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ASSIGNMENT

Discuss the Physiology of balance

The organ of balance (the vestibular system) is found inside the inner ear. Balance is maintained by the interactions between the labyrinth and other systems in the body, such as the visual and skeletal systems. The labyrinth (a part of the inner ear), is a major organ of our vestibular (balance) system. It is made up of three semicircular canals and two otolith organs, known as the utricle and the saccule. The otolith organs and the semicircular canals each has a different function.

The otolith organs have two functions:

1. The otoliths sense the head's increasing speed in a straight line. They can be either forward or backward, left or right, up or down, or any combination of these.
2. They are also able to sense the head's position relative to gravity. These are the organs that tells whether the body upside down or right side up

The canals generally detect the head's rotation (turning motion). Each of the three semicircular canals is responsible for a specific direction of head movement: One of the canals responds to the head

- tilting upwards or downwards,
- one responds to it tilting to the right or to the left, and
- One responds to it turning sideways.

Any changes of the position of the head causes movement in the perilymph and endolymph, which bends the hair cells and stimulate the sensory nerve ending in the utricle, saccule and ampullae. The resultant nerve impulses are transmitted by the vestibular nerve which joins the

cochlear nerve to form the vestibulocochlear nerve. The vestibular branch passes first to the vestibular nucleus, then to the cerebellum.

The cerebellum also receives nerve impulses from the eyes and proprioceptors (sensory receptors) in the skeletal muscles and joints. Impulses from these 3 sources are coordinated and efferent nerve impulses pass to the cerebrum and to skeletal muscles. This results in awareness of body positions, maintenance of upright posture and fixing of the eye on the same point, independently of head movements.