Occupational Therapy Tip Sheet

THE PROPRIOCEPTIVE SYSTEM

What is the proprioceptive system (or proprioception)?

- It is our sense of awareness of where our body is in space, how it is moving and what each body part is doing in relation to the others.
- It is the reason our bodies can move freely without consciously thinking about our actions and our environment.

How does the proprioceptive system work?

- Its function overlaps with that of the vestibular system (sense of movement) and helps us make sense of touch and movement.
- Sensory receptors in our tendons and muscles send messages to our brain, which then directs our muscles on how to move. These receptors become activated or "turned on" by deep pressure input (e.g. a hug, jumping or crawling).
- This process happens almost instantaneously and allows us to do things like walk without watching our feet, touch our hands together without looking or move a pencil while writing.
- When we move, proprioception allows our brain to sense the direction and force of our changing positions and actions and directs our body accordingly.

Why is it important to understand the proprioceptive system?

- Proprioceptive input (deep pressure input) can have a soothing effect on a student's nervous system due to changes in the body's biochemistry resulting from this sensation.
- When "turning on" the proprioceptive system, the benefits last for specific amounts of time. Proprioceptive input needs to be repeated throughout the day in order to maintain this soothing effect on a student's nervous system.
- When creating a universally designed classroom, consider options for deep pressure seating and activities (bean bag chairs, posted animal crawl cards, etc.).

What are the benefits of incorporating proprioceptive input for students?

- Deep pressure (e.g. hugging, jumping, crawling, lifting) can have a calming effect on students who are over stimulated or overwhelmed.
- It can place children in a calm and alert state, students can pay better attention to what they see and hear and are more prepared to learn.

A student experiencing difficulty with their proprioceptive system may do the following:

- Write too light or too dark with pens, pencils, etc.
- Crash onto floors or into walls, bump into objects (e.g. desks, tables), jump or fall purposefully
- Misjudge the amount of force it takes to pick up or move objects
- Disregard the personal space of others (purposefully making contact or bumping into others)
- Express frustration or have emotional outbursts (especially as the day progresses)
- Seek out proprioceptive input without conscious awareness (e.g. placing hand on their chin during a lesson, leaning against walls or desks, stretching out their legs, kneeling on their chairs)

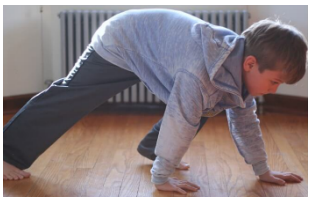
How can Occupational Therapists (OTs) help?

- OTs have experience working with students who have difficulty processing sensory information. They can teach strategies that will help students maintain a balanced proprioceptive system so they can be ready for learning in the classroom and other environments.
- OTs can also help create individualized programs for students when necessary.

Practice some of the following activities to provide proprioceptive input:

- Encourage students to lie on their stomachs to do work.
- Hide small beads or coins in playdough for students to dig out with their fingers.
- Incorporate crawling activities or animal walks during transition times.
- Include stretching or yoga during transition times.
- Have students practice pushing, pulling or carrying heavier items around the classroom (e.g. collect books in a milk crate).



Precautions:

- Proprioceptive input rarely overloads the nervous system and is generally considered safe for most students.
- Students who have difficulty processing information from the proprioceptive system may show negative responses, such as excessive yawning, changes in breathing, colour change, atypical sweating, or appear sleepy.
- Students who demonstrate these signs of distress should stop the activity immediately and be closely monitored.