

Components of the Motor System

Muscles & Movement

- Movement = change in state of muscle
- Motoneurons (MN) located along spinal cord + brain stem
 - axon to one muscle, innervates a number of muscle fibres
 - MN + muscle fibres = motor unit
- MNs are activated by interneurons + descending tracts from forebrain + brainstem
- Alpha motoneurons (AMN)
 - originate in spinal cord, exit via ventral root, terminate in muscle
 - Action potential → Ach

Brainstem – Spinal Cord

- Coordination of basic motor patterns
- Central Pattern Generators: interneurons activate groups of MNs in certain sequences
- Spinal Cord: protective reflexes, walking
- Brainstem (medulla + midbrain): swallowing, chewing, breathing, saccadic eye movements

Diencephalon & Subcortical Motor Structures

Hypothalamus:

- Control of autonomic functions (temperature regulation, intake of fluid/food)
- Activation: search for water
- Recruit series of motor acts in logical order

Basal Ganglia

- Important for initiation of motor behaviours

Cerebellum:

- Important for coordination of movement