

# What is sensory processing?

**Sensory Processing** – or Integration as it is also known – is the effective registration (and accurate interpretation) of sensory input in the environment (including one's body). It is the way the brain receives, organises and responds to sensory input in order to behave in a meaningful & consistent manner.

There are 3 possible components of Dysfunction of Sensory Integration.

- **Sensory Modulation Disorder** is a problem with turning sensory messages into controlled behaviours that match the nature and intensity of the sensory information.
- **Sensory-Based Motor Disorder** is a problem with stabilising, moving or planning a series of movements in response to sensory demands.
- **Sensory Discrimination Disorder** is a problem with sensing similarities and differences between sensations.

**Other factors that impact processing can include:** speech and language difficulties, attention difficulties (e.g. ADD/ADHD), psychological issues (e.g. anxiety, depression), fatigue, diagnosis specific behaviour and conscious choice behaviour.

**Environmental factors include:** the sensory input around the child, the degree of structure of the setting, the time of day, the impact of fatigue, and the expectations placed on them by the tasks they are doing.

## Why is sensory processing / motor integration important?

A new born is able to see, hear and sense their body but is unable to organise these senses well; therefore this has very little meaning to them. They are unable to judge distances or feel the shape of one object versus another. As the child is

exposed to various sensory inputs, they gradually learn to organise them within their brain and are able to give meaning to them.

They become better able to focus on one sensation and as a result performance improves. Their movement changes from being jerky and clumsy to more refined and they are able to manage multiple amounts of sensory input at one time. By organising sensations the child is able to modulate their response and as a result they seem to be more connected with the world and in control of their emotions.

When children are efficient in their processing, appropriate responses to the environment around us occurs and is demonstrated by appropriate skill mastery, behaviour, attention and self regulation. Children are able to sit and attend to the important pieces of information in a classroom and therefore will have a good chance at achieving their academic potential.

Furthermore a child will be able to understand their body's movement in relation to their surroundings and itself. This allows for success in fine and gross motor activities. This in turns aids the social development of a child.

## **What are the building blocks necessary to develop efficient sensory processing / motor integration?**

All the sensory systems need to work together for effective sensory processing. It is important to recognise that there are in fact 7 senses that make up the sensory system and its these systems that process information as a building block to many other skills.

**Visual sense:** The ability to understand and interpret what is seen. The visual system uses the eye to receive information about contrast of light and dark, colour and movement. It detects visual input from the environment through light waves stimulating the retina.

**Auditory Sense:** The ability to interpret information that is heard. The auditory system uses the outer and middle ear to receive noise and sound information

about volume, pitch and rhythm. It is important for the refinement of sounds into meaningful syllables and words.

**Gustatory Sense:** The ability to interpret information regarding taste in the mouth. It uses the tongue to receive taste sensations and to detect if these are safe or harmful by their chemical makeup.

**Olfactory Sense:** The ability to interpret smells. It uses the nose to receive information of the chemical makeup of particles in the air.

**Tactile sense:** The ability to interpret information coming into the body by the skin. It uses receptors in the skin to receive touch sensations like pressure, vibration, movement, temperature and pain. It is the first sense to develop (in the womb), and as such is very important for overall neural organisation.

**Proprioceptive Sense:** The ability to interpret where your body parts are in relation to each other. It uses information from nerves and sheaths on the muscles and bones to inform about the position and movement of the body through muscles contracting, stretching, bending, straightening, pulling and compressing.

**Vestibular sense:** The ability to interpret information relating to movement and balance. The vestibular system uses the semi-circular canals in the inner ear to receive information about movement, change of direction, change of head position and gravitational pull. It receives information about how fast or slow we are moving, balance, movement from the neck, eyes and body, body position, and orientation in space.

## How can you tell if my child has problems with sensory processing / motor integration?

**If a child has difficulties with sensory processing they might:**

- Show heightened reactivity to sound, touch or movement.

- Be under-reactive to certain sensations (e.g. not notice name being called, being touched, have a very high pain threshold).
- Appear lethargic or disinterested; appearing to mostly be in their 'own world'.
- Have difficulty regulating their own behavioural and emotional responses; showing increased tantrums, being emotional reactive, having a need for control, impulsive behaviours, being easily frustrated or overly compliant.
- Being easily distracted, showing poor attention and concentration.
- Have poor motor skills; appearing clumsy, have immature coordination, balance and motor planning skills, and/or poor handwriting skills.
- Have poor sleep patterns.
- Have a restricted eating habits or be a picky eater.
- Become distressed during self-care tasks (e.g. hair-brushing, hair-washing, nail cutting, dressing, tying shoe laces, self-feeding).
- Loves movement so that they seeks out intense pressure (e.g. constant spinning, running around, jumping, crashing in objects/people).
- Avoid movement based equipment (e.g. swings, slides).
- Appear floppy or has 'low muscle tone', tire easily and often slumped in posture.
- Perform tasks with too much force, have big movements, move too fast, write too light or too hard.
- Have delayed communication and social skills, is hard to engage in two-way interactions.
- Prefer to play on their own or has difficulty in knowing how to play with other children.
- Have difficulty accepting changes in routine or transitioning between tasks.
- Have difficulty engaging with peers and sustaining friendships.

What other problems can occur when a child has difficulties with sensory processing /motor integration?

## When a child has sensory processing difficulties, they might also have difficulties with:

- **Attention and concentration:** Sustained effort, doing activities without distraction and being able to hold that effort long enough to get the task done.
- **Behaviour:** Their actions, usually in relation to their environment.
- **Body awareness:** Knowing body parts and understanding the body's movement in space in relation to other limbs and objects.
- **Coordination:** The ability to integrate multiple movements into efficient movement.
- **Expressive language (using language):** The use of language through speech, sign or alternative forms of communication to communicate wants, needs, thoughts and ideas.
- **Play skills:** Voluntary engagement in self motivated activities that are normally associated with pleasure and enjoyment where the activities may be, but are not necessarily, goal oriented.
- **Receptive language (understanding):** Comprehension of language.
- **Self regulation:** The ability to obtain, maintain and change their emotion, behaviour, attention and activity level appropriate for a task or situation in a socially acceptable manner.
- **Articulation:** Clarity of speech sounds and spoken language.

## What can be done to improve sensory processing / motor integration skills?

### Education around the varying management strategies.

- **Recognise triggers:** Educate the child's adult carers (parents, teachers) of the triggers that spark inappropriate sensory reactions.
- **Environmental factors:** Improve the adult carers knowledge of how to reduce the environmental factors that contribute to inappropriate sensory responses.

- **Alert (Engine) program** to promote to self-regulation through sensory and cognitive (thought based) strategies.
- **M.O.R.E program** uses motor (muscle) components, oral organization, respiratory demands, and eye contact to assist with sensory regulation.
- **The Wilbarger Protocol (Deep Pressure Proprioceptive Technique)** – otherwise known as the ‘Brushing Program’ – is a therapy program designed to reduce sensory or tactile defensiveness and assist with sensory regulation.

## What activities can help improve sensory processing / motor integration?

A Sensory diet to provide sensory feedback to the body to enable it to sensorily regulate. These activities might be activities such as:

- **Wheelbarrow walking**
- **Animal walks**
- **Trampolining**
- **Cycling or scooting**
- **Swings** (forward and back, side to side, rotary)
- **Rough and tumble play** / squishing or sandwiching with pillows or balls
- **Wearing a heavy backpack**
- **Weighted items** (wheat bag on lap while sitting or heavy blanket for sleep)
- **Chewy toys**
- **Visual schedules** enable a child to see and understand what is going to happen next. Schedules also help them to organise themselves and to plan ahead.
- **Timers** help with transitions as they tell the child how long and when they are going to have to do an activity.
- Timers allow us to pre-warn the child.

## **Why should I seek therapy if I notice difficulties with sensory processing / motor integration in my child?**

Therapeutic intervention to help a child with sensory processing difficulties is important to:

- Enable a child to be able to develop social interaction, behaviour and play skills.
- Allow a child to cope in busy environments.
- Ensure a child is able to engage in academic tasks long enough to learn them.
- Support school transition which may be difficult if they are unable to follow instructions (e.g. classroom instructions, academic task requirements).
- Children do not grow out of sensory issues, rather they change and adapt as necessary.

If left untreated what can difficulties with sensory processing / motor integration difficulties lead to?

**When children have difficulties with sensory processing, they might also have difficulties with:**

- Self regulation of their emotion, behaviour, attention and activity levels to match them to the task or situation in a socially acceptable manner.
- Behaviour as the child might be unable to regulate themselves appropriately to settle and attend to a task for extended periods of time.
- Difficulties accessing the curriculum because they are unable to attend to tasks long enough to complete assessment criteria.

- Poor sleep habits, impacting upon skill development due to fatigue.
- Rigid routines that are difficult to break.
- Speech and language difficulties as sensory processing is the foundation to these skills.
- Physical skills (fine and gross motor) including self care skills (eating, sleeping, teeth cleaning, tolerating haircuts).
- Play skills being more limited in scope and being more bossy in social interaction with peers than age appropriate.

## What type of therapy is recommended for sensory processing / motor integration difficulties?

If your child has difficulties with sensory processing/motor integration difficulties, it is recommended they consult an Occupational Therapist.