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The Impact of Limited Body Awareness: What can be Done?

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When children are born, they have no sense of themselves or their bodies. They cannot coordinate hands and feet, hands together, hand to mouth, or really control any of their movements. They are not able to control any of their bodily functions, including when they need to use the washroom. As they get older, these skills typically develop, so that they can feed themselves, dress themselves, kick/throw a ball, ride a bike, or perform many other motor skills. They know how close to get to other people, how hard to tap when playing tag, how hard to press with their pencil, etc., without even thinking about it.

We do not usually think about how the awareness of the body develops or how these skills develop. Body awareness develops through input to various parts of the nervous system. Of primary importance is the input to the proprioceptive and vestibular systems.

- Proprioceptive input is inputted any time there is deep pressure applied to muscles and joints, or vibration is applied to muscles. For a baby, this happens through swaddling, holding tightly, lying in different positions (body weight applies the pressure), crawling, rolling, etc.
- Vestibular input is any type of movement to the head. Babies get this input through rocking, swinging, movement in a stroller, changing diapers, etc.

Body awareness continues to develop in childhood. In order for it to continue developing in older children, they generally require lots of vestibular input or physical activity. Again, this usually happens through regular play. Children are engaged in activities such as:

- riding bikes
- skating
- tobogganing
- swimming
- playing games
- skate boarding
- roller blading

If they do not receive this input, such as when children choose not to engage in activities where they get the physical activity they require, they are at risk of many physical and mental health challenges.

Proprioceptive input continues to have an impact on the body when children are:

- pushing on the pedals while riding their bikes
- rock climbing
- pulling a sled up a hill
- swimming through the water
- hiding under couch cushions
- squeezing into tight corners
- sitting very close to people in circle at school or on the couch at home
- wanting lots of blankets on them when they sleep at night
- digging in sand/dirt
- baking, or playing with playdough/clay, especially when hands are used for mixing and rolling

It is possible to continue to observe the development of body awareness when children get older as their fine and gross motor skills develop. Can they manage scissors and pencils with good control? Do they draw an age-appropriate picture of themselves? Do they run into walls or other objects on purpose? Do they use too much force when tagging a peer in a game of tag? Is it a struggle to toilet train during the day and night?

For many individuals with a developmental disability (DD), these skills are slow to develop, or may never develop. They may not be able to control a pencil or scissors, kick or throw a ball, etc. They may continue to stand too close to others, although they may hate it when others come into their space. The lack of development of body awareness is not necessarily because they did not get the input when they were younger, but rather, they needed more input in order for it to allow them to use their body effectively. Once children get to the teenage years, it is harder, but not impossible, to develop body awareness. Unfortunately, body awareness can also deteriorate. Young adults may have received much more input during their school years, and it becomes more of a challenge after they leave school. Suddenly, the input is no longer provided or easily accessible. Body awareness begins to regress and the motor skills that are based on body awareness also begin to deteriorate.

For those of us supporting adults with developmental disabilities, we need to be more aware of how to continue developing these skills, especially for those young adults who are suddenly left with very little daily activity. For the most part, as much proprioceptive input as possible appears to be the most helpful. Vestibular input is also very important, since it helps to organize the body. In order to meet the individuals where they are at chronologically, it is often hard to think of activities that are meaningful, as well as beneficial.

Vestibular activities may include:

- Swimming is always a good choice as long as the individual can tolerate all the tactile or temperature changes, especially if swimming in an indoor pool (temperature changes from outside, to inside, to the change room, to showering, to the pool area, to going into the pool can be too much for people who are sensitive to temperature changes)
- Bike riding on a two- or three-wheel bike
- Snow shoeing
- Cross country skiing
- Skating
- Going for a walk

Proprioceptive input may be provided through:

- Swimming
- Yoga is excellent, but a coach may need to guide the body through the positions because there is often not enough awareness for the individual to plan how to make the movement.
- Progressive relaxation is also useful, but again physical (and possibly visual) input may be necessary for the individual to know which limb they are trying to relax.
- Massages are useful.
- Bean bag tapping is another strategy that can help to develop body awareness.
- Tight clothing (i.e., cycling clothes) can be helpful.
- Weighted blankets are often useful either at night or when sitting to watch TV, play computer games, etc.
- Cross country skiing
- Mixing cookies with firm dough
- Stress balls that provide resistance
- Pulling on activity bands
- Gym activities also have a component of proprioceptive input.

Case Example

Scott is a young man who lives with his parents in a small Ontario town. He has recently finished school where he was in a special education class due to developmental delays. Currently, he is spending a lot of time at home playing video games. His parents both work full time so are not home during the day to provide transportation to activities, direct support, or encouragement to engage in activities. He does have a support worker who takes him out twice a week for a couple of hours. Scott is not as interested in the activities in which he participated previously. He would rather just go for a drive or challenge his worker to a video game. They occasionally go for a coffee.

Scott's parents have noted that he does not engage in many of the activities, including household chores, that he did when there was a routine while he attended school. They have also noticed he is much clumsier than he was previously. He has difficulty putting toothpaste on his toothbrush without getting it all over the counter. There is frequently spilled milk and cereal on the counter after Scott pours his cereal. He has tripped going up and down the stairs a couple of times. Scott used to enjoy riding his bike, but he fell off it and no longer wants to ride anywhere which further limits his participation in community activities. Scott was previously involved in T-ball with Special Olympics but gets frustrated because he can no longer consistently hit the ball. He has stopped going, an activity he used to enjoy attending with his father in the evenings. Possibly, the biggest change that Scott's parents have observed is that there has been a change in his toileting. He has become incontinent frequently, including decreased bowel and bladder control. Scott began masturbating when he reached puberty and learned that this was a private activity to be done in his bedroom or in the bathroom. He no longer seems to have the same control and will often defecate and urinate during masturbation.

Initially, Scott's parents took him to the family doctor to see if there was something medical that was causing all the changes. Blood work was normal. A neurologist did not see anything abnormal during his assessment. Muscle tone was decreased, but it has always been low, and the neurologist had not seen him previously to have a baseline comparison. Eventually, the family doctor suggested that an occupational therapist may be able to assist.

The occupational therapist assessed activities of daily living, as well as Scott's ability to process sensory input. Skills with personal care were very limited and, at that time, Scott's parents realized that he had more skills previously. There was not as much change in home and community skills, since he had not been as active in those areas. Once the assessment of

sensory processing was completed, it became very apparent that Scott needed a lot more vestibular and proprioceptive input. When he was at school, the input was usually provided as part of his daily routine. He participated in gym every day; there were daily walks around the track in the morning; he used activity bands if he was becoming agitated at school, and he carried his backpack every day. His backpack was heavy because he had a collection of metal cars that he always brought with him. He also had some special cars that were kept safely in his coat pockets; so not only was the backpack heavy, but his coat was as well. It became apparent that Scott had been getting a lot of the vestibular and proprioceptive input he needed without having to really plan for it. Now that he was sitting playing video games much of the day, he did not receive the input.

The occupational therapist determined that Scott no longer had the body awareness or body organization that he needed to be able to participate fully in many daily activities. He required many more enjoyable activities, and especially vestibular and proprioceptive input throughout the day. The therapist completed a leisure activities checklist to try to find activities that Scott may enjoy which would provide the input he needed. She also helped Scott and his parents to develop a daily routine where Scott would follow a visual schedule throughout the day with a variety of activities that would provide him with the sensory input he needed. Before his mother left for work, she did some bean bag tapping which provided proprioceptive input, as long as she used enough pressure. His father left about an hour-and-a-half later, so he repeated this activity prior to leaving.

Scott had a short exercise routine, consisting of wall push-ups, jumping jacks, and using activity bands (proprioceptive and vestibular input). He also became responsible for emptying the dishwasher which provides a lot of vestibular input as his head moves up and down. Mid-morning, Scott would go for a walk (vestibular input) to get a coffee, carrying his backpack (proprioceptive input) with all the metal cars in it. This was approximately a three kilometer (1.86 miles) walk. Scott enjoyed meeting people and talking with them when he got to the coffee shop. When he returned home, it was lunch time, and then there were one or two chores to do. This might involve collecting the garbage and taking it to the curb (proprioceptive and vestibular input), cutting the grass, raking the leaves (proprioceptive and vestibular input), etc. His support worker came twice a week, and they were finding new activities to do together. They went hiking, walked for coffee rather than driving, and started biking again, (proprioceptive and vestibular input). They also tried some new activities such as badminton, pickleball, and basketball (primarily vestibular input). On occasion, they drove to the next town to go swimming and rock climbing (primarily proprioceptive input).

It did not happen immediately but, when the therapist followed up in about six months, Scott's parents were able to identify that he was no longer spilling the milk or cereal when he was pouring it. The vanity in the bathroom rarely had toothpaste all over it. It had been a long time since Scott had tripped on the stairs. It was too late to begin T-ball, but Scott was looking forward to participating in Special Olympics during the next season. The biggest change was that Scott was rarely incontinent. He was also able to masturbate without having to urinate and defecate at the same time. In general, Scott was much happier. He still enjoyed his video games but was so much more active and was participating in the community in many ways. His parents were looking forward to doing many more activities with him again now that they had a better idea of those that would provide the most benefit to Scott. They planned to give him snowshoes for Christmas. He was going to use some of his funding to get a gym membership. He would go with his support worker at times and then walk there by himself at other times. His father had a membership at the same gym, so they could go together occasionally in the evening.

This is an example of how deterioration of body awareness can affect an individual's skills. It was important to rule out medical issues, but there was such a significant change after Scott left school that there had to be a relationship. He was not getting the input he needed, and many

skills were deteriorating. In addition, Scott was not moving enough and so was at risk for other physical and mental health challenges.

Conclusion

Body awareness seems like an issue that is only relevant when a child is very young. This is most frequently the case for neurotypical individuals. However, anyone who is not neurotypical can have challenges even into adulthood. As individuals age out of school, it is becoming more recognizable that challenges can resurface. If you notice any of these issues arising for the people you support, please contact your occupational therapist or someone who has a good understanding of sensory processing and its impact on functional skills. There really are many options to help individuals have a higher quality of life through a variety of modifications in their everyday routine.

If you are looking for more information about sensory processing, Carol Kranowitz has written a series of books beginning with The Out of Sync Child. Unfortunately, these books appear to be available in English only. However, they are written in a manner that is easy to read. They include checklists that will help you to know when it would be useful to seek additional assistance.

About the author

Chris Galvin is an occupational therapist with over 40 years experience in working with adults and children with a great variety of developmental challenges. She uses a sensory processing basis to guide many, but not all, treatment recommendations. Body awareness is a current interest because it incorporates so many aspects of sensory processing and underlies the development of so many skills. It is only recently that we have become aware of the impact of immature body awareness on the development and awareness of sexuality.

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