

Today – February 5th

- **Intro** – Pick-up page of notes and physiology coloring sheet; warm-ups out; 7th per. – laptops/headphones out
- **Advanced** – Get injury research & related materials out
- **Weekend Check-In**
- **Reminders n' Stuff:**
 - SLC On-Line Testing begins today!
 - CLUB MED meeting Weds. 9am room 1406
 - Teacher Offerings Wednesday
 - Job Shadow needs?

Today – February 5th

Introduction to Sports Medicine

- Semester Leadership Project Activities posted!
- **Warm-Up:** Physiology Review
- **Lecture:** Muscle Contraction Characteristics and Terminology

Advanced Sports Medicine

- One-on-One review of Semester Leadership Projects
- Continue research on assigned injury



Assigned Injuries

- **Olivia** – Avulsion Fx of Ischial Tuberosity
- **Alex** – Acute Compartment Syndrome
- **Hansika** – Carpal Tunnel Syndrome
- **Themi** – Meniscus Tear
- **Elle** – ACL Tear/Rupture
- **Kaitlyn** – SLAP Lesion
- **Ishita** – Tib/Fib Fx
- **Elshaday** – Femur Fx
- **Jade** – Achilles Tendon Rupture
- **Saadhvi** – Lis Franc Injury
- **Niharika** – UCL Tear/Rupture
- **Saanvi** – Ankle Dislocation/Fx
- **Sharon** – Unhappy Triad
- **Vrinda** – Rotator Cuff Tear

Warm-Up (No notes, no blanks)

Outline the steps/events of muscle contraction starting from an action potential arriving at the synaptic terminals of a motor neuron to the cocking of myosin heads into their resting position.

You may **write** and/or **draw** the steps/events!

Warm-Up Key

1. An **action potential** is sent down a **motor neuron** from the brain
2. **Synaptic vesicles** in the neuron release **ACh** into the synaptic cleft
3. ACh binds to **ligand-gated Na⁺ channels**, opening the channels which allows Na⁺ to diffuse into the muscle fiber
4. Na⁺ diffuses until depolarization occurs and a **new action potential** is sent down the **sarcolemma**
5. The AP on the sarcolemma continues down the **t-tubules**, opening **voltage-regulated Ca²⁺ channels** in the adjacent **terminal cisternae/sarcoplasmic reticulum**
6. Calcium concentrations increase in the **sarcoplasm** and, thus, around the sarcomeres
7. Ca²⁺ in the sarcoplasm bind to the **troponin** on the thin filaments resulting in the exposure of the active sites under the **tropomyosin**
8. The **myosin heads** bind to the exposed active sites forming a “**cross bridge**”
9. Stored energy in the myosin head allows a “**power stroke**” of the hinge to move the thick filaments along the thin
10. **ATP** then binds to the myosin heads, the energy from which results in a “**cocking**” of the myosin head back to its resting position