

“You Spin Me Round”: The Vestibular System in the Classroom

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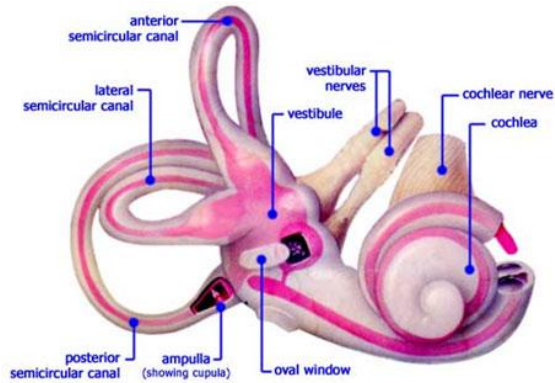
Rustling leaves, sharpened pencils, backpacks slung over shoulders, hot early days of September, you are ready for a new classroom! This is a time of anticipation, planning and excitement. Teachers will soon face a group of students, each with their own personal style. Their temperaments, speech mannerisms, movement, posture, social interactions and learning preferences are behaviors that represent their own unique nervous systems. The children will come with a variety of abilities that may or may not be conducive to learning in a classroom environment.

Is it possible that this fall that you may be faced with a class of glassy-eyed, droopy bodies that are fidgeting and squirming? The students’ capacity to individually, and as a group, sustain attention is a basic learning requirement. You may be excited to hear that as the neurochemistry/ physiology of attention becomes better understood, you can equip yourself with tools that can directly impact a child’s ability to attend. You can fire up the system for arousal via the vestibular system (a sensory system located in the inner ear). As a teacher, you have the power of turning on the light bulb of attention and focus for learning. You can purposely activate the “on switch” of the vestibular system with selective movement at key times during the day. Though not all of your classroom may be inattentive, your intervention will support all students to be able to listen and learn at a more efficient level.

What is the vestibular system?

Though you have come to be a highly educated adult with basic concepts of how the human body functions, it is likely that you have learned about only five of the seven sensory systems. When you think: vision, hearing, touch, taste and smell, unfortunately you are missing the proprioceptive and vestibular senses. Taking a few minutes to discover the wonders of the vestibular system could change your ability to reach your students.

A powerhouse, and wonder, of a sensory organ, the vestibular system is located within the inner ear. It is physically attached to the cochlea (the part of the ear that senses sound) and, like the cochlea, is fluid-filled and lined with hair-like structures. The structure of the vestibular system is made up of three semicircular canals and two sa- like structures called the saccule and utricle. The entire mechanism is quite small and could sit on a dime.



An intact vestibular system is necessary for:

- Marking your position in space.... “You are here” in the map of your life
- Balance
- Attention
- The ability to localize sound
- Motor coordination
- The ability of your eyes to scan for reading
- Emotional regulation

As the stimulus for sight occurs when light hits the rods and cones of the eye, the greatest stimulus for the vestibular system is movement of the head. When the head and neck move, so does the fluid in the semicircular canals, utricles and saccules. The fluid, in turn, pushes the hair cells that sway with the direction of gravity (imagine an underwater current that causes the movement of seaweed). When the hair cell sways, it activates a neurochemical reaction that is transmitted to the brain. The brain then registers the movement of your head in space.

The vestibular system is the vestibule, or entry, to the brain. It directly feeds the reticular activating system, the part of the brain that is responsible for maintaining a level of alertness. The vestibular system is also hardwired to coordinate with vision and hearing, to create the synthesis of a triad of input to give one perception of where you are in space.

The vestibular system is key to the vestibule-ocular reflex that permits stabilization of gaze during movement of the head. It is also a crucial part of the vestibulospinal reflex necessary for posture and stability.

Signs of Vestibular Dysfunction

There are numerous behaviors one might observe in the classroom that could be indicative of vestibular dysfunction.

Think of these categories:

Posture:

Slumping in seat
Resting head on the desk
Tipping back and balancing on two chair legs
Propping or leaning against furniture or walls
Falling off chair

Movement:

Moving all the time OR seldom moving/ poor endurance
Fidgeting/trouble sitting still
Bumping into walls, desks other children
Falling or general clumsiness
Difficulty balancing on one foot or walking on balance beam
Trouble judging space for social interactions (“in your personal space”)
Difficulty with handwriting

Vision:

Skipping lines when reading
Trouble copying information from the blackboard
Trouble kicking or catching balls

Arousal:

Ability to attend to work, play, lessons is impaired
Very quiet, “spacey,” easy to overlook
Loud, over-active
Trouble staying “just right” (either high or low)

How to help

You have identified a student in your classroom with possible vestibular dysfunction. In fact, you have found a few children who cannot focus attention, skip lines when they read, or have deficient grapho-motor skills. As a teacher, it is appropriate to support best practice in a classroom. This means creating an environment and schedule that is “brain smart” for all children. A classroom of 25 children will yield 25 different nervous systems. Each individual will require a slightly different “diet” of sensation to enter the zone of regulation necessary for learning.

Under this scheme, a teacher can offer a variety of strategies that target vestibular stimulation. Simple ideas include offering students a variety of seats: ball chairs, move and sit cushions, T stools, and chairs that rock. Movement breaks may involve dancing (spinning, dipping head down and up, swaying side to side), yoga poses, Brain Gym, walking on a balance beam, standing on one leg or bouncing on a therapy ball.

Recess is a vital component in maintaining focus. Children with possible sensory differences should never be denied recess. In fact, if you suspect vestibular dysfunction,

the student might be directed to swing, ride the merry go round, or hang upside-down on the bars. Use of dynamic equipment on the playground will better support attention than running around, playing chase, kicking a ball or standing and talking.

A little vestibular intervention, directed by a novice, can go a long way. If a child is on the cusp of ability, your activity may be enough to tip the scale toward making significant achievements in improving attention and motor-based skills (visual, eye-hand and gross motor). You would certainly see improved focus in your general classroom. However, if your changes do not help the child, then it will be important to call for more expert assistance.

Consider the following scenario: Your infant seems to have the flu. She is vomiting and has a fever of 100 degrees. You are comfortable administering Tylenol and Pedialite. However, after a day or two of persistent symptoms, you take your infant to the doctor. The baby is assessed by the physician and recommendations for medication and symptom management are made.

A child in your classroom who may present with vestibular dysfunction deserves the same type of intervention. If unable to achieve desired changes under your care, an Occupational Therapist with a background in assessment and treatment of children with sensory processing disorders needs to be consulted. Like the baby, with appropriate intervention, the child has a better chance to achieve normality in functioning.

Teachers may use the mind-body connection of vestibular activation through movement as a strategy to enhance an entire classroom's level of attentiveness. It is also possible to target specific students who are inattentive with use of equipment or planned movement breaks. The vestibular system is a powerful sensory system that has an enormous impact on posture, balance, movement through space, visual skills, emotional regulation, fine coordination and arousal.