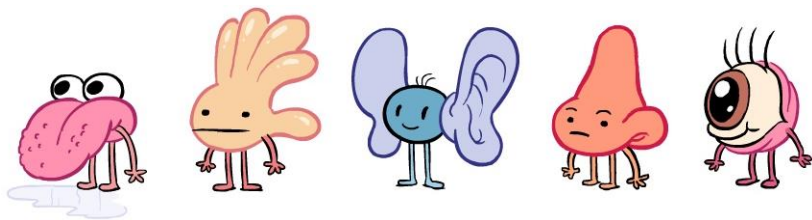




# Proprioception

By Stephanie Wheen



## What is Proprioception

- One of our 7 senses – sight, hearing, touch, smell, taste, vestibular and proprioceptive systems
- It is our sense which lets us know where we are in space and compared to our surroundings. E.g. with eyes closed you know where your arms and legs are.
- It is key to feeling safe and secure in your body and environment.
- It is stimulated by receptors in the muscles and joints which send messages to the brain when they are compressed or pulled apart. The brain then processes this to tell you where you are in space and in relation to your environment
- Good proprioception means you have good balance, can move your arms and legs without looking at them (for example walking or feeding yourself) and can negotiate your body in your environment.

## What conditions can have poor proprioception?

- Lots of disabilities can have poor proprioception due to not processing sensory inputs effectively in the brain. E.g.
  - Autism
  - Dyspraxia
  - ADHD
  - Sensory Processing Disorder
  - CP
- Some poor proprioception is caused because the muscles and joints don't give enough feedback
  - Hypermobility which can be a condition on its own or a symptom of other disabilities. 1 in 10 people are hypermobile so your child may genetically be hypermobile even though it isn't a common symptom of the disability.
  - Low tone (hypotonia) which can be symptom of many conditions including Down Syndrome, CP, Ataxias, stroke and many undiagnosed syndromes.
  - High tone (hypertonia) which can also be a symptom of many conditions including CP, SMA, some dystrophies and many more.

## How do I know if my child may have poor proprioceptive?

- Your child may show many small signs but not necessarily all of them.
  - Clumsy – walking into things, tripping easily, wanting to hold the bannister when on the stairs, not great at hand eye coordination such as throwing and catching.
  - Overusing sight – e.g. watching the spoon as they bring it to their mouth, watching the floor when they walk, difficulty balancing if they close their eyes.
- They may not be able to control the force at which they do things including:
  - Crashing on the floor or on furniture or into people, pressing too hard or too light on the paper with a pen, slamming doors when they didn't mean to, biting or hitting themselves or others, chewing inedible objects such as jumpers
- If they don't feel very safe in their body they will seek out situations where their bodies are supported to feel safe. For example:
  - Enjoying being in corners, up against furniture, fitting into small spaces rather than sitting in the middle of the room.
  - Seeking out hugs and being squeezed. Squeezing and touching themselves, tapping feet, wiggling in their chair, rocking and bouncing
  - Enjoying being tucked up tight at night, enjoying heavy duvets, heavy clothing or weighted items.
  - Like to be in positions where their joints are on stretch – w-sitting
  - position, hanging on 1 hip in standing, standing with knees hyperextended, leaning backwards over the arm of the sofa, hanging on monkey bars



## What are the benefits of stimulating the proprioceptive system

1. If your child has poor proprioception then stimulating it will help them feel safe and help them improve their gross and fine motor skills
2. Generally Proprioception is the sensory system which calms and regulates the other sensory systems. E.g.
  - For children who are hypersensitive (feel too much) in any of their systems – e.g. don't like big noises or crowds, don't like touching some textures, don't like moving too much, proprioception can make these things easier to tolerate
  - For children who seek out sensory stimulation e.g. children who are 'adrenaline junkies' or are always on the go, proprioception can help them slow down, concentrate and stay with 1 activity for longer
  - For children who find social situations difficult, proprioception can help with interaction.



## How do you stimulate the proprioceptive system?

- Some children will have discovered the benefits of stimulating the proprioceptive system and will gravitate towards proprioceptive activities already. This is great as long as it is not disruptive. It may be that another activity is just as effective but less disruptive.
- Anything that squeezes the joints together or pulls them apart (pulling, pushing)
- Anything which gives the body a big indication of where it is (contentious) such as vibration, squeezing the limbs, strong massage and whole body compression.
- Sensory diets made up of different activities to stimulate the proprioceptive system through the day can be great for home and school.



## Things to do at home – Heavy work

- Carrying the laundry basket,
- Digging,
- Doing the hoovering,
- Lifting boxes,
- Pushing a heavy trolley,
- Washing the car
- Making the bed – shaking out the duvet
- Wrestling – push mum out of bed to start the day
- Moving furniture – laying the table and getting all the chairs in the right place
- Cooking – carrying pans
- Use a Move 'n' Sit or wobble cushion – cushions filled with air which keep your child moving while they stay sitting. Could also use a gym ball to sit on or work on.
- Gym Ball – rolling over it forward or backwards or bouncing on it.
- Wheelbarrow walking on hands
- Carrying books



## Weighted items

- Weighted blanket, waistcoat,
- Weighted home made snakes using sand/ rice/ lentils
- Wearing a rucksack with some weight in it
- Wrist or ankle weights (make sure these are for children and are not adult weights which may be too heavy for a child)
- Squash them with cushions or a physio ball – go over their whole body except their head.
- Start with something small like a weighted home made snake to see how they react and if they like it before moving on to weighted blankets etc.



## Compression items

- Lycra suit,
- Wetsuit
- Tight clothes or skins (lycra clothing) that you can get from Sports Direct.
- Lycra belt or lycra shorts
- Roll them up in a mat with arms by their side and then squash them with a physio ball

## Pulling or pushing items

- Stretching squidgy toys
- Playing with a stress ball
- Tie a stretchy band across the legs of their table or chair so they can bounce their feet on it in sitting to help them concentrate.



# Impact exercises

- Jumping and hopping. Hopscotch
- Trampolining
- Boxing
- Cycling on a low gear
- Catch and throw heavy beanbags or balls
- Hitting balls with a bat or racket
- Monkey bars or hanging from a parents hands
- Climbing – climbing frames and move on to climbing walls
- Aerobic workouts to get lots of jumping
- Yoga workouts for great stretching
- Strength exercises – press ups, sit ups, squat jumps
- Gymnastics – headstands and handstands are brilliant.
- Walking or running up hills or on the uphill mode of a treadmill
- Steps and stairs – going up or bouncing down on their bottoms
- Kicking balls hard against a wall (away from windows!!)
- Axis has disability sessions for trampolining.
- Bristol Bears Rugby do inclusive work – may be worth looking into.
- Keynsham football club has inclusive sessions



## Prepare your child before fine motor activities

- Massaging and squeezing their arm and hands,
- Compressing their joints together or pulling them apart
- Using vibration on their hands – they must have control of this and be able to take their hands off at any point as it can be very intense.
- Brushing the skin with a surgical scrubbing brush
- Squeezing finger tips
- Rubbing their hands
- Squashing their hands
- Sat on a wobble cushion with feet on the floor
- In sitting, press down through their shoulders towards the floor and hold for 5 seconds.
- Play with theraputty or firm playdough (see <https://www.gympanzees.org/our-home/sensory-and-behavioural-disorders/shoulder-hand-and-finger-strengthening> for some more ideas and videos)

Do this to/ for them but the aim is for them to do it for themselves in time.

## Preparing for gross motor skills

- In standing, push down through their hips or if young enough lift and bring down to the ground firmly to get lots of impact through the feet
- Jumping on the spot
- Pushing against a wall – try to push wall over.
- Pushing their hands together or pushing against your hands
- Compression or pulling at their joints
- Roll them up in a rug/ mat/ blanket
- Vibration, firm massage, brushing or rubbing their bodies before an activity
- If small, hold them up by their ankles or hands and swing them round
- Tacpac – see [www.tacpac.co.uk](http://www.tacpac.co.uk) for some free resources.

## For the mouth

- Vibrating toothbrush in mouth including over lips and inside cheeks
- Vibrating teethers where they need to bite to make the vibration start.
- Crunching food, biting on chewy sticks or chewy tubes.
- Blowing games – blow bubbles, blow cotton wool across the table with a straw, play a mouth instrument.
- Any sucking works well from dummy's to thumbs to straws – the harder the suck the better so thick fluids with a straw works well
- Crunch or suck on ice

