



## SENSORY MOTOR INTERGRATION

### DR KAREN SINGH


a sensory guide of physical activities to help kids  
stay calm & regulate their nervous system.

*stimulate. repeat. organise.*

# CLINICAL WISDOM

Cranial, dural or spinal tension in babies can be due to pregnancy or the birth process. We see patterns & similarities with cranio-cervical dysfunction with our paediatric population. Discomfort in the pelvis in late pregnancy can be due to pelvic asymmetry, fascial tension or torsion resulting in increased pressure on the baby's head & neck during the birth process.

I have noticed a rise in intervention during the labour & birth process. From inductions to epidural anesthesia and instrumentation; especially forceps & ventouse (vacuum extraction). This creates cranial and upper cervical tension from birth in the baby leading to one sided head tilt, spasmodic torticollis and increase in neural tone.



Newborns may be irritated and distressed while breastfeeding creating a negative feedback loop for mumma and bub. Latching difficulty due to orofacial and cranial tension leads to positional plagiocephaly (flat head), reflux and colic.

The cascade of dysfunction continues in kids with symptomatic presentations of sensory overload, behavioural issues and emotional dysregulation. Sensory disorders occur with damage to the brain, brainstem, spine or nerves. Neurological trauma at birth can result in developmental & milestone delays.

Our world is now saturated with screens TVs, smart phones, video games and watches. Paediatricians recommend no screen time up to age 2 and kids between 2-5 years should limit screen time to 60 minutes daily. Screens emit blue light which suppresses melatonin production - the hormone that regulates your sleep cycles. Sleep disruption is a significant contributor to neurobehavioral issues.

This pattern of sensory overload continues in adults. The foundational neurological framework of the brain experiences overwhelm leading to further symptomatic dysfunction. The most common presentations are headaches, migraines, anxiety, hormonal imbalances, difficulty sleeping and chronic fatigue.

*Remember the mind (psychology) directly influences the body (physiology).*

# SENSORY PROCESSING

There are in fact 7 senses that make up the sensory system and process information as the building blocks to many other skills.

**Visual** sense is the ability to understand and interpret what is seen. The visual system uses the eyes 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 is the ability to interpret information that is heard. The auditory system uses the outer and middle ear to receive noise and sound information. They receive information about volume, pitch and rhythm. It is important for the refinement of sounds into meaningful syllables and words.

**Gustatory** Sense is the ability to interpret information regarding taste in the mouth. It uses the tongue to receive taste sensations, and detects the chemical makeup through the tongue to determine if the sensation is safe or harmful.

**Olfactory** Sense is the ability to interpret smells. It uses the nose to receive information about the chemical makeup of particles in the air to determine if the smell is safe or harmful.

**Tactile** sense is 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 is 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 body through muscles contracting, stretching, bending, straightening, pulling and compressing.

**Vestibular** sense is the ability to interpret information relating to movement and balance. The vestibular system uses the semicircular 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.

# SENSORY OVERLOAD

It is the way the brain receives, organises and responds to sensory input in order to behave in a meaningful & consistent manner. Children can experience an overwhelming response in the brain leading to sensory overload.

## SIGNS & SYMPTOMS

- Have a short attention span
- Demonstrate inappropriate behaviour & inability to pick up social cues
- Being overly active and fidgeting
- Being very lethargic and lacking speed of activity
- Have difficulties in learning and retaining newly learnt skills
- Unable to comfortably manage crowds or group settings
- Show immature social skills
- Suffer from heightened anxiety and nervousness
- Show heightened reactivity to unexpected sound, touch or movement
- Be under-reactive to certain sensations (feeling dazed, not noticing their name being called, being touched, high pain threshold)
- Appear lethargic/disinterested; appearing to mostly be in their 'own world'
- Have difficulty regulating their own behavioural and emotional responses; increased tantrums, emotionally reactive, need for control, impulsive behaviours, easily frustrated or overly compliant
- Be easily distracted, show poor attention and concentration
- Have poor motor skills; appears clumsy, has immature coordination, balance and motor planning skills, and/or poor handwriting skills
- Have poor sleep patterns
- Display restricted eating habits or is a picky eater
- Become distressed during self-care tasks (hair-brushing, hair-washing, nail cutting, dressing, tying shoe laces and self-feeding)
- Love movement; seeks out intense pressure (constant spinning, running around, jumping and crashing in objects/people)
- Avoid movement based equipment (swings & slides)
- Appear floppy or have 'low muscle tone', tire easily and is often slumped in postures
- Performs tasks with too much force, has big movements, moves too fast, writes 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

# SENSORY PROCESSING DISORDER

Sensory overload occurs if the five senses *sight, hearing, smell, touch, and taste* take in more information than the brain can process. When the brain is overwhelmed by this input, it enters the *fight, flight or freeze* mode in response to what feels like a crisis, making our kids feel unsafe leading to emotional dysregulation, anxiety & panic.

## SIGNS

- Anxiety, fear or panic
- Unable to relax or sit still
- Generalised irritability & body stiffness
- Tantrums or meltdown
- Restless and physical discomfort
- Pulling ears or covering ears to block out noise
- High levels of excitement
- Running away when triggered
- Signs – head banging, lack of pain response, hiding under things, hitting against wall or chewing holes in clothes
- Developmental delays
- Sensory overload with touch, vibration and pressure
- Meltdowns and tantrums
- Teeth grinding
- Communication and lack of social skills
- Short attention span



## TRIGGERS

- Loud noises
- Crowded or congested space
- Emotionally intense conversation
- Environmental changes (light, temperature or pressure)
- Unexpected physical touch (hugs)
- Tactile triggers (scratchy uncomfortable clothing)
- Intense smells
- New environments (school, play dates or social venues) activating defensive mechanisms

## CHIROPRACTIC CARE

- Paediatric chiropractic care improves brain & body communication
- Helps to regulate & calm the nervous system reducing stress
- Improves quality of sleep
- Improves fine & gross motor skills
- Significantly reduces emotional dysregulation, tantrums & meltdowns
- Improves sensory motor integration easing the mind & body

# SENSORY PLAY TRACKER

Pick 5 activities from the sensory play list and do them daily.  
Ask your child to rate how they feel before and after the activity.

calm      happy      anxious      angry      upset

1



2



3



4



5



# NEURAL & VAGAL TONE



Chiropractic Wellness Care

Diaphragmatic breathing 5-6-7

Cold showers

Singing and chanting

Humming

Playing and singing classical music

Meditation as a family

Mindful journaling

Walking barefoot in nature

Probiotics for gut health

Omega 3 fatty acids

Massage therapy

Functional exercise

Smiles & laughter



# GROSS MOTOR SKILLS

Obstacle courses

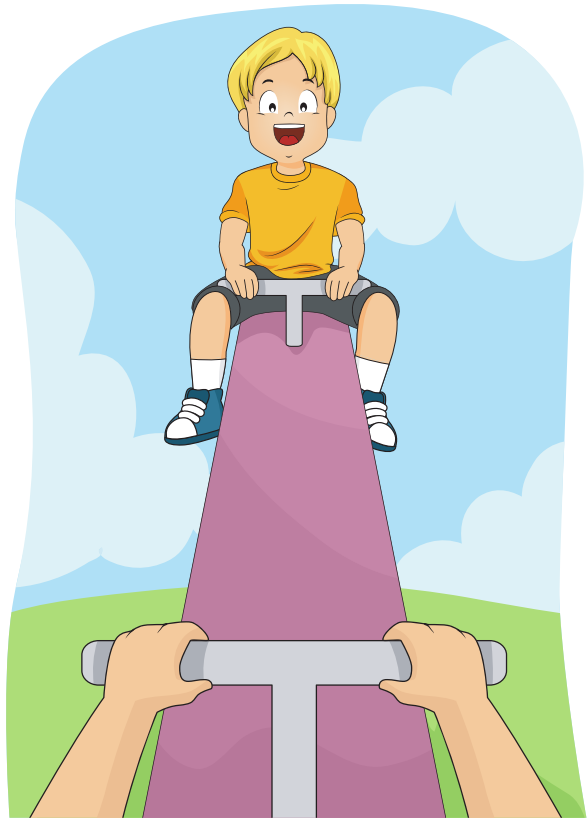
Jump on a trampoline

Playing tag in a playground

Popping bubbles

Martial arts classes

Dancing



Yoga and tai chi poses

Keep a balloon in the air

Play Simon says games

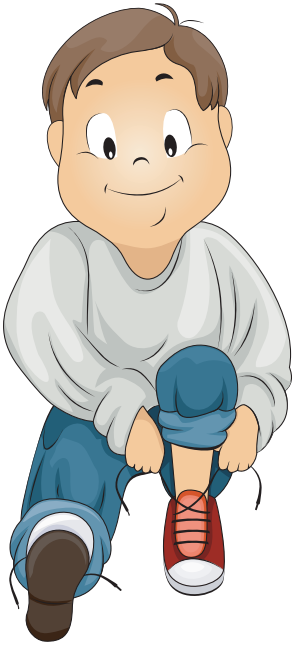
Play tug of war

Play hide and seek

Ride a bike



# FINE MOTOR SKILLS



Threading & lacing shoe laces and beads

Pick up marbles with tongs

Swimming in pool and ocean

Play with lego and construction toys

Make things from old boxes, paper and tape

Skipping and galloping Jumping rope

Play 5 knucklebones

Play hopscotch

Learn to jump rope

Throwing a ball at a target

Play pick up sticks or connect 4



# CROSS THE MIDLINE

Cutting and folding paper

Finger puppets

Percussion instruments

Playing twister

Ribbon streamers and circles

Painting with left hand



Marching games

Kicking a ball with left foot

Clapping games

Washing the car or windows

Crab crawls and windmills

Walking in figure of 8 pattern

Water gun fight

# TACTILE & TOUCH

Finger painting  
Play with textured stress ball  
Using silly putty  
Play with water  
Massage lotion on hands



Swimming  
Walking barefoot  
Play in a sandbox  
Draw with shaving cream  
Squish playdough  
Squish sand, foam or slime  
Knead bread or pizza dough

# VESTIBULAR & MOVEMENT



Run, jump, march, dance or walk

Climb stairs

Ride trike, bike or scooter

Play catch

Play on a merry go round

Do push ups

Hop on one foot

Swing on a swing

Somersault and roll down a hill

Climb and slide on playground

Bounce on pilates ball

Do standing jumping jacks

Do snow angels lying down



# ORAL & MOTOR

Brush teeth with vibrating toothbrush

Blow a whistle or kazoo

Blow bubbles

Blow bubbles with a straw in water

Practice tongue twister



Eat crunchy food like apples or carrots

Drink sour drinks like lemonade

Use a straw to drink a thick shake

Apply scented lip balm

Chew on gummy snacks

# HEAVY WORK

Play catch with a heavy ball

Carry a full laundry basket

Take out the rubbish

Mop or sweep floors

Push a vacuum cleaner

Move furniture



Rake leaves and do gardening

Knead or roll bread dough

Push the shopping trolley

Carry groceries

Yin yoga poses

Rearrange toys in boxes

Rearrange books on shelves

# VISUAL & AUDITORY

Wear sunglasses or hat to reduce glare

Bang on pots and pans

Wear noise cancelling headphones

Listen to classical music

Play a musical instrument



Read picture books

Reduce visual clutter

Turn on white noise

Use aromatherapy diffuser

Change the dimness on lights



HEY THERE!

I am honoured to guide you through this journey  
to raise happier, healthier & holier families.

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