

## Activity 7: Pelvis and Hip

### Part I

Locate on the skeleton, on a fellow classmate, and on yourself all of the bones of the lower extremity (except only on the skeleton for the pelvis). Include the bony landmarks of Anterior Superior Iliac Spine, Posterior Superior Iliac Spine, Iliac Crest, and Greater Trochanter. The greater trochanter is an appropriate landmark to locate the acetabulofemoral joint as it is directly deep from the surface.

On the Primal Interactive Anatomy – Hip, click the Radiology Text tab. Double click on the Anatomy of the Hip. This text describes the anatomical structure of the hip, including bony articulation, capsule, ligaments, etc. Fill in the following information about the hip:

Percent congruency between the acetabulum and the femoral head:

Structures that provide support (stability for the joint):

How is the femoral neck oriented relative to the femoral shaft? Why?

Now click on the Anatomy tab. Make sure that under the picture it reads Hip Joint Model. Use the slider to observe the various layers of the hip structure. Use the arrows to rotate the image. Click on structures to learn what they are. Answer these questions.

What structures (bones, connective tissue) make up the pelvis?

What are the primary ligaments of the pelvis?

What muscles attach the greater trochanter?

## **Part II: muscle identification**

Locate the following muscles the mannequin, yourself, and/or a partner. If you are not sure you are palpating the correct muscle, provide some resistance so the subject is performing an isometric contraction of the muscle. Use your textbook to determine the approximate location of the muscle belly and determine the resistance action. Before you leave lab today, your instructor will test you on your ability to identify the location of these muscles.

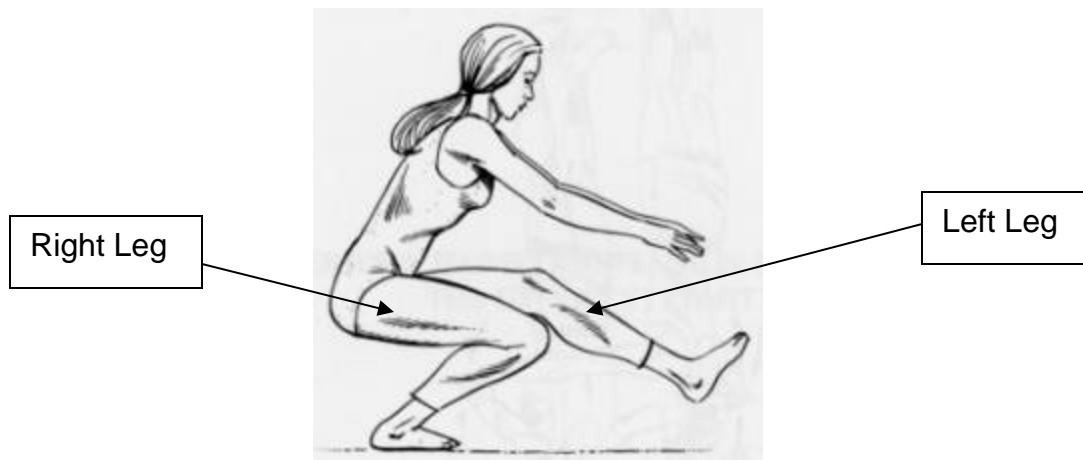
<b>Muscle</b>	<b>Location of muscle belly</b>	<b>Resistance/Action</b>
quadratus lumborum		
Rectus abdominus		
internal oblique		
external oblique		
gluteus maximus		
gluteus medius		
gluteus minimus		
adductor magnus		
rectus femoris		
tenser fascia latae		
gracilis		
biceps femoris		
semitendinosus		
semimembranosus		

What happens to the muscles that cross the hip when the pelvis is posteriorly or anteriorly tilted? How does this affect the low back? The hip?

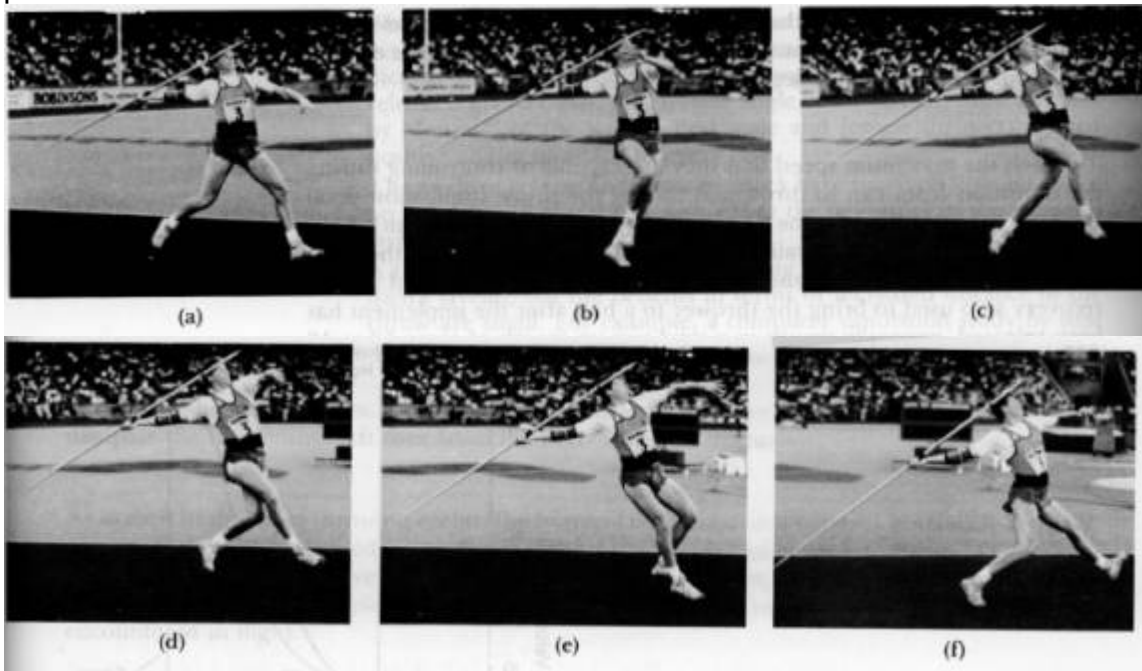
### Part III

Three different situations are given. Name the positions/actions of the hip and pelvis and the agonist muscles involved in producing or controlling the position/action. Please be concise and specific.

A) One legged static squat. (Separate analyses for each leg)



B) The right leg of a javelin throw. The following sequence of pictures show a run up to a javelin toss. Analyze the motions of the right hip and pelvis only. Examine two phases of the movement from a to d and from d to f. Base your analysis as if you were looking at the beginning and end of that particular phase of the movement and you are assuming the joint motion in between. For example, the position in picture a is the beginning of the first phase and the position in picture d is the end of the first phase. What motions are required to move from the position in picture a to the position in picture d?



C) Discus throw. Analyze the pelvic and leg motion from frames m to p of the right leg using the same methods as in the previous question.



(m)



(n)



(o)



(p)



(q)



(r)