

## Laboratory Exercise

# 23

# Muscles of the Hip and Lower Limb

### Materials Needed

Textbook  
Human torso model with musculature  
Human skeleton, articulated  
Muscular models of the lower limb

### For Learning Extension:

Long rubber bands

The muscles that move the thigh are attached to the femur and to some part of the pelvic girdle. Those attached anteriorly primarily act to flex the thigh at the hip, whereas those attached posteriorly act to extend, abduct, or rotate the thigh.

The muscles that move the leg connect the tibia or fibula to the femur or to the pelvic girdle. They function to flex or extend the leg at the knee. Other muscles, located in the leg, act to move the foot.

### Purpose of the Exercise

To review the actions, origins, and insertions of the muscles that move the thigh, leg, and foot.

### LEARNING OUTCOMES

After completing this exercise, you should be able to

1. Locate and identify the muscles that move the thigh, leg, and foot.
2. Describe and demonstrate the actions of each of these muscles.
3. Locate the origin and insertion of each of these muscles in a human skeleton and on muscular models.

### EXPLORE

#### Procedure—Muscles of the Hip and Lower Limb

1. Review the sections entitled “Muscles That Move the Thigh,” “Muscles That Move the Leg,” and “Muscles That Move the Foot” in chapter 9 of the textbook.

2. As a review activity, label figures 23.1, 23.2, 23.3, 23.4, 23.5, and 23.6.
3. Locate the following muscles in the human torso model and in the lower limb models. Also locate as many of them as possible in your body.

#### muscles that move the thigh

anterior hip muscles  
    iliopsoas group  
        psoas major  
        iliacus  
posterior and lateral hip muscles  
    gluteus maximus  
    gluteus medius  
    gluteus minimus  
    tensor fasciae latae  
medial adductor muscles  
    pectineus  
    adductor longus  
    adductor magnus  
    adductor brevis  
    gracilis

#### muscles that move the leg

anterior thigh muscles  
    sartorius  
    quadriceps femoris group  
        rectus femoris  
        vastus lateralis  
        vastus medialis  
        vastus intermedius  
posterior thigh muscles  
    hamstring group  
        biceps femoris  
        semitendinosus  
        semimembranosus

#### muscles that move the foot

anterior leg muscles  
    tibialis anterior  
    fibularis (peroneus) tertius  
    extensor digitorum longus

posterior leg muscles

gastrocnemius

soleus

flexor digitorum longus

tibialis posterior

lateral leg muscles

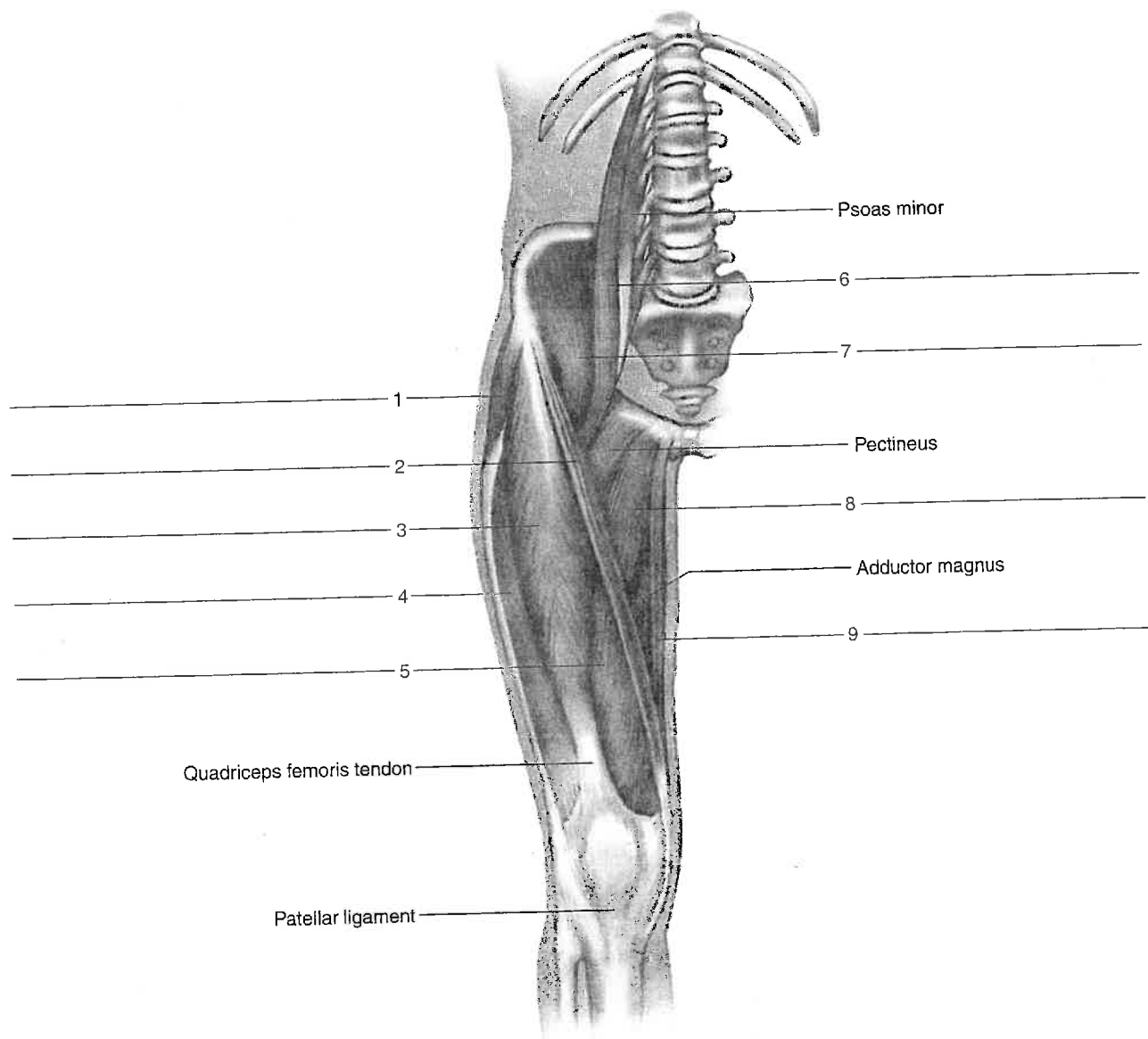
fibularis (peroneus) longus

fibularis (peroneus) brevis

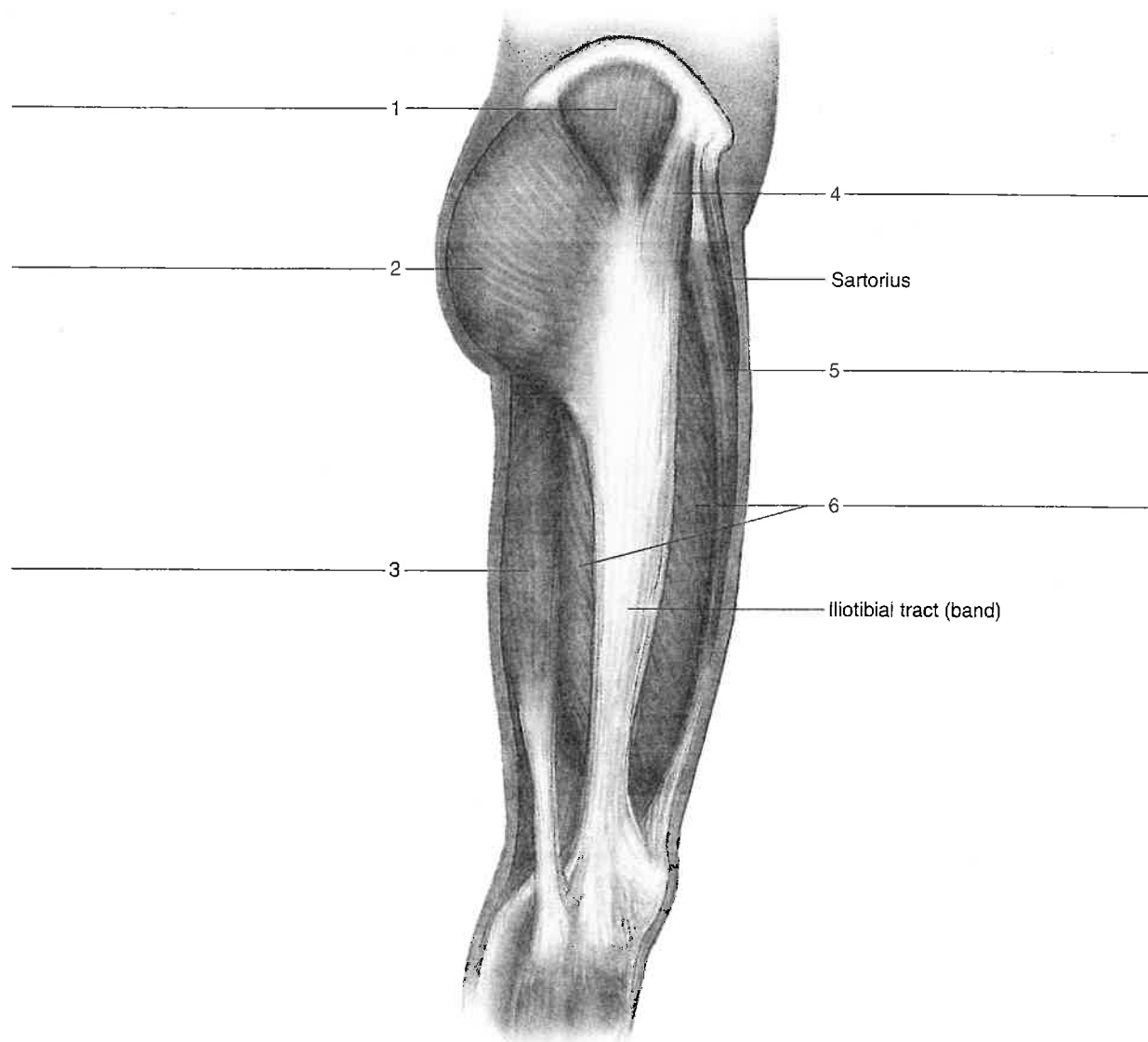
4. Demonstrate the action of each of these muscles in your body.
5. Locate the origin and insertion of each of these muscles in the human skeleton.
6. Complete Parts A, B, and C of Laboratory Report 23.


### Learning Extension

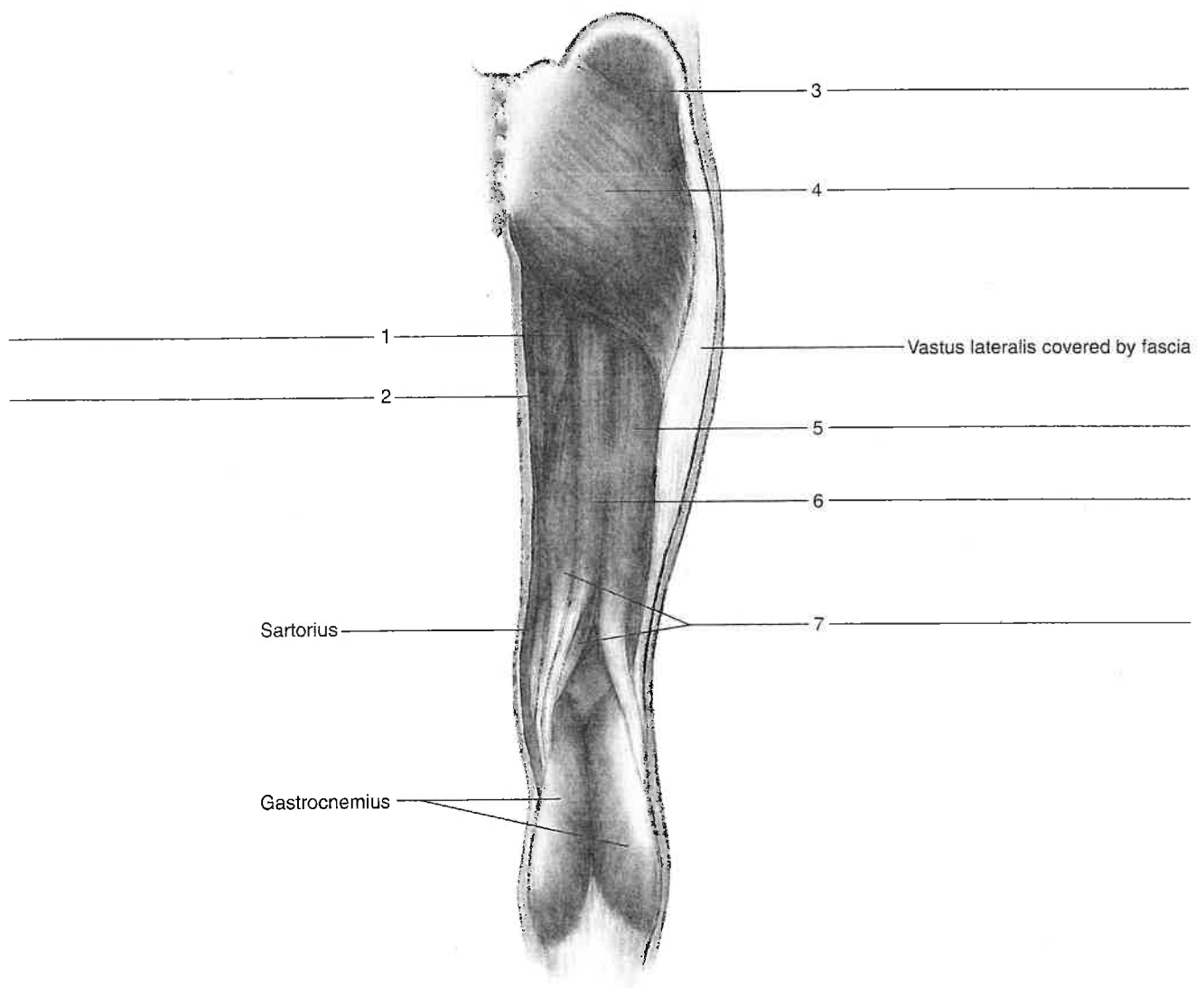
A long rubber band can be used to simulate muscle locations, origins, insertions, and actions on muscular models, the skeleton, or on a laboratory partner. Hold one end of the rubber band firmly on the origin location of a muscle, then slightly stretch the rubber band and hold the other end on the insertion site. Allow the insertion end to slowly move toward the origin end to simulate the contraction and action of the muscle. 1 2 3



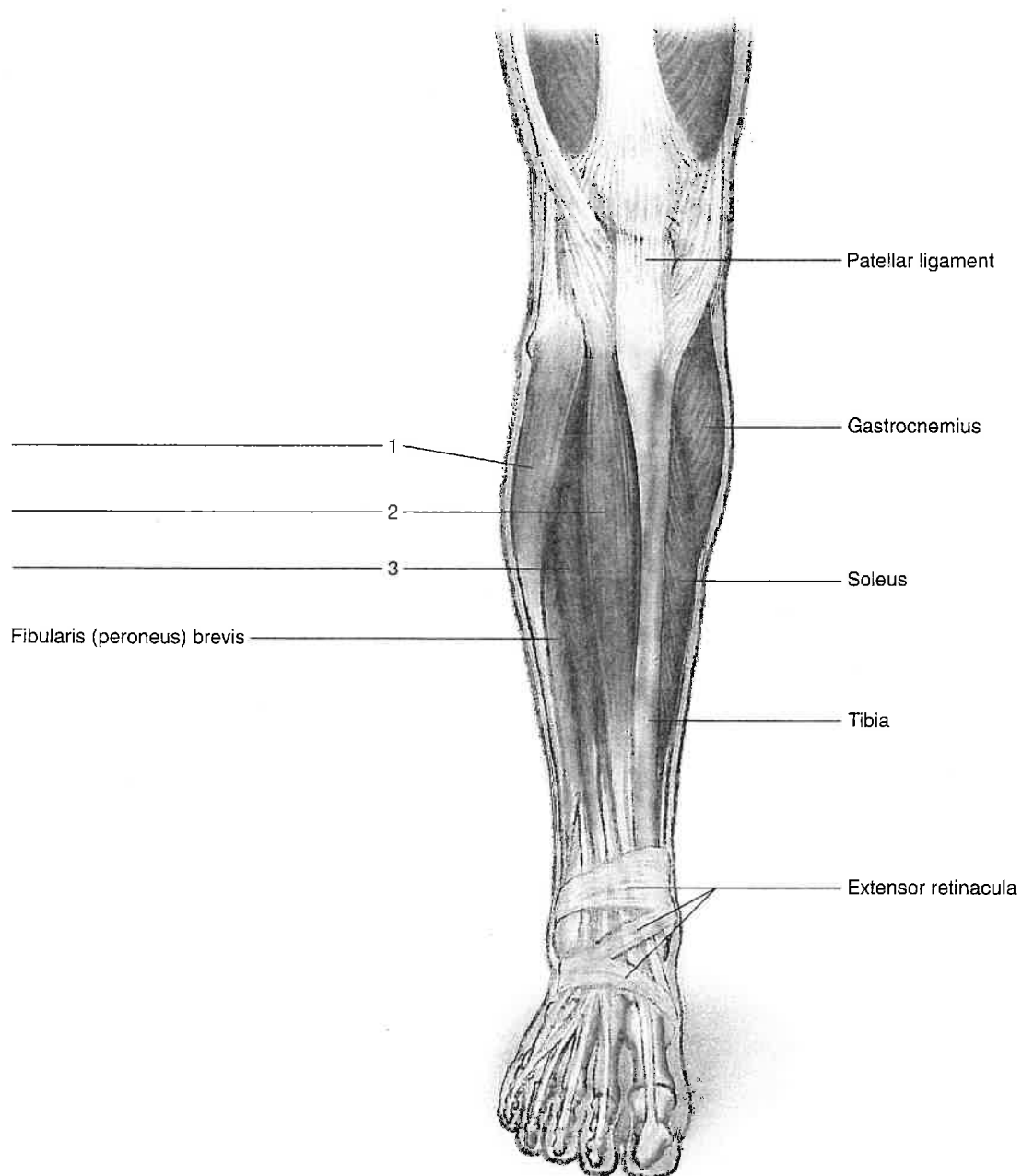
**Figure 23.1** Label the muscles of the anterior right hip and thigh. 1



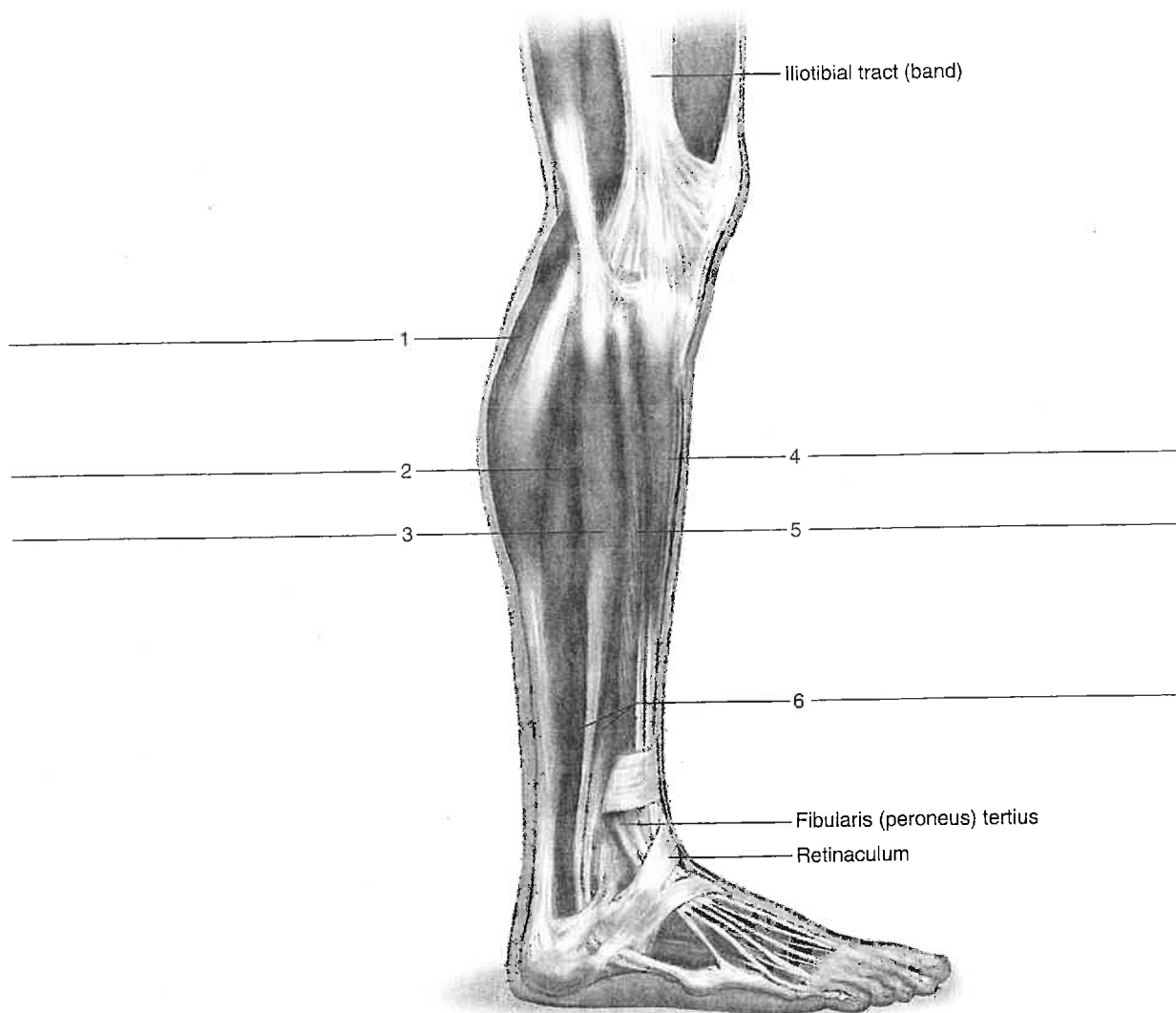
**Figure 23.2** Label the muscles of the lateral right hip and thigh. 



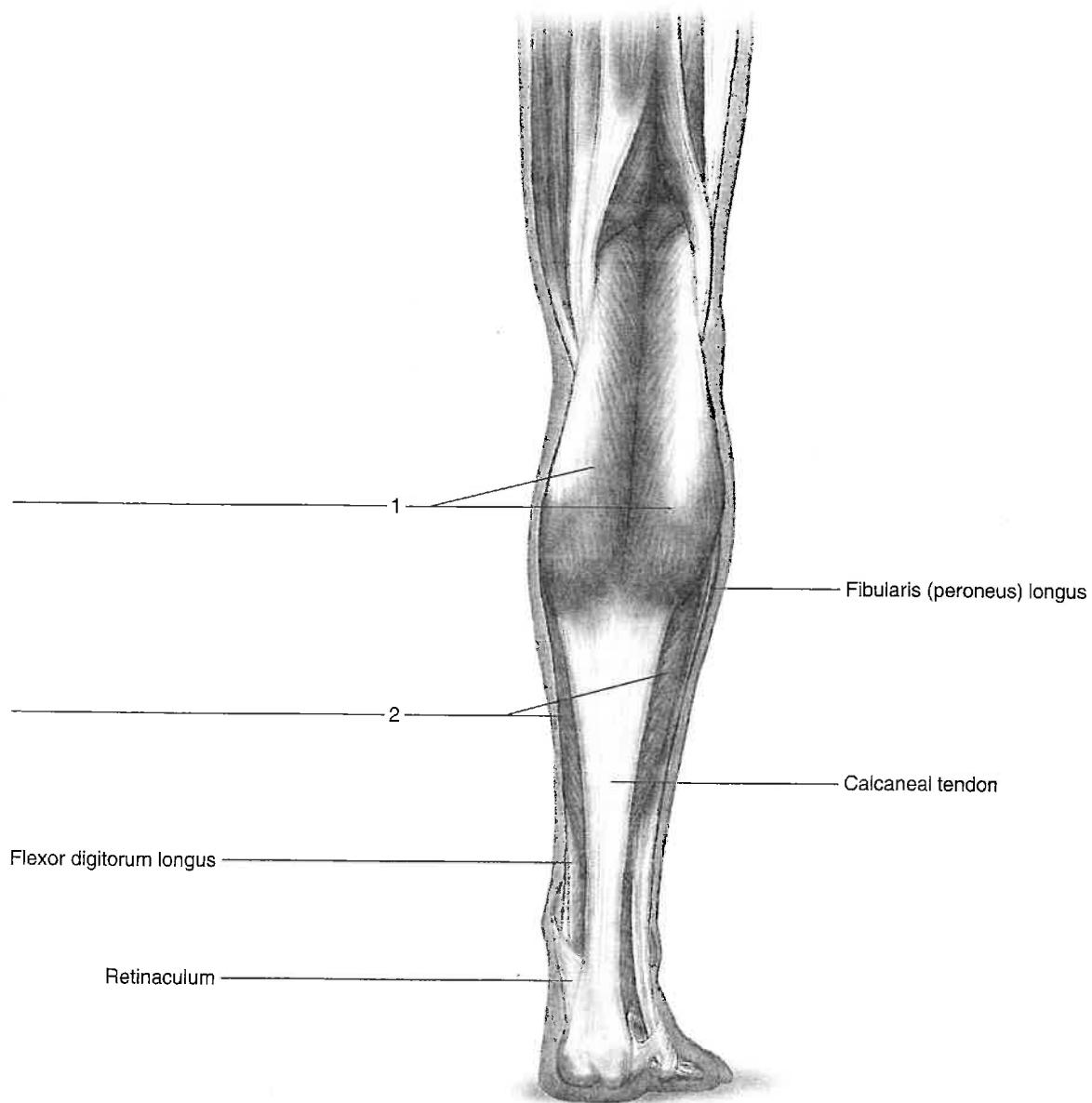
**Figure 23.3** Label the muscles of the posterior right hip and thigh. **A**



**Figure 23.4** Label the muscles of the anterior right leg. 1



**Figure 23.5** Label the muscles of the lateral right leg. **1**



**Figure 23.6** Label the muscles of the posterior right leg. **A**