**NAME: ONAH OGONNA KAMSIYOCHUKWU**

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**Discuss the physiology of balance**

The vestibular system is the sensory apparatus of the inner ear that helps the body maintain its postural equilibrium, the information by the vestibular system is also important for coordinating the position of the head and eye movements. Balance is mediated by the vestibular nuclei in the brain stem. The labyrinth (inner ear) is a major organ of our vestibular system. There are two sets of end organs in the inner ear:the three semicircular canals of the labyrinth which are associated with sensing rotary motion (angular acceleration) and the utricle and saccule within the vestibule, which respond to changes in the head’s position with respect to gravity (linear acceleration). The brain senses the direction and speed of rotation of the head by the movement of fluids in the semicircular canals. Therefore, balance is maintained by the interactions between the labyrinth and other systems in the body, such as the visual and skeletal systems.

The main inputs into the balance system are the:

1. Vestibular labyrinths
2. Visual system that is, the eyes
3. Somatosensory system, especially proprioception

The main outputs from the vestibular nuclei are:

1. Vestibulo-ocular;

* Permitting reflex eye movements related to posture

1. Vestibulo-spinal which supply;

* Anti-gravity muscles in the lower limb
* Reflex arcs which control gait