Finding the Balance *in Your Balance System*

By Jenna McLane PT DPT

Is it uncomfortable for you to stand still while having an unexpected conversation? Do you find yourself looking for something sturdy just to rest your hand on? Perhaps you are second-guessing invitations to picnics or sporting events because walking on the grass is a challenge. Maybe you just find yourself parking closer and closer to the shopping cart corral so that you have something to lean on in order to get into the store.

These are all common behaviors reported in our physical therapy clinic. Not all of our patients come to us because they have vertigo or spinning. Many people who arrive at our clinic report limiting their social activities and the hobbies they enjoy due to feeling less confident on their feet. Not all have fallen; some just experience stumbling and tripping at times.

Balance, your body's ability to keep your center of mass over your base of support, is something we often take for granted until we struggle with it. Physical therapy can be very useful in restoring your balance when it is compromised.

Our bodies rely on peripheral feedback systems to give the brain the information it needs to stay upright and avoid falling down. The three sensory systems include our vision, proprioception, and vestibular systems.

First let's discuss the role your vision plays in balance. Your brain relies on this to get information about how your body fits in the surrounding environment. For example, you see people coming toward you or you see that the ground is uneven up ahead and make adjustments accordingly.

Next, you rely on information from your proprioceptors. These are the sensors in your joints, muscles, and skin that provide information to your brain as to where your body is in space. Let's pretend you are walking down a slope right now. There is pressure from your shoe against your foot, a stretch to the muscles in front of your lower leg, and a slight bend in your knee informing your brain that you are on a decline. Someone with peripheral neuropathy, an artificial joint, or an injury can have impaired proprioceptive feedback.

Lastly, the vestibular system also provides your brain with information about your movement in space. This is found in your ear, beyond the eardrum. Within the system are five end organs including the utricle, saccule, and three semicircular canals. The utricle and saccule have small hair cells that detect horizontal and vertical acceleration such as riding in a car or going up an elevator.

The fluid-filled semicircular canals detect rotational movement in different planes. When your head turns, both the left and right vestibular systems generate an impulse based on the fluid shift that occurs. This impulse travels to the brainstem and then directs the appropriate muscular and visual responses that keep you moving smoothly. When both the left and right vestibular systems are healthy and work together, these adjustments are typically not noticed. But, people who have damage or weakness in one or both vestibular systems may feel unsteady on their feet, dizzy, or disoriented (as if their eyes are bouncing).

When patients arrive at WWSPT with complaints of unsteadiness, we look at their whole medical picture. We complete a thorough review of their history to identify variables that may be influencing their balance. Do they have chronic back pain or diabetes that may impair their sensation? Have they been on medications that may impact the function of their vestibular system? Are they smokers, have they experienced migraines, and/or do they have trouble multitasking? These are just a few of the questions we may ask that are extremely helpful in identifying possible contributing causes to patients' imbalance.

After reviewing their history, we evaluate how they move. Is one hip weaker than the other? Are stairs difficult? Is there a difference when walking on a smooth indoor surface and going outside? Do busy environments suddenly make them reach for support?

Next, we thoroughly evaluate their vestibular system and how the reflex known as the vestibular ocular reflex or VOR is working. We screen them for benign paroxysmal positional vertigo, and we evaluate their balance both statically and dynamically.

First-time patients may feel intimidated by the "strange" exercises they see other patients doing in the gym. Our expertise in balance training allows us to incorporate patients' individual goals into their therapy. Patients who struggle with talking to their friend while on a walk may be asked to walk, turn their head, and simultaneously list out their grocery items for the week. A hiker, who misses walking in the woods, may find him or herself stepping across our river rocks while wearing a weighted vest. We like to keep it interesting!

If you have noticed something doesn't quite feel right in your movement, do not simply accept imbalance as a part of aging. In fact, if left untreated, this could lead to a fall. Falls are the leading cause of fatal and nonfatal injuries in adults over 65. Enhancing your balance system through physical therapy can help you maintain your independence and the quality of life you enjoy. Be your own advocate. Please contact us at WWSPT for your balance assessment and treatment plan!