Bone Practical: Lecture

Bone-Appendicular Pelvic Girdle and Leg

Speaker: Heidi Peterson

Hello Students. As you watch the video anything you see in purple or on the slide itself is a corrected mistake or clarification to help you find the bones and markings for your study. If you have questions email your instructor through your course section. And refer back to the handouts. You can also use your textbook, chapter 7 and PAL in the study area of Mastering A&P to help you find your handout bones and features(markings).

The last section of your Human Anatomy lab will be the Pelvic girdle and leg. The pelvic girdle starts out with a very important bone that goes by a lot of names, but the easiest to spell and remember is the hip bone. You are looking at a medial view. The hip bone also goes by the Os Coxae or the innominate, it is part of the pelvis but pelvic bone is not its name. So I think hip bone is the easiest one to spell.

The hip bone in humans, because we have learned to be bipedal which means to walk upright, has been compressed (fused) so three bones became one. But since we still talk about the areas or the views of these bones and features and markings are still named for them it is probably beneficial for you to know them. On a test you will probably see something like name the part of the hip bone. Those parts include the ilium (spelling matters- not the ileum, which part of the small intestine), ischium, and pubis. The ilium is the broad flat area at the most superior part. The hip bone contains the ilium so one of the clues for you in the future when you are naming features and markings that anything that is in that box probably has ilium in its name. The middle part of the hip bone is the Ischium. And we will see in the posterior view it has a big cave behind it. The pubis itself is where the two hip bones meet to make up the Pelvic Girdle. There is a big piece of cartilage that gets trapped between the two hip bones and it is called the pubic symphysis. So the Ilium, Ischium, and Pubis.

I recommend you also look these up in your text (Ch 7) as the borders of each individual bone differ slightly from the boxes shown in the video. The ilium is fan-shaped, like a peacock tail flared out. It is the most superficial portion of the hip bone. The middle part of the hip bone is the Ischium (isk-e-um), which makes up the posterior portion of hip bone inferior to the ilium. We will see in the lateral view it meets the ilium and pubis in a feature that looks like a cave, called the acetabulum. The pubis makes up the anterior portion of the hip bone inferior to the ilium, and together, the two pubis bones are where the hip bones meet to form the pubic symphysis joint, which completes the pelvic girdle. When the joint forms, the two pubic symphysis fossas (one flat surface on the medial aspect of each pubis) join with a piece of cartilage between the two to form the pubic symphysis joint. So the Ilium, Ischium, and Pubis make up the hip bone.

On the ilium the first feature or marking you will see is something that is called the anterior superior iliac spine (ASIS). (It is on the anterior, superior part of the ilium) Easy to abbreviate and remember as the AS IS or A.S.I.S. The anterior superior iliac spine is what you used to call your hip bone. If you have ever dove in volleyball or crossed home plate in baseball you know exactly where that feature is. Coming
up from the ASIS is the iliac crest. It is the top portion of your hip bone and you can see it is quite an extensive feature. Down (in inferior) at the bottom on the pubic bone you will see the pubic symphysis fossa, fossa is the broad flat area where the pubic symphysis cartilage is attached. So in this medial view we see the three parts of the hip bone, the ilium, ischium, and pubis. And we see features that include the ASIS, the iliac crest, the pubic symphysis fossa, and then the big hole in the hip bone the obturator foramen. I remember it because it kind of sounds like operator but you put a b in there. And it is easy to spell, ob-tur-a-tor foramen. (Do not mix this up with the foramen magnum from the occipital bone! They are both large holes)

In a lateral view we have taken that hip bone and just shot it from the other side. You can still see the broad flat area called the ilium. See the big cave I was talking about now that is part of the ischium and then the pubis right in front or to the right of the picture. (That is the acetabulum, and it is where all 3 bones of the hip meet, reference your text fro a color-coded figure; the boxes are general guides, but your book is anatomically accurate). We are going to see the ASIS from a different view. In that lateral view you will also see the big cave. That cave is where the head of the femur fits into. It is called the acetabulum. And it is right on your ACE a tabulum. Right below it is the big lake. So you wake up and take a dip in the lake, it is called the obturator foramen. The obturator foramen. So in this view we have four really big features. Starting at the top with the anterior superior iliac spine (ASIS), the cave; the acetabulum, the obturator foramen, and then the ischial tuberosity. A raised roughened projection and the ischial tuberosity is commonly known as your butt bone. And it is also a really good landmark for anybody in health occ. If you ever have to give an intramuscular injection in somebody’s buttocks you will use the ischial tuberosity as your landmark. The sciatic nerve comes out above it and it is always why you need 3 fingers above the ischial tuberosity before you inject.

The acetabulum is where the head of the femur fits to form the hip joint. So in this view we have four really big features. Starting at the top with the anterior superior iliac spine (ASIS), the acetabulum, the obturator foramen, and finally, the ischial tuberosity. This feature is better seen from a posterior view; it is a raised and roughened projection commonly known as your sit bone. It is also a really good landmark for anyone who gives IM injections. You will use the ischial tuberosity as a landmark. The sciatic nerve comes out above it and is the reason why you must have 3 fingers of space above the ischial tuberosity before you inject, so you can stay away from the sciatic nerve.

Right connected to the hip bone is the largest bone in the human body, the femur. The femur in an anterior view you will see features such as the femoral head, but it is when we flip the femur over to the posterior view that we see some really good features. Do not get the femur confused with the humerus. I find it very humerous, when people confuse the two. It is a big bone although it has a lot in common with the humerus. Like the humerus it has some greater and lesser. Except they are bigger. And in the femur they are bigger called the greater trochanter and the lesser trochanter. Again greater more superior and lesser more inferior and smaller. The trochanters are different than the tubercles in the humerus. I remember because horses trot and canter on their legs. And in the femur you will find the trochanters. The greater trochanter and lesser trochanter. In that posterior view you will also find the femoral head. The femoral head is a nice round projection. It fits into the acetabulum of the hip bone
and makes up the ball of the ball and socket joint on your hip joint. Right between the head and shaft of the femur is the neck. Sometimes it is called the surgical neck. And it is the most easiest piece broken off the femur. A lot of times when people break their hip, what they are breaking is the surgical neck. In the posterior view down at the bottom you will also find two condyles. Condyles are flat parts of bone that make up a hinge joint. On the lateral side is the lateral condyle and on the medial side is the medial condyle. You always know it is the medial side because if you take the femoral head and draw an invisible line straight down, that is the medial side of any bone. It works for the humerus and the femur. So greater trochanter, lesser trochanter, femoral head, surgical neck or neck of the femur, lateral condyle and medial condyle. The last view of the femur is a medial view. The reason I want to show you that is for a feature that is very important in joint and hip health. That feature is the fovea capitis. If you had a real bone in front of you, you could stick a pinky finger in the indentation. It is for the main ligament that holds the head of the femur into the acetabulum of the hip bone.

Sitting right on top of those condyles on the anterior side of the femur is a little sesamoid bone. The largest sesamoid bone in your body, again these are sesamoid bones they are bones found in tendons and it is called the patella. If you write “knee cap” on your test it will be wrong. The cool thing about patellas is that they come with use. So if anybody has small children in the house under the crawling stage feel their knees you won’t find a patella at all.

The two bones in your legs are very specific on spelling on these two bones. They are easy to interchange and if you are in the health occ fields or if you ever have to write these on a chart someday not a single health information tech appreciates these two bones being misspelled. So we have the first bone the fibula F-I-B-U-L-A. The fibula. And the marking on the fibula is clear at the bottom. It is called the lateral malleolus. And the lateral malleolus is actually by your little toe it’s that part that sticks out by your ankle.

The tibia is the larger of the bones even though it has the smaller name. In the anterior view of the tibia we will see right underneath the superior part of that bone is the tibial tuberosity. And if you feel right under your kneecap you will feel that big bump on your tibia. If you have ever shaved your legs you know where that is. So the tibial tuberosity, so at the bottom is the medial malleolus, the medial malleolus is the medial side ankle bone that sticks out. In the superior view of the tibia we have the intercondylar eminence or also known as the tibial spine you can also see on either side where the lateral and medial condyles of the femur sit. This intercondylar eminence is for the attachment of the ACL or the anterior cruciate ligament and the posterior cruciate ligament and if you have ever had a knee injury you know where they are located.

Moving from the lower leg we move into the foot. And we are going to see three views of the foot. The first is the superior view like you are looking straight down at your toes, and those toes are called your phalanges. The arch of your foot are the metatarsals, tarsals by your toes is an easy way to remember it. And then we go into the 7 tarsals themselves. The biggest tarsal is the calcaneus. And right on top of the calcaneus is the talus, talus on top. Sitting right in front of the talus is a little boat shaped bone called the navicular. I remember it because navy men come out of boats. From the navicular we move on to the first (medial) cuneiform which is right behind your big toe or your first digit. The second
(intermediate) cuneiform, then the third (lateral) cuneiform. You can call them first, second, or third cuneiforms but you might also know them as the medial, intermediate, and lateral. So in this superior view, the last little bone we need to talk about is right in front of the calcaneus and that is the cuboid bone. It gets its name because like a cube it has six sides.

Moving on to the lateral view, how do I know it’s lateral? Because I see the shortest toe or little toe. Again we see phalanges, then moving back the metatarsals, and from the big bone it is really easy to see the calcaneus or your heel bone. Sitting right on top of the calcaneus is the talus, and your talus is your bone of or tarsal that joins up with your tibia to make your ankle bone. In that lateral view you can see the second cuneiform and third cuneiform. And then a really good view of the cuboid. Again the cuboid sitting right in front of the calcaneus.

The last view of the foot is the medial view. This is looking straight at your big toe through your foot. Again we see the calcaneus. Notice there are lots of views of the calcaneus so you better know where it is on each view because you don’t know what’s going to show up on the test. So calcaneus, then again the talus on top. A really good view of the navicular, a really good view of the cuneiform, the metatarsals from the side, and the phalanges. Study hard.