

NAME: AKINBILE GRACE OLUWASEUN

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ANSWER

PHYSIOLOGY OF BALANCE

The vestibular system is the sensory apparatus of the inner ear that helps the body maintain its postural equilibrium. The information furnished by the vestibular system is also essential for coordinating the position of the head and the movement of the eyes. There are two sets of end organs in the inner ear, or labyrinth: the semi-circular canals, which respond to rotational movements (angular acceleration); and the utricle and saccule within the vestibule, which respond to changes in the position of the head with respect to gravity (linear acceleration). The information these organs deliver is proprioceptive in character, dealing with the body itself, rather than exteroceptive, dealing with events outside the body, as in the case of the responses of the cochlea to sound. Functionally, these organs are closely related to the cerebellum and to the reflex centres of the spinal cord and brainstem that govern the movement of the eyes, neck, and limbs.

- 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:
 - vestibular labyrinths
 - visual system (eyes)
 - somatosensory system, especially proprioception
- the main outputs from the vestibular nuclei are:
 - vestibulo-ocular:
 - permitting reflex eye movements related to posture
 - vestibulo-spinal which supply:
 - anti-gravity muscles in the lower limbs
 - reflex arcs which control gait