Human Anatomy Lab #7: Muscles of the Cadaver

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Expected Learning Outcomes
At the end of the muscle labs, you will be able to
- locate and write the names of muscles of the anterior cadaver;
- locate and write the names of muscles of the posterior cadaver;
- name non-muscular structures;
- list a major action for each bulleted muscle; and
- list the origins and insertions of some of the muscles.

Introduction
There are over 600 muscles in the human body. We will locate several of these on human cadavers. Knowing the location and name of muscles is important, but is only a first step to understanding them. The function of a muscle is the movement, or action, it produces, such as flexion of the hip. A muscle’s action is determined by its attachments, usually on bones. We will use our knowledge of the skeleton as a foundation for learning the bony attachments of muscles. The origin is the attachment point of the muscle that does not move during contraction, whereas the insertion is located on the body part (usually a bone) that is moved.

What are you required to know for the test?
1. Locate and write down the name of all bulleted muscles. (Spelling counts!)
2. List one major action for each muscle that is bulleted. Use specific vocabulary. That is, use terms such as flexion, extension, abduction, etc. followed by the body segment or joint that is moved. For example, the action of the Biceps brachii is _______ of the _________.
3. List origins and insertions for required muscles. Use specific bony features to describe the origin and insertion. NOTE: REQUIRED MUSCLES ARE INDICATED WITH AN ASTERISK (*). YOUR INSTRUCTOR MAY VARY THE MUSCLES YOU ARE REQUIRED TO KNOW.
4. Be able to answer the functional questions that are included in the Check Your Understanding boxes.
How does one learn the information listed above?

1. Look at the illustrations and tables in chapters 11 and 12 of Saladin’s *Human Anatomy* textbook. The tables include information about actions and origins and insertions.
2. Review the bony landmarks in the text and on human skeletons in lab.
3. The key to learning this information is repetition.

**Study Suggestions:**
- First, locate and name the muscles that are listed in this handout on the cadaver. Use a resource such as the text or atlas to identify the muscles.
- Second, get a study partner and quiz each other until you are comfortable with identifying and accurately naming the muscles.
- Third, make flashcards or use a sheet of paper to write down the actions, and origins and insertions of the muscles. (Sketches are useful.)
- Continue to practice naming and WRITING (with correct spelling) the muscle names, actions, and origins and insertions.
- Finally, ace the practical exam!

**Identifying Muscles on Yourself**
(This material will not be tested on the exam; it is intended as an orientation.)

You will first need to identify muscles on yourself or your fellow students! (This does not require dissection.) Work with a partner to demonstrate the operation of the following muscles. One of you can demonstrate the movement while the other can supply resistance and palpate the muscle being tested.

1. Fully abduct the arm and extend the elbow. Now adduct the arm against resistance. You are using the *latissimus dorsi*.
2. To observe the deltoid, attempt to abduct your arm against resistance. Observe the large triangular muscle that caps the shoulder joint.
3. Press your hands together at chest level with your elbows widely abducted. You just used your *pectoralis major*.
4. Flex your elbow and then try to extend it against resistance. The muscle used is the triceps brachii.
5. Strongly flex your wrist and make a fist. Palpate your contracting forearm flexor muscles and their tendons, which can easily be felt at the anterior aspect of the wrist.
6. Flare your fingers to identify the tendons of the *extensor digitorum* muscle on the dorsum of your hand.

**MUSCLES OF THE ANTERIOR TRUNK AND ARM**

*NOTE: The muscles are listed in the order in which you can identify them on the cadavers. On one cadaver, muscles of the anterior body are visible; the posterior muscles are visible on the cadaver that is lying face-down.*

**Neck Region**
- sternocleidomastoid* (O/I)

**Anterior Trunk**
- pectoralis major

Lab #7: Muscles
• pectoralis minor
• rectus abdominis
• external oblique
• internal oblique
• serratus anterior

Muscles of the Arm
• biceps brachii* (O/I)
• brachialis
• brachioradialis

Check Your Understanding
Try to answer the following questions without looking at your notes.
1. Which muscle attaches to the mastoid process?
2. What muscle lies deep to the external oblique?
3. Which muscle is commonly referred to as the “six pack”?
4. What exercise strengthens your pectoralis major?
5. Why do you need a pectoralis minor?
6. What muscle lies deep to the biceps brachii?
7. Which muscle forms the boundary between the flexors and the extensors?

Muscles of the Forearm

Anterior Forearm Muscles
Hint: Think of these muscles as being in layers. This will help you distinguish them.

Layer one:
• flexor carpi radialis
• palmaris longus
• flexor carpi ulnaris

Layer two:
• flexor digitorum superficialis* (O/I)

Layer three:
• flexor digitorum profundus* (O/I)

Pronators:
• pronator teres
• pronator quadratus

Lab #7: Muscles
Check Your Understanding
Try to answer the following questions without looking at your notes.
8. Name the pronator muscle closest to the wrist.
9. Which wrist flexor is most lateral?
10. List three muscles that flex the wrist.
11. List two muscles that flex the fingers.

Posterior Forearm Muscles
- extensor carpi radialis longus
- extensor carpi radialis brevis
- extensor digitorum* (O/I)
- extensor digiti minimi
- extensor carpi ulnaris
- supinator

The following two muscles can be thought of as the “hitch-hiking” muscles. They abduct and extend the thumb.
- abductor pollicis longus
- extensor pollicis brevis

Check Your Understanding
Try to answer the following questions without looking at your notes.
12. Which muscle opposes the action of the pronator teres?
13. Which muscle has tendons extending to phalanges 2-5?
14. Which muscle has a tendon extending only to phalanx 5?
15. Which is more medial: extensor carpi radialis brevis or extensor carpi ulnaris?
ANTERIOR MUSCLES OF THE LOWER LIMB

THIGH MUSCLES

Anterior thigh
• Sartorius
• iliopsoas

The quadriceps femoris* (O/I)
• rectus femoris
• vastus lateralis
• vastus intermedius
• vastus medialis

Lateral thigh
• tensor fasciae latae

Medial thigh
• gracilis
• adductor longus
• adductor magnus

LEG MUSCLES

Lateral leg
• fibularis longus

Anterior Leg
• extensor digitorum longus
• extensor hallicus longus
• tibialis anterior

Check Your Understanding
Try to answer the following questions without looking at your notes.
16. The most medial muscle in the thigh is the ________________.
17. What is the meaning of hallicus?

Figure 3 Anterior Thigh
Muscles of the Posterior Trunk and Arm

Posterior Trunk

- trapezius
- deltoid* (O/I)
- latissimus dorsi
- teres major
- rhomboideus major
- erector spinae

Hip Muscles

- gluteus maximus
- gluteus medius
- piriformis

Posterior Arm

- triceps brachii* (O/I)

Check Your Understanding

Try to answer the following questions without looking at your notes.

18. What muscle is used to shrug the shoulders? How would you describe that action using specific anatomical vocabulary?
19. What muscle opposes the action of the triceps brachii?
**POSTERIOR MUSCLES OF THE LOWER LIMB**

**Posterior Thigh**

The hamstrings are a group of three muscles of the posterior thigh.

- biceps femoris * (O/I)
- semimembranosus * (O/I)
- semitendinosus* (O/I)

**Posterior Leg**

- gastrocnemius
- soleus

**NON-MUSCULAR STRUCTURES**

These are not muscles, but they are important structures you should be able to locate and name. They are found on both the anterior and posterior sides of the body.

- linea alba
- iliotibial band (known commonly as the IT band)
- femoral artery and vein
- sciatic nerve
- calcaneal tendon (achilles tendon)

**Check Your Understanding**

*Try to answer the following questions without looking at your notes.*

20. What muscles insert into the calcaneal tendon?
21. Name two muscles that insert onto the iliotibial tract.

**Muscle Test Format**

You will stand around the cadaver and an instructor or TA will point to the muscle to be identified. Once everyone has written the answer, the next muscle is shown to you. Origins, insertions and actions may be tested at this time too. You need to sign up for a test time during the lab the week prior to the test. Total questions: 50, each worth two points.

Lab #7: Muscles