Name: Abioye Bariyah Oyesholape

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Course: Physiology

1. Physiology of balance

The semicircular canals and the vestibule (utericle and saccule) are concerned with balance,or equilibrium. The arrangement of the three semicircular canals, one in each plane,allow perception not only of the position of the head in space but also of the direction and rate of any movement. Any change of position of the hair causes movement in the endolymph bathing the hair cells, which disorts them and stimulate the sensory receptors in the utricle seccule and ampullae. The resultant nerves impulses are transmitted by the vestibular nerve, which join the cochlear nerve to the vestibule cochlear nerve. The vestibular branch passes first to the vestibular nucleus, then to the cerebellum.

The cerebellum also receives nerve impulses from the eye and proprioceptors in the skeletal muscle and joint, the cerebellum coordinate incoming impulses from the vestibular nerve, the eyes and proprioceptors. Thereafter, impulses are transmitted to the cerebrum and skeletal muscle enabling perception of body position and any adjustments needed to maintain posture and balance. This maintains upright posture and fixing of the eyes on the same points independently of head movement.