A&P 1
Skeletal Lab Guide #6 -
Appendicular Skeleton and Joints Lab Exercises:
_Pectoral Girdle_

_Have someone in your group read the following out loud, while the others read along:_

Do This Only If a "Scapula & Arm With Rubber Band" model is available in the room, and if your instructor asks you to. **THIS WILL NOT be available in the Open Lab, and these models will not appear on the lab practical.** This step covers material that will not be on the exam directly. You can come back to this later!

In the room, there are 2 models you’d like at your table:

Model #1 (as seen in IMAGE "A" below): a model of a scapula & arm bones, with rubber bands attached (representing two muscles).

Model #2 (as seen in IMAGE "B" on next page). Model of the muscles of the arm.

Go get them, and return to your table.

Look at **Model #1.** Notice that the rubber bands represent muscles. If "muscle 1" contracts, the forearm will move towards the humerus around the elbow joint. If "muscle 2" contracts, the forearm will move away from the humerus around the elbow joint.

Notice where the rubber band is attached to the bones. Notice how processes give the rubber bands more surface area to attach.
Look at Model #2. Can you ID the muscles that are represented by the rubber bands on Model #1?

The image to the right "draws" the 2 muscles represented by the rubber bands on an arm.

Find these muscles on your own arm.

Do you know the name of these muscles?

Find the attachments on your forearm. Contract these muscles on your own arm, bringing the forearm up towards your humerus, then moving it away.
Step 1. Review some long bone anatomy in lab:

Find the "dissected long bone" in the lab room. Find the image in your text showing the regions of a long bone.

Q1. Label the types of bone tissue indicated. Find them on the long bone dissection.

Q2. Correctly label the regions of a long bone indicated on this image, using these terms:

- diaphysis
- proximal epiphysis
- distal epiphysis
- metaphysis
- medullary cavity

Q3. In the above image, where would you find:

- The Growth Plate?
- The Bone Marrow?
- The Endosteum?
- The Periosteum?
Step 2. Identify the features of the Pectoral Girdle and Associated Limbs you need to know

You will need the model of the shoulder joint, a disarticulated skeleton, and an articulated skeleton at your station. If the shoulder model is unavailable, move to another step, or use the images in your text.

Your instructor wants you to know some features associated with the individual bones of the pectoral girdle and upper limb. **Highlight the terms you need, or underline them on the images in your lab or lecture book!** Label the features on the accompanying images.

In the "Appendicular Pre-lab Lab Exercise Guide", we made a list of terms you need to know. Use that as a guide, writing "none" if you do not have to know any off a specific bone.

**Notice that this exercise asks you to identify which features are associated with certain joint.**

If you are not sure if a feature is associated with a joint, put it in the "**other features**" category. You can change your mind later, after asking your instructor!

You are not being graded on your ability to analyze the joints; we are simply making you look! You can change your mind later, when you study the muscles!

Find each feature on the disarticulated bone AND the articulated skeleton. Label the features on the images below as your group moves through the skeleton.

Continued on next page
Examine The Pectoral Girdle & Shoulder Joint:

Look at this image of the articulated shoulder joint, while examining the skeleton at your station. Follow the steps "1", "2", "3", etc. in sequential order.

Then, on the following page, label them on the bone images while examining the bones in lab.

The shoulder joint includes features of the scapula, clavicle and proximal humerus.

1. Some processes are used in the joint, such as this condyle. These have a smooth surface.

2. Other processes are where ligaments and tendons attach. These have a "rough surface".

3. Continued on next page
In the room is a model of the shoulder joint, similar to the one seen in the image to the right. Bring it to your workstation if it is available. If not available, find an image in your book which shows the ligaments attaching (similar to the model). You may look in the "articulation" chapter.

Do not worry about naming the ligaments yet; we'll do that later.

Get a scapula, clavicle and humerus out of your "Disarticulated skeleton box". If possible, make sure they are from the same side of the body (for example, make sure they are all from the right-side of the body). Use book images as a guide.

Now, let's label the features associated with the shoulder joint, while finding them on the bones in lab. Remember to write "none" if you do not need something in a category.

#1. The Clavicle - Do this while looking at the shoulder model, or the image in your book. Label the bone, as well as any feature you need to know, while finding them on the disarticulated bone. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

Label sternal End:

Label acromial End:

Label "Other Features":
#2. The Scapula - Do this while looking at the shoulder model, or the image in your book, and the disarticulated bone. Use book images as a guide. List and label anything you need to know, while finding them on the disarticulated bone. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

Label the bone, as well as any feature directly associated with the shoulder joint, and the girdle itself. Use another piece of paper if you need more room:

Now, label the "Other Features" (any feature you need to know but is not directly associated with the shoulder joint). Use another piece of paper if you need more room:

Anterior

Posterior
#3. The Humerus - Do this while looking at the shoulder model, or the image in your book, and the disarticulated bone. Use book images as a guide. List and label anything you need to know, while finding them on the disarticulated bone.

Label the bone, as well as the features associated with the shoulder joint (we'll do more on the humerus in subsequent joints). Just pay attention to the proximal humerus, as the distal end is not involved in the shoulder joint (directly).

Include any processes that serve as attachments for shoulder muscles, or structures involved in the joint itself. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

(Do not worry about the distal end of the humerus, which does not play a role in the shoulder joint)

Anterior  Posterior
Step 3. Examine The Elbow Joint

You will need the model of the elbow joint, a disarticulated skeleton, and an articulated skeleton at your station. If the elbow model is unavailable, move to another step, or use the images in your text.

Look at this image of the articulated elbow joint, while examining the skeleton at your station. Follow the steps "1" and "2" in sequential order.

Then, on the following page, list the features of the bones, while labeling them on the bone images.

The elbow joint includes features of the distal humerus, and the proximal ulna and radius.

Some processes are used in the joint, such as this condyle. These have a smooth surface. Other processes are where ligaments and tendons attach. These have a "rough surface".
In the room is a model of the elbow joint, similar to the one seen in the image to the right. Bring it to your workstation if it is available. If not available, find an image in your book which shows the ligaments attaching (similar to the model). You may look in the "articulation" chapter.

Get a radius, ulna and humerus out of your "Disarticulated skeleton box". If possible, make sure they are from the same side of the body (for example, make sure they are all from the right-side of the body).

Use labeled book images as a guide.

Do not worry about naming the ligaments yet; we'll do that later.

Now, let's label the features associated with the elbow joint, while finding them on the bones in lab. Remember to write "none" if you do not need something in a category.
#1. The Humerus - Do this while looking at the elbow model, and the disarticulated bone. Use book images as a guide. Label anything you need to know, while finding them on the disarticulated bone. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

First, label the bone, as well as any features associated with the elbow joint.

Then, label the "Other Features" you haven't listed yet.

(Do not worry about the proximal end of the humerus, which does not play a role in the elbow joint)
#2. The Ulna and Radius - Do this while looking at the elbow model, and the disarticulated bones. Use book images as a guide. Label the bones, as well as any feature you need to know, while finding them on the disarticulated bone. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

(Do not worry about the distal end of the radius, which does not play a role in the elbow joint)

(Do not worry about the distal end of the ulna, which does not play a role in the elbow joint)

Anterior  Lateral
Step 4. Examine The Wrist Joint, Hand and Fingers

You will need the a disarticulated skeleton and an articulated skeleton at your station.

Look at this image of the articulated elbow joint, while examining the skeleton at your station. Follow the steps "1" and "2" in sequential order.

Then, on the following page, list the features of the bones, while labeling them on the bone images.

The wrist joint includes features of the distal radius and ulna, and the carpal bones.

We won't worry about each individual joints found in the hand and fingers. Different instructors vary greatly in what they have you know; make sure you know what you are responsible for!!
In the room is a model of the hand and wrist joint, similar to the one seen in the image to the right. Alternatively, you can use the hand on your articulated skeleton. Find the labeled images in your book.

Inside the "Disarticulated skeleton box", there will be an ulna, radius, and an articulated hand. Get them out!

Now, let's label the features associated with the elbow joint, while finding them on the bones in lab. Remember to write "none" is you do not need something in a category.

#1. The Ulna and Radius - Do this while looking at the disarticulated ulna and radius. Label the bones, as well as anything you need to know in the wrist region, while finding them on the articulated bone. Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

(Do not worry about the proximal end of the radius, which does not play a role in the elbow joint)

(Do not worry about the proximal end of the ulna, which does not play a role in the elbow joint)

Anterior  Lateral
#2. On the image below, first label the "Thumb Side". Then, label the features you list below. We are showing you the PALMAR side ONLY! Remember: you are only labeling the image as a guide; you will be tested on real bone. Skip the labeling if it does not help.

Individual carpal bones
I need to know:

What to know about the Metacarpals:

What to know about the Phalanges of the hand:

Other things to know:
Team Assessment for STEPS 2, 3 & 4

Before moving onto the next step, make sure everyone in your group gets at least a "75%" on this assessment. That means they have to get 7 - 8 out of 10 on the score-sheet below.

*If you move on before doing this assessment, you will only end up spending more time later! It is better to know the pectoral girdle WELL before moving on to another part of the skeleton.*

*Repeat this procedure in a couple of days...but before the next lab session. You will find that through this process you will do much less "cramming" for the quiz or exam. Instead...you will simply know the material!*

Using the diagrams you labeled on the previous pages as a key, quiz your teammates on both the disarticulated bones and the articulated skeleton. Point at every bone and feature, and ask "name this bone" or "name this bump" or "name this groove", etc.

Only give them a few seconds to answer. If they haven't in 5 seconds, say "time's up!" and give them the answer. Then RE-ASK THE SAME FEATURE in a few questions.

If they haven't gotten it correct the third time you return to a feature, make them write it out 5 times on a piece of paper. Then, ask them again later.

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**Score Sheet:**

<table>
<thead>
<tr>
<th></th>
<th>Teammate #1</th>
<th>Teammate #2</th>
<th>Teammate #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many did they get right?:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Words they are struggling with:</td>
<td></td>
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<tr>
<td>Percent Correct:</td>
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</tbody>
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HINT: to make this challenge harder, jump "between bones" when asking questions!!