

How does the balance system work?

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FACT SHEET



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Balance comes from several systems working together to create stability of your body and your vision.

We use 3 main sensory systems to maintain balance:

- 1) Vision: Your vision helps you see where your head and body are in relationship to the world around you and to sense motion between you and your environment.
- 2) Sensation/Proprioception: We use sensation from our feet against the ground as well as special sensors in our joints that let you know how your feet and legs are positioned compared to the ground and how your head is positioned compared to your chest and shoulders.
- 3) Vestibular system: Balance organs in the inner ear tell the brain about the movements and position of your head. There are 3 canals in each ear that sense when you move your head and help keep your vision clear

Central Processing: Information from these 3 systems is sent to the brain for processing. The brain stem also gets information from other parts of the brain called the cerebellum and cerebral cortex, mostly about previous experiences that have affected your sense of balance. Your brain can control balance by using the information that is most important for a particular situation. For example, in the dark, when the information from your eyes is reduced or might not be accurate, your brain will use more information from your legs and your inner ear. If you are walking on a sandy beach during the day, the information coming from your legs and feet will be less reliable and your brain will use more information from your visual and vestibular systems.

Motor output: Once your brain stem sorts out all of this information, it sends messages to the eyes and postural muscles to move in a way that will help you keep your balance and have clear vision while you are moving. If you feel off balance or dizzy, one of these systems may not be working correctly, or the information from these systems may not be being “put together” or “integrated” correctly in the brain. A physical therapist can help you determine which systems may be affected and can instruct you in exercises that can improve how your body uses all these systems together.

Updated August 2015