUCTION** Sensory integration is a kind of integration or organization of stimuli, the ability to feel and respond properly to news from the world. The organization of stimuli takes place in the brain so that later can use them to create appropriate reactions and behaviors. If the flow of stimuli is disturbed then some reactions, the body's response may be incorrect.

**OBJECTIVE** The purpose of this article is to present in a understandable way the sensory integration process and the impact of various stimuli on its condition. It also shows how important parents play in the development and therapy of children with sensory integration disorders.

**THE WEIGHT OF THE BODCIES** The stimuli is food that absorbs our brain through every organ of our body. We are what we eat, that is why, it is so important what we feed our children's brain. Impulses reach the body thanks to the senses: sight, hearing, taste, smell, touch and proprioceptive, atrial and interoceptive.

**SUMMARY** Sensory integration is the whole of reactions that take place between the outside world and our body. The most important and the most intense time of physical and mental development is childhood during which we provide our body with the most stimuli. For children with sensory integration disorders and without these disorders, the best therapists are parents.

Key words:            Sensory Integration; SI; bodcies

### Sensory integration

Our behavior and perception of the world around us depends on sensory integration. Sensory integration is a kind of integration or organization of stimuli, the ability to feel and respond correctly to news from the world. The organization of stimuli takes place in the brain so that later it can use them to create appropriate reactions and behaviors. If the flow of stimuli is disturbed then some reactions, the body's response may be incorrect. Integration takes place without our conscious participation, just like breathing, it allows us to group collected information through our senses, selects what is important from what is unnecessary at the moment, so we can focus on certain things and ignore others; thanks to integration, we react on purpose, we can learn and act socially [1].

Sensory integration arises in fetal life when the child's brain feels the mother's movements. After birth, the infant begins to crawl, then sit and stand, but sensory integration is necessary for these activities to take place. It can happen through play, then the child subconsciously plans impulses from the body, along with hearing and sight. Activities that require integration at a very high level are performed by gymnasts, whose senses are trained and provide the correct information about gravity, space so that they can perform different figures with grace [2]. In order to integrate stimuli at a similar level, we do not have to be gymnasts, other activities also require the combination of many senses and skills that each of us can take, for example reading, which is a complex activity, because it requires the participation of the eye, neck, concentration and muscles, involvement of several senses. In each of us there is sensory integration at various levels, but in most people it occurs at an average level. Genes influence it, but they are not a guarantee of success or failure, it is a kind of potential that each of us must develop through contact with the world and our response is an adaptation to the conditions around us. An adaptive response is a deliberate response to achieve the intended goal, and the aim of a young child may be to get up or reach for the toy. The more complex adaptive response of several reactions, the wider the sensory integration and skills development at a higher level [3].

Child's play is a complex process during which he must act creatively and integrate many stimuli, and the positive emotions that are experienced during play are the driving force and positive adaptive response, which with age is more and more multidimensional [4].

Improper sensory integration is not something clear, there are no rigid boundaries, because in everybody integration does not happen perfectly, only through continuous training we can approach this perfection but we will not get it. If in our brain this integration takes place at a low level, it will be visible and perceptible in everyday life in the form of certain difficulties and activities requiring

greater effort. Therefore, the correct diagnosis plays an extremely important role. It is not easy because there is no method to measure integration disorders in the patient's brain, other medical problems can be diagnosed in the laboratory and sensory integration disorders have a different nature. Some disorders are invisible to parents or guardians of children, often when a child gets angry, for some reason parents say that this will grow and the cause may be a disruption of integration, which later affects many other things about everyday life or education. Early symptoms of sensory integration disorders may include late development of the child, late start of creeping, walking then problems in self-service such as problems with tying shoelaces or riding on a scooter, a bicycle [5]. It is then necessary to exclude reasons related to the nervous or musculoskeletal system [1]. Parents or teachers, thanks to the free observation of the child, may be the first to see certain disorders that appear during play, when the child is less efficient, less active than other children or, on the contrary, responds with too strong reactions during the game, play or direct contact such as throwing on children. The initial signal of the disorder may be a delay in speech development or active listening. Other signs are visible in manual work, the child cannot cut, put blocks, assemble puzzles, falls out on the background of peers always worse. Some do not like touch, they irritate them when someone, even a close person accidentally touches them, they are all disturbances of sensory integration [6].

At home parents cannot always see the disorder, what they do not see is visible in the school for teachers and therapists. Problems with reading or writing are basic activities that we acquire during the course of primary education, but they are very complex and require efficient information transfer between particular systems and senses. If the child has sensory integration disorders that are not diagnosed earlier and therapy is not taken, then in primary school these problems will build up and accumulate in future education. People without integration disorders will follow the normal pace and deal with educational challenges, while those with disabilities will have to work longer and harder with a worse result. Other factors favoring accentuation of disturbances are loud bells and noises, these stimuli a child may not be able to organize in the brain and reactions may be different and inadequate to the situation, it must be remembered that it all happens outside of consciousness and is not possible to consciously control. Children who have developed in a correct way also sometimes have certain problems or situations such as children with sensory integration disorders, but they vary their frequency, because suspicion can be extended when such situations are repeated, then you should contact the therapist. Proper diagnosis and therapy will provide understanding and support for the child and parents, and the person in the future will be able to realize and meet without major restrictions [7].

The development of sensory integration begins in the womb but in the first years of life children learn about the world around them and how to cope with it. They must learn to move, eat, play, dress, interpret sounds and speech, and communicate with others. All these activities send stimuli to the body through which we learn how to properly cooperate. The development of integration as well as the whole organism and its response is different for everyone, but despite these differences, there

are certain norms in which they must be. After birth, the child cannot yet organize all the stimuli coming from outside, determine the distance of objects properly or locate the place of reaching sounds, all this is a certain process of organization in the nervous system that is most intensely and continuously during the first seven years of life. This organization is possible thanks to irreplaceable adaptive responses [1]. This response arises from the need, the infant to locate the sound source must first rise and turn over, the child to pass someone else must shift the center of gravity and make a move. Before our bodies respond adequately to a given situation in the brain, many reactions take place and leave a kind of memory. These are complex activities that not only teach but also give the child joy to receive new impressions and develop further motor functions [8].

The most important is the nature that has constructed us in this way, that each of us has an internal momentum that constantly pushes us forward and thanks to whom, regardless of the conditions, it allows us to develop. Nobody has to tell us to start sitting down and then to get up and walk, there is a natural inner strength that everyone has and that works like a motor, so we should not stop it. We can observe how a small child in the next stage tries to climb furniture, run, play and invent various things, even though we did not ask for anything and the same creates new situations for development [9].

#### Stages of development of sensory integration.

In the first month of life, a newborn baby has a quite well-developed sense of touch, which allows him to turn towards food when we touch him on the cheek or reacts crying when he has a soaked diaper, grabs everything that touches his hand. The sense of gravity and movement is very well developed, in the moment when we suddenly change the position of the child, he will spread his hands and be disturbed in this way as if he wants to catch someone, this movement is a defensive reaction of the newborn. When the infant is lying on the chest, he tries to raise his head from time to time, of course he cannot keep it but he does this because the brain senses gravity and is stimulated to such a reaction, thanks to which we are able to keep our head horizontally. It is similar with the information from the muscles and joints, thanks to which the infant initially performs quite chaotic movements of the limbs, which later turn into precise ones. Sight at birth is poorly developed but should not be underestimated in stimulation because its development is stimulated by external factors, we can help it by showing the child images in red, white and black, preferably up to the fifth month of life. When it comes to hearing, the silence for the newborn is too quiet. The child spent nine months in the mother's womb in which one could hear the rhythmic beating of the heart and various other sounds to which the child got used to. Although after the birth the child hears quite well, this sense develops continuously to the school age. The smell of newborn babies is at a higher level than in adults. The newborn is able to distinguish the smell of the mother's skin from other people and the fragrance of cosmetics used on the skin is felt more intensely by the child and is irritating. The taste of a newborn is strictly dependent on smell and less educated [10].

In the subsequent months of life, the development of motor function is gaining momentum. At the beginning, the eyes and neck, which is to stabilize the head. The brain has to merge the stimuli coming from the ear, eye and neck so that the baby can see the image in a stable position. When he sees well, he also begins to get up, gravity stimulates the child to raise the chest, a challenge that parents should not simplify by supporting the position of a sitting child or learning to walk. The child begins to get to know parts of his body by looking at his hands and learning about their location in space. Coordination is created by bringing hands together, then clapping, if one of the elements is missing, it can be expected that at a later stage the child will have some disturbances of sensory integration. What makes the child's joy more and more is movement, each physical activity increases the integrity of the senses. Once he can see a given object in space, which is in the child's assessment, it is possible to get started to rotate and then crawl. The nervous system supplies more and more information from the muscles to the brain, through the observation and analysis of the surrounding objects, it begins to create new adaptive responses [11].

Next years are learning and improving walking, speech and performing increasingly complex activities. Movements during which he feels more gravitational attraction give the most joy, that's why children like to be swinging, riding on the back or making turns.

An excellent exercise to develop integration and deepen the experience are climbing, those on parents and on objects. Children start showing in different ways what they want, who they are and what they do not want or do not accept. This is the period when adults should become more understanding and patient and accept the individuality of the child. When a child is physically fit, he knows his body, his development goes further and starts thinking at higher levels [12].

### Weight of stimuli

Stimulants are food that absorbs our brain through every organ of our body. We are what we eat, which is why it is so important what we feed the brain of our children. Impulses reach the body thanks to the senses: sight, hearing, taste, smell, touch and proprioceptive, atrial and interoceptive [1].

Vision is one of the most important senses that ensure proper development. Although it is not well developed after birth, the imprecise image seen by a newborn child triggers a kind of momentum in it that arouses the desire to search for objects and imitate face expressions, which is the beginning of the upcoming new reactions. The integration of impulses delivered by means of the retina of the eye takes place in the brainstem to create the subconscious. Then, motor messages are integrated in the cerebellum and from there into specific organs and parts of the body [13].

Hearing has a very large impact on the development of the brain. if a child is born with hearing loss or deafness and has not received proper treatment, the consequence is the intellectual delay of that child, which does not occur in case of eye damage. The sounds that float in the air are caught by the auditory receptors and then go to the brainstem nuclei, these impulses are divided and connected with others. Thanks to the fact that information from hearing can connect and mingle with visual impulses, we know what is important and give it meaning.

The smell and taste provide information about the chemical composition of what we eat. Thanks to these senses, we can react instinctively, for example a baby can recognize the mother by smell.

A touch considered the most important sense that we use right after birth. Thanks to him, the newborn gets the most information from the world around him, that he is safe and he is safe. And this is due to the stimuli received on the skin. It is the largest sensory system that affects our physical and mental state, is the first of the systems developing in the fetal life [1].

The senses of balance and position and movement that provide us with proper physical and intellectual development. The stimuli that come from these systems are received subconsciously, that's why we rarely think about these systems and when we start to think about them consciously, we still feel a small amount of information.

Integrating stimuli using the nervous system is nothing more than a continuous learning of everything through our body with all possible reactions. Although there is no organism that perfectly integrates all external stimuli coming from outside and most people on earth are at a fairly good level of integration, the disorder of one of the systems or organs has a series of consequences that disrupt the next development process. When our brain cannot receive certain information through the senses, then the consequence of this may be inadequate behavior and the child's development itself is uneven [14].

The role of parents.

Parents play one of the most important functions in children's development because they spend the most time with them and they know them for the longest time and influence them. Most often, mother is the first to notice a problem or suspect something. You should never underestimate any disturbing symptoms in your child's behavior, let alone anticipate the problem and perpetuate abnormal reactions. The earlier we diagnose the problem and the earlier the child is, the better the results will be. Once we know that the child has integration disorders, there are classes in the psychological and pedagogical counseling center, which are not really enough because most of the various behaviors or activities performed can be seen as taking place at home [1]. It should also be stated whether a child with a certain dysfunction should be sent to school as peers. This may be too early for the child and the requirements set at the child's school, which has some problems may cause the disorder to deepen and negatively affect the child's psyche. Also, one should not take the attitude that some disturbance of sensory integration can be very burdensome or cause delay in education, so everything should be planned so that the child has optimal conditions for development and learning [16]. A child with sensory integration disorders can deal with everyday life differently,

then one should take care of the child's psyche, take into account that such disorders are physical problems and for simplicity we can compare them to some physical dysfunction of our body. Parents should clearly and transparently communicate all communications from themselves as well as from the environment in order to prevent inappropriate behavior of the child. Understanding and accepting a parent is crucial in the therapeutic process [15]. Penalties should not be used, even in undemanded children, as they lower self-esteem. The role of a parent should be taking care of the child and creating conditions for him to calm down, analyze the situation and draw conclusions for the future without unnecessary additional stress of the child [10,17]. Sensory integration disorders are not recognized as other dysfunctions, therefore it should be reminded of it, because excessive expectations may cause some sensorimotor overload and understate the child's assessment. Parents should focus on the positive sides of the child and give this proof, praising the mentee and strengthening positive reactions [18]. Children with sensory integration disorders who have been properly diagnosed, treated and accepted and surrounded by parents' care have the same chances to achieve success as their peers. Parents play a very important role in the child's therapeutic process, which is irreplaceable because the therapy at the clinic itself the child spends a few hours a week, and stays at home or around the family most of the time. Therefore, they should try to stay with the child as much as possible in an active way, having fun the best. It is play that is a form of therapy that provides invaluable opportunities for human development [19].

Sensory integration is the whole of reactions that take place between the outside world and our body. The most important and the most intense time of physical and mental development is childhood, up to the age of six our brain develops and shapes up to 80%, which is why from the first years of life depends on what potential will have a small man in the future. Children are in the majority of their lives under the care of their parents and to a large extent it is from their attitude and attitude and time devoted that it will develop, it is said that children are a reflection of their parents [20]. Therefore, for children with sensory integration disorders and without these disorders, the best therapists are parents. Because children have improved sensory integrity, parents should especially use this time for the creative development of their children, because the development of children's abilities takes place from the first months of their life, through creative games. Learning with children can be great fun and an effective and inviting way to spend time together. Expanding

your and your child's knowledge allows for a greater understanding of each other, the parent can choose consciously the best method of therapy and upbringing of the child, without additional physical expenditure. Additional sensory integration classes carried out at home by parents can be inspired by therapists or with the help of books or guides addressed to parents, in which there are proposals for exercises, games, therapeutic strategies as well as describe the possibilities of modifying the home environment and the use of objects for this purpose everyday equipment.

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