

DESCENDING TRACTS

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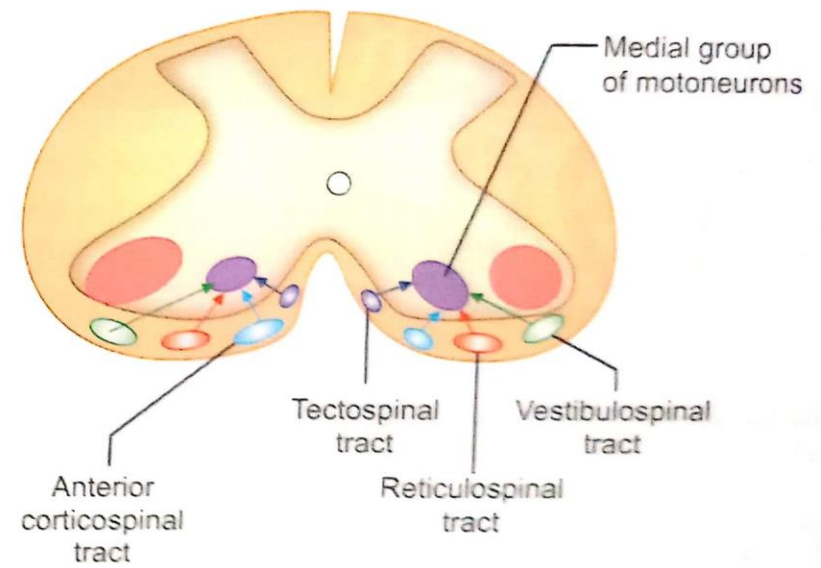
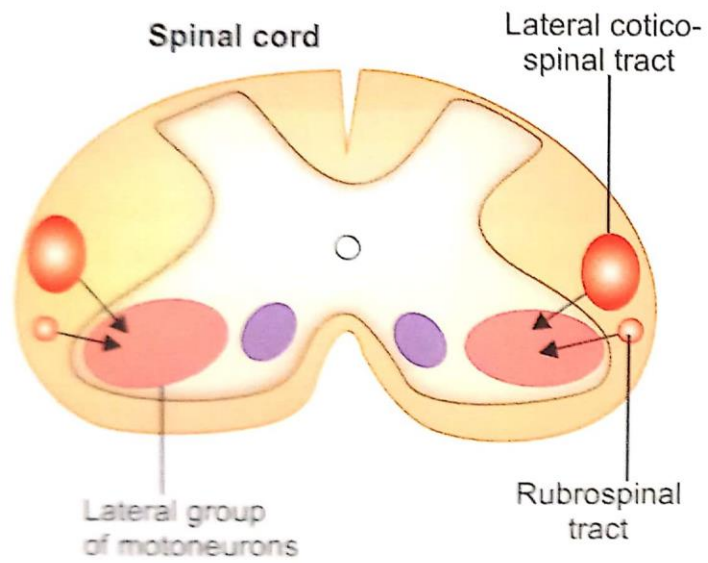
DESCENDING / MOTOR TRACTS

▶ PYRAMIDAL TRACT

- 1) LATERAL / CROSSED CORTICOSPINAL TRACT
- 2) ANTERIOR / UNCROSSED CORTICOSPINAL TRACT
- 3) CORTICOBULBAR TRACT

▶ EXTRAPYRAMIDAL TRACTS

- 1) RUBROSPINAL
- 2) TECTOSPINAL
- 3) RETICULOSPINAL
- 4) VESTIBULOSPINAL
- 5) OLIVOSPINAL

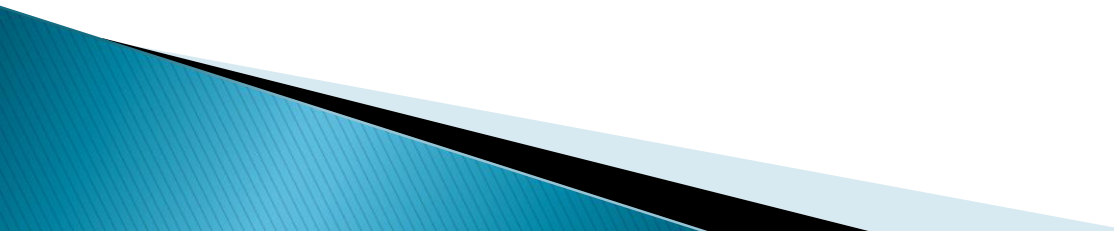


PYRAMIDAL OR CORTICOSPINAL TRACT

- ▶ LONGEST TRACT
- ▶ PRESENT ONLY IN HIGHER ANIMALS AND MAN
- ▶ ONE MILLION NERVE FIBRES: 60% MYELINATED, 40% UNMYELINATED

- 1) LATERAL CORTICOSPINAL TRACT (CROSSED)
- 2) ANTERIOR CORTICOSPINAL TRACT (UNCROSSED)

ORIGIN

- ▶ 30% FIBRES ARISE FROM AREA 4 (PRIMARY MOTOR CORTEX)
 - ▶ 30% FIBRES – AREA 6 (PREMOTOR CORTEX)
 - ▶ 40% FIBRES – SENSORY CORTEX
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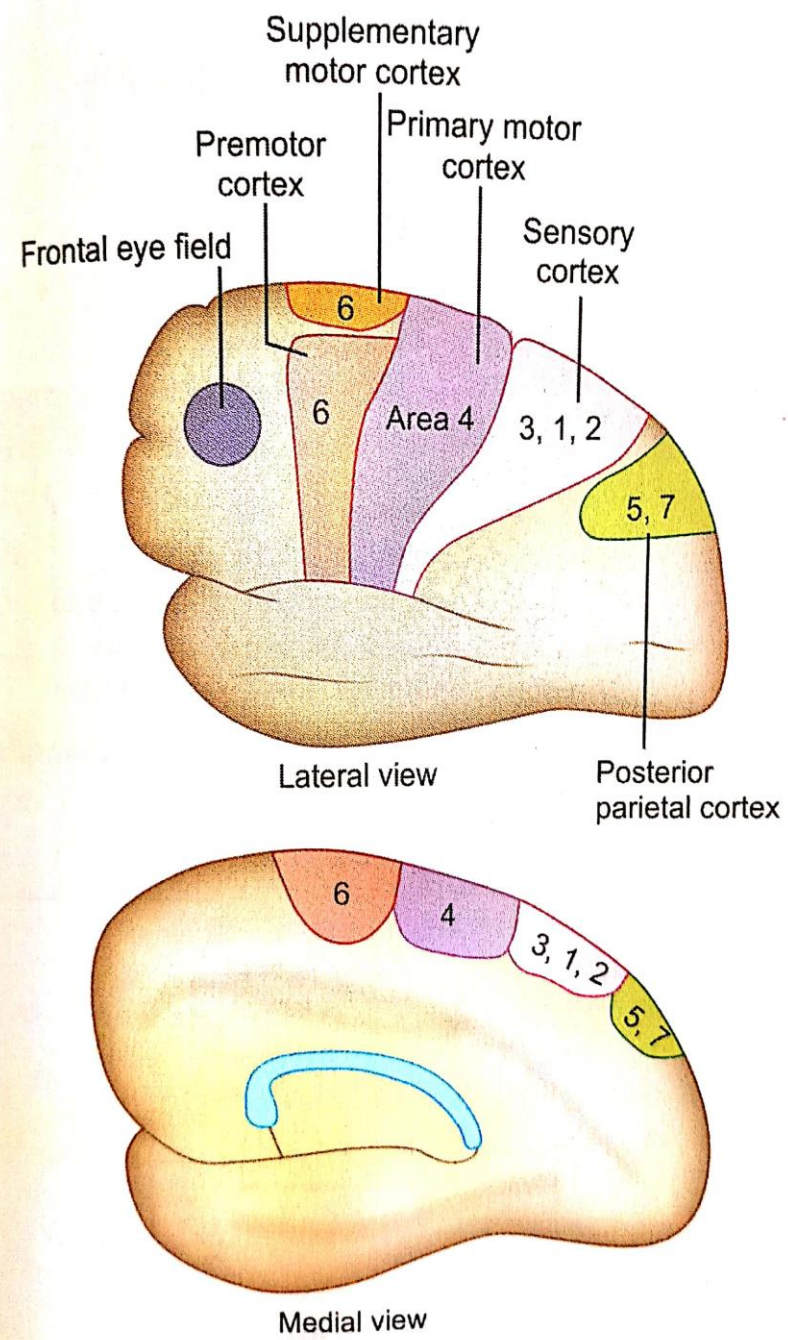


Fig. 130.7: Motor areas in the cortex.

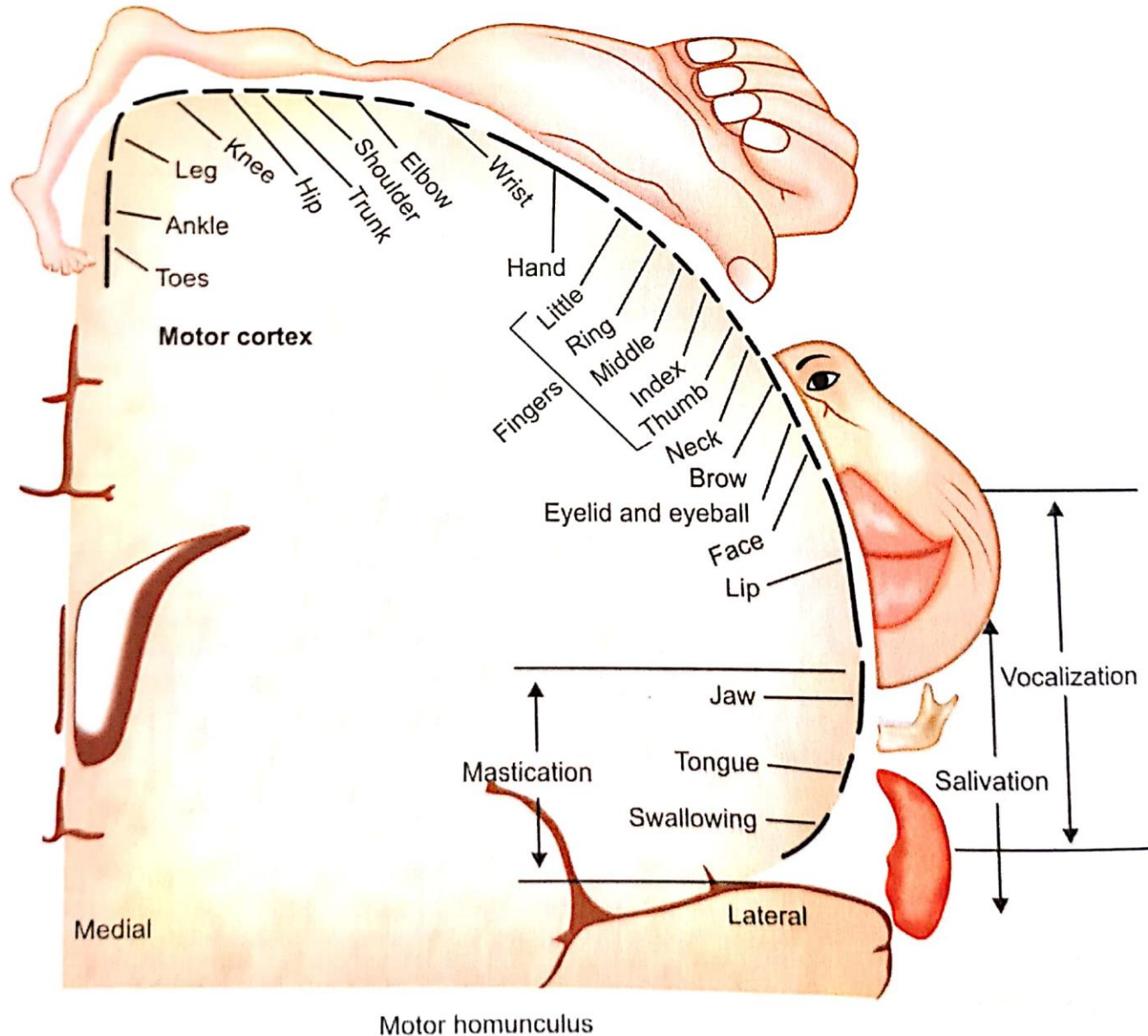


Fig. 130.9: Motor homunculus. Note, hands (including digits) and face have maximum representation in the motor cortex

FUNCTIONS

1) LATERAL CS T.: control of fine, precise voluntary movements of fingers and hands for skilled work.

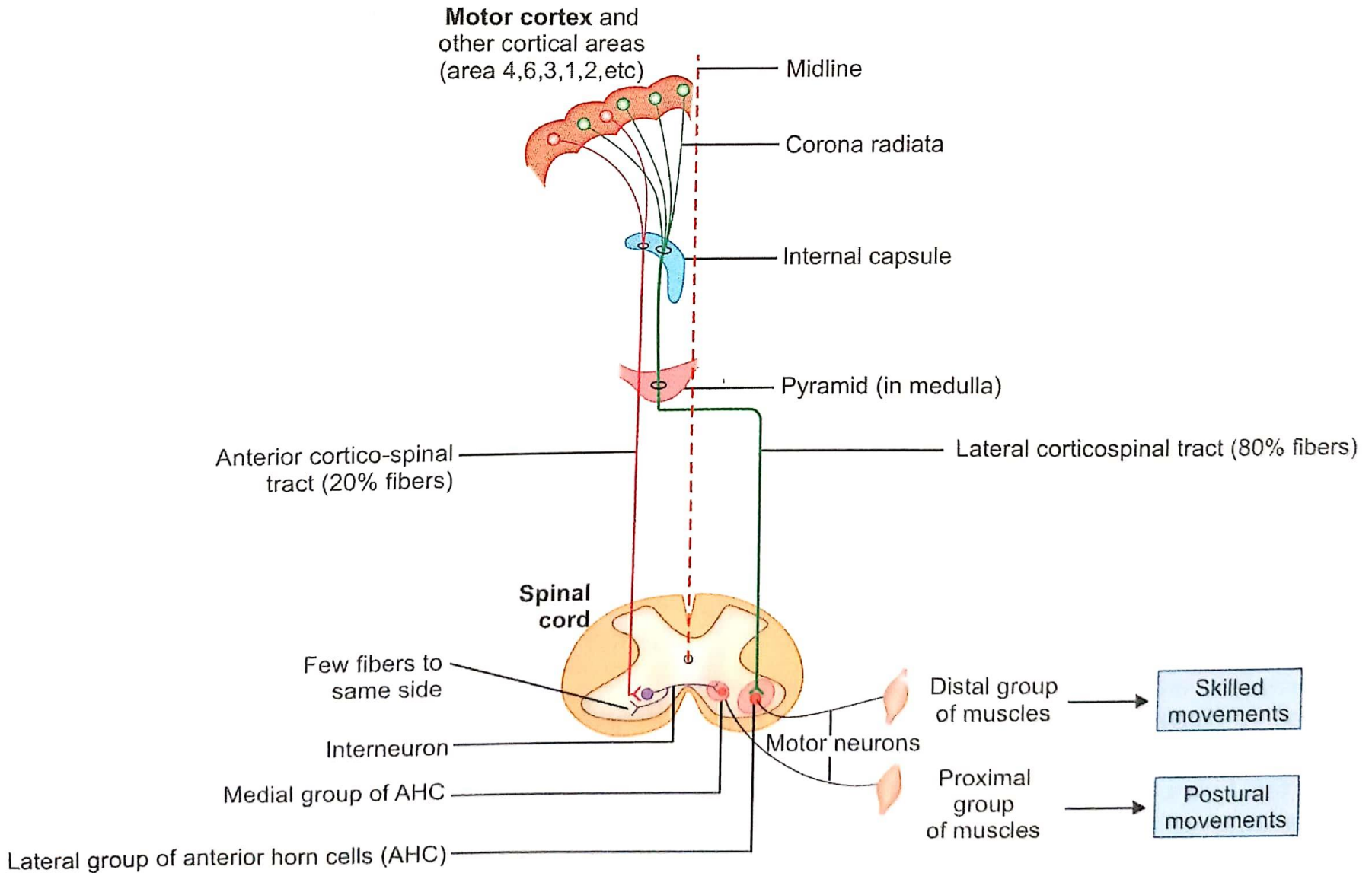
ANTERIOR CS T.: control of muscles of trunk and proximal portions of limbs for gross movements.

2) Form pathway for superficial reflexes



COURSE

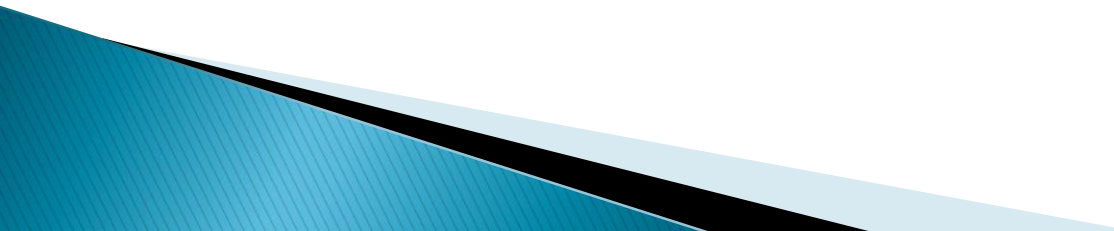
- ▶ **Cerebral cortex** to brainstem: corona radiata
- ▶ **Internal capsule**: in genu and ant. 2/3rd of posterior limb
- ▶ **Midbrain**: ventrally
- ▶ **Pons**: ventral. get scattered due to pontine nuclei
- ▶ **Medulla**: reunite and form thick pyramid on ventral side.
 - 80% cross and form lateral CS tract
 - 20% do not cross and form ant. CS tract
- * **Spinal cord**: end around anterior horn cells.
 - 55% end in cervical region, 20% in thoracic and 25% in lumbosacral region.



CORTICOBULBAR TRACT

- ▶ FROM CEREBRAL CORTEX TO BRAIN STEM (MOTOR CRANIAL NUCLEI).
- ▶ RESPONSIBLE FOR VOLUNTARY CONTROL OF MUSCLES OF LARYNX, PHARYNX, PALATE, UPPER AND LOWER FACE, JAW, EYE ETC.
- ▶ PSEUDOBULBAR PALSY: DUE TO BILATERAL LESION OF THIS TRACT. PARALYSIS OF MUSCLES OF SWALLOWING, TALKING ETC.

LESION OF MOTOR TRACTS: PARALYSIS / PARESIS

- ▶ MONOPLEGIA
 - ▶ HEMIPLEGIA
 - ▶ CROSSED HEMIPLEGIA
 - ▶ PARAPLEGIA
 - ▶ QUADRIPLEGIA
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EXTRAPYRAMIDAL SYSTEM

- 1) RUBROSPINAL TRACT: red nucleus of midbrain to sc.
fn.: facilitatory influence over flexor muscle tone
- 2) TECTOSPINAL TRACT: superior colliculus to sc
fn.: reflex postural movements in response to visual & auditory stimulus

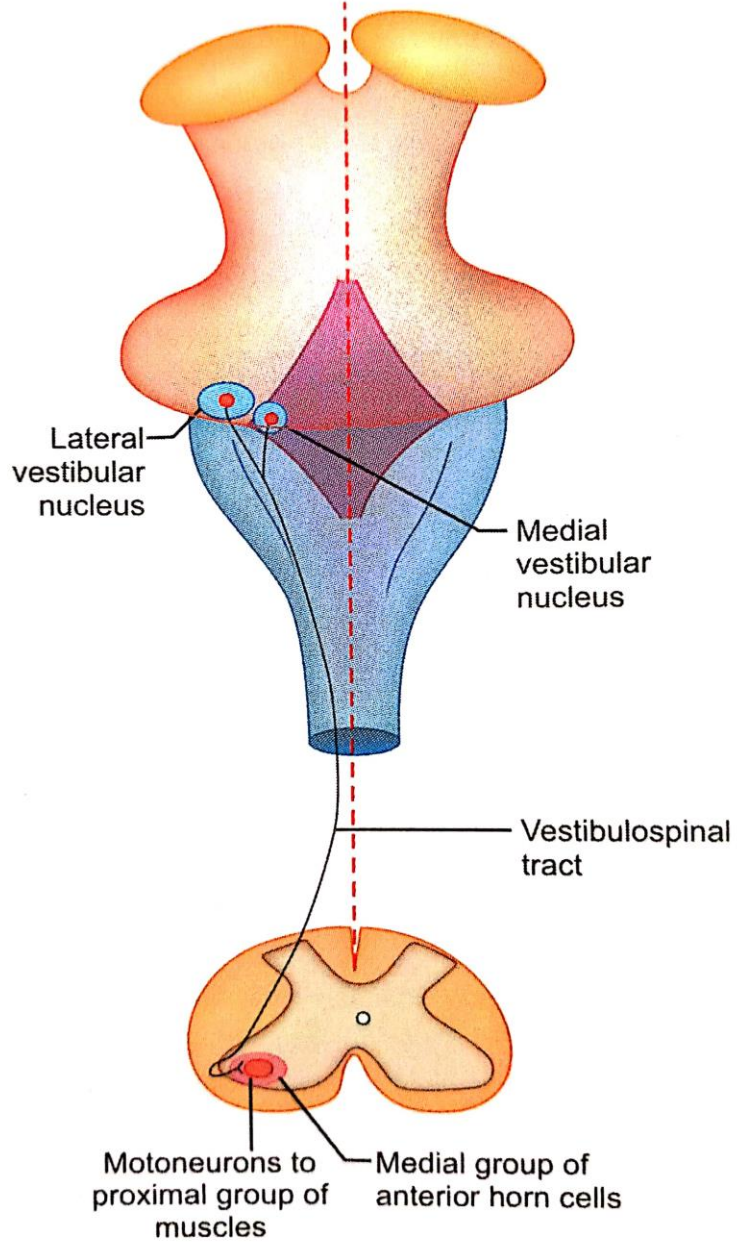


Fig. 129.5: Course of vestibulospinal tract.

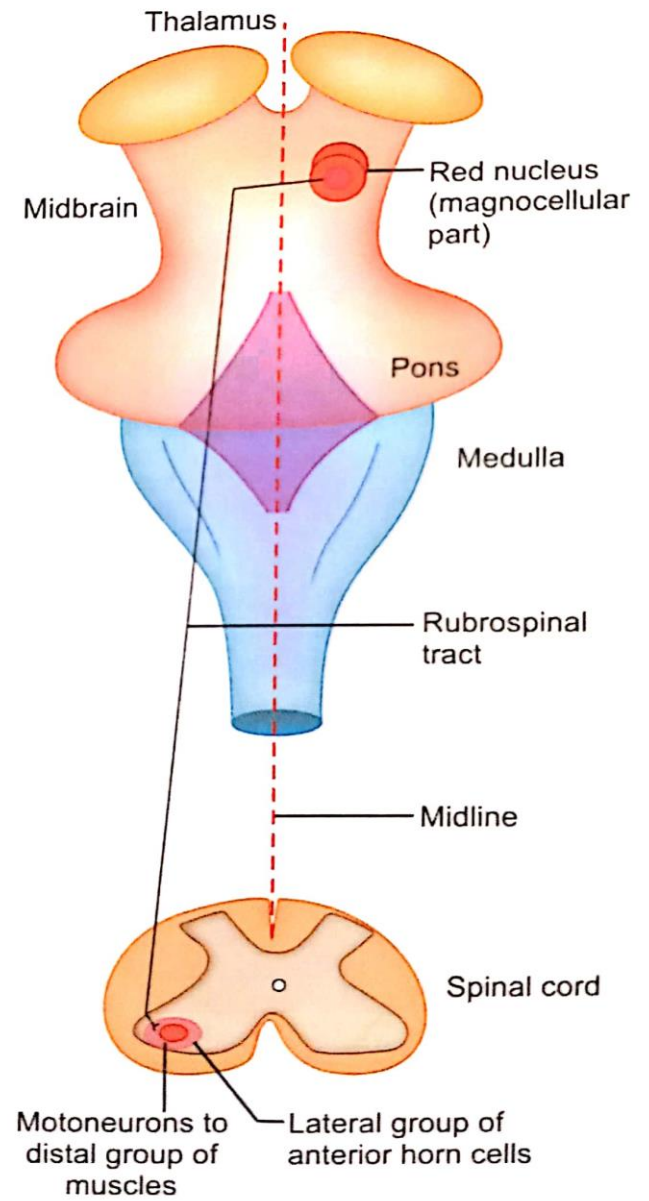
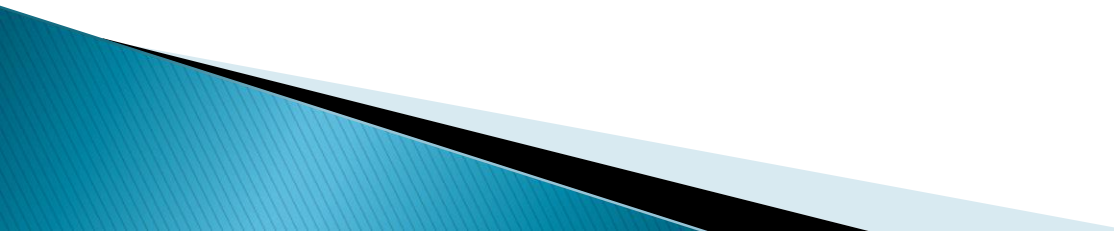


Fig. 129.4: Course of rubrospinal tract.

- 3) RETICULOSPINAL TRACT: Neurons of reticular formation of brainstem to sc.
fn.: influence gamma motor neurons. maintain muscle tone.
- 4) VESTIBULOSPINAL TRACT: Lateral vestibular nucleus (brainstem) to sc.
fn.: facilitatory influence over extensor group (antigravity) muscles
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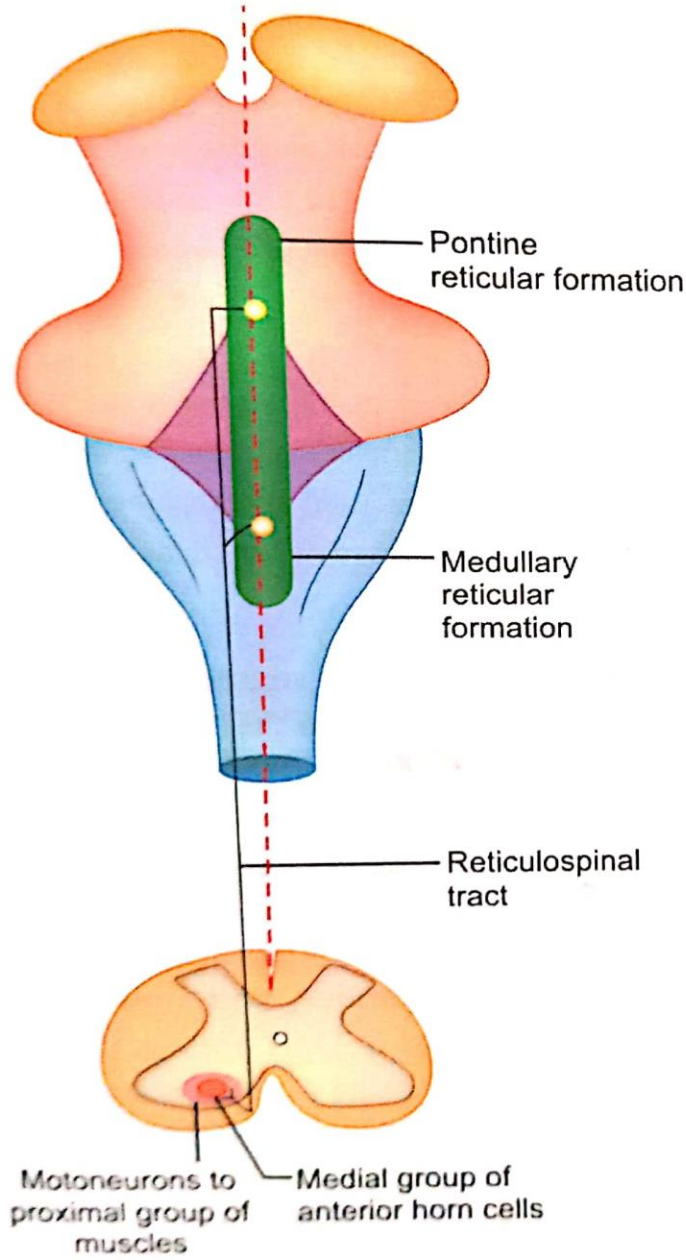


Fig. 129.6: Course of reticulospinal tract.

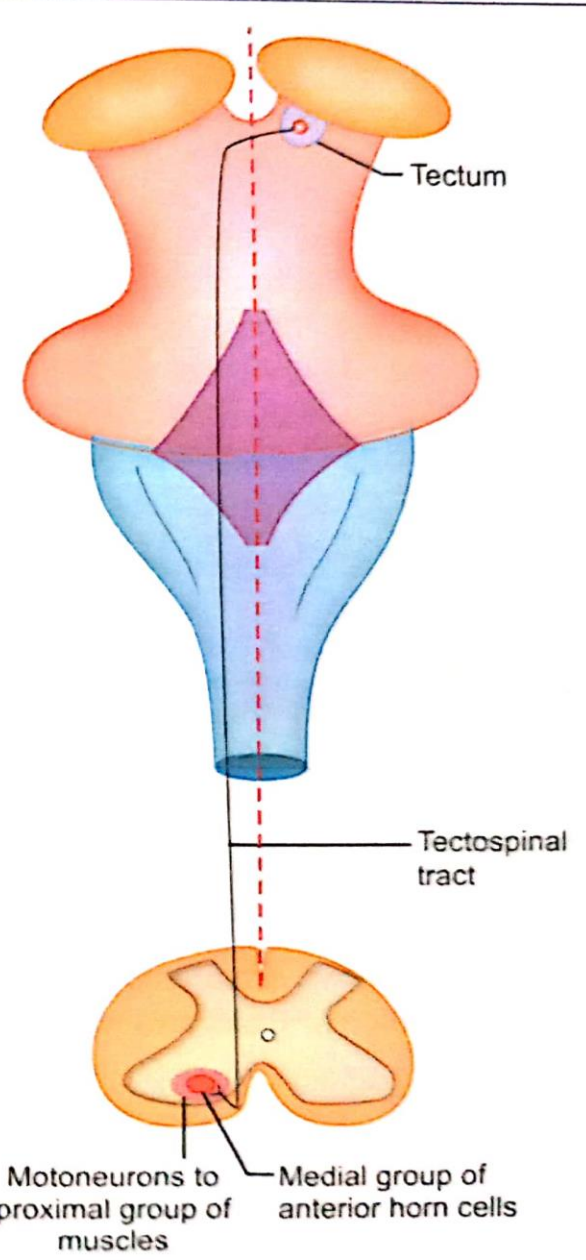
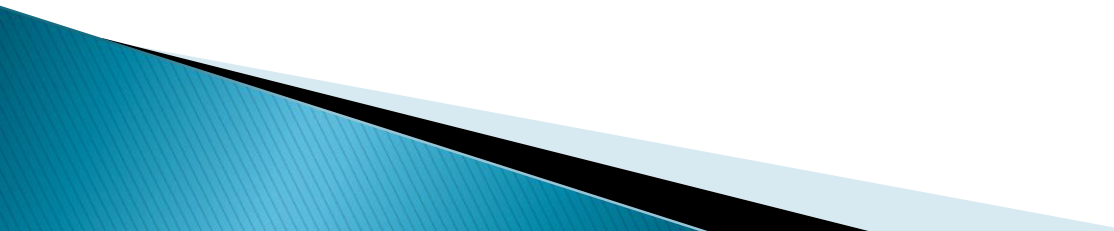


Fig. 129.7: Course of tectospinal tract.

UMN AND LMN

- ▶ UPPER MOTOR NEURONS: NEURONS IN BRAIN AND SPINAL CORD UPTO (NOT INCLUDING) ALPHA MOTOR NEURONS
 - ▶ LOWER MOTOR NEURONS: ALPHA MOTOR NEURONS AND NERVE SUPPLYING MUSCLES
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LOWER MOTOR NEURON LESION

- ▶ DUE TO LESION OF LMN
- ▶ SINGLE MUSCLE INVOLVED
- ▶ FLACCID PARALYSIS
- ▶ DISUSE ATROPY
- ▶ DEEP REFLEXES: LOST
- SUPERFICIAL REFLEXES: LOST
- ▶ BABINSKI'S SIGN -VE (NORMAL)

UPPER MOTOR NEURON LESION

- ▶ DUE TO LESION OF UMN
- ▶ INVOLVES GROUP OF MUSCLES
- ▶ SPASTIC PARALYSIS
- ▶ NO MUSCLE ATROPY
- ▶ DEEP REFLEXES: EXAGERRATED
- ▶ SUPERFICIAL REFLEXES: LOST
- ▶ BABINSKI'S SIGN +VE

**THANK
YOU**