Decending tract of Spinal cord (2)

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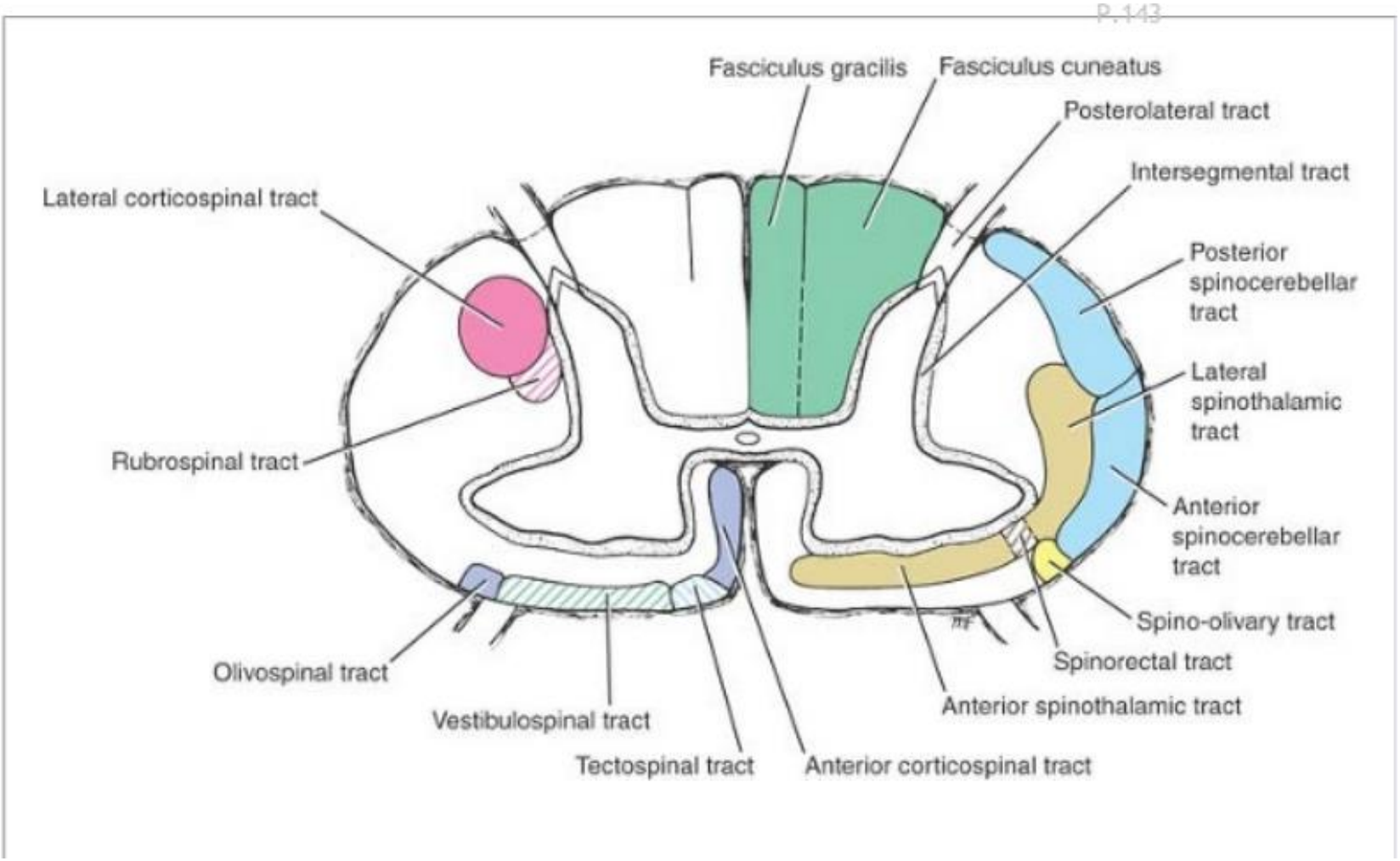
A/P anatomy kgmc

Descending tract of spinal cord



Reticulospinal Tracts

- Throughout the midbrain, pons, and medulla oblongata,
- Groups of scattered nerve cells and nerve fibers exist

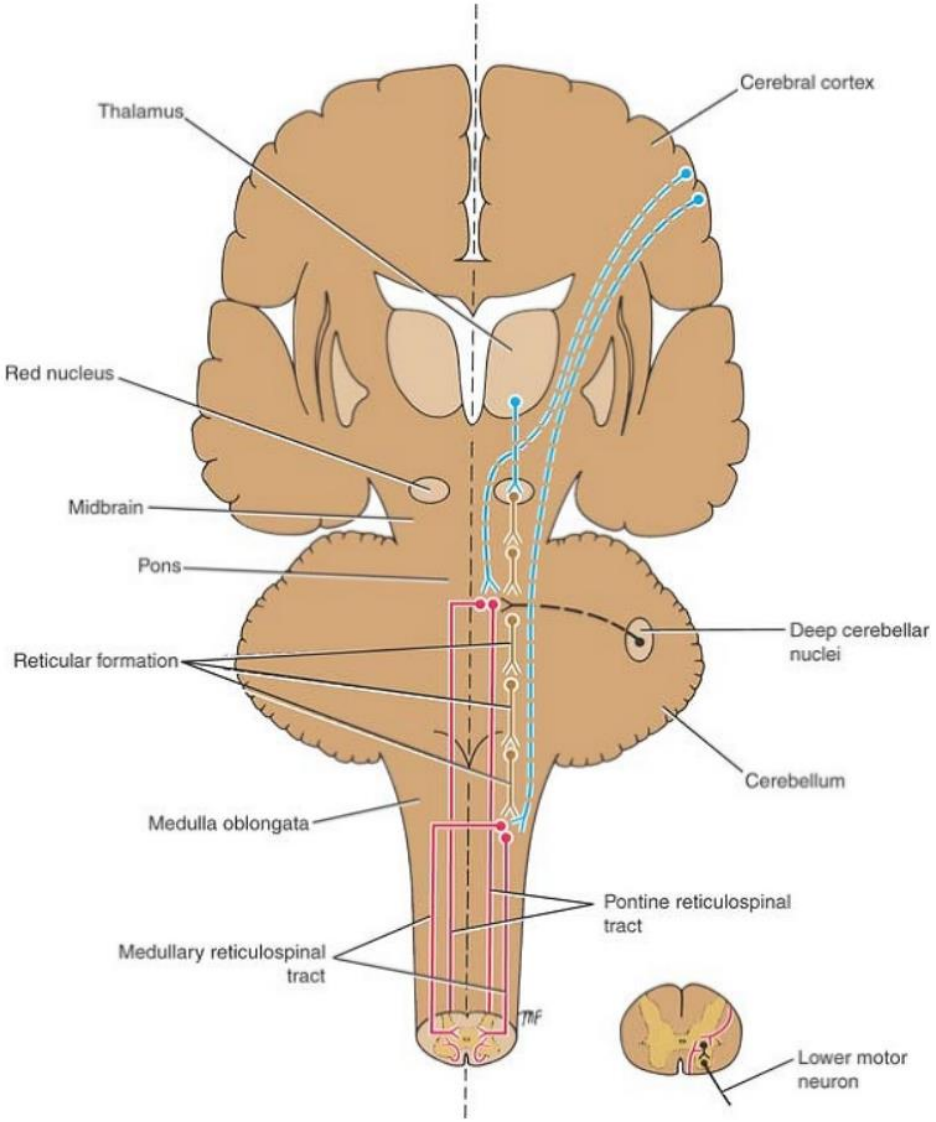
  That are collectively known as the reticular formation.

From the pons

- These neurons send axons, which are mostly uncrossed, down into the spinal cord and form the pontine reticulospinal tract .

From the medulla

- Similar neurons send axons
- which are crossed and uncrossed, to the spinal cord
- And form the medullary reticulospinal tract



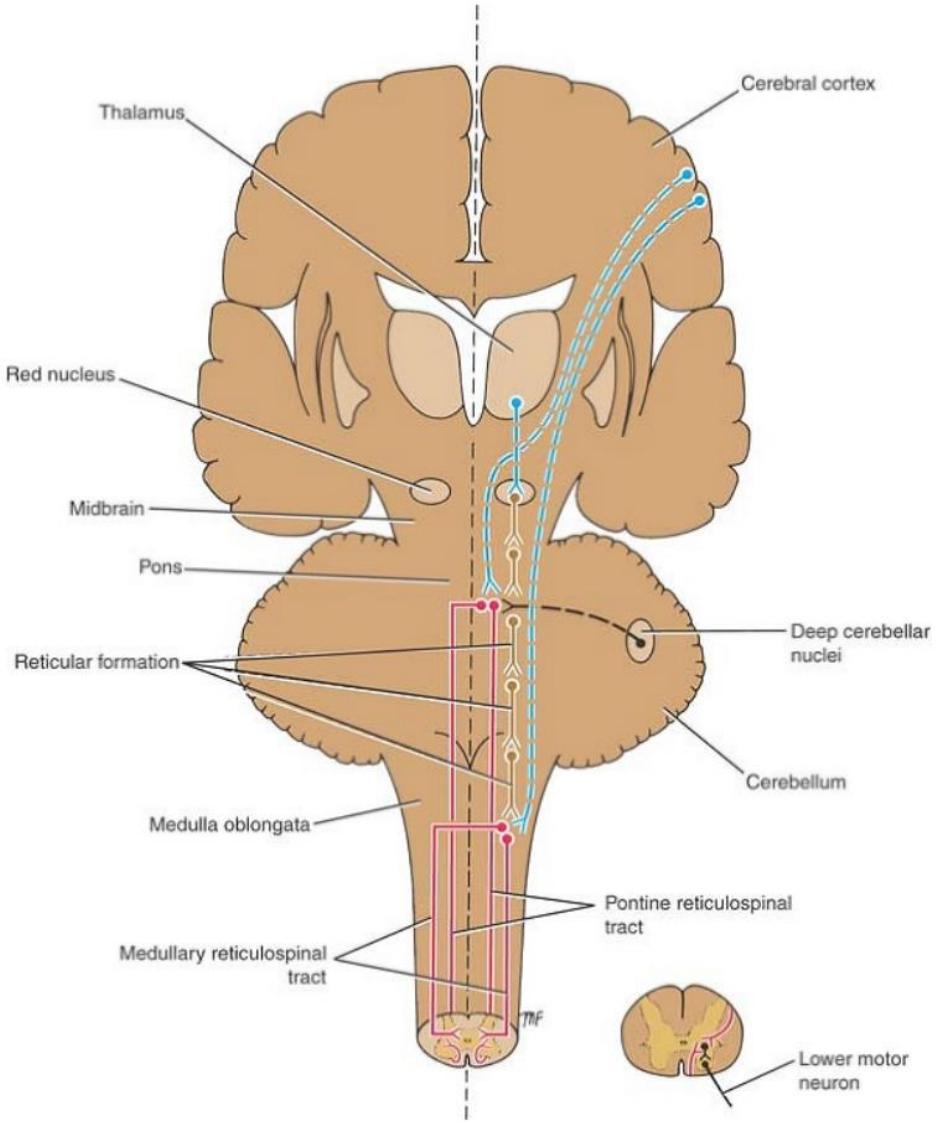
Reticulospinal fibers

from the pons

- Descend through the anterior white column

From the medulla oblongata

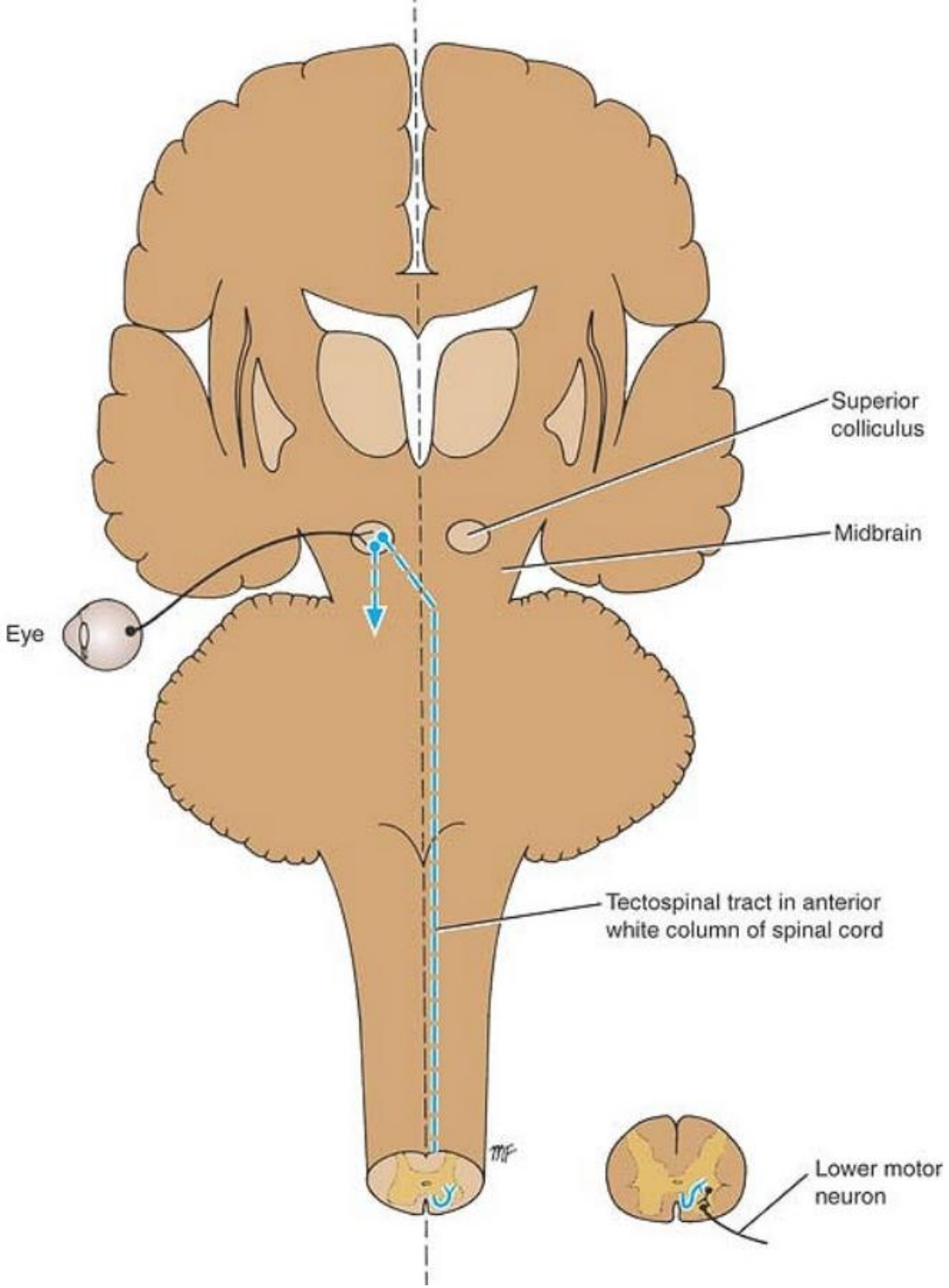
- Descend in the lateral white column .
- Both sets of fibers enter the anterior gray columns of the spinal cord
- And may facilitate or inhibit the activity of the alpha and gamma motor neurons.
- By these means, the reticulospinal tracts influence voluntary movements and reflex activity.
- The reticulospinal fibers are also now thought to include the descending autonomic fibers.
- The reticulospinal tracts thus provide a pathway by which the hypothalamus can control the sympathetic outflow and the sacral parasympathetic outflow.



Tectospinal Tract

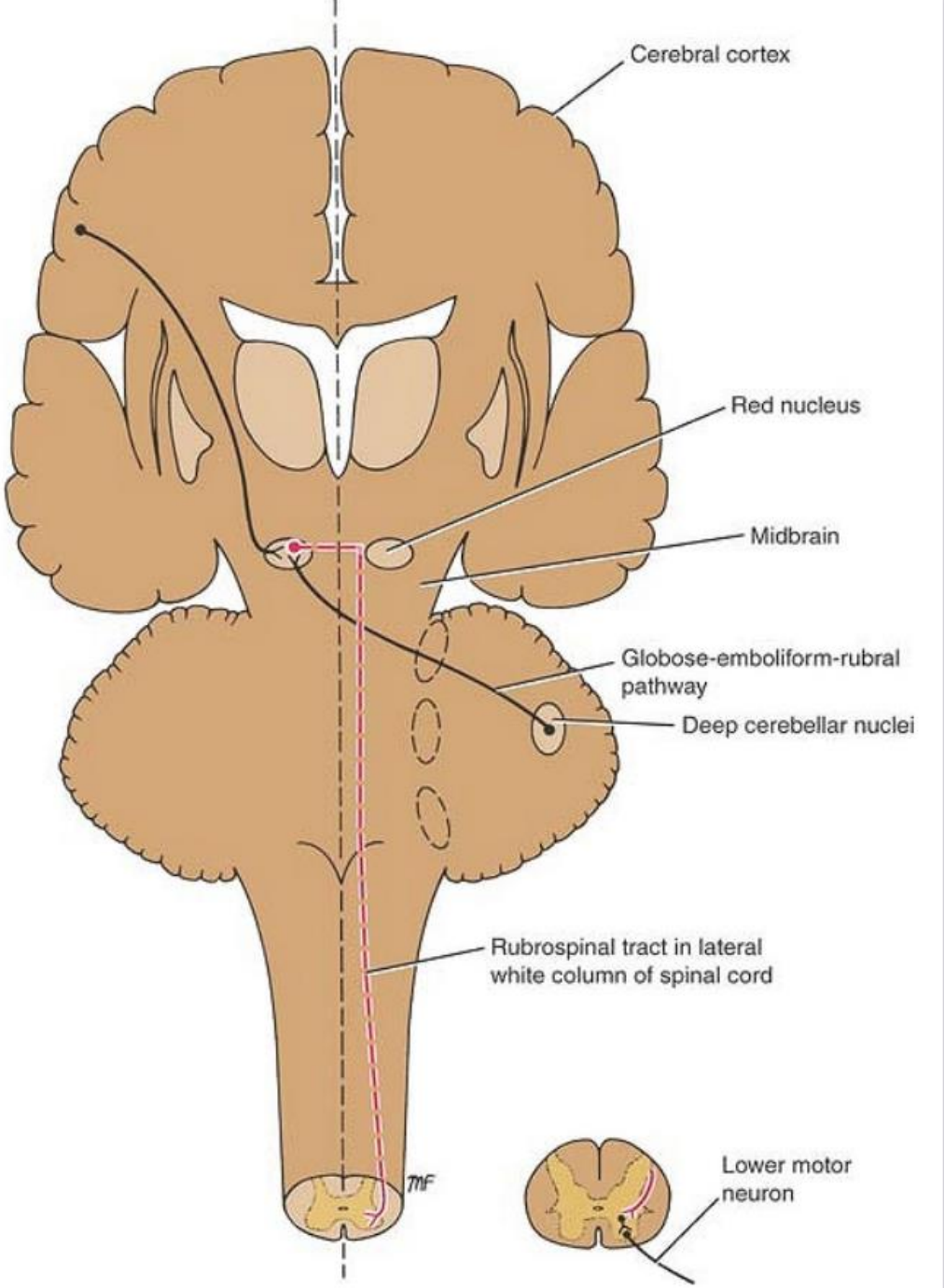
- Fibers of this tract arise from nerve cells in the superior colliculus of the midbrain .
- Most of the fibers cross the midline soon after their origin
- Descend through the brainstem close to the medial longitudinal fasciculus of pons.
- The tectospinal tract descends through the anterior white column of the spinal cord close to the anterior median fissure.
- Terminated

  The majority of the fibers terminate in the anterior gray column in the upper cervical segments of the spinal cord by synapsing with internuncial neurons.
- These fibers are believed to be concerned with reflex postural movements in response to visual stimuli.



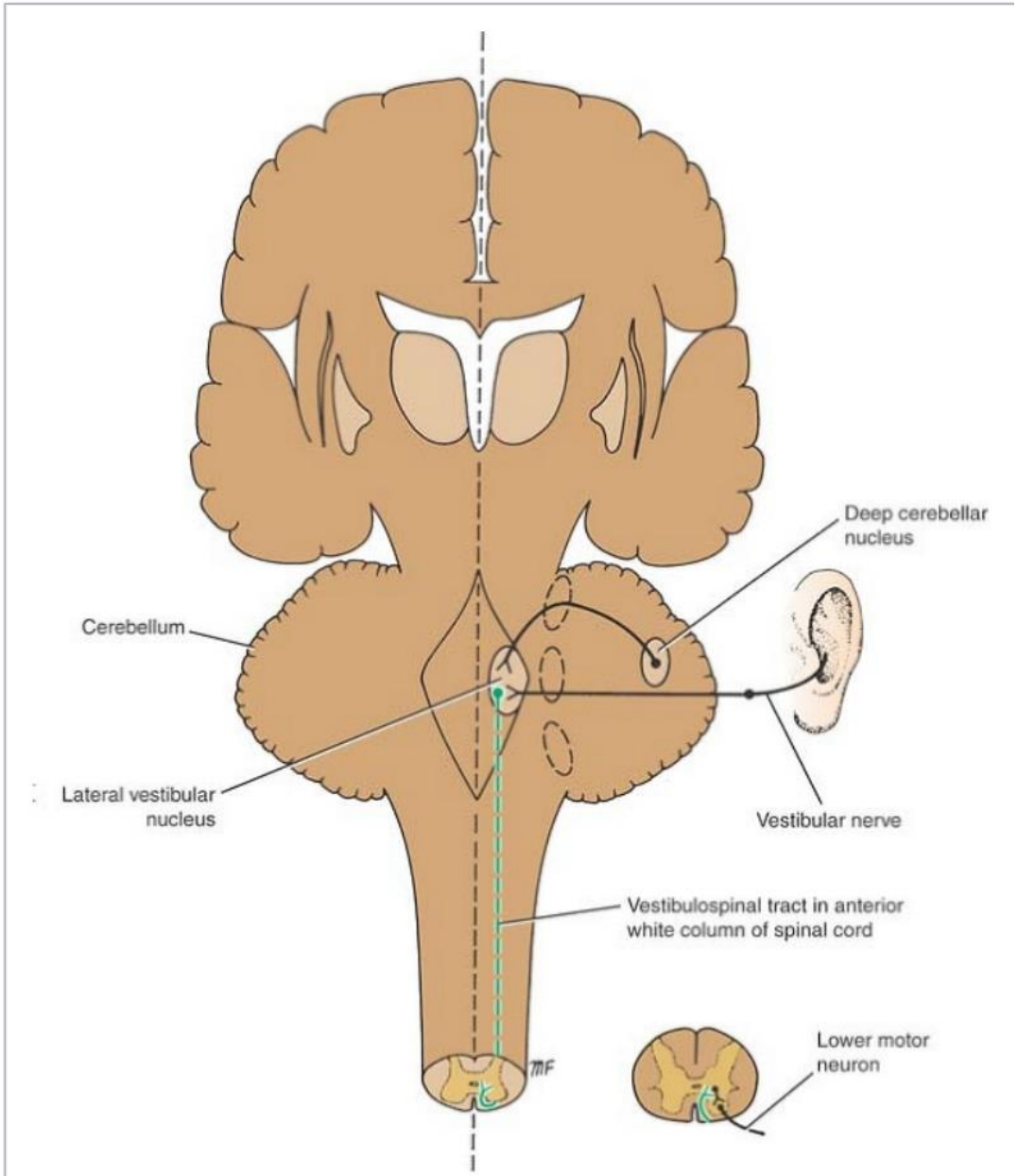
Rubrospinal Tract

- Red nucleus is situated in the tegmentum of the midbrain at the level of the superior colliculus.
- The axons of neurons in this nucleus cross the midline at the level of the nucleus
- Descend as the rubrospinal tract through the pons and medulla oblongata to enter the lateral white column of the spinal cord .
- Fibers terminate by synapsing with internuncial neurons in the anterior gray column of the cord.
- The neurons of the red nucleus receive afferent impulses through connections with the cerebral cortex and the cerebellum.
- This is believed to be an important indirect pathway by which the cerebral cortex and the cerebellum can influence the activity of the alpha and gamma motor neurons of the spinal cord.
- Facilitates the activity of the flexor muscles and inhibits the activity of the extensor or antigravity muscles.



Vestibulospinal Tract

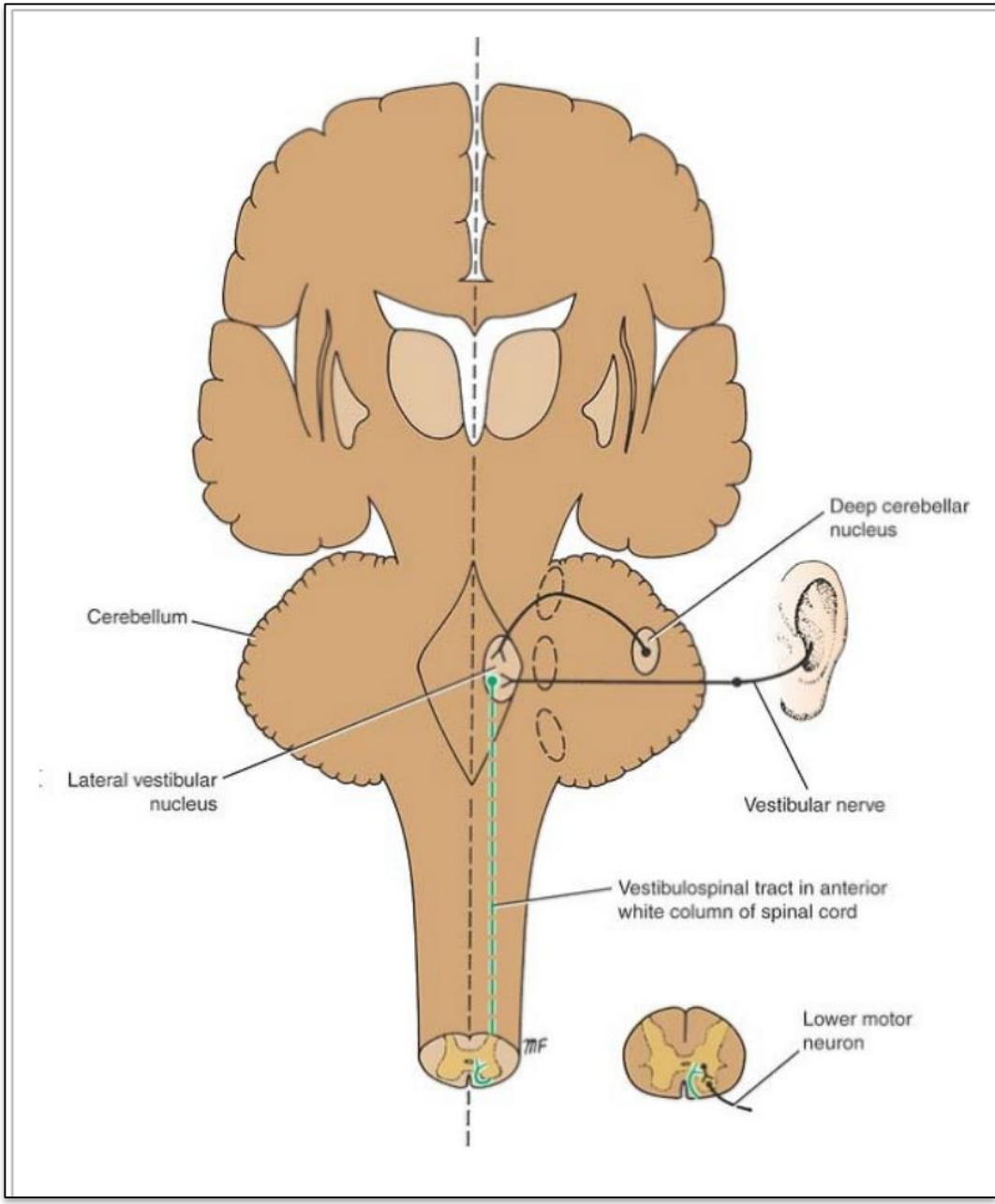
- Vestibular nuclei are situated in the pons and medulla oblongata beneath the floor of the fourth ventricle
- The vestibular nuclei receive afferent fibers from the inner ear through the vestibular nerve and from the cerebellum.
- The neurons of the lateral vestibular nucleus give rise to the axons that form the vestibulospinal tract.
- Descends uncrossed through the medulla and through the length of the spinal cord in the anterior white column
- The fibers terminate by synapsing with internuncial neurons of the anterior gray column of the spinal cord.



Vestibulospinal Tract

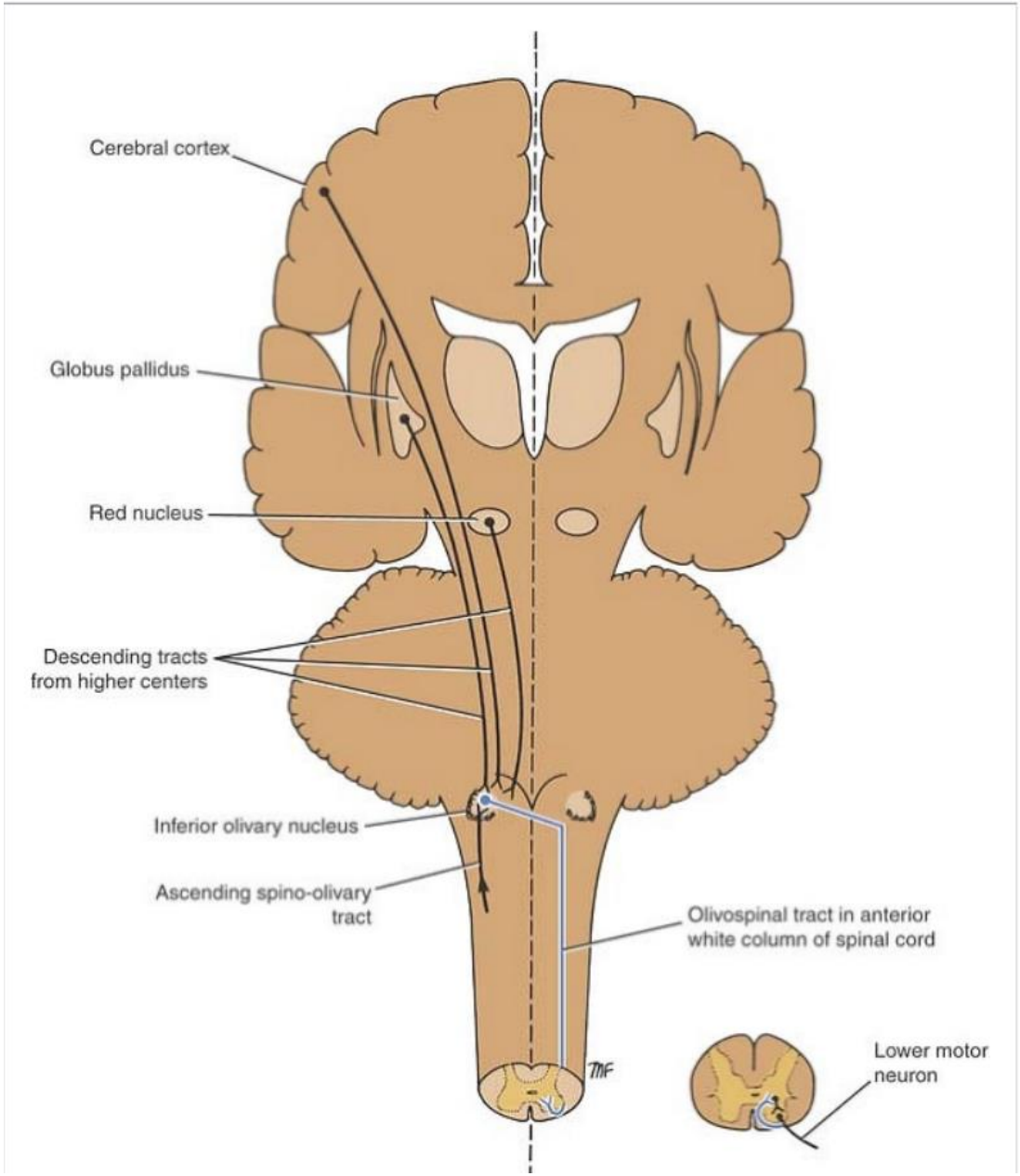
- Facilitate

  the activity of the extensor muscles
- Inhibit the activity of the flexor muscles
- In association with the maintenance of balance.



Olivospinal Tract

- The olivospinal tract was thought to arise from the inferior olivary nucleus
- And descend in the lateral white column of the spinal cord
- To influence the activity of the motor neurons in the anterior gray column.
- There is now considerable doubt that it exists.



Descending Autonomic Fibers

- Higher centers of the central nervous system associated with the control of autonomic activity .

Situated

In the Cerebral cortex, hypothalamus,
amygdaloid complex, and reticular formation.

- Although distinct tracts have not been recognized

- Investigation of spinal cord lesions has demonstrated that descending autonomic tracts do exist and probably form part of the reticulospinal tract.

Descending Autonomic Fibers

- Fibers arise from neurons in the higher centers
- Cross the midline in the brainstem.
- Descend in the lateral white column of the spinal cord

Terminate

- By synapsing on the autonomic motor cells in the lateral gray columns in the thoracic and upper lumbar (sympathetic outflow) and midsacral (parasympathetic) levels of the spinal cord.

Intersegmental Tracts

- Short ascending and descending tracts

- Originate and end within the spinal cord
- Exist in the anterior, lateral, and posterior white columns.

Function

- Is to interconnect the neurons of different segmental levels

- And the pathways are particularly important in intersegmental spinal reflexes.

thank you!