

Neurophysiology

Vestibular system

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Vestibular System Physiology

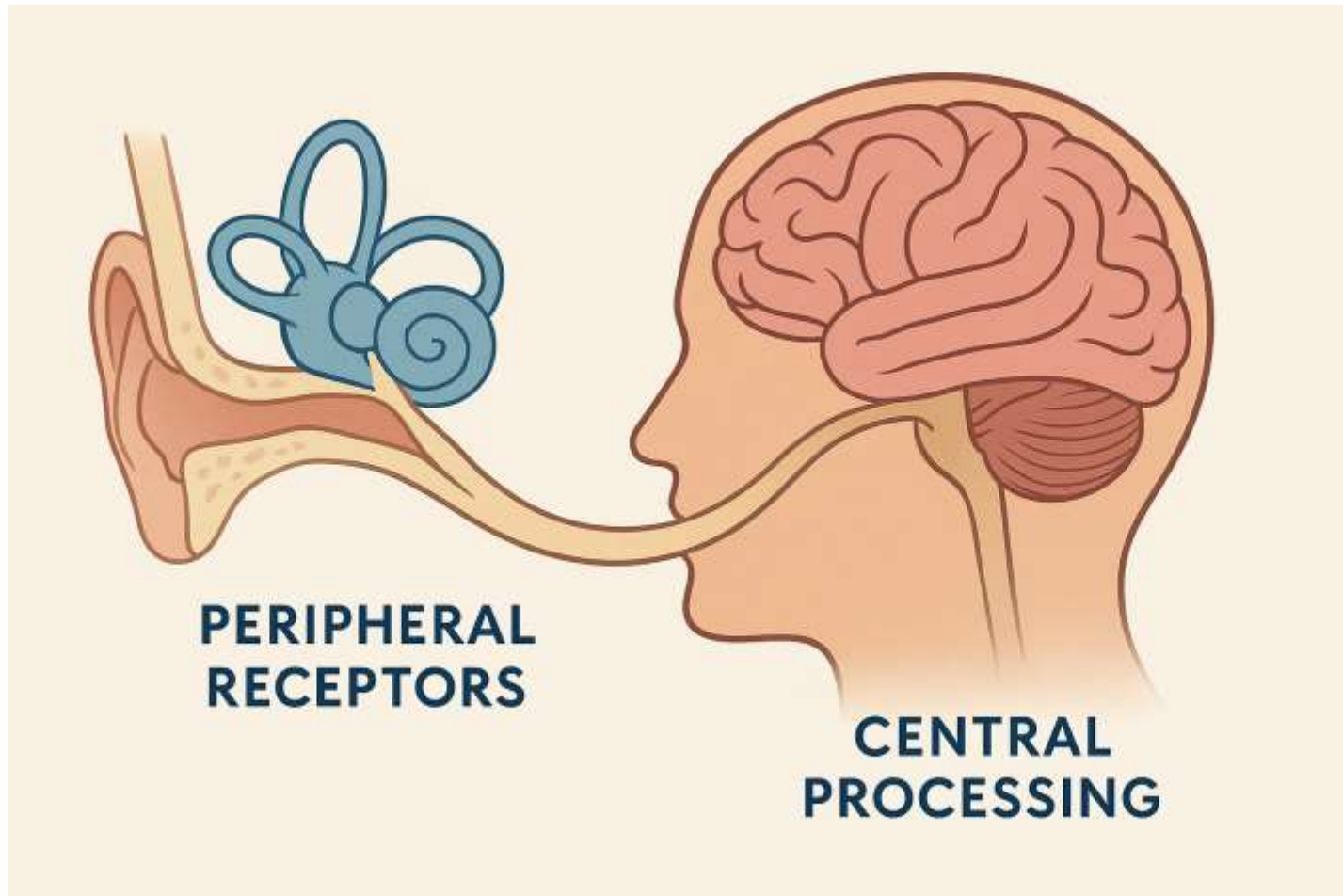
- Balance • Motion • Gaze Stability



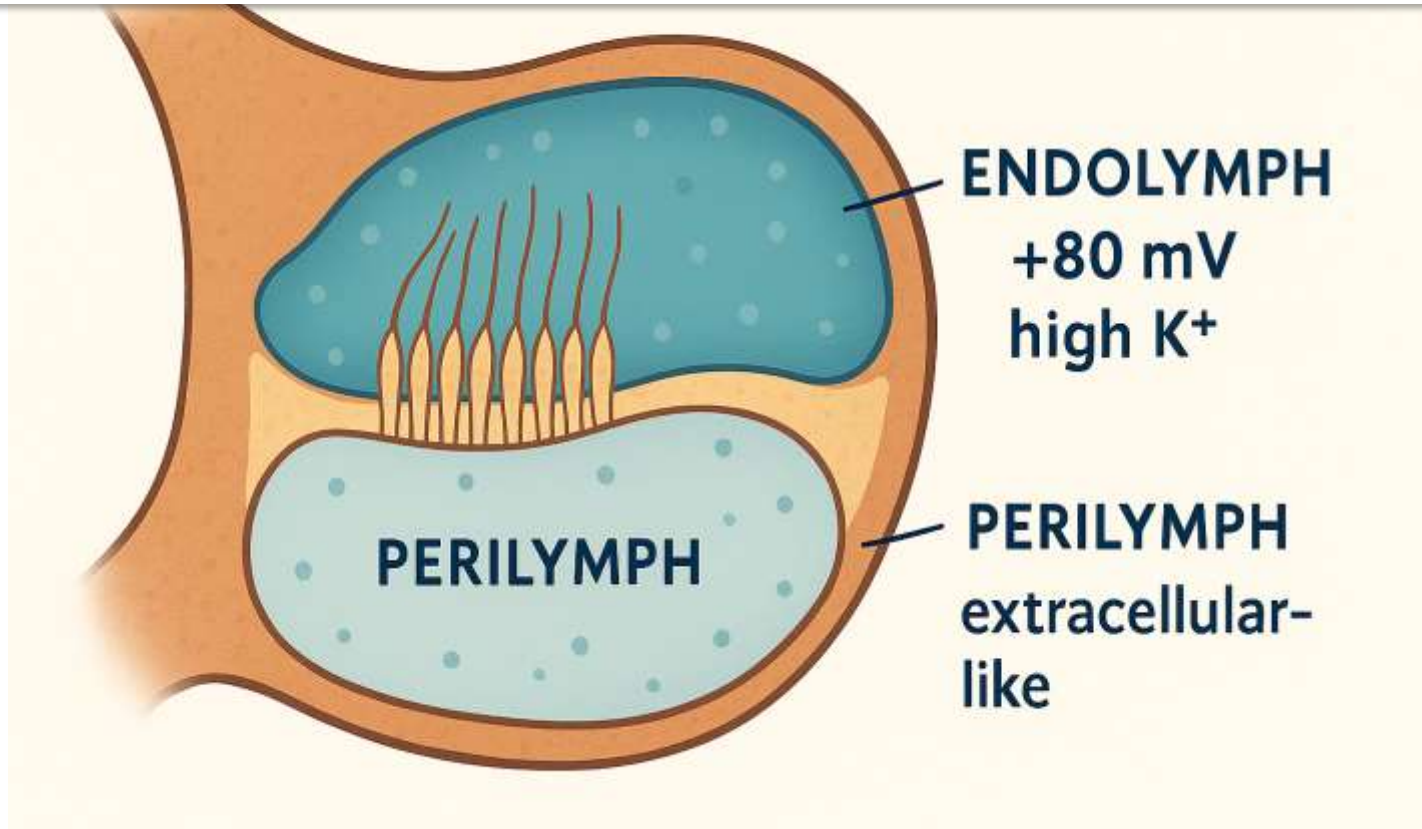
Functions of the Vestibular System

- Balance
- Spatial orientation
- Stable vision during movement

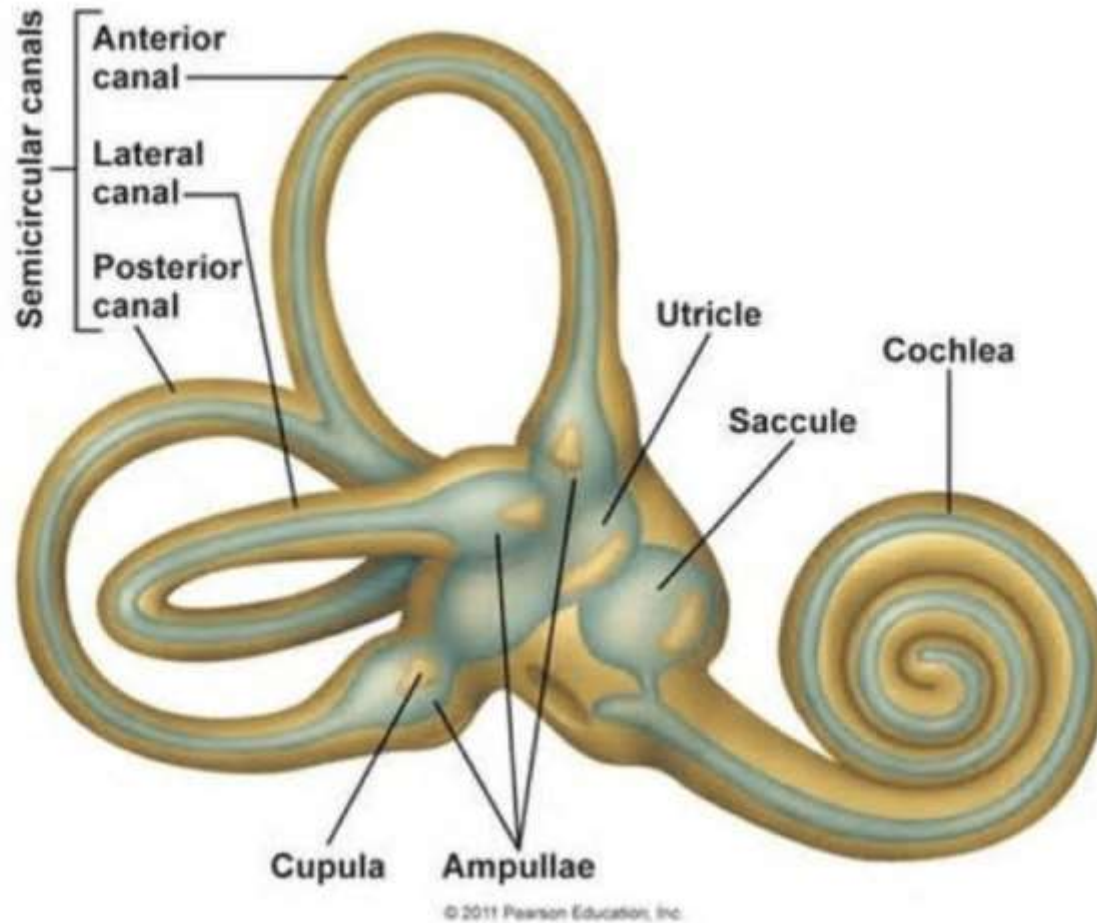
System Organization



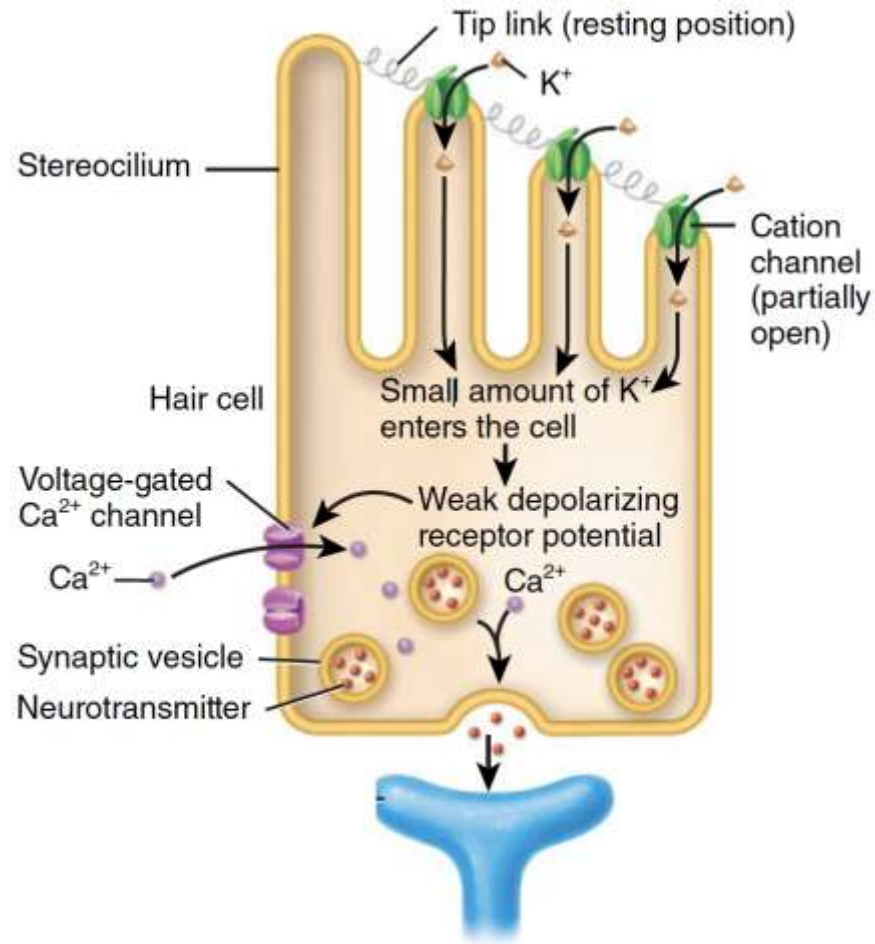
Inner Ear Fluids



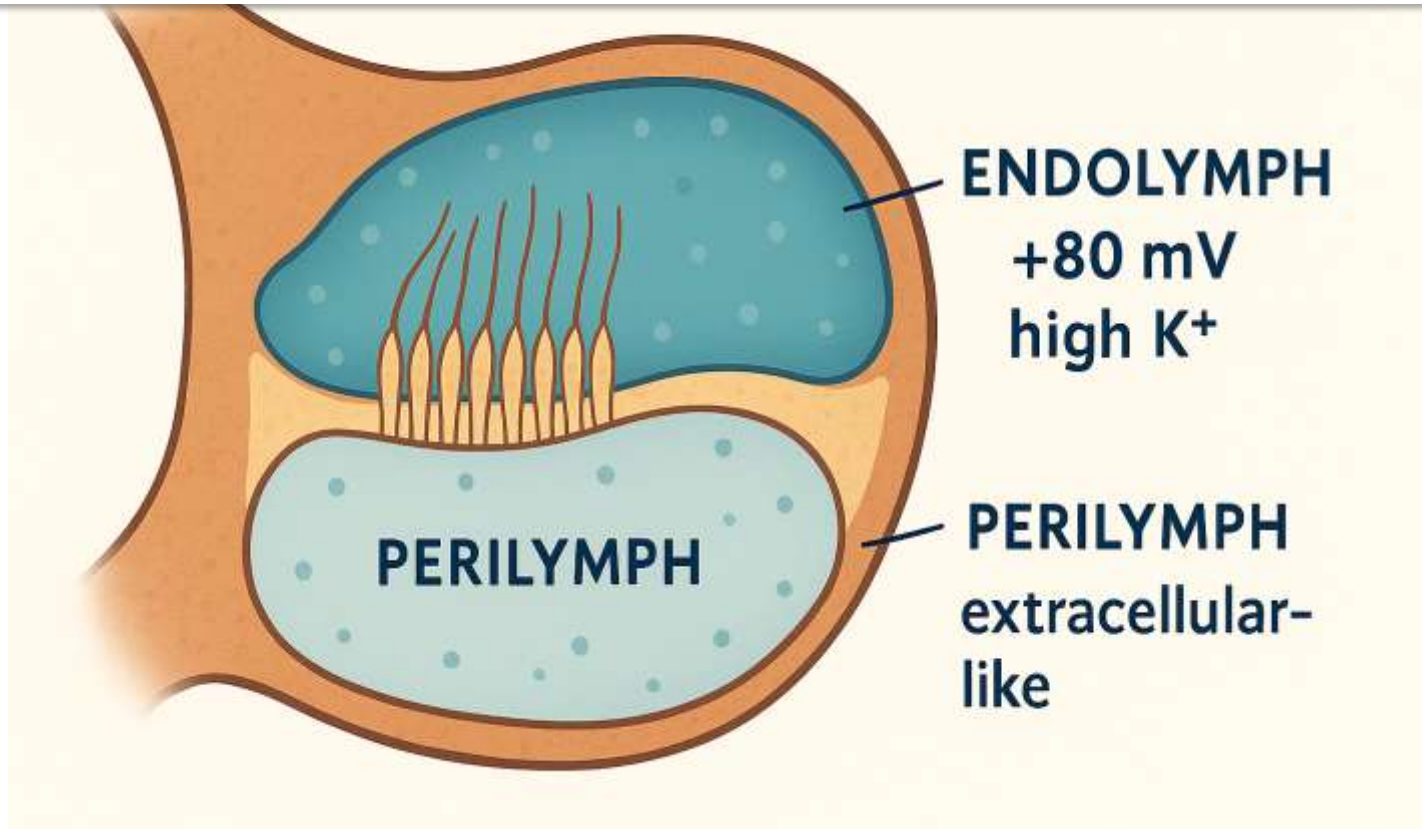
Vestibular Sensory Organs



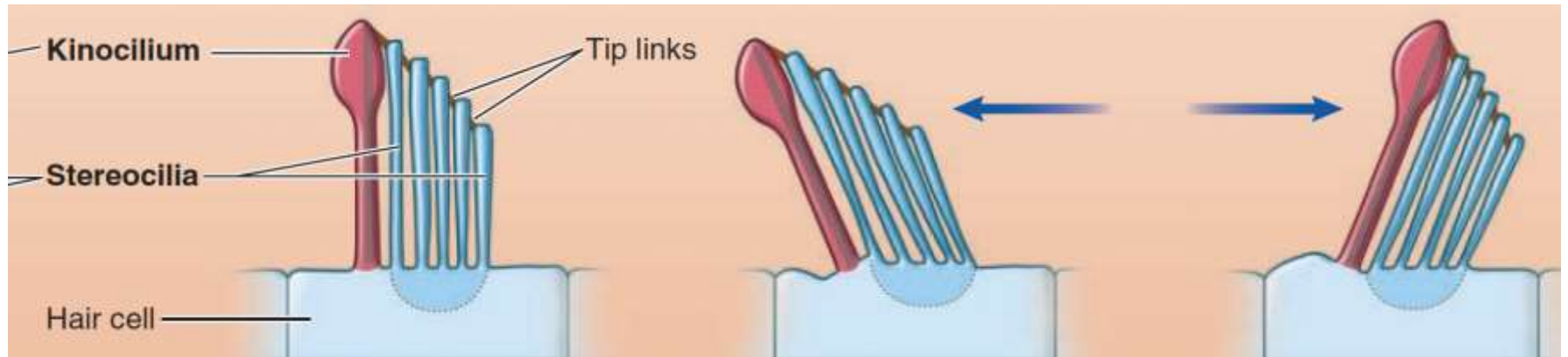
Vestibular Hair Cells



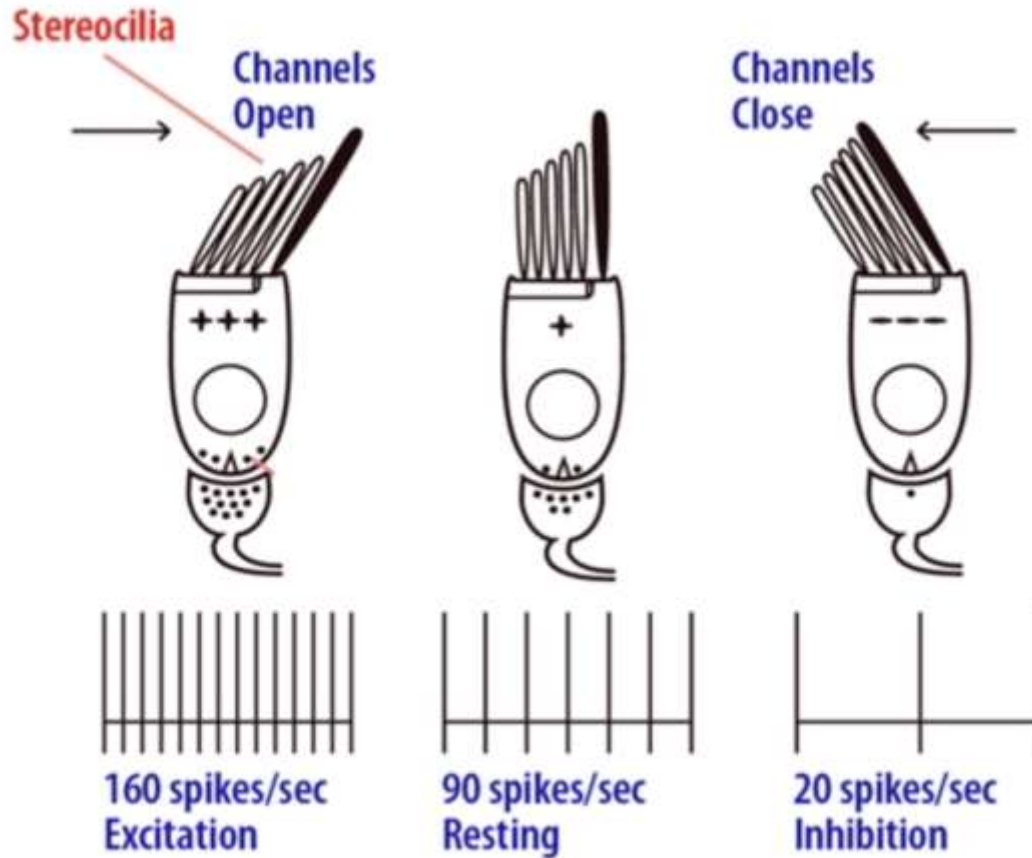
Inner Ear Fluids



Hair Cell Mechanotransduction

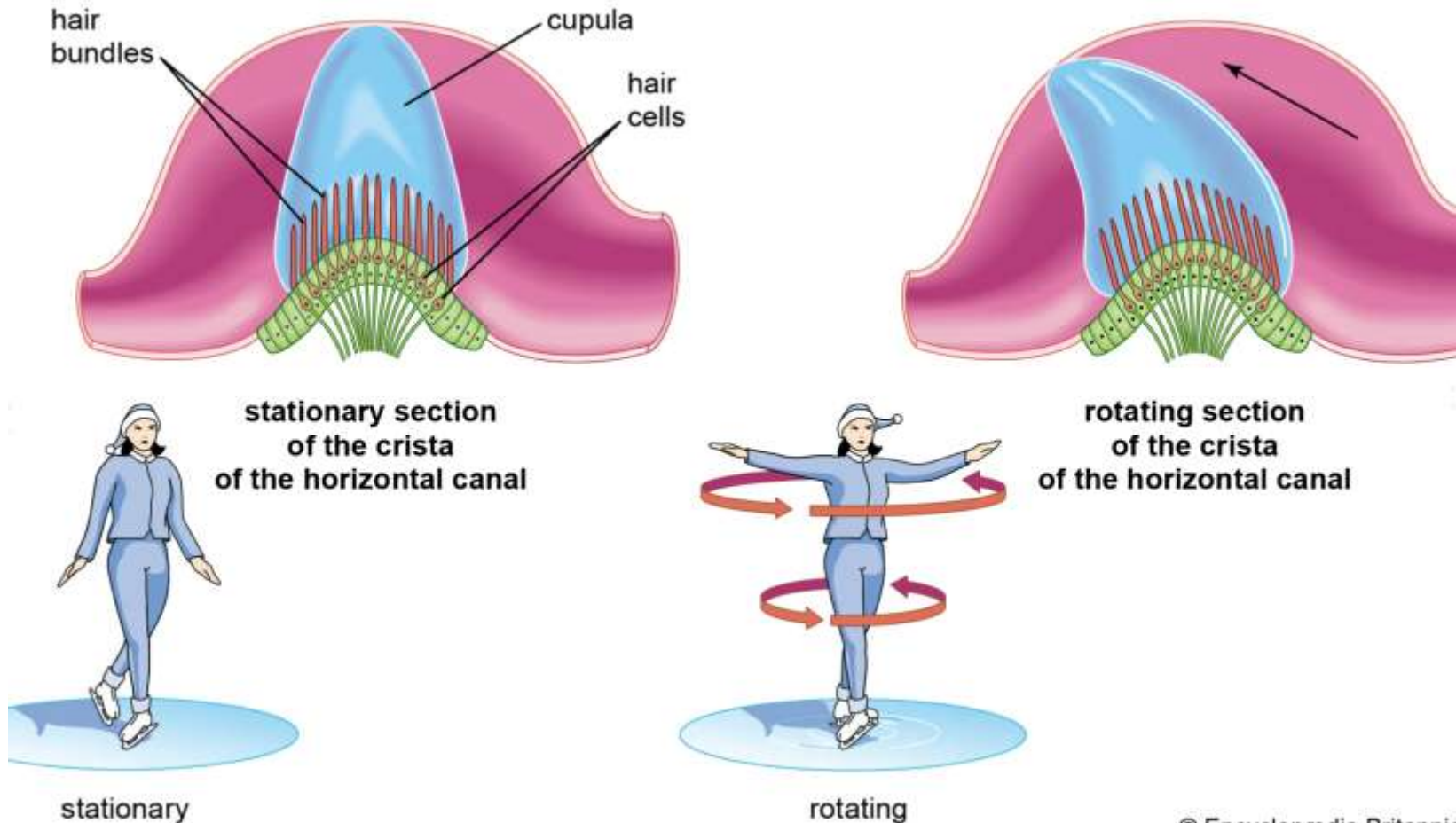


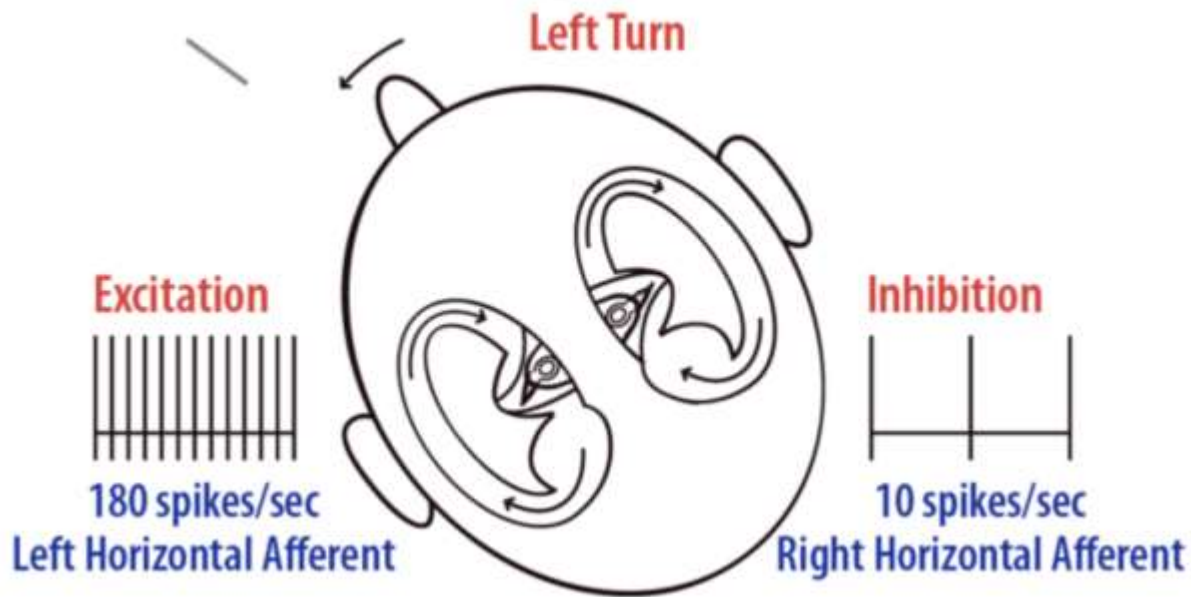
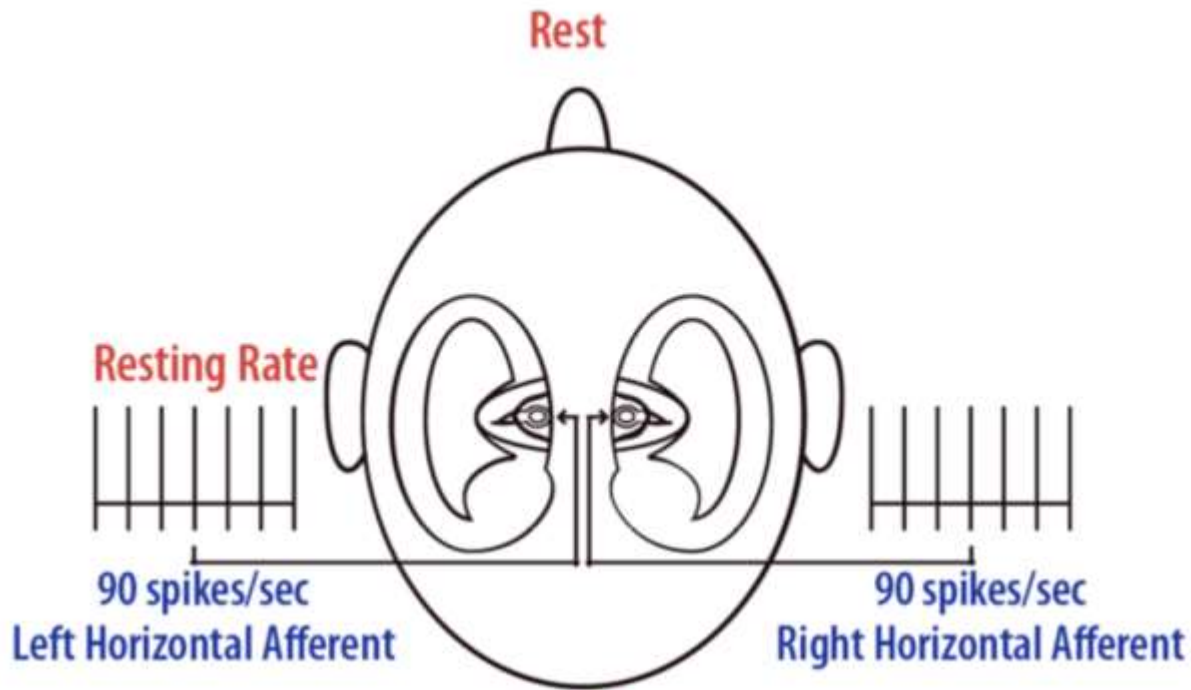
Tonic Firing



Semicircular Canals

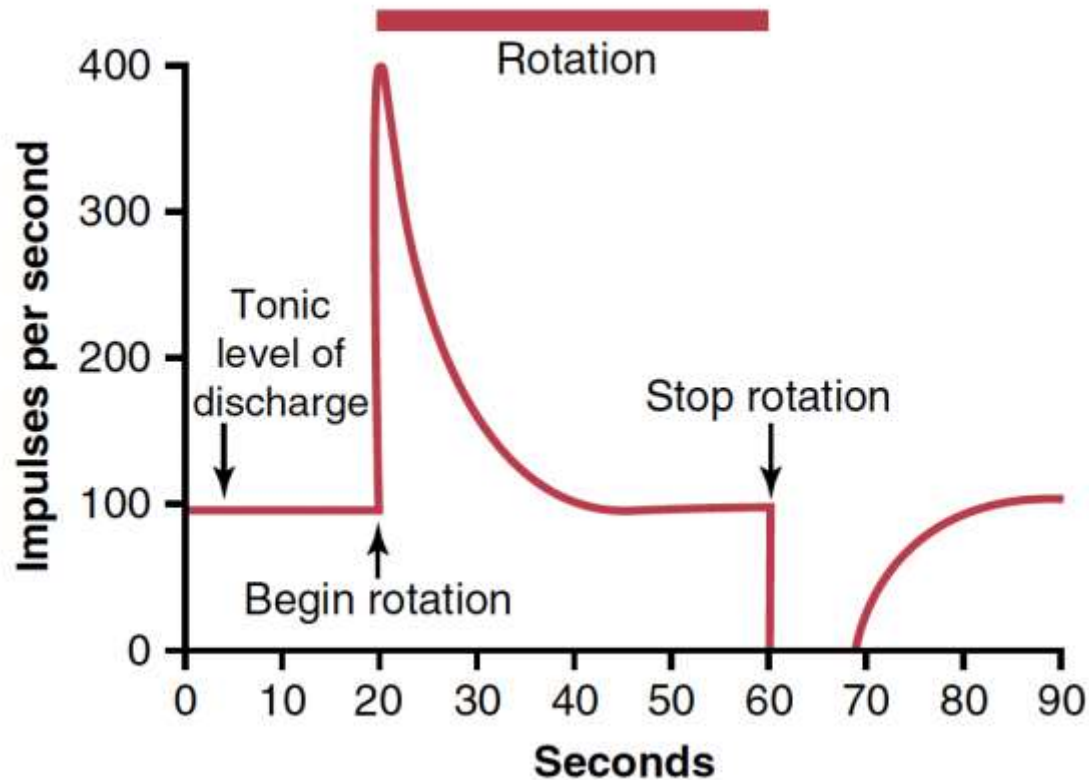
- Detect angular acceleration



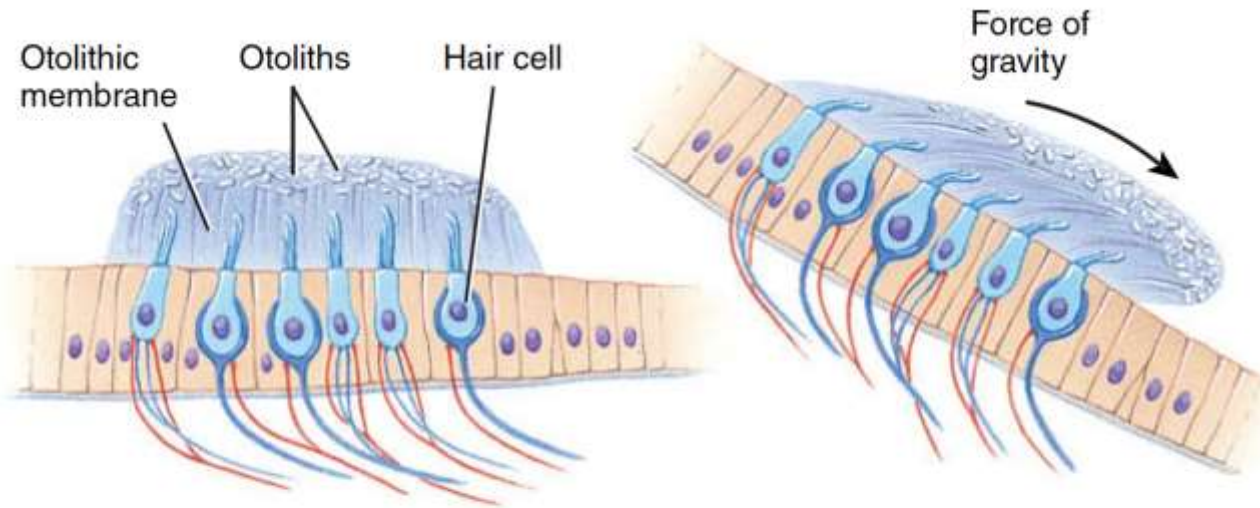


Canal Adaptation

- Respond to acceleration Not constant velocity.



Otolith Organs

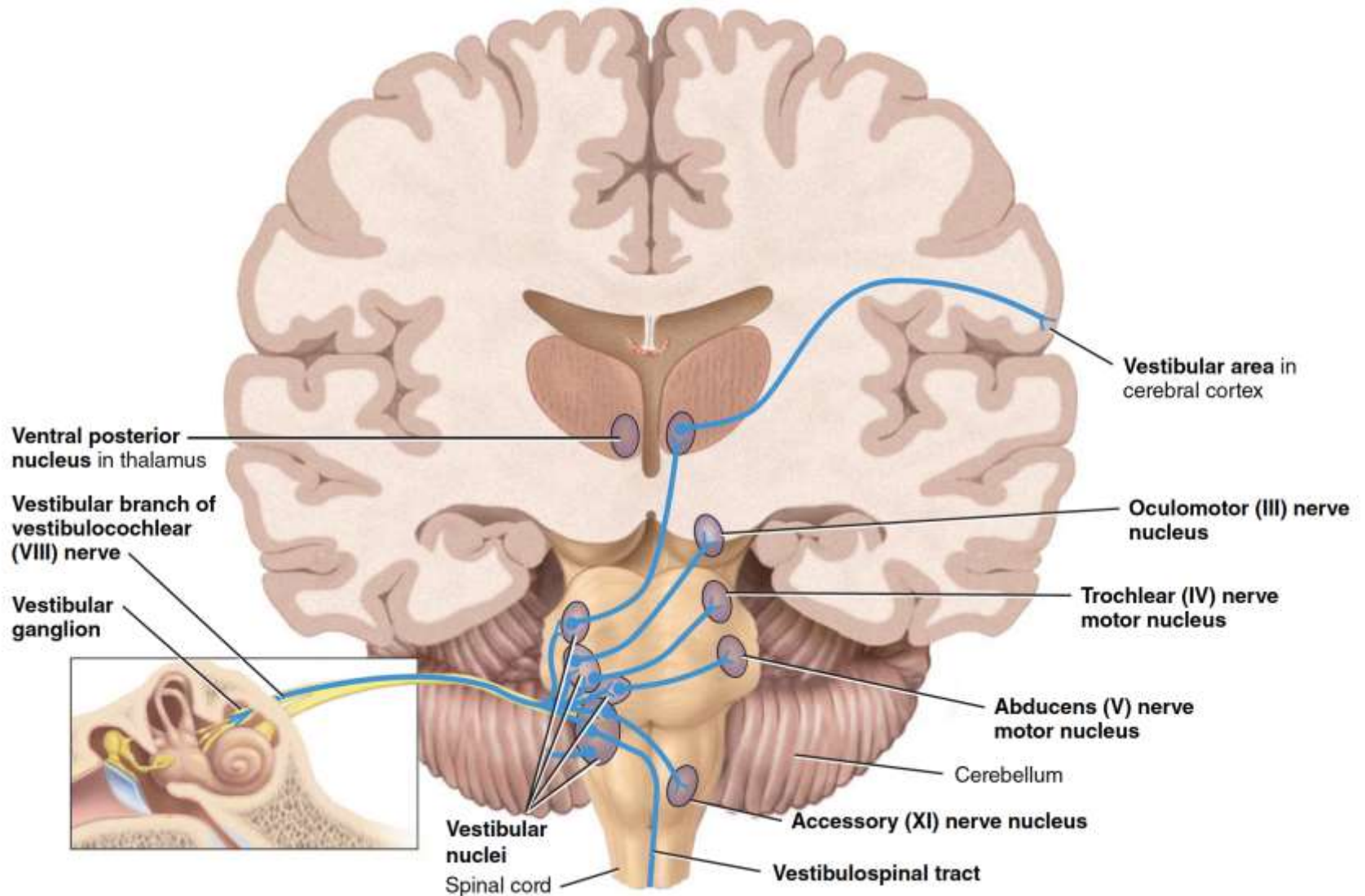


Head upright



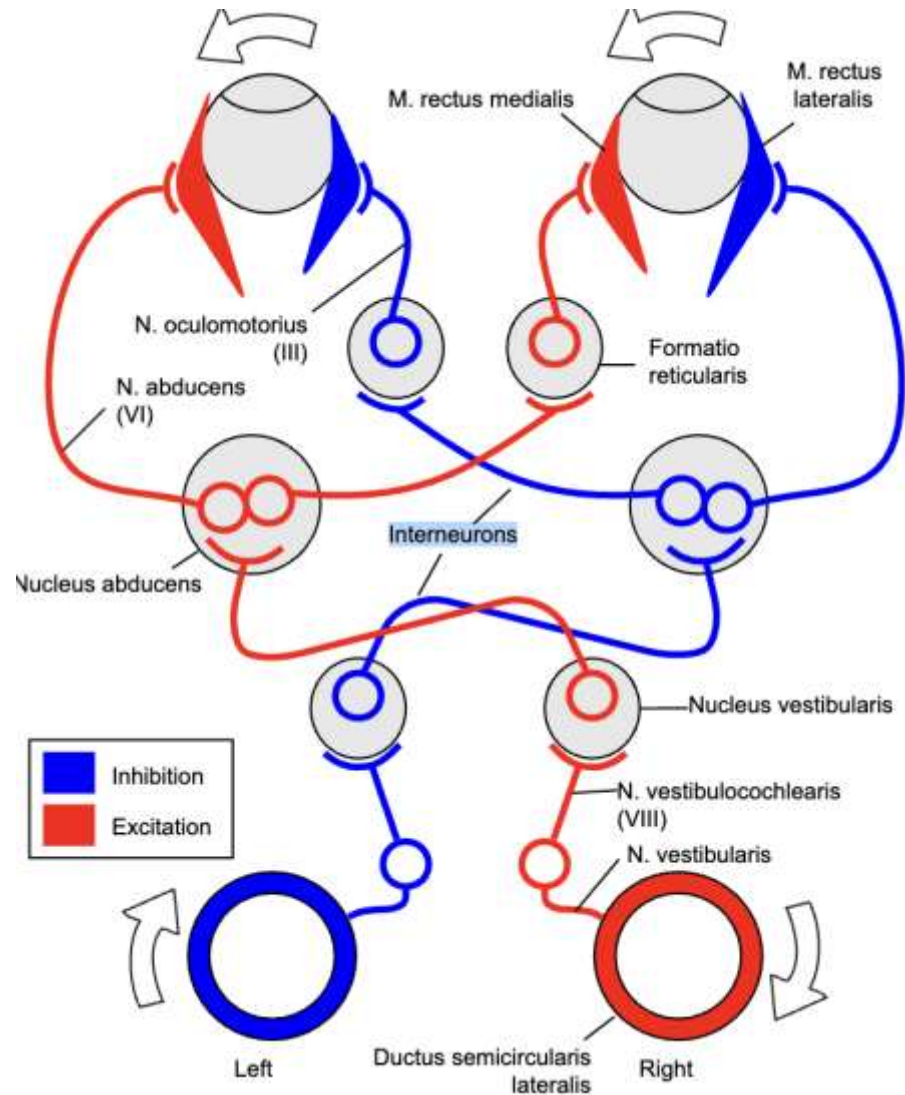
Head tilted forward

Central Vestibular Processing



Vestibulo-Ocular Reflex

- Stabilizes vision



Vestibulospinal Reflexes

- Posture
- Extensor tone

Key Clinical Principle

- Asymmetry = vertigo

Thank You

References

