The physiology of balance

Vestibular system: this has to do with the inner ear and the enables balance of the Human body.

Information of our balance is gained through the receptors of our inner ear.

We have three major parts in the inner ear:

- Cochlea which is shaped like a snail full of specialized auditory receptors that process sounds and transfer information to our brain.
- Semicircular canals: which are divided into three

  The lateral

  The posterior

  The anterior

  They are orthogonal to each other which means they are at right angles to each other. Each of these semicircular Amal's are filled with a fluid that's is known as Endolymph. This fluid as the canals rotate they shift as well which causes us to sense what plane our head is rotating along and also the strength of the movement. Sensitive to rotational movement.

- OTOLITHIC ORGANS

  We have two parts :

- Utricle
- Saccule

  Which help us to detect linear acceleration and head positioning

  and within these organs are crystals(actual calcium carbonate crystals).

  that attach hair cells within kind of a viscous gel substance.

  And when we move from any position we are in let's say from lying down

  to sitting down it causes the crystals to move and when they move, they

  physically pull on the hair cells that they are attached to. Ear crystals responds to gravity.

If these crystals can work perfectly there's also a default sometimes which causes dizziness.

And this happens when the crystals in the ear does not move according to the way it is suppose to be and it also causes vertigo.

This is caused by spinning vigorously or for a long period of time. So this happens when the fluid in your semicircular canals are still moving even after you have stopped moving so they send signals to your brain that you are still moving whereas you are not moving and this can result in the experience of dizziness and when the fluid stops moving is when the dizziness subside.

And this can also be stopped by moving the opposite direction of which you we're moving and this stops the endolymph(fluid) to go to it's original direction which cancels it out.

That is not the only reason for dizziness the otolithic organs deal with gravity so in a situation whereby the body is not under gravity like space the otolithic organs do not work very well because the crystals would not be under the force of gravity. And also this happens to divers under water because they would not be able to detect ups or downs.

When a man is looking straight and not moving the hair cells send information to the brain. And is called tonically active because the hair cells sends it fast.