

## Proprioception

The proprioceptive system is located in joints and muscles and carries information to the central nervous system.

Proprioceptive input provides the brain with information about the location and movement of your body in space, rate and speed of force needed to work against gravity and sequencing of movements.

CYP with decreased proprioception may have an inefficient 'body map' and often don't know where their body parts are individually or how to isolate the movements of those body parts.

These CYP will usually present with poor gross and fine motor skills as these require isolated and bilateral movements and sequencing of those movements.

CYP often prefer to be grounded by lying on the floor or leaning against surfaces/adult's bodies.

CYP with decreased proprioception require a higher level of proprioceptive input/stimuli than others in order for the brain to receive/respond to it.

By providing opportunities to access increased proprioceptive input you will be helping the brain to develop a more effective 'body map' and the ability to control joints and muscles more efficiently. (The brain receives adequate sensory information in order to be able to initiate a motor response). Proprioception can often help prepare a child for activity.

Proprioceptive input also balances the central nervous system and promotes a 'just right' state through either satisfying a **seeking** sensory system, alerting an **under responsive** sensory system or calming an **over responsive** sensory system.

### Balancing the sensory systems

We can use sensory input to support calming, this can be via the proprioceptive system, the tactile system or a combination of both.

When calming it is important that touch is given with deep or firm touch and that muscle movements are regular rhythmical and predictable. Engaging in 'heavy work' will also provide calming and organising sensory information to the CYP.

'Heavy work' means using the muscles against gravity, engaging in activities that require push/pull against resistance, this can include activities as noted below.

### When?

Examples of what you might see... CYP may be:

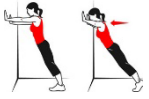






- restless and have difficulty attending
- slow to respond and have difficulty keeping alert levels sufficient for maintaining attention
- using a lot of pressure to engage in a task
- stamping feet, walking on tip toes, looking to pull and push objects- generally wanting more input...
- finding themselves in trouble for playing too rough or breaking items unintentionally
- grinding their teeth
- squeezing into small/tight spaces
- chewing beyond developmentally appropriate







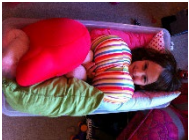
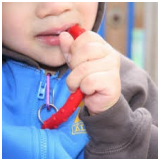
### What can I do?

- Offer short activities before the need to concentrate.
- Provide short activities, little and often, to help to organise the sensory systems
- Provide activity following over excitement as a calming tool to settle the CYP

For activities marked with '!' – proceed with caution as some CYP may respond negatively to them or quickly become over stimulated. **Please take careful note of the advice given.**

## Activities to help balance the sensory systems

Initial activities	When? /How long for? / techniques	What to be aware of	Image
Pressing into a wall	Use a straight back. Arms at shoulder height		
Hand presses	Palm to palm presses. Long enough to feel the pressure in the body and hands	Check that CYP is not over flexing at the wrist. Look for hyper mobility in joints. (too much flexibility)	
Use of stress balls/ fiddle toys	Little and often. Can help to maintain concentration	Remove if too distracting. Find something with low visual interest	
Weighted cushion	When seated  Up to 30 minutes followed by a break of 30 mins.		
Carrying books, washing basket, toy box etc.	Helping with chores can offer short breaks to re-set attention levels	Only use if needed. Do not interrupt if CYP is able to maintain concentration  Alter times according to need (do not timetable activity by time but by when need occurs)	
Use of move and sit cushion	During sedentary activities	If there is too much movement CYP can become over excited. Trial for short period and see if it improves concentration	! 
Use of a backpack (Not more than 5-10% of body weight)	Not for longer than 20 mins followed by a break of 20 mins.		! 

Initial activities	When? /How long for? / techniques	What to be aware of	Image
Self-hug	Hold for a few seconds in order to gain impact. Little and often		
Resistive hand play such as tearing catalogues, kneading dough, stretching putty	Short activity option  During breaks or before sedentary task	Will need boundaries for use	 
Provide a safe space for heavy falling and rough and tumble		This can overload a CYP and so be aware of too much movement that over excites Limit time and complete a fully calming activity afterwards	
Tie Thera band to chair legs- offers resistance when sitting	Use on class chairs and allow CYP to push against band with calves or feet	Requires supervision.  Do not use Thera band as general hand resistive tool	
Small spaces	A quiet space without visual distraction	Always make sure CYP can remove self from small space	 
Chewy foods/ Chew toys  (Offers resistance in muscles of mouth)	Short periods  Crunchy snacks	Try and use healthy options  Chewing gum only if appropriate to age/developmental stage	

## Think!

- What times of the day and what activities suit you and your CYP best- when do they need this input?
- Little and often activities can help keep a CYP 'just right' and able to concentrate
- Have a selection of ideas ready to use as some work better than others for individual CYP

## Think!

- **Person** What are the CYP's patterns in the day? When do they most need a calming activity?
- **Place** (environment) What is the environment like / is this overloading or just right for them?
- **Activity** What are you asking the CYP to do / is this a reaction to an activity that is too hard, or not offering enough stimulation/ has it gone on too long, or not long enough?
- **Stress factors!** Think about what is happening for the CYP in relation to stress, this can exacerbate all sensory processing needs.

## Additional Activity Sheets

These lists are by no means definitive but a good starting point to discover what does and does not work for individuals.

It is important to bear in mind age and appropriateness to setting when choosing activities from the lists. Some activities will be more appropriate for younger children and others for young adults whereas some will be more appropriate for home, nursery, school, outdoors etc.

The use of vibratory equipment should be under supervision to allow for observation around over-stimulation.

## Sensory Seeking:

### Physical activities/working against resistance

- Kick balls into goals/spot on the wall
- Clapping games
- Rolling down hills/log rolls
- Stretching high to reach for objects
- Squeeze balls/sponges
- Bouncing on trampoline
- Bang flat hands onto drum/therapy ball
- Roll on therapy ball/roll on tummy to touch floor or reach objects in front
- Roll therapy ball/roll over body
- Push with feet into therapy ball/roll against wall/person
- Batting balloons
- Trampoline jumping/crashing
- Crashing on mats/cushions
- Skipping
- Sitting on therapy ball/roll/Wobble cushion/Bilibo
- Swimming
- Row the boat
- Leap frog
- Hopscotch
- Bouncy hopper races
- Seesaw with a friend
- Sliding down slide on tummy
- Hand wash pump paints
- Squeezing water/paint from washing up liquid bottles
- Push against wall/flat surface with hands and feet
- Pushing against adult's feet/hands with feet/hands to push them over
- Parachute games Dance sox/lycra tubing to stretch out limbs against resistance
- Rolling large ball to partner
- Batting balloon to partner
- Archery
- Chin ups
- Monkey bars
- Arm wrestling
- Weight lifting
- Horse riding
- Cycling
- Scootering
- Climbing wall
- Contact sports such as wrestling/rugby/martial arts
- Kayaking
- scuba diving
- Therapy putty or stress ball
- Clay modelling
- Walking, especially on treadmill. Can use weighted backpack (no more than 10% of body weight, no longer than 20 minutes).
- Wall or floor push ups (can be on knees or toes)
- Plank exercise
- Access to fitness suite (fixed or free weights)
- Gymnastics exercise, for example, vault over box, handstand, etc.
- Access to trim trail
- Use of a fitness tracker or app for motivation (e.g. 30-day plank challenge app.)

### Chewing

- Chewy jewellery
- Chew sticks/toys
- Chewing gum
- Crunchy/chewy snacks
- Sucking from a straw/sports bottle

### Vibratory Stimuli

- Vibrating cushion
- Vibrating massage tube/snake
- Body massager
- Vibrating light spinner touching body/face
- Vibrating foot massager
- Electric/battery toothbrush
- Vibrating hairbrush
- Vibrating chew toy/teether

### Deep Pressure

- Patting own legs/arms/tummy etc.
- Firm deep pressure /squeezing
- Swaddling and rocking/rolling
- Lycra clothing
- Tight fitting under clothing/base layers
- Pillow fight
- Carrying backpack filled to no heavier than 10% of person body weight
- Hiding under balls in ball pit, weighted blanket, duvet cover filled with soft play balls, sofa cushions etc.
- Person 'Sandwich' between cushions/mats
- Weighted shoulder, lap, wrist, ankle resources
- Rough and tumble
- Wrestling
- Pushing hands together or onto top of head
- Vibratory resources
- Teach use of a blanket for self-hugs
- Teach self-hugs
- Chair pull ups
- Weighted lap support for seated activities.
- Small weights carried in pockets (wear clothes with large pockets to support this)
- Access to a hat or headband
- Access to a bean bag

### Heavy work

- Pushing heavy truck/cart loaded with blocks
- Ripping pages from catalogues
- Tug of war
- Passing heavy objects between hands
- Wipe white boards
- Push car along the floor with one hand while weight bearing on the other in quadruped
- Wash the cars/bikes in playground
- Digging flower beds/vegetable garden
- Throwing bean bags, sand bottles
- Wheelbarrows
- Pushing friend on swing
- Pulling Velcro strips apart
- Rolling play dough sausages/pastry
- Pushing trucks in the sand box
- Hammer toys
- Hammer pins/nails into boards
- Loading boxes, wagon, buckets with heavy objects
- Swinging dog ball toys
- Welly wanging
- Setting out benches for assembly or chairs and tables in classroom/ dining room
- A regular job involving the above skills, for example, carrying and delivering fruit to different classrooms.
- Carry a pile of books on an errand to the office
- Circular/arc mark making on large paper while on hands and knees
- Large mark making on an easel or wall
- Potato printing
- Handprints
- Footprints
- Plant watering with large cans
- Playing in large boxes filled with polystyrene, pasta, rice, dried peas etc.
- Mark making in deep trays of paint, corn flour, sand, rice etc.
- Wall painting with large brushes/rollers
- Digging, raking, sweeping
- Crushing biscuits/boiled sweets with rolling pin
- Walking a dog
- Emptying rubbish bins
- Moving furniture/ tidying up tables and chairs at the end of the day
- Vacuum cleaning
- Gardening or groundwork, for example, digging, pushing a hand trolley or wheelbarrow.
- Every day or curricular activities involving the above, for example, kneading dough in food technology, working with clay in art
- Use of a fitness tracker for motivation
- Library work: stacking and shelving books

## Under Responsive

### Motor planning

- Sitting astride physio roll and gently moving to encourage weight adjustment and stability
- Crawling up steps
- Commando crawling
- Crawling through tunnels/tight spaces
- Obstacle courses
- Rolling
- Hand/feet musical mats
- Dancing
- Dance mat
- Gymnastics floor work
- Zumba
- Aerobics
- Step exercises
- Use of console games for the above (e.g. Wii fit)
- Walking/ running on treadmill
- Yoga or Pilates, especially in front of a mirror
- Balancing activities, e.g. walking on beam or bar
- Hand clap exercises, e.g. 'A sailor went to sea, sea, sea...'
- Use of a fitness tracker for motivation
- Large splashing in water trough
- Touch body part alongside verbal instruction such as "lift your leg"
- 'Animal walks'
- Physical literacy activities
- Simon says game

### Graded movement

- Pouring between containers in water trough
- Scooping and pouring in sand tray
- Placing rings on poles of varying distance and lengths
- Stacking cups
- Building towers of blocks
- Throwing bean bags into buckets/rings at varying distances
- Mark making with resources which need varying amounts of pressure to achieve least pressure: touch screen and white board pens to most pressure: light crayons/pencils
- Heavy and light resources to practice grading movement against gravity needed to place on a table/ into a bowl and throw to catch etc.
- Musical instrument play to grade effort needed to make quiet and loud sounds
- Inset puzzles, posting activities, peg boards etc.
- Everyday activities or curricular activities involving pouring and measuring, for example, food technology, science, art, resistant materials, carrying a tray of objects, etc.
- Instrumental lessons
- Animal care
- Regularly collect or hand out books or equipment
- Various sports or activities involving precision, e.g. shooting hoops, putting, bowling, pool or snooker, table tennis