Labs 5 & 6 – Muscles of Upper & Lower Limbs

If you don't know a muscle…
- Is it anterior/posterior?
- Where does it originate?
- Where does it insert?
- What direction do the fibers go?

1. Heads up!
    a. Exam 2
        i. Same format as Exam 1
        ii. Not cumulative

2. General muscle lab items
    a. **Origin** – the attachment of a muscle's tendon to the stationary bone; usually located more proximally.
    b. **Insertion** – the attachment of a muscle's tendon to the movable bone; usually located more distally.
    c. In general, when the muscle is contracted, it is pulled toward the origin.
    d. Example: A spring-loaded door.
        i. Origin = The door frame to which the spring is attached
        ii. Insertion = The location on the actual door where the spring is attached
            1. PART THAT MOVES

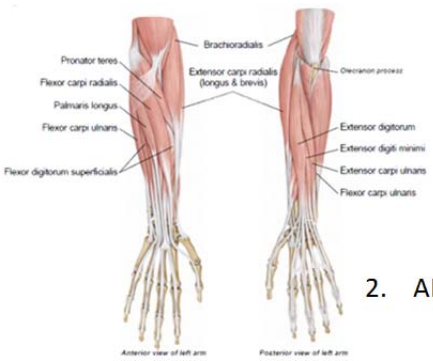
3. **Lab 5: Muscles of Upper Limb**
    a. Teaching Pearls
        i. Remember anatomical position when considering anterior/posterior.
        ii. Create a table of Muscle names, origins, insertions, and major actions to help you study
            1. but remember, just use it to help you study and not to rely entirely on memorizing a chart
        iii. **Serratus anterior** muscles: like a serrated edge (help with identification).
            1. Also, "Serratus" sounds like a boxer's name. Serratus anterior = boxer's muscle = boxer's motion (punch) = protraction of scapula
        iv. Extrinsic shoulder muscles = insert onto humeral shaft
        v. Intrinsic shoulder muscles = insert near humeral head
        vi. **Pectoralis minor** – depresses the scapula (it's "depressed" that it's the minor muscle and not the major muscle)
        vii. "___ radialis" …think thumb side. You use your thumb to turn on the radio.
        viii. **Orbicularis oculi** = aka orbicularis ocul"eye" – the orbicularis muscle around the eye
        ix. **Orbicularis oris** = think of 'orate' (use your mouth)
        x. **Levator scapula** – levator sounds like elevator (elevates the scapula)
        xi. **Rhomboids** retract the scapula (both start with "R")
        xii. **Pterygoids** lay deep to the mandible, while **buccinator** is superficial to mandible. So look to see if mandible has been removed or not to help you.
        xiii. Muscles of the brachium and **antebrachium**:
            1. Anterior compartment: think flexion. Originate at medial epicondyle of humerus.
            2. Posterior compartment: think extension. Originate at lateral epicondyle of humerus.
            3. One exception: brachioradialis of posterior compartment = flexion of humeroulnar joint.
        xiv. **Anterior forearm muscles** mnemonic:
            1. Place your thumb into your palm, then lay that hand palm down on your other arm:

Pointer to Pinky: PFPF
[pass/fail, pass/fail]:

Pronator teres
Flexor carpi radialis
Palmaris longus
Flexor carpi ulnaris
Flexor **d**igitorum **s**uperficialis

            2. Your thumb below your 4 fingers shows the muscle which is deep to the other four: FDS

b. Forearm Muscles in general → **READ** the words!
   i. Almost all muscles named based on approximate origins and insertions:
      1. ALL Anterior muscles (mostly *Flexors*) originate MEDIALLY



         a. **Pronator Teres** – no help here / just learn it
         b. ***Flexor* Carpi Radialis** – flexes wrist (carpals) on radius side
         c. **Palmaris Longus** – long and stretches to insert on palm (palmar aponeurosis)
         d. ***Flexor* Carpi Ulnaris** – flexes wrist (carpals) on ulna side
         e. ***Flexor* Digitorum Superficialis** – inserts on digits
            i. Superficial relative to similar muscles you don't need to know! (actually deep relative to the muscles you need to know)
      2. ALL Posterior muscles (mostly *Extensors*) originate LATERALLY
         a. ***Extensor* Carpi Ulnaris** – inserts near carpals on ulna side (actually metacarpal v)
         b. ***Extensor* Digitorum** – inserts on digits 2-4
         c. ***Extensor* Digiti minimi** – inserts on the pinky (the 'minimalist digit')
         d. ***Extensor* Carpi Radialis** – inserts near carpals on radius side (actually metacarpals II & III)
            i. ECR Longus = longer
            ii. ECR Brevis = shorter
         e. **Brachioradialis** – originates on humerus of **brach**ium (upper arm) & inserts on distal **radi**us
   ii. READING words to understand muscle names works for other muscles too:
      1. **Brachialis** – involved with brachium
      2. **Coracbrachialis** – originates at coracoid process of scapula and inserts on the brachium
      3. **Subscapularis** – is beneath the scapulae
      4. **Supraspinatus** / **Infraspinatus** – above and below scapular spine
      5. **Biceps** = 2 'heads'; **triceps** = 3 'heads'; **deltoid** = delta (triangle) shaped
      a. In general. 'Major' = bigger / 'Minor' = smaller
         'Longus' = long / 'Brevis' = short
c. Quizlet: http://quizlet.com/14504261/lab-5-upper-limb-facial-muscles-flash-cards/

4. Lab 6: Muscles of Lower Limb

a. Teaching Pearls
   i. Create a table of Muscle names, origins, insertions, and major actions to help you study
   ii. Hypaxial muscles: Anterior to spinal cord
      i. Cervical Region:
         1. Prevertebral **– longus coli** and **longus capitis**
         2. Ventral – strap muscles (aka **infrahyoid** muscles)
         3. Lateral – **scalene** muscles
      ii. Thoracic Region:
         1. prevertebral - **longus coli**
         2. ventral – none!
         3. lateral – **intercostal muscles**, **serratus posterior**
      iii. Lumbar Region:
         1. Prevertebral – **psoas major**
         2. Ventral – **rectus abdominis**
         3. Lateral – **transversus abdominus**, **internal** and **external obliques**
   iii. Epaxial Muscles: Posterior to spinal cord
      1. Cervical Region: erector spinae (superficial), transversospinalis (deep)
      2. Thoracic Region: erector spinae (superficial), transversospinalis (deep)
      3. Lumbar Region: erector spinae (superficial), transversospinalis (deep)

iv. **Semitendinosus**: in between biceps femoris and semimembranosus (the "t" acts like "tape" to hold them together).
v. **Semimembranosus**: "m" for "medial"
vi. **Plantaris** vs. **popliteus**: plantaris is more vertical (when you plant something, you want it to grow up and down, not sideways)
vii. **Illiacus** is located over the ilium
viii. **Transverse abdominis** -> striations are transverse
ix. **Hallicus** = relating to hallux (the big toe)
x. **Pectineus** connected to the pectineal line

b. More mnemonics:
   i. Abdominal muscles "Spare **TIRE** around their abdomen":
      1. **T**ransversus abdominis
      2. **I**nternal abdominal oblique
      3. **R**ectus abdominis
      4. **E**xternal abdominal oblique
   ii. Direction of **External Obliques**: When you put hands in your pockets, fingers now lie on top of external obliques and fingers point the direction of their fibers: down and towards midline.
      1. Internal obliques fibers = at right angle of external obliques
   iii. Leg: anterior muscles of lower leg (Medially->Laterally) "**T**om's **H**airy, **D**irty **F**oot":
      1. **T**: **T**ibialis anterior
      2. **H**: extensor **H**ollicis longus
      3. **D**: extensor **D**igitorum longus
      4. **F**: **F**ibularis
   iv. **Plantarflexion vs. dorsiflexion Plant**ar flexion occurs when you squish a **Plant** with your foot.
   v. Fibula = smaller than tibia → think about telling a 'little fib'
c. Quizlet: http://quizlet.com/14505951/lab-6-lower-limb-axial-muscles-flash-cards/

5. Muscles that cannot be seen on models (but are still on your checklist – know the diagrams!)
   a. Platysmus,
   b. Transversospinalis group, longus coli, longus capitis, transversus abdominis

6. Helpful websites for studying muscles! [not necessary to look at, but can be very helpful]
   a. Anterior Forearm: http://www.gwc.maricopa.edu/class/bio201/muscle/arm/frma.htm
   b. Posterior Forearm: http://www.gwc.maricopa.edu/class/bio201/muscle/arm/frmp.htm
   c. Choose a body part: http://www.gwc.maricopa.edu/class/bio201/muscle/mustut.htm
   d. Full Body: http://www.innerbody.com/image/musfov.html

7. Other things to keep in mind:
   d. Move muscles on your own body
   e. Don't just memorize the words, READ them -> understanding the latin makes locating (& not mixing up) a lot of these muscles easier (e.g., 'longus' vs 'brevis', 'flexor' vs. 'extensor', 'digitorum', 'radialis', etc.)
   f. Again, diagrams might (and probably will) show up on the exam.
   g. There is a lot of material for this exam – START STUDYING NOW for best results.

Good luck studying!!