

# SENSORY INTEGRATION DISORDER & TREATMENT

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BASIC

information  
GUIDE



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# what is SENSORY INTEGRATION DISORDER & TREATMENT?



## SENSORY INTEGRATION IS THE PROCESS OF ORGANIZING SENSORY INFORMATION FOR FUNCTIONAL USE

All day, every day we receive information about the world through our sensory systems. This includes our sight, hearing, smell, and taste. The less well known senses of touch (tactile), movement (vestibular), and body position (proprioception) are especially important for sensory integration.

The basic assumption is that sensory information received from the environment and our body is integrated in the many parts of the nervous system so that a person can interact with the environment functionally and experience appropriate satisfaction.

The functional behavior in children includes effective participation in play, chores, self-care, as well as school routines.

A child with intact sensory integration is more likely to have successful responses to a challenge in his/her environment. This child can run, jump, play, and attend to structured activities without much difficulty. This child is much more likely to respond adaptively, and each adaptive response creates a positive change in the brain due to "neural plasticity".

Mastery of each challenge gives the child a sense of competence and drives development forward.

Sensory integration is linked to a child's emotional states and organization of behavior.

Children with disorders in sensory integration have inefficient processing of information received through the senses thereby impacting their educational, social, and emotional development. Their difficulties are chronic and disrupt their everyday life in a significant manner.

The child with sensory processing disorder may lose self-confidence and give up trying to master new skills. Emotional difficulties such as aggressiveness, poor frustration tolerance, behavioral outbursts, and/or poor self-esteem may develop.

A child with a sensory modulation disorder has a problem turning the sensory messages into controlled behaviors that match the nature and intensity of the sensory information. In other words, the child over or under reacts to the sensation.

A child with a sensory based motor disorder has a problem with stabilizing their body, moving, or planning a series of movements so as to react functionally.

A child with a sensory discrimination disorder has a problem with sensing similarities and differences between sensations.

Many children with symptoms of sensory processing disorder also have another diagnosis such as Attention Deficit /Hyperactivity Disorder or Autism.

Occupational Therapists with special training in this area can provide individualized sensory integration treatment using playful, meaningful activities that enhance the child's sensory intake to promote adaptive responses for improved daily functioning within their life roles.

The goal of the treatment is to enable the child to participate in childhood activities in a typical manner. This includes playing with peers, enjoying and learning at school, dressing and grooming, playing sports and/or developing hobbies.

A child is an active participant in sensory integration treatment. You cannot make a child perform an adaptive response, but you can provide an environment and "tools" to encourage such.

Children have an inner drive. Sensory Integration therapy provides an environment that offers "just right challenges" that tap into this inner drive. Treatment tasks are designed to be "not too hard" (failure) or "not too easy" (boring).

The therapist should be offering treatment activities that entice the child, not coerce.

Sensory integration treatment often includes the use of special equipment including suspended swings, climbing structures, ball pits, and scooter boards.

Sensory integration treatment should include education for parents, teachers, and other caregivers. The intervention should include recommendations for shaping the child's daily routine to incorporate or eliminate sensory input at strategic times. This is often referred to as a sensory diet.

Sensory integration treatment should include cognitive (thinking) strategies to help the child manage his/her self. These strategies need to be individualized to accommodate the child's age, developmental level, and responsiveness to these interventions.



# THE Sensory SYSTEMS



**OLFACTORY:** The sense of smell allows an individual to perceive odor and react negatively to noxious smells as a form of protection. This sense allows a child to smell and enjoy food.

**AUDITORY:** The sense of hearing provides the child with the ability to receive sounds. A child with intact hearing can identify the quality and direction from which the sound is coming. The auditory sense tells us to turn our heads and look. It is also very important for development of understanding speech and language.



**TACTILE:** This sensory system receives sensations of pressure, vibration, movement, temperature, and pain through the skin. It is broken into two parts, the protective and discriminative. The protective component provides a signal of harmful touch stimuli. The discriminative component provides information about where the body was touched, how light or firm the touch was, and the perception of the shape, size and texture of the object. For example, this sense allows a child to find a coin within their pocket by touch only. The sense of touch provides the body with important feedback for precise, skilled movement and contributes to a child's body scheme. It is known that tactile input early in life has a long term impact on a child's behavior and interpersonal development. The tactile sensory receptors are located throughout the skin.



**VISION:** The sense of seeing provides the child with the ability to identify and understand what the eye sees. It is critical for learning about shapes, colors, numbers, letters, and words. Vision offers very important feedback to help a child move safely and effectively.



**GUSTATORY:** The sense of taste allows an individual to enjoy food and causes one to react negatively to noxious tastes as a form of protection.



**VESTIBULAR:** This sensory system responds to changes in head position and to body movement through space. This sense coordinates movements of the eyes, head, and body to help a child with balance. This sense allows a child to hike along a bumpy trail and kick a soccer ball without falling. It is also important for maintaining tone (or appropriate stiffness) in the muscles and coordinating the two sides of the body together. The vestibular sensory receptors are located in the inner ear and are stimulated by movement and gravity, letting the body know in which direction and how fast it is moving.



**PROPRIOCEPTION:** The sense of proprioception enables an unconscious awareness of body position. It allows the brain to know where each body part is and how it is moving. This sense allows a child to regulate what direction and how much force to use when moving to successfully grade movement to accomplish functional tasks. This sense allows a child to walk up and down stairs without looking at their legs or feet. This sense is believed to help a child regulate their emotional and behavioral responses. The proprioceptive sensory receptors are located in the muscles, joints, and skin and are stimulated by active movement of the muscles and joints.



# terms & definitions

## RELATED TO

# SENSORY INTEGRATION

**ADAPTIVE RESPONSE:** An appropriate action in which the individual responds successfully to the environmental demand. Adaptive responses require good sensory integration and they further the sensory integration process.

**AVERSIVE RESPONSE:** A feeling of revulsion toward a sensation typically accompanied by a strong desire to avoid it or behaviorally react to the sensation.

**BILATERAL MOTOR COORDINATION:** The ability to use both sides of the body together in a smooth, simultaneous and coordination fashion.

**BODY POSITION:** The sense of the placement of one's head, limbs, and trunk.

**BODY SCHEME OR BODY CONCEPT:** This is a child's internal map of their physical self. It is the mental picture of one's own body parts and how they interrelate and move.

**DIRECTIONALITY:** The awareness of right vs. left, forward vs. backward, up vs. down, and the ability to move oneself in those directions.

**DYSPRAXIA:** Children with dyspraxia have difficulty translating sensory information into physical movement, unfamiliar movements, or movement with multiple steps. The individual may have a type that manifests in one, two, or all of the following areas: gross motor skills (large movements), fine motor skills (small movements), or oral motor skills (movements of the mouth).

**EQUILIBRIUM:** This automatic reaction refers to shifts of body movements to maintain or regain balance. The movement may be slight (such as maintaining a seated position while in a rocking chair) or large (such as regaining an upright standing position when slipping while walking on the ice).

**FIGHT OR FLIGHT RESPONSE:** The instinctive reaction to defend oneself from real or perceived threat/danger by withdrawing or becoming aggressive. Children with sensory processing difficulties may react with fight or flight responses to some sensory input.

**GRAVITATIONAL INSECURITY:** The extreme fear and anxiety that one will fall when their head position changes. This is related to poor processing of vestibular and proprioception information.

**HAND PREFERENCE:** To have an established hand dominance of right or left. This becomes established as a child's brain develops.

**HYPERSENSITIVITY:** This is an over sensitivity to sensory input. Is characterized by a tendency to avoid and appear fearful of the sensation. The child often over reacts more strongly than most people do. Children with hypersensitivity tend to present as defiant and uncooperative.

**HYPOSENSITIVITY:** This is an under sensitivity to sensory input; the child does not notice or register the sensory stimuli that are relevant to the situation. Children with hyposensitivity tend to present as withdrawn or passive.

**IDEATION:** The ability to think of a new or novel action (ex: what to do).

**MODULATION:** The brain's regulation of its own activity. Modulation involves facilitating some nerve messages to maximize a response, and inhibiting other message to reduce irrelevant nerve activity.

**MOTOR PLANNING:** The ability to organize a new or novel action in space and time (ex: how to do it). This piece of praxis allows a child to conceive of, organize, sequence, and carry out unfamiliar and complex movement skills. Motor planning allows a preschooler to figure out how to use a new riding toy. Motor planning involves conscious attention to the task, while relying on unconscious body sensations.



# terms & definitions

## RELATED TO

# SENSORY INTEGRATION



**MUSCLE TONE**: The degree of tension in one's muscles. Muscles need to be responsive to the task on hand. Muscles should be stiff enough to pick up a bowling ball, then relax enough to handle a delicate flower without crushing it.

**PERCEPTION**: The process of becoming aware of what something is through a sensory experience. This is a complex function in which the brain gives meaning to the sensory stimuli. Sensations are objective, while perception is subjective.

**PRAXIS**: The ability to think of (conceptualize) and organize novel, purposeful actions. This has been described by Jean Ayers as an "intelligence of doing".

**SELF-REGULATION**: The ability to control one's activity level and state of alertness, as well as one's emotional, mental, or physical responses to sensations. Also known as self-organization.

**SENSORY DEFENSIVENESS**: The tendency to have a high level of sensitivity to harmless experiences; an over-reaction to non-noxious stimuli.

**SENSORY DIET**: A planned and scheduled activity program of sensory activities and accommodations that is developed to help a person become more self-regulated.

**SENSORY DISCRIMINATION**: The ability to distinguish between different sensory stimuli. The stimuli may be discriminated based upon their quality, timing, or position in space. For example...is the touch light as a feather, or deep like a pin prick? Is the ball moving quickly through the air, or slowly moving like a floating balloon? Does child still recognize his favorite toy, even though it is upside down?

**SENSORY INPUT**: The streams of neural impulses flowing from the sense receptors in the body to the spinal cord and brain.

**SENSORY INTEGRATION**: The process of organizing sensory information for use. This is the normal neurological process (brain and nerves) of taking in information from the environment and one's body through the senses, organizing this information, and using it to plan and execute adaptive responses. This is essential for learning and successful daily functioning.

**SENSORY INTEGRATION DYSFUNCTION**: An irregularity or disorder in the brain function that makes it difficult to integrate sensory input effectively. The individual's educational, social, motor, and emotional development may be affected. Their difficulties are chronic and disrupt their everyday life in a significant manner.

**SENSORY MODULATION**: The process in which the central nervous system (brain and nerves) regulates the sensory information. The child should be able to grade their behavior in response to the intensity, complexity, and novelty of the sensation. In other words, the child should not under or over react. It is very common that the same child may appear over-responsive some times, and under responsive other times.

**SEQUENCING**: Putting movements, sounds, sights, objects, thoughts, letters, and numbers in consecutive order, according to time and space.

**TACTILE DEFENSIVENESS**: The tendency to react negatively or emotionally to touching objects/materials or being touched by others. It is associated with distractibility, restlessness, and behavior problems.