OUR SENSES

THE VESTIBULAR SYSTEM
Learning Objectives

- Gain an understanding of the vestibular system and how it works.
- Understand the components and function of the vestibular system.
- Describe several strategies that you can use when playing with your children to provide needed sensory input.
SEVEN SENSES?

Most children and adults are taught that we have five senses: taste, touch, smell, sight and hearing.

However, we have two additional senses that are often not discussed. What are they?
MOVEMENT

Proprioception (body awareness). This helps us know where our body is in space.

Vestibular (movement).
Sensory Experiences

“Exploration through all senses lays the foundation for all development.”
The first sensory system to fully develop by six months after conception is the vestibular system.
Our vestibular system tells us where our heads and bodies are in space.
The vestibular system is housed in our inner ear and contributes to our balance and spatial orientation.
The vestibular system influences everything we do!

It is the unifying system in our brain that modifies and coordinates information received from other systems.
It functions like a traffic cop telling each sensation where and when it should go or stop.
Our vestibular system contributes to our balance and sense of spatial orientation.
The Internal Ear

- Semicircular ducts
  - Anterior
  - Lateral
  - Posterior

- Cristae within ampullae
- Utricle
- Saccule
- Vestibulocochlear nerve
- Vestibular duct
- Cochlear duct
- Tympanic duct

Legend:
- **Purple**: Bony labyrinth
- **Blue**: Membranous labyrinth

Cochlea
Two components of our vestibular system are:

*Otoliths*-which indicate side to side movement

Otoliths = Saccule and Utricle
Both the utricle and the saccule within the vestibule respond to changes in the position of the head with respect to gravity. It provides information about acceleration.
Utricle = Sensitive to horizontal acceleration

Saccule = sensitive to vertical acceleration
Semi-circular canals—which indicate circular movement.

Figure 2: The Vestibular System - semicircular canals and otolith organs
Each time we move our head, there is a corresponding movement of the fluid in the vestibular system for each ear. This then allows us to sense how far our head has moved and at what speed.
Research validates the importance of movement for stimulating the inner ear and the vestibules.
Children who experience challenges with their vestibular system have difficulty integrating information about movement, gravity, balance and space.
Often children with hearing loss crave vestibular input.
Sensory play should incorporate all seven of our senses.

Here’s how!
GET MESSY!
During meal times invite your child to explore food with his or her hands and sense of smell before tasting it.
Resist the temptation to immediately wipe your child’s hands.

The tactile information from the mess provides your child’s brain with tons of useful information.
MOVE!
Expose your child to movement early.
Movement helps to develop your child’s sense of body awareness, balance and coordination.
Movement is also great for emotional regulation. Always start with slow movements and remember to keep the duration short.
A yoga ball is great for encouraging movement at home. Have your child bounce on it and then try different positions – laying on their stomach, reclining on their back or rolling gently from side to side.
THINK ABOUT TOYS!
DITCH THE PLASTIC!

Plastic toys typically have the same feel. Wooden toys and toys with textures invite more sensory exploration and creative play.
Sometimes the most simple of objects like the tupperware drawer in your kitchen intrigues your child.
With warmer weather just around the corner, toys like Play Doh, sand and water tables invite exploration and provide so many language opportunities.
For example, at the sand/water table, model language like, “Scoop” “pour” “dip” “dig in the sand” “float” “splash.”
CEMENT LANGUAGE WITH ACTION!

For example something as simple as counting 1-2-3 GO! before your child goes down the slide.
With enough modeling, your child will then use this language during independent play.
STANDING AND BALANCE

An easel is a great tool for helping your child to develop core strength, coordination, balance and fine motor skills.
While standing at the easel try painting with different textures like fingerpaint, or pudding paint and using different drawing tools like thick chalk or thick crayons.
When you are dressing your child, have him/her stand and lift his/her leg into pants or stand and raise his/her hands above their hand to put on a shirt.
GET OUTSIDE!

We are fortunate to live in Colorado and to have so many opportunities to get outside. Try each day to be outside with your child.
Take advantage of opportunities to observe and encourage your child’s play.

This requires you to be “in the moment”
Move! Before During and After Story!

Move like the animals in the story. Place props in sand/rice/water.

Read books that have a variety of textures.

Use feely boxes. Light and deep touch.

Plan art experiences with different textures like chalk, paint, materials that connect to the story.
Music and Movement

Songs, rhymes, and chants all provide opportunities to PLAY with the sounds of language and to develop phonemic awareness.

- Make up songs for daily routines
- Practice familiar nursery rhymes
- Pause and have the child fill in the missing word or phrase—practice auditory closure often!

Studies show that if a child knows 8 nursery rhymes by heart by the age of 4, they typically are one of the top readers in their class.

Laurene Simms, PhD
When parents are asked to define how they play and what they do when they play with their child, a common response is “I hand him/her my phone.” Let this not be your go-to!