Sensory Processing Difficulties; What are they and how can parents and teachers help.

(Paediatric Occupational Therapist)

GET TO KNOW YOUR SENSORY PROCESSING NEEDS!!!

WHAT DO YOU DO TO WAKE YOURSELF UP IN THE MORNING?

- What senses are involved and to what intensity/ frequency/ duration?
- What happens/ how do you feel or react if this changes?

WHAT DO YOU DO TO WIND DOWN AND PREPARE FOR SLEEP?

- What senses are involved and to what intensity/ frequency/ duration?
- What happens/ how do you feel or react if this changes?

WHAT DO YOU REALLY LIKE DOING?

- What senses are involved and to what intensity / frequency/ duration?
- What happens/ how do you feel or react if this changes?

WHAT DO YOU REALLY HATE DOING?

- What senses are involved and to what intensity/ frequency/ duration?
- What happens/ how do you feel or react if this changes?

AIMS OF THIS WORKSHOP

- To understand what we mean by sensory processing difficulties/disorders.
- To gain an overview of symptoms experienced by children with a sensory processing difficulties.
- To understand practical strategies for helping children with these difficulties to function within the school and home environments.

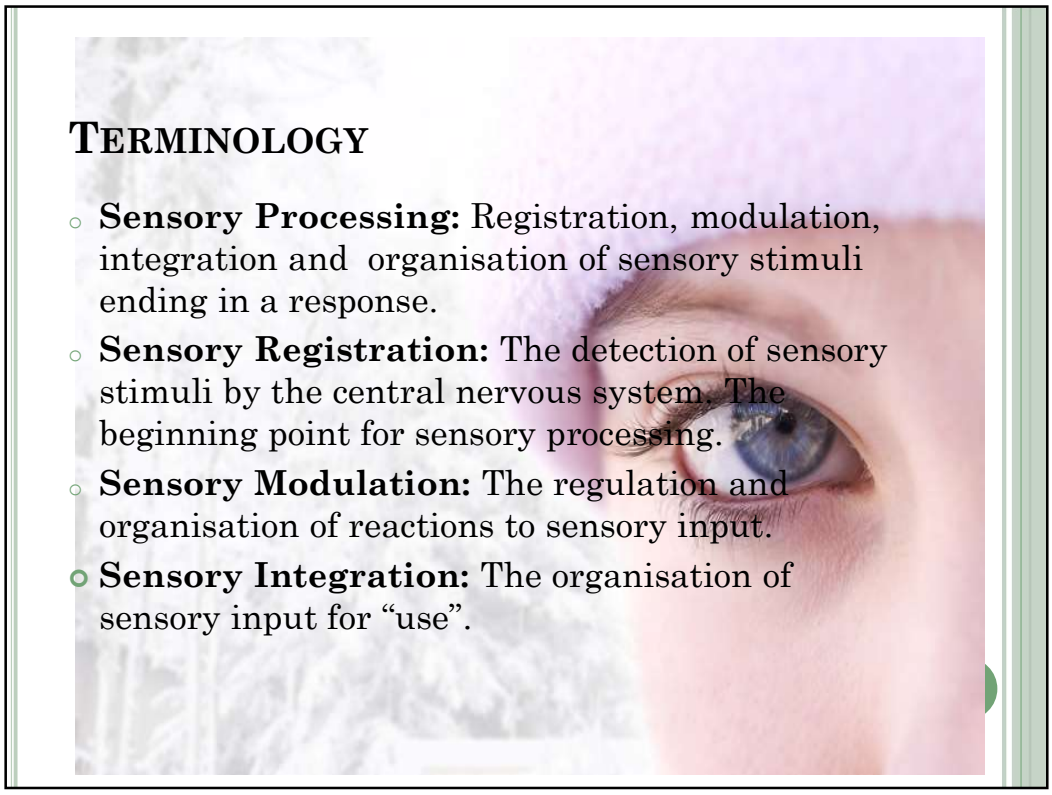
Ask people what they want to gain understanding of or need advice on.

Sensory overload exercise

Explain our responses to sensory stimulation – immediate if dangerous – taking hand off hot surface, slower if no immediate action is required (intermittent fire alarm)

There is no diagnosis of sensory processing disorder. We are all sensory beings with different needs but we only need intervention if it is affecting our daily function.

Read article from OT



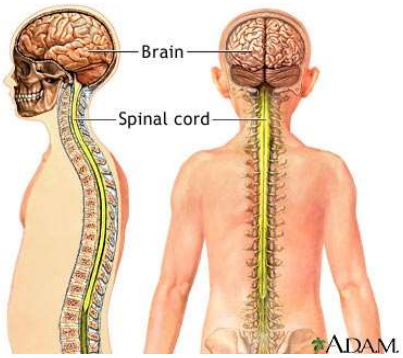
Response can be a immediate reaction e.g. taking hand off hot surface.

Response can be slow e.g. detecting the stimuli processing it doesn't require and immediate reaction and reacting later.

Response can be - filtering the stimuli as not required and not needing a response at all – habituation.

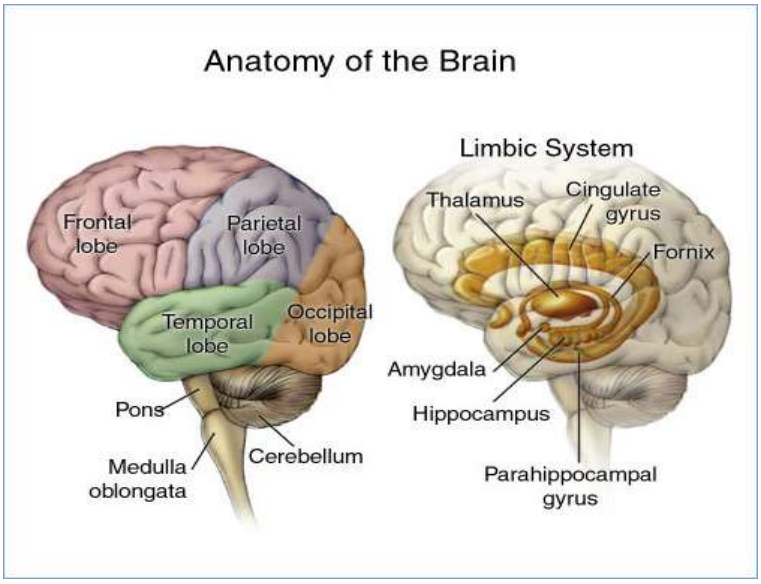
Sensory Processing
The Science Bit.....

The Central Nervous System



Sensory processing is a neurological process involving the ***brain*** and ***spinal cord*** which are connected to different parts of the body by ***nerves***.

Anatomy of the Brain



Thalamus – sensory processing unit of the brain. All sensory input is processed through this and a response is produced.

Amygdala – processes and is responsible for emotional responses.

These two parts of the brain are structurally extremely close and therefore there is high level of interaction between them.

Explanation of how a child's brain may work

- Crocodile brain –fight or flight mode– cannot reason with
- Cat brain - some reasoning but on own terms
- Monkey brain – can reason with and will understand the concepts

Our senses

Visual (sight)

Auditory (hearing)

Olfactory (smell)

Gustatory (taste)

Tactile (touch)

Vestibular (movement, sense of balance)

Proprioceptive (body position/ effort and speed)

Interoception (internal processing)

Reiterate that each sensory system registers, processes and then produces a response OR filters the information out as not required.

MOVEMENT: VESTIBULAR SYSTEM

- Sits within our ears and provides us with information about movement - sense of balance and response to gravity. It allows us to balance and catch ourselves before we fall.
- Detects forward, backward, up and down movements of the head as well as spinning, stop /start and angular movements.
- Works with our eyes to tells us if an object is moving or if we are and maintains a stable visual field despite our head moving.
- Response to stop / start, spinning and angular movements can cause us to be movement sick on a boat/ plane, car, rollercoaster etc. and gives us the feeling of the land beneath our feet moving when we get off of a boat/ rollercoaster.

Examples

Roller coaster/ lift/ boat etc.

Practical

Linear Calming examples

Rotatory Alerting examples - head rotations

Proprioceptive System

- Perceives joint and body movements as well as position of the body or body parts in space.
- Includes sensing the direction and speed of movement as well as determining the effort needed to grasp and lift objects.
- Informs us about:
- the spatial orientation of the body or body parts,
- the pace and timing of movement,
- the amount of force our muscles are exerting and how much and how far a muscle is being stretched.

Proprioception helps the joints and muscles be "awake" and more responsive to motor control and helps with motor coordination as well as calming the brain. Proprioceptive input is the best source of sensory input to help keep a good balance of serotonin in the brain which helps to regulate all the other brain chemistry and keep a neutral and relaxed learning state.

Practical

Proprioception – hand flapping, slow and fast, close your eyes, move n sit. Head compressions; chair push ups; shoulder compressions

TACTILE SYSTEM

- Our tactile system is our sense of touch.
- Light touch, deep pressure, skin stretch, vibration, movement, temperature and pain all activate our tactile receptors.
- Identifies objects/ people without using our vision.
- Soothing ~ alerting ~ NICE -HORRIBLE!!
- Touch tells us whether we are in danger and can evoke a primal response to protect ourselves – fight / flight or freeze
- Light ticklish touch is usually more alerting and deep/ firm pressure touch is usually calming – think about massage.

We get tactile information through sensory receiving cells-called receptors-in our skin from head to toe.

Discrimination – working out what is touching us and if and how we need to respond.

WHY ALL THESE SENSES ARE IMPORTANT ?

- To allow the perception of the world
- To give meaning to the world and what is in it
- To enable function and interaction within the world.

Participation!! Function

Practical

Tactile – rubber gloves discrimination – fine motor activities, tickly feathers, rice/ pasta with toys

Working out money with gloves on

Writing with glasses off

Discussion of food likes/ dislikes

Sensory Regulation

We all regulate our sensory systems to ensure we achieve the alert state required for participation in all activities. This alert state/ level needs to be altered according to the activities we participate in.

We do this by self regulation and do so without thinking consciously about what we are doing.

An 'effective' state of alertness is essential for the development of the following abilities:

- Attention to tasks
- Impulse control
- Frustration tolerance
- Balance of emotional reactions

Car journey example.

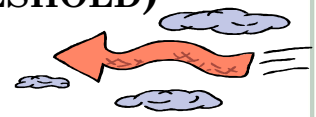
Hotel room habituation

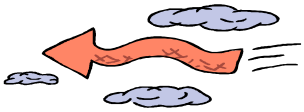
Hotel room example for filtering/ habituation.

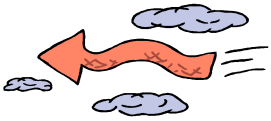
Sensory Modulation explanation

- Sensory input can be too much, too little or just right

Over Responsive (low threshold)







OVER-RESPONSIVITY

- Responds to sensation faster, more intensely, longer duration.
- Can occur in more than one sensory system
- Difficulty in new environments and transitions
- Sensory defensiveness - fight/ flight / freeze
- Sensory overload - distractibility/ inability to filter sensations
- Affects ability to participate in daily activities.

The following are the difficulties our sensory systems can have and effect our ability to self regulate.

Over responsive - High distraction – cant filter out un needed information cant habituate – get used to. Attention difficulties.

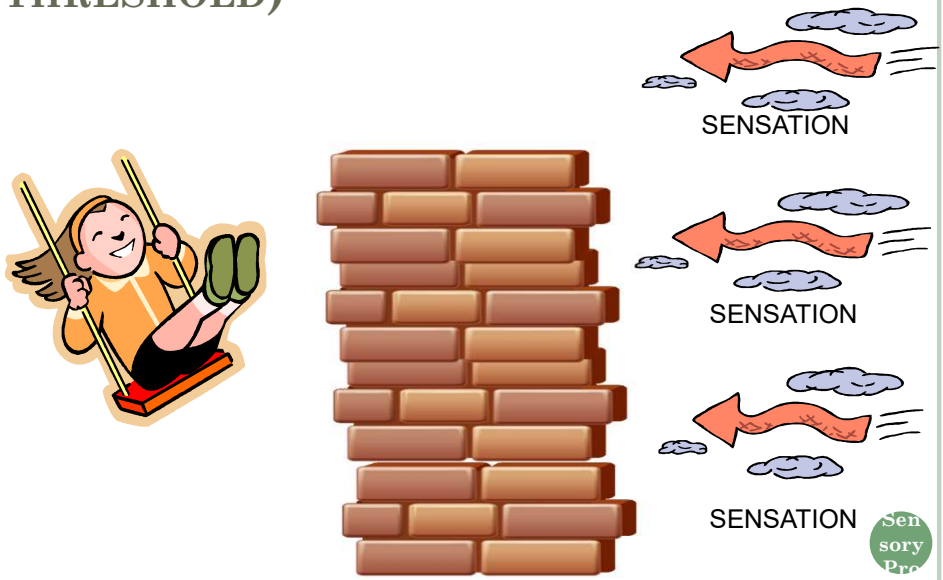
Sensory defensiveness – fight, flight, freeze reactions occur. Autonomic nervous system (sweat glands, heart rate, digestion, blood vessels, release adrenaline & cortisol)

ADL's dressing and eating (e.g. Restricted diets from avoiding foods with textures, seams in socks cause emotional meltdowns getting ready in the morning)

Prompt participants to think of examples

Examples: covers ears to moderate sound levels, withdraws from touch, behaviour rigid and controlling.

Under Responsive (High threshold)



UNDER-RESPONSIVITY

- Poor registration, decreased awareness, orientation and response to sensory input. Takes longer to respond
- Requires intense sensory input to notice
- Appear sedentary, lethargic, apathetic. May fail to take action when given instructions.
- Mislabelled as “lazy” or “unmotivated”/ Appears to lack inner drive for socialising

Attention/ concentration difficulties.

Prompt participants to think of examples

SENSORY-SEEKING

- Prefers intense & extreme sensory input
- Constantly moving, careless, restless, unsafe
- Impulsive, intense, highly energetic
- High pain tolerance
- Viewed as “Dare devils”
- Displays attention seeking behaviour
- Explosive, aggressive
- Attention is profoundly disrupted which compromises learning and completion of daily tasks

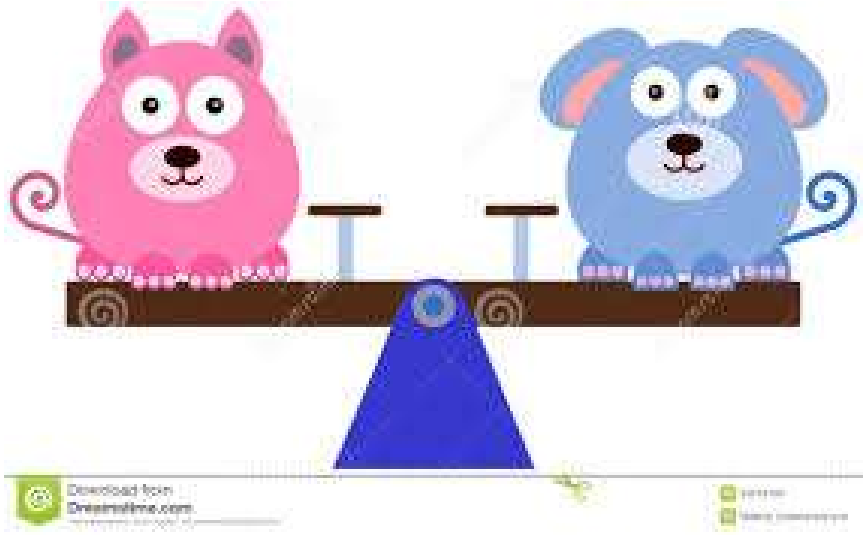
Prompt participants to think of examples

Examples: make vocal sounds to stimulate auditory system, plays roughly with toys, prefers spicy food, spins or rocks self, fidgets with objects, “on the go”.

THE REGULATION AND ORGANISATION OF REACTIONS TO SENSORY INPUT

- Children with poor sensory modulation often have difficulty achieving effective levels of alertness.
- They cannot readily "switch" from being over active to being calm.
- They cannot "ignore" after a reasonable period of time, the noise or touch that has sent them into "fight" or "flight" mode.
- They feel uncomfortable and "out of sorts".
- They instinctively respond to these unpleasant sensations often with maladaptive and challenging behaviours.
- Can be quite controlling of people and environment.
- They can be "unpredictable" in their reactions to sensory input and situations.

SUPPORTING CHILDREN WITH SENSORY DIFFICULTIES



Explanation of sensory diet and optimum arousal/ alert level to achieve concentration/ focus appropriate for activities etc.

SENSORY DIET EXPLANATION!!

- A sensory diet is where a child has very regular access throughout the day to activities which contain a sensory stimuli to alert or calm them helping them to maintain the appropriate levels of sensory alertness to function.
- These additional sensory activities should be incorporated into daily life/ routines.
- Activities which have increased proprioception, deep pressure touch and slow methodical movement such as rocking and walking have a calming effect
- Activities which have fast erratic stop /start movement and very intensive tactile/ auditory/ visual sensory stimuli have an alerting effect.

GOLDEN RULES!

- Provide sensory input REGULARLY and BEFORE activities which children find difficult to manage their sensory processing. Be PROACTIVE not REACTIVE.
- Activities with additional proprioception, deep pressure touch and slow, rhythmical, linear movement added to them are calming.
- Activities with fast erratic movement/ touch; light / ticklish touch and generally intensified sensory input are alerting.
- NEVER force a child to participate in sensory activities which they cannot cope with.
- Always provide positive modelling.

Additional proprioception/ deep pressure touch or linear vestibular movement before introduction to offensive sensations will ensure a child is prepared. Then introduction should be graded via time and intensity, be child led and the child have a safe way of stopping the activity.

AUDITORY STRATEGIES
(over-sensitive to sounds)

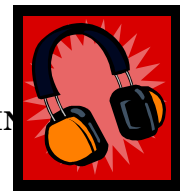
- Reduce auditory stimulation.
- Allow some control of the sound / where they sit.
- Play soft rhythmical sounds to calm the child .
- Allow them to wear ear plugs/unplugged headphones.
- White noise apps.
- Provide a quiet corner-the child could go there if they feel overwhelmed - to calm down, reorganise and refocus.
- Use a soft voice and slow down your movements and speech when speaking to the child. Take a 5 minute whisper break.
- Limit, forewarn or prepare the child for loud noises when and where possible.

The outer and middle ear receive noise and sound information. Information it receives is about volume, pitch and rhythm. This system processes and organises information and enables us to distinguish between similar sounds (auditory discrimination), remember what we hear (auditory memory), develop communication and literacy skills (auditory memory and sequencing).

(for example, place materials that create a loud, unpredictable sounds-electric pencil sharpener away from child).

when loud sounds are used-this can be done by allowing the child to blow a whistle, press play button on a tape recorder).

AUDITORY STRATEGIES CONTIN



Under sensitive to sound

Gain the child's visual attention.

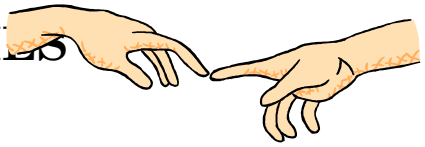
- Give a cue to gain the child's attention prior to giving instructions
- Place child near source of information
- Use a listening chart to teach good listening skills
- Explain the thinking and doing parts of an activity

make noise for noises sake

- Allow child to receive auditory stimulation that is not disruptive
- Present instructions visually
- Give cues to gain attention
- Create a talking role for the child

These children don't register or are delayed in registering sounds and require more input to register sounds. They need to use other senses to enhance their ability to process sounds. E.g. visual q's etc. Provide non-verbal cues to aid verbal instructions

TACTILE STRATEGIES



Over sensitive

- Identify child's sensitivities.
- Adapt the environment to limit unpredictable or unfamiliar touch sensations which may cause anxiety or stress.
- Broaden the child's tactile experiences within daily activities
- Child-directed tactile play -graded exposure and gradually introduce a range of tactile sensations to develop a greater tolerance towards them. Do not force a child to participate.
- Deep-pressure touch-calming – before activities i.e. hair brushing/ teeth brushing /pressing palms etc.

Use gloves/ cling film / utensils when touching messy foods etc

Position child's coat etc. at end of row/ beginning or end of line ups

TACTILE STRATEGIES

Sensory seeker

- Provide a range of tactile sensations in the classroom
- Give the child appropriate items and objects to touch
- Change body positions-when becomes fidgety.
- Define the child's space-textured towel or carpet square
- Provide the child with a variety of play activities.
- Increase tactile contrasts between items, objects and tasks
- Perform wake up activities that have a strong tactile focus
- Activities to develop and improve touch processing skills (feely bag)

- A tactile object held in the hand can satisfy the child's need to touch everything.
- Sitting still on a mat with a tactile toy-may focus attention to sitting
- Encourage the child to manipulate rice, sand, water etc.
- Use modelling clay to encourage the child to manipulate and squeeze dough
- Get the child to write letters with fingers on carpet squares and in sand boxes
- Colouring over textured surfaces
- Encourage the child to explore objects through touch
- Provide a range of tactile experiences in class
- e.g. water play, sand play, finger paint, messy play (brushing her body with different textures, body painting with thick brushes and 'pretend' paint, shape and object "feely bags")
- (this could include standing in a circle and patting rhythms on each others back, clapping and jumping songs, body slapping songs.
- Story massage

Strategies for Oral Sensitivities

Over sensitive

- Before eating or teeth brushing get the child to firmly wipe their face / mouth with a face cloth providing deep pressure
- During teeth brushing let the child know what you are doing and what you will do next, and use firm pressure with slow even strokes… the more predictable the better.
- Do not force a child to try foods. Gradually introduce new foods being on the table/ other family members plates, through play, smell, touch to lips, lick, taste and finally chew and swallow.

The individuals may: Dislike having teeth brushed and/or face washed/ Have a limited food repertoire / Avoid certain food textures or mixed textures/ Take their food off the fork or spoon using only their teeth - keeping their lips retracted/ Gag easily when eating and may only get food down with a drink may exhibit signs of tactile defensiveness such as; disliking being touched, avoiding messy play - glue, play do, mud, sand, finger paints, etc. - , or, may not pick up eating utensil or food with a grasp that involves the palm of his hand

Practical sour sweets

STRATEGIES FOR ORAL SENSITIVITIES

Sensory seeking

- Increase oral motor activities: Blowing/ sucking/ chewing. Give the child appropriate items to put in her mouth (e.g. a plastic straw, chewy necklace, mints etc.).
- Provide a variety of flavours and intensities of oral experiences – warm; cold; sweet sour and relate them to words
- Provide a variety of tactile experiences that involve light and brisk touch around the mouth.

The skin on the outside and inside of the mouth and the tongue receive touch and taste. The nose receives smell sensations.

Difficulties may occur from eating foods of certain textures or temperatures and may become particularly selective about foods eaten.

Encourage the child to play a musical instrument they have to blow.

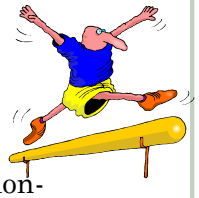
VESTIBULAR STRATEGIES

Over reactive

- Gradually increase tolerance and stamina for movement
- Fast erratic is alerting / slow rhythmical is calming
- Develop areas of coordination and strength – jump ahead/ core stability.
- Reduce movement experiences which produce aversive reactions
- Fidget/ brain toys e.g. stress ball, fidget toy etc.
- Complete some activities in different positions
- Avoid fast moving activities as alerting

○***Calming Activities***

VESTIBULAR STRATEGIES (CONT.)



- Encourage games which promote vestibular stimulation- e.g. log rolling, skipping games, rolling up in a mat or blanket and unrolling.
- Use a scooter board or skate board where the child has to lie on his tummy and propel himself with his arms. Get him to negotiate different objects so that he has to change direction.
- Apply deep steady touch pressure when the child is over reactive.
- Provide a quiet corner.

VESTIBULAR STRATEGIES

Under responsive

- Monitor the amount and type of movement the child receives.
- Allow the child to have controlled movement breaks.
- Encourage frequent changes in positions that facilitate changes in head position.
- Experiment to see if the child is able to focus attention on table top work after alerting movement.
- Limit the length of time the child is expected to sit still in one position, alternate sitting activities and physical activities.
- The child will benefit from wake up activities

Monitor the amount of stimulation the child receives during a movement activity. Ensure the child does not do too much resulting in nausea, lethargy etc.

Allow the child to move around during class activities as this helps him concentrate better when moving. You may need to negotiate rules with the child "You may move freely about this area of the room, provided you do your work, and don't disturb others".

Encourage frequent changes in positions during work that facilitate changes in head position. Alternate between sitting and lying on stomach. Allow the child to get up, move and run errands throughout the day.

Experiment to see if the child is able to focus attention on table top work after vestibular stimulation. If movement activities assist the child to concentrate, prepare movement activities before a table top activity. Alternatively, allow the child to sit on a therapy ball (large bouncy ball) when performing table top activities.

Limit the length of time the child is expected to sit still in one position, alternate sitting activities and physical activities. the child may find completing physical activities before sitting to do table work increases her concentration levels.

the child will benefit from wake up activities that includes jumping up and down on the spot, running around, shaking his head and body.

the child may benefit from using the Moving' Sit is a wedge shaped inflatable dynamic cushion which aids users in adopting the correct sitting posture and strengthens the support muscles of the trunk. The wedge shape also encourages a forward pelvic position and good upper trunk posture. It helps to make the child aware of their position in space.

Movement should be intense and stimulating

Calming Activities

The following activities can be used if the child is required to attend to a new task.

Utilise a range of relaxation techniques.

Apply deep steady touch pressure when the child is overly aroused by placing a heavy hand on the child's shoulders or allow the child to have a fluffy toy in the classroom that can be hugged tightly.

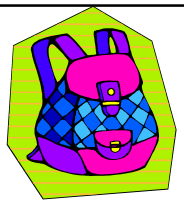
Wrapping the child tightly in a blanket will also have a calming effect. This can be done as a game, e.g. the child rolling up in a blanket to make a "hot dog".

Firmly stroke down the child's back either side of the spine, one hand after the other.

Provide a quiet corner.

jumping up and down on the spot, running around, shaking his head and body.

PROPRIOCEPTIVE SYSTEM



- **Strategies**
- Deep pressure through each shoulder pushing down 10 times
- Resistive activities such as pulling, pushing and carrying objects
- Holding, carrying and wearing weighted objects such as a rucksack (no more than 5% of child's weight), weighted bean bags, balls etc.
- Exploring play dough and theraputty
- Firmly rolling a theraball over different body parts
- Exploring soft play equipment

Proprioception helps the joints and muscles be "awake" and more responsive to motor control and helps with motor coordination as well as calming the brain. Proprioceptive input is the best source of sensory input to help keep a good balance of serotonin in the brain which helps to regulate all the other brain chemistry and keep a neutral and relaxed learning state

Massage snakes/ rollers etc

General Classroom Advice

- Be aware of each child's sensory needs
- Organise the school day or week to meet these needs
- Place children in the correct position in the classroom in order to maximise their learning
- Make changes to the environment to aid attention
- Prepare children for stimulating activities and transitions
- Grade the activity to meet everyone's sensory needs
- Recognise when individual children have reached their sensory threshold
- Use sensory materials to aid learning
- Adapt the environment to have a quiet area.

Lighting/ reducing visual distractions and background noise

Ways to help the child to help themselves.

WAYS OF AIDING SELF REGULATION

- Note the child's responses to sensory stimuli in different environments.
- Important to encourage child to learn what they need to do to aid concentration and participation.
- Link words to actions and feelings. Then link these to actions required to calm or alert themselves.
- Encourage a communication system that child can use that allows them to communicate their sensory processing needs. I.e. traffic lights/ engine running slow/ fast / just right.

- The Alert programme –How Does Your Engine Run? for Self-Regulation (Williams & Shellenberger, 1996),

SENSORY PROCESSING SUMMARY

- Our nervous system detects and interprets sensory stimuli to enable us to then produce an organised effective response so we can participate in activities.
- By being more aware of a child's sensory needs we can assist them to feel appropriately calm and alert to participate in daily activities and then teach them to begin to understand what they need to achieve and maintain this.
- A sensory need can become learnt behaviour/ obsessions long after the sensory need is met.
- See a behaviour/ reaction – Think sensory/ Think Communication/ Think other causes.

Other sources of Information

- Discovery centre website; www.boxofideas.org
- Sensory Integration and the child.
- Sensory Motor Issues in Autism, Johanna M. Anderson, Therapy Skill Builders.
- The Out of Sync. Child by Carol Stock Kranowitz,
- Building Bridges book – Paula Aquilla and Shirley Sutton
- Sensory Network UK
- Apps: White noise/ timers for teeth cleaning.

Sensory resources available from Amazon.co.uk or Rompa.com. OR Sensory Direct and other online companies.

Information regarding weighted therapy: www.sensorydirect.com

Final Thoughts and Questions.....

THANK YOU!

Feedback forms!!!