

## Module VII

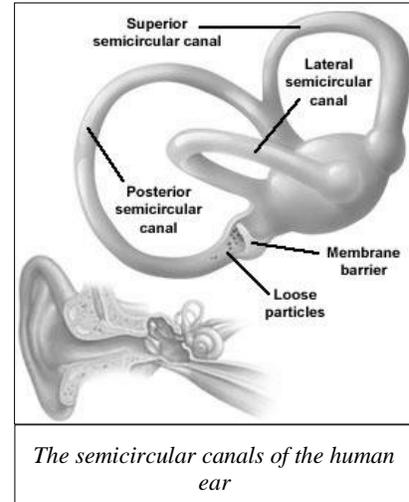
### Module VII: Successfully Treating the Vestibular System; the Semicircular Canals, Utricles and Saccules

While I was preparing for a recent neurology class I ran across an interesting article about scoliosis. The article\* deals with scoliosis as it relates to balance mechanisms and muscle tone, hormones, and some of the most recent clinical applications and the human nervous system.

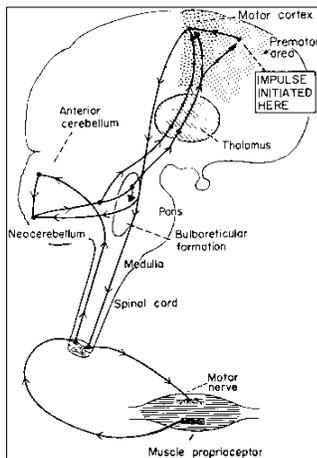
#### Delicate Balance Mechanisms

Standing on two feet is not easy. It takes an integration of many intriguing mechanisms to keep us upright in our environment. One such mechanism is the set of three circular tubes called semicircular canals in each ear. These fluid filled arching channels are set perpendicular to each other. They look somewhat like a chair with a seat, a back and a single arm. Ideally, these three canals are oriented at right angles to each other. However, since they are contained inside the bones of the skull seldom are these canals aligned perfectly at 90 degrees to each other, on the left and the right.

As a person turns his or her head to the right, for example, that movement activates balance mechanisms on the right side and at the same time turns down these same balance mechanisms on the left. This increases the tone of certain muscles while easing back the tone of certain other muscles, which allows the first muscles to be more available for use. When that person turns their head to the left, the nervous system sends the opposite signal and opposite muscle activity takes place. In other words, the semicircular canals are designed to help us respond to the gravitational forces of our environment. In essence, if you tend to fall to one side your semicircular canals are designed to ready your muscles to brace your fall.



The muscle responses to semicircular canal stimulation are preprogrammed into the fabric of the human nervous system. They are predictable and testable. I test them every day in my office, on every patient. If these responses are working properly we move on with our examination. However, more often there is some conflict between what should happen and what actually happens, so we examine these mechanisms further, making appropriate treatment when necessary.



*Primary afferents as they influence cerebellar and dentatorubroreticulothalamic input to the cortex with concomitant cortical outflow to modulate the anterior horn of the spinal cord.*

#### The Spinal Link

The article specifically deals with the lateral semicircular canals and their relationship to the muscles of the spinal column. You would think that the right lateral canal deals with the right spinal muscles and likewise for the left lateral canal, but in fact each canal exerts its influence on the spinal muscles on both sides.

#### Hormones

It is also important to point out that these semicircular canals relate to hormones, too, linking the master gland known as the hypothalamus to scoliosis. Research has shown that an untreated scoliosis can quickly progress as a child reaches puberty, and this progression is a more sensitive issue in females as they start menstruation. It seems that female hormones accentuate a scoliosis.

Finally, it is important to realize that the lateral semicircular canal, the hypothalamus and the muscles that move the spine are all hard wired. That is, whatever happens to one also happens to the others.

While scoliosis has no cure and its treatment can be a formidable task, research has linked some very important neurological items that can be addressed with functional neurology. If you or someone you know has scoliosis, we could examine them and treat their nervous system to correct this erroneous display.

*\*Lateral Semicircular Canal Asymmetry in Idiopathic Scoliosis: An Early Link between Biomechanical, Hormonal and Neurosensory Theories?*  
(<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0131120>); July 17, 2015.