

## muscle physiology lecture 4

### Structure and function of the neuromuscular system

#### neural recruitment / motor activation

- peripheral - not in bones - branches out from spine
- central - bones (skull, spine)

#### muscle recruitment starts as electrical event in motor cortex

- nerve impulses
- premotor & primary motor cortex & supplementary motor cortex

#### primary motor cortex

- controls execution of movement
- has a lot of Beta cells - largest cells of CNS
- come out of the brain & send axons down the spinal cord
- account for ~10% of cells that project into spinal cord from PMC
- functional overlap, not a segregated thing

#### premotor cortex

- supports motor control
- sensory & spatial guide
- "preparation to move"

#### supplementary motor area

- movement planning & coordination of bilateral functioning

#### posterior parietal motor cortex

- transform sensory information into motor commands

recruiting skeletal muscle is begun in an electrical event.

alpha motor nerve - voluntary, huge, descend the spine

sensory receptor → sensory neuron → integrating center → motor neuron → effector

motor unit - a motor nerve & all the muscle fibers it innervates

- generally several hundred muscle fibers per motor unit

all or none - no partial activation

- every single muscle fiber in a motor unit is activated maximally if activated

- each muscle fiber has one motor nerve but each motor nerve can activate many fibers