ACTIVITY

6

AXIAL MUSCLES

OBJECTIVES

- ❒ **How to get ready:** Read CHAPTER 11, MCKINLEY ET AL., *HUMAN ANATOMY*, 5E. All text references are for this textbook. Begin identifying muscles in your textbook BEFORE you come to the laboratory. **You must bring gloves for this activity.**
- ❒ Identify muscles listed on models and/or cadavers.
- ❒ When indicated, identify the action and attachments for each muscle.
- ❒ **Before next class:** Preview Nervous System, Brain, and Cranial Nerves terms lists from SLCC Anatomy Laboratory website or your printed laboratory manual and your textbook.

Activity 6

AXIAL MUSCLES

These muscles have both their origins and insertions on the axial skeleton or skin.

TABLE 6-1. **Muscles of facial expression:** (*8 muscles to identify*) These muscles move skin rather than a joint upon contraction.

NAME	ACTION	TEXT REFERENCES & NOTES
▫ **frontalis** (frontal belly of occipitofrontalis)	draws scalp forward, raises eyebrows, wrinkles forehead horizontally	**DESCRIBED: P. 321** **FIG. 11.2A & B**
▫ **occipitalis** (occipital belly of occipitofrontalis)	retracts scalp	**DESCRIBED: P. 321** **FIG. 11.1B, 11.2B**
▫ **orbicularis oris**	compresses and purses lips (kiss muscle)	**DESCRIBED: PP. 321, 326** **FIG. 11.2A & B**
▫ **orbicularis oculi**	closes eye	
▫ **platysma**	pulls lower lip inferiorly, tenses skin of neck, aids in depressing mandible	

TABLE 6-1. **Muscles of facial expression:** (*8 muscles to identify*) These muscles move skin rather than a joint upon contraction.

NAME	ACTION	TEXT REFERENCES & NOTES
▫ **zygomaticus major**	pulls corners of mouth superiorly (smiling muscle)	
▫ **zygomaticus minor**	raises upper lip, exposing upper teeth	
▫ **buccinator**	presses cheeks against molar teeth, holds food between teeth during chewing	**DESCRIBED: P. 326 FIG. 11.2A & B**

TABLE 6-2. **Muscles of mastication (chewing):** (*2 muscles to identify*)

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	TEXT REFERENCES & NOTES
▫ **temporalis**	parietal bone frontal bone	coronoid process of mandible	elevates and retracts mandible at jaw	**DESCRIBED: P. 330 FIG. 11.2B, 11.5**
▫ **masseter**	zygomatic arch (made up of the temporal process of zygomatic bone and the zygomatic process of the temporal bone)	coronoid process, angle, and ramus of mandible	closes jaw; elevates mandible at jaw	**DESCRIBED: P. 330 FIG. 11.2A & B, 11.5**

TABLE 6-3. **Neck muscles:** (*3 muscles to identify*)

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	TEXT REFERENCES & NOTES
▫ **sternocleidomastoid**	• manubrium of sternum • sternal end of clavicle	mastoid process of temporal bone	*one side*: laterally flexes & rotates head to opposite side of contracting muscle *both sides*: flexes cervical portion of vertebral column	**DESCRIBED: P. 335** **FIG. 11.8, 11.9**
▫ **splenius capitis**	ligamentum nuchae (connective tissue covering the spinal processes of the cervical vertebrae)	• occipital bone • mastoid process of temporal bone	*one side*: rotate head to same side of contracting muscle *both sides*: extend head & neck	**DESCRIBED: P. 335** **FIG. 11.10, 11.11**
▫ **splenius cervicis**	spinous processes of T3–T6	transverse processes of cervical vertebrae		

TABLE 6-4. **Muscles of vertebral column:** (*3 muscle groups plus 1 individual muscle to identify*)

NAME	ACTION	TEXT REFERENCES & NOTES
erector spinae groups: (3 muscle groups)		
▫ iliocostalis group (lateral) ▫ longissimus group (intermediate) ▫ spinalis group (medial)	*one side*: laterally flexes vertebral column to the same side as the contracting muscle *both sides*: extends vertebral column	**DESCRIBED: P. 338** **FIG. 11.11**
▫ **quadratus lumborum**	*one side*: laterally flexes lumbar portion of vertebral column *both sides*: extends lumbar portion of vertebral column	**DESCRIBED: P. 338** **FIG. 11.11**

Activity 6

TABLE 6-5. **Muscles of respiration:** (*3 muscles to identify*)

NAME	ACTION	TEXT REFERENCES* & NOTES
▫ **external intercostals**	elevates ribs during normal inspiration (inhalation)	**DESCRIBED: P. 341** **FIG. 11.11, 11.13**
▫ **internal intercostals**	depresses ribs during forced exhalation	**DESCRIBED: P. 341** **FIG. 11.13**
▫ **diaphragm**	expands the thoracic cavity during normal inspiration	

*also see: **FIGURES 25.14 & 25.15, PP. 762–763**

TABLE 6-6. **Muscles of the abdominal wall:** (*4 paired muscles plus 2 associated structures to identify*)

NAME	ACTION	TEXT REFERENCES & NOTES
▫ **external oblique**	*both sides*: compress abdominal wall & flex vertebral column *one side*: laterally flex vertebral column	**DESCRIBED: P. 343** **FIG. 11.14A & B**
▫ **internal oblique**		
▫ **transversus abdominis**		
▫ **rectus abdominis**	compresses abdominal wall & flexes vertebral column	

TABLE 6-6. **Muscles of the abdominal wall:** (*4 paired muscles plus 2 associated structures to identify*)

NAME	ACTION	TEXT REFERENCES & NOTES
▫ **inguinal ligament** (associated structure)	**significance:** formed by the aponeurosis of the external oblique; contains tissues coursing from the trunk to the lower limb	
▫ **linea alba** (associated structure)	**significance:** connective tissue connecting left and right rectus abdominis muscles	

MUSCLE COLORING AND LABELING

How to use these pages:

Each pair of pages consists of a table facing an image. The table refers to the image on the facing page and has empty boxes for the student to fill in attachment points and actions for the muscles on the facing page.

The images are designed to assist students in identifying muscles and associated structures, and the colored leader lines aid the student in clearly pointing out each structure. It is helpful to write out the name of the muscle, paying close attention to spelling.

It may also be helpful to color the images. Coloring is best done with colored pencils or ball-point (not felt-tip) pens in a variety of colors. Whenever possible, you should use the same color for like structures or muscles, so that the completed images can be utilized as visual references. For instance, if the deltoid muscle is represented on multiple images, it may be helpful to color it the same color (blue) on each image.

NOTE: These images and tables are not meant to be a comprehensive representation of the muscles the student is required to know. For a comprehensive list, refer to the Muscle Tables.

TABLE 6-19. MUSCLES OF FACIAL EXPRESSION & THE NECK

#	NAME	ORIGIN	INSERTION	ACTION
1	occipitalis (occipital belly of occipitofrontalis)			
2	splenius capitis		•	• one side:
			• mastoid process of _____bone	• both sides:
3	trapezius			
4	frontalis (frontal belly of occipitofrontalis)			
5	orbicularis oculi			
6	zygomaticus minor			
7	zygomaticus major			
8	orbicularis oris			
9	masseter		coronoid process, angle and ramus of _____	
10	temporalis	•		
		•		
11	levator scapulae			
12	sternocleidomastoid	• manubrium of _____	mastoid process of _____bone	• one side:
		• sternal end of _____		• both sides:

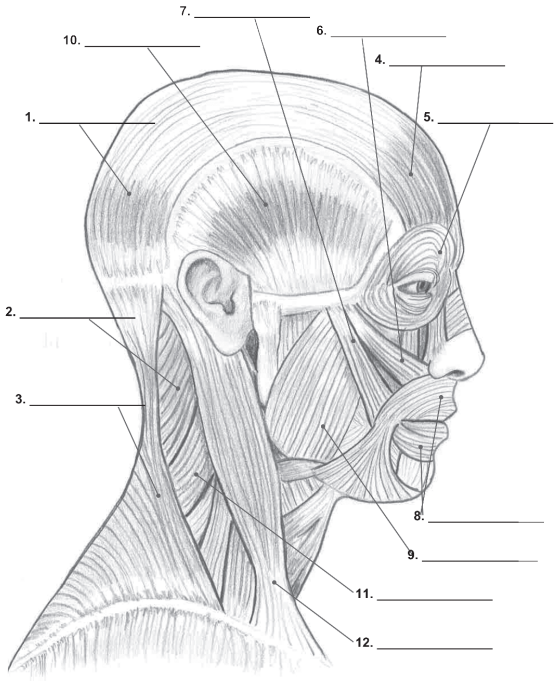

TABLE 6-7. MUSCLES OF THE TRUNK—POSTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	trapezius			• **superior:** • **middle:** • **inferior:**
2	deltoid			
3	levator scapulae			
4	supraspinatus			
5	rhomboid minor			
6	rhomboid major			
7	infraspinatus			
8	teres minor			
9	teres major			
10	serratus anterior			
	ERECTOR SPINAE GROUPS (3)			
11	spinalis group (medial)			• one side: • both sides:
12	longissimus group (intermediate)			
13	iliocostalis group (lateral)			
14	latissimus dorsi	• • •	intertubercular sulcus of _____	
15	external oblique			
16	internal oblique			
17	gluteus minimus			
18	piriformis			

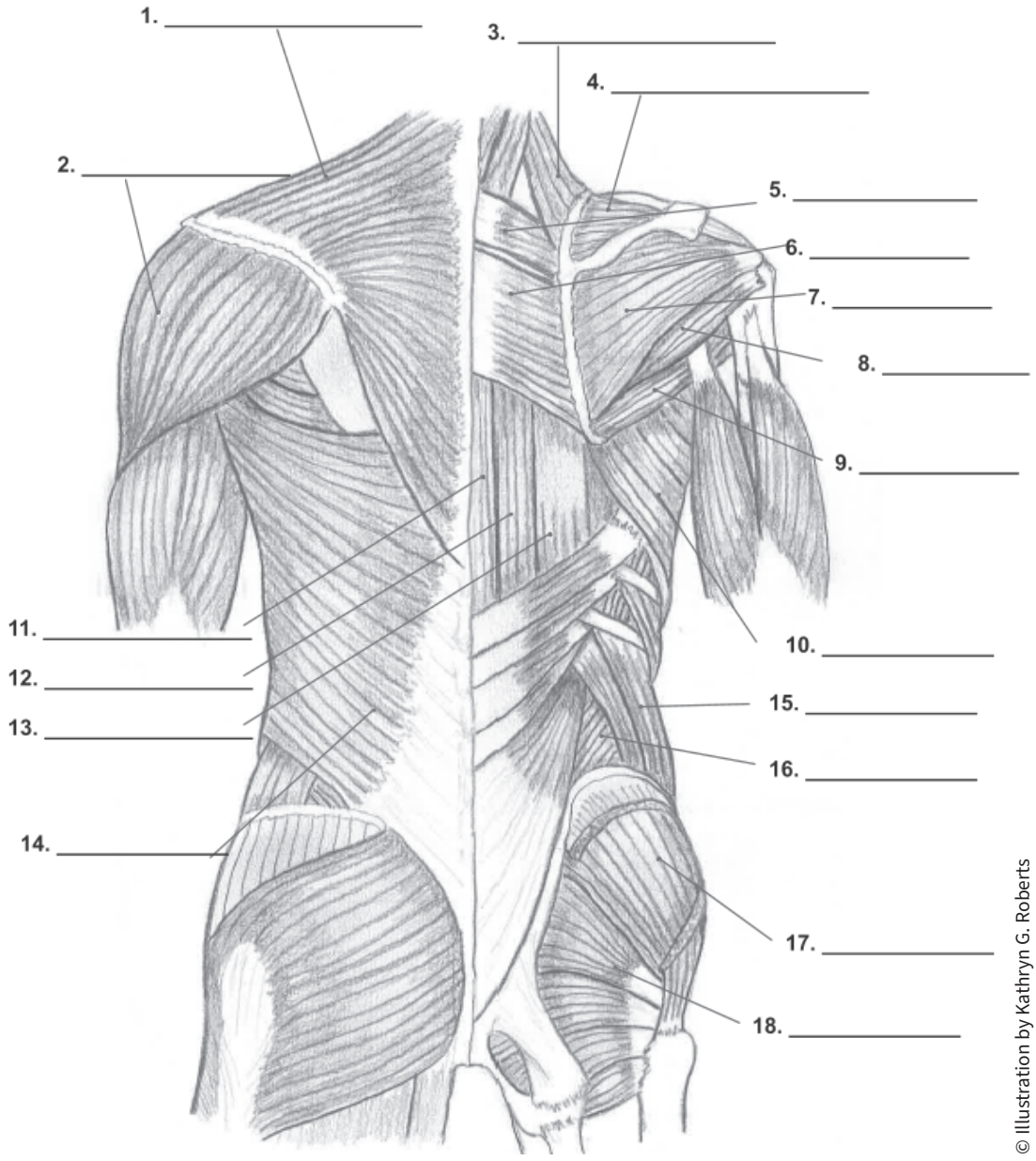

FIGURE 6-1.

TABLE 6-8. MUSCLES OF THE TRUNK—ANTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	trapezius			
2	deltoid			
3	pectoralis major	• •	greater tubercle & lateral intertubercular sulcus of _____	
4	biceps brachii, long head			
5	biceps brachii, short head			
6	latissimus dorsi			
7	serratus anterior			
8	pectoralis minor			
9	rectus abdominis			
10	internal oblique (cut)			• both sides:
11	external oblique			• one side:
12	inguinal ligament			

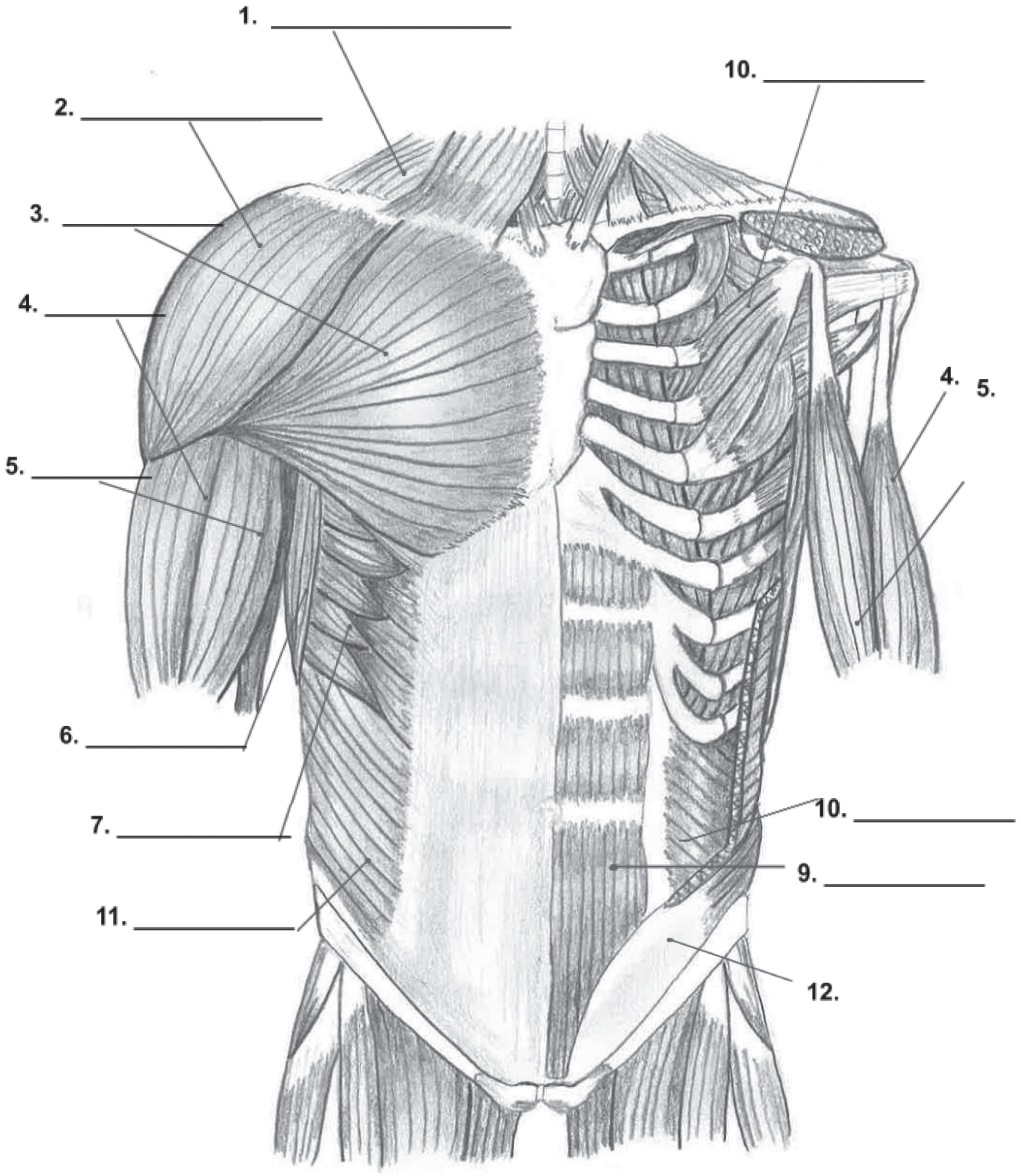

FIGURE 6-2.

TABLE 6-9. RIGHT ARM—ANTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	deltoid	• acromial end of _____ • acromion and spine of _____	deltoid tuberosity of _____	
2	pectoralis major			
3	coracobrachialis	coracoid process of _____	middle medial shaft of _____	
4	biceps brachii, long head	supraglenoid tubercle of _____	radial tuberosity of _____	•
5	biceps brachii, short head	coracoid process of _____		•
6	triceps brachii			
7	brachialis	distal, anterior surface of _____	coronoid process of _____	
8	brachioradialis	lateral _____	styloid process of _____	
9	coracoid process of scapula			

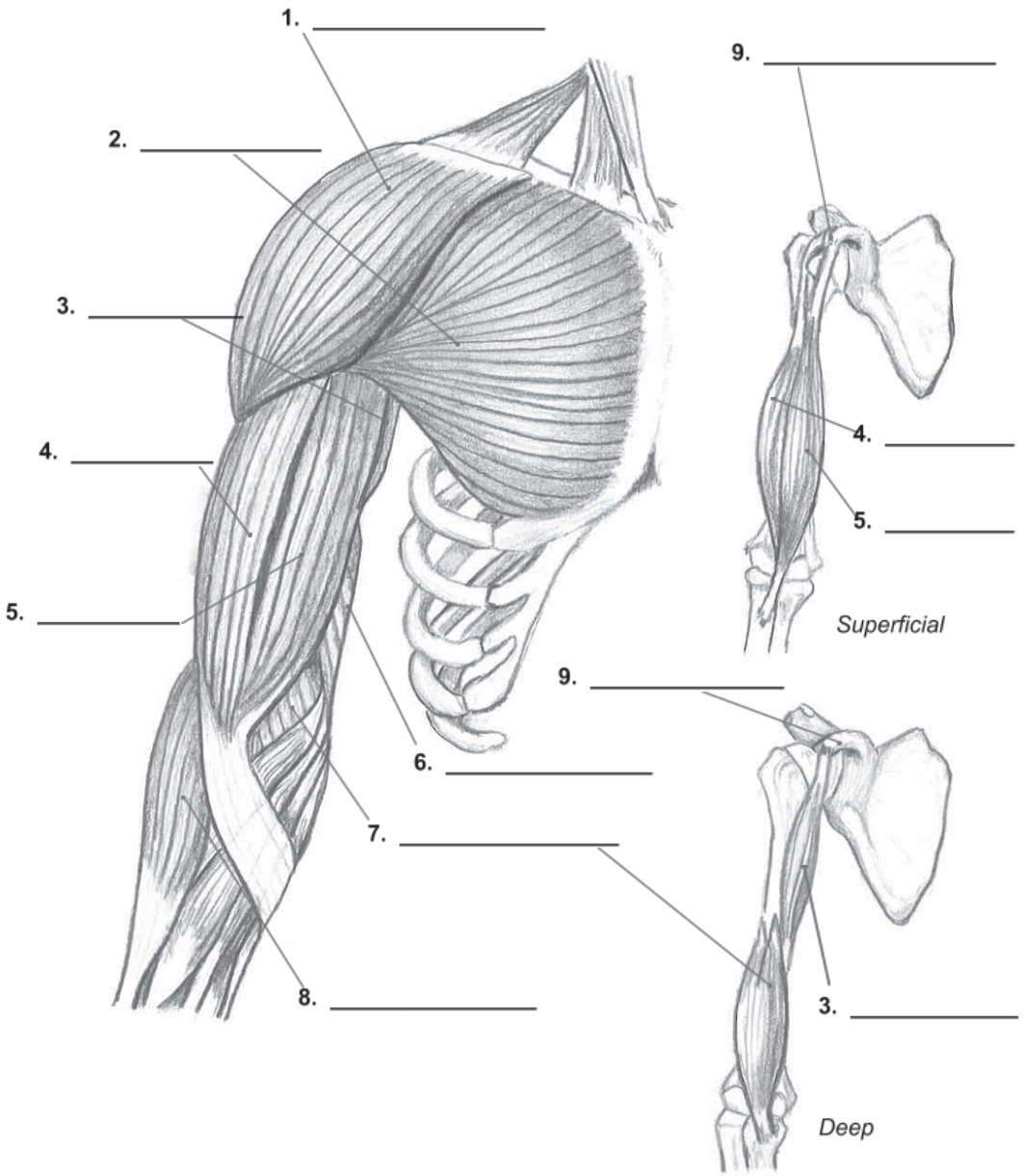

FIGURE 6-3.

TABLE 6-10. RIGHT ARM—POSTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	supraspinatus	supraspinous fossa of _____	greater tubercle of _____	
2	infraspinatus	infraspinous fossa of _____		
3	teres minor	lateral border of _____		
4	teres major	lateral border and angle of _____	lesser tubercle & intertubercular sulcus of _____	
5	triceps brachii, lateral head	posterior shaft of _____	olecranon process of _____	
6	triceps brachii, long head	infraglenoid tubercle of _____		
7	triceps brachii, medial head			
8	latissimus dorsi			
9	olecranon process of ulna			
10	levator scapulae			
11	rhomboid minor			
12	rhomboid major			

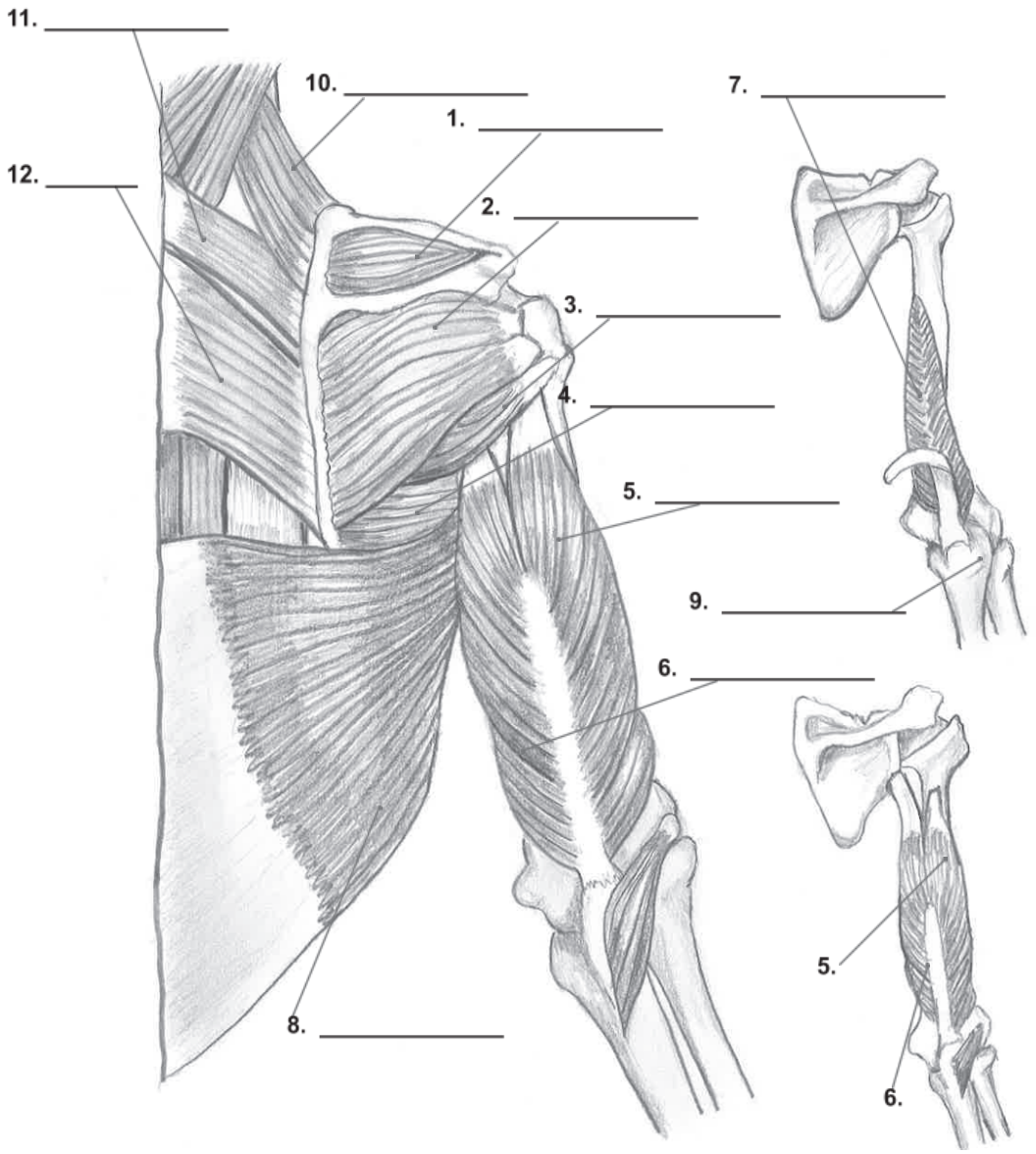

FIGURE 6-4.

TABLE 6-11. RIGHT FOREARM—ANTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	brachioradialis		styloid process of _____	
2	flexor retinaculum			
3	pronator teres			
4	flexor carpi radialis			• •
5	palmaris longus			• •
6	flexor carpi ulnaris			• •
7	flexor digitorum superficialis			• •
8	flexor digitorum profundus			• •
9	supinator			
10	flexor pollicis longus			

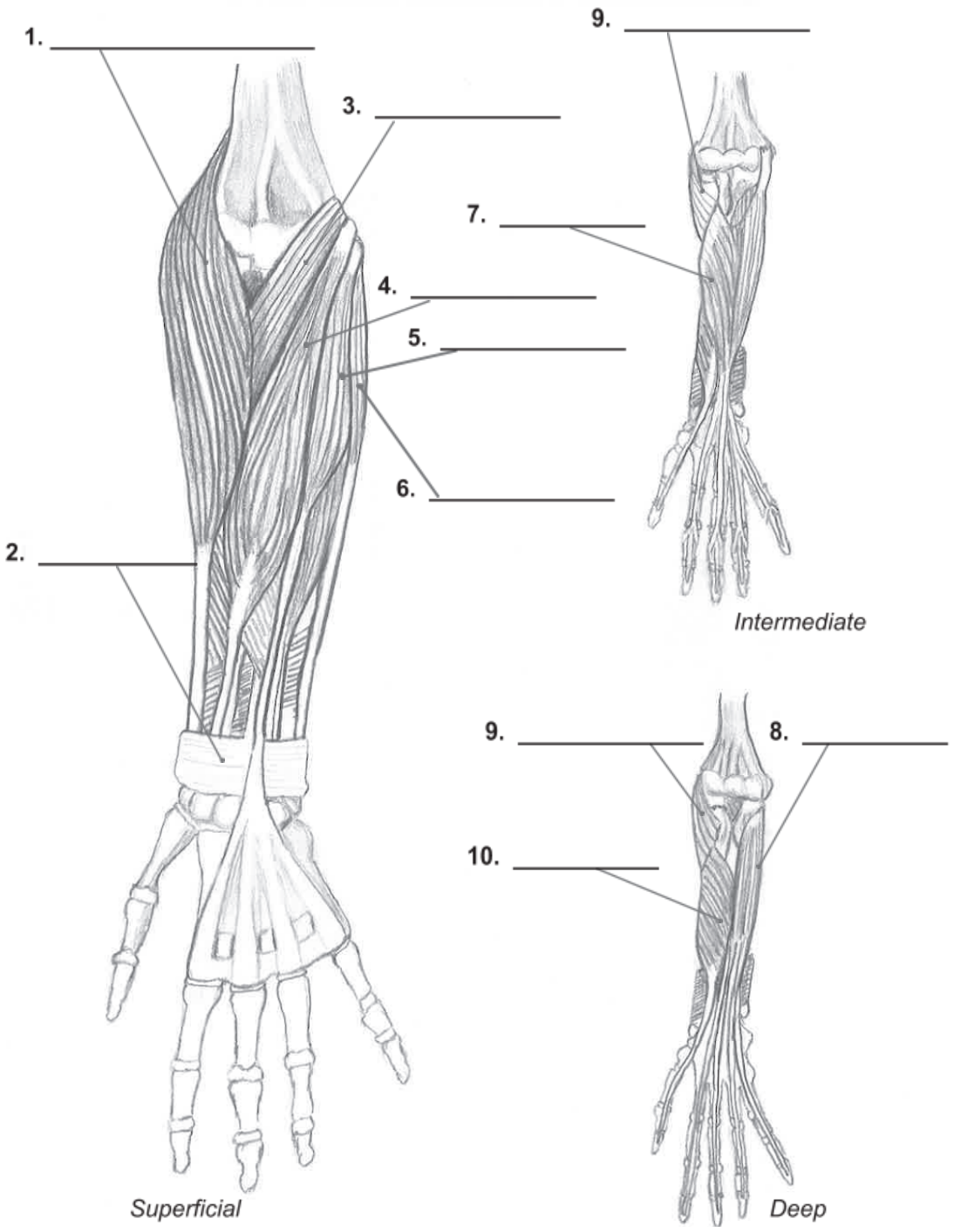

FIGURE 6-5.

TABLE 6-12. RIGHT FOREARM—POSTERIOR VIEW

#	NAME	ACTION
1	anconeus	
2	flexor carpi ulnaris	•
		•
3	extensor carpi ulnaris	•
		•
4	extensor retinaculum	
5	brachioradialis	
6	extensor carpi radialis longus	•
		•
7	extensor carpi radialis brevis	•
		•
8	extensor digitorum	•
		•
9	abductor pollicis longus	•
		•
10	extensor pollicis brevis	•
		•
11	olecranon process of ulna	
12	extensor pollicis longus	•
		•
13	supinator	

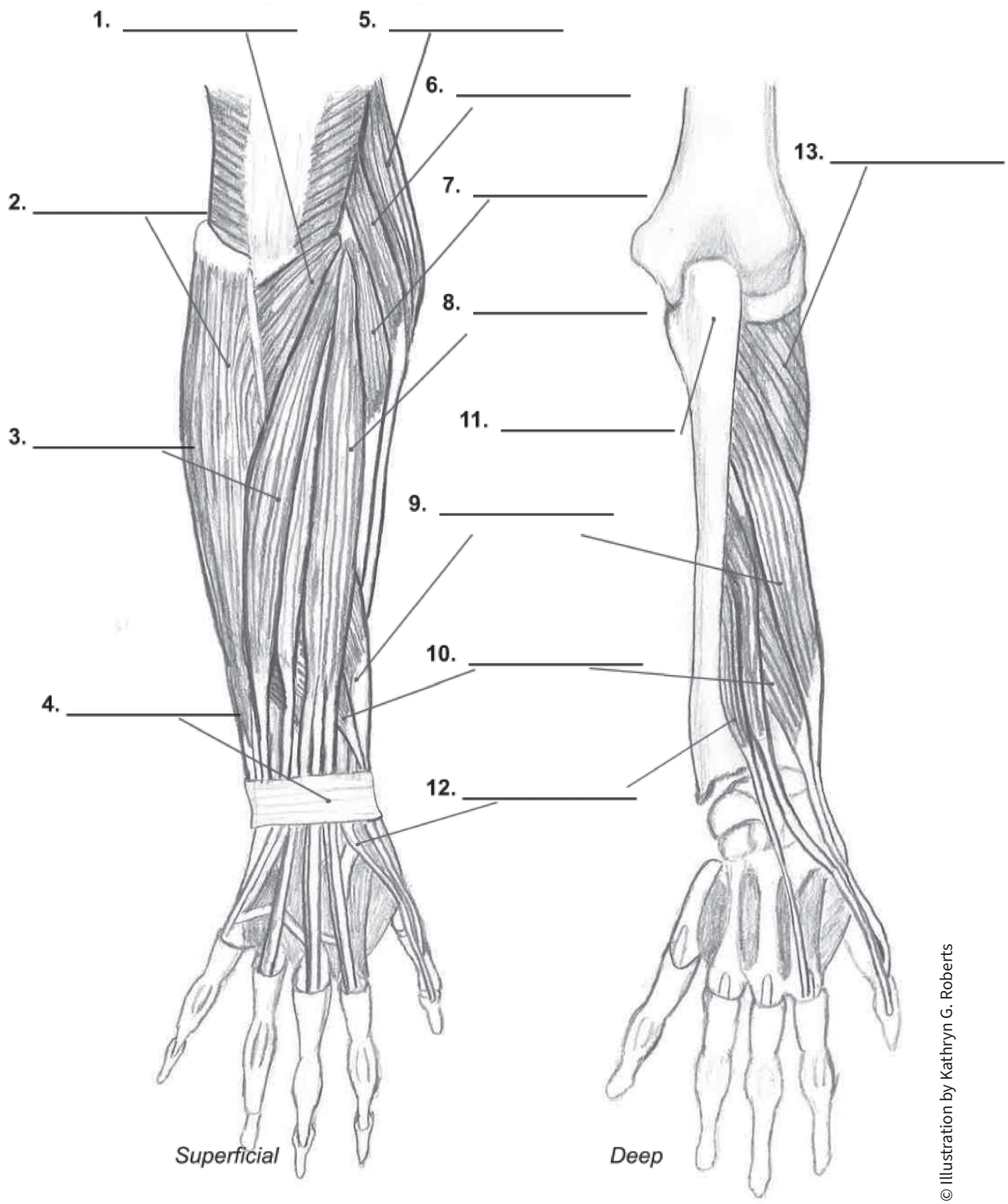

FIGURE 6-6.

TABLE 6-13. RIGHT THIGH—ANTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	iliacus		lesser trochanter of _____	
2	psoas major			
3	pectineus			
4	adductor brevis			
5	adductor longus			•
6	gracilis	inferior ramus & body of _____	upper medial surface of _____	•
7	adductor magnus			
8	tensor fasciae latae	•		
		•		
9	iliotibial tract ***or*** band			
10	rectus femoris	anterior inferior iliac spine of _____		•
				•
11	vastus lateralis			
12	vastus medialis			
13	sartorius	anterior superior iliac spine of _____		•
				•

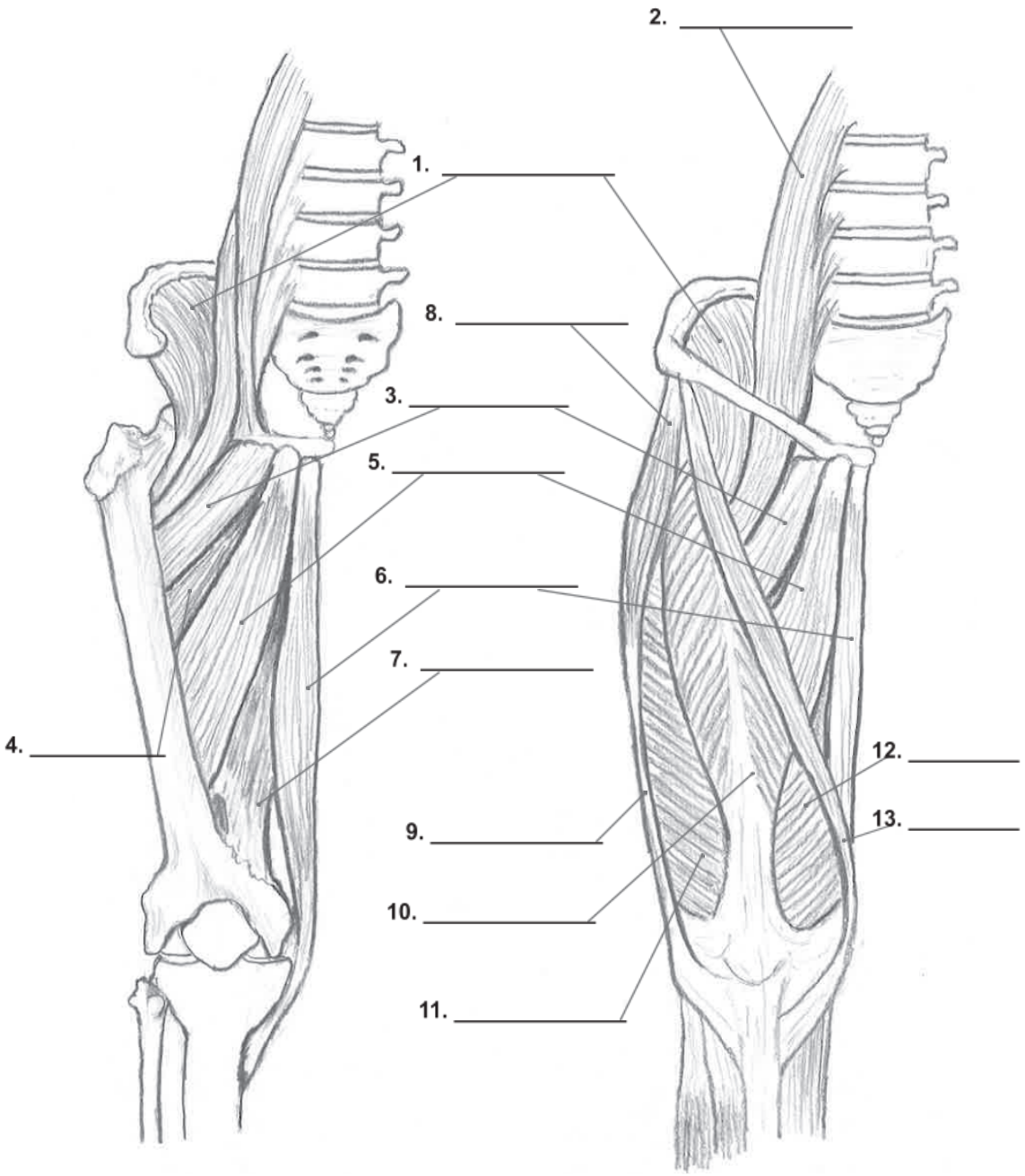

FIGURE 6-7.

TABLE 6-14. RIGHT THIGH—LATERAL VIEW

#	NAME
1	gluteus medius
2	gluteus maximus
3	biceps femoris, long head
4	external oblique
5	biceps femoris, short head
6	gastrocnemius
7	tensor fasciae latae
8	sartorius
9	vastus lateralis
10	rectus femoris
11	iliotibial tract ***or*** band

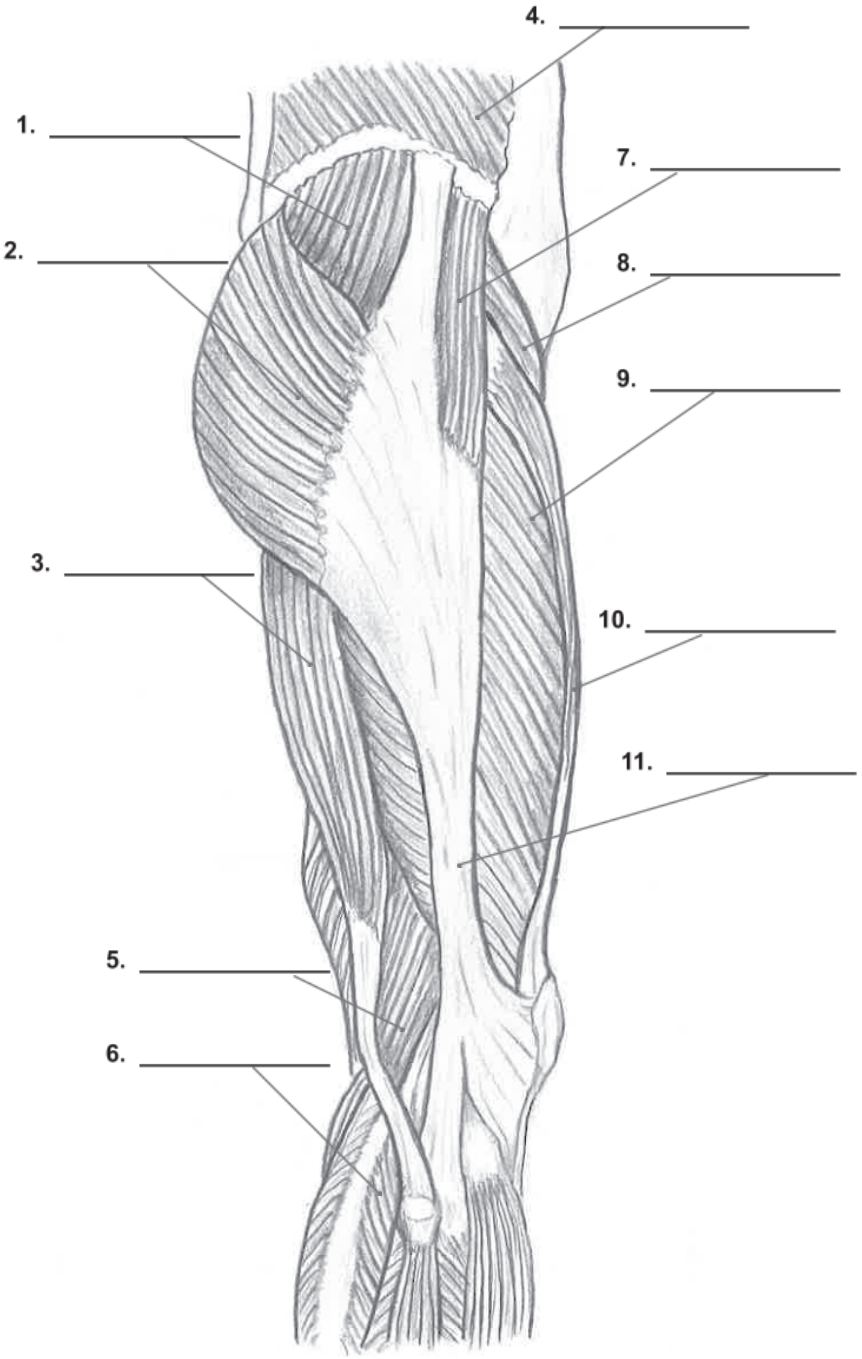

FIGURE 6-8.

TABLE 6-15. RIGHT THIGH—POSTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	gluteus medius		greater trochanter of _____	
2	gluteus maximus	• • •	• •	
3	gracilis			
4	adductor magnus			
5	iliotibial tract or band			
6	semimembranosus			
7	semitendinosus		proximal medial surface of _____ via pes anserinus	• •
8	biceps femoris, long head		head of _____	• •
9	biceps femoris, short head	linea aspera of _____		
10	gastrocnemius			

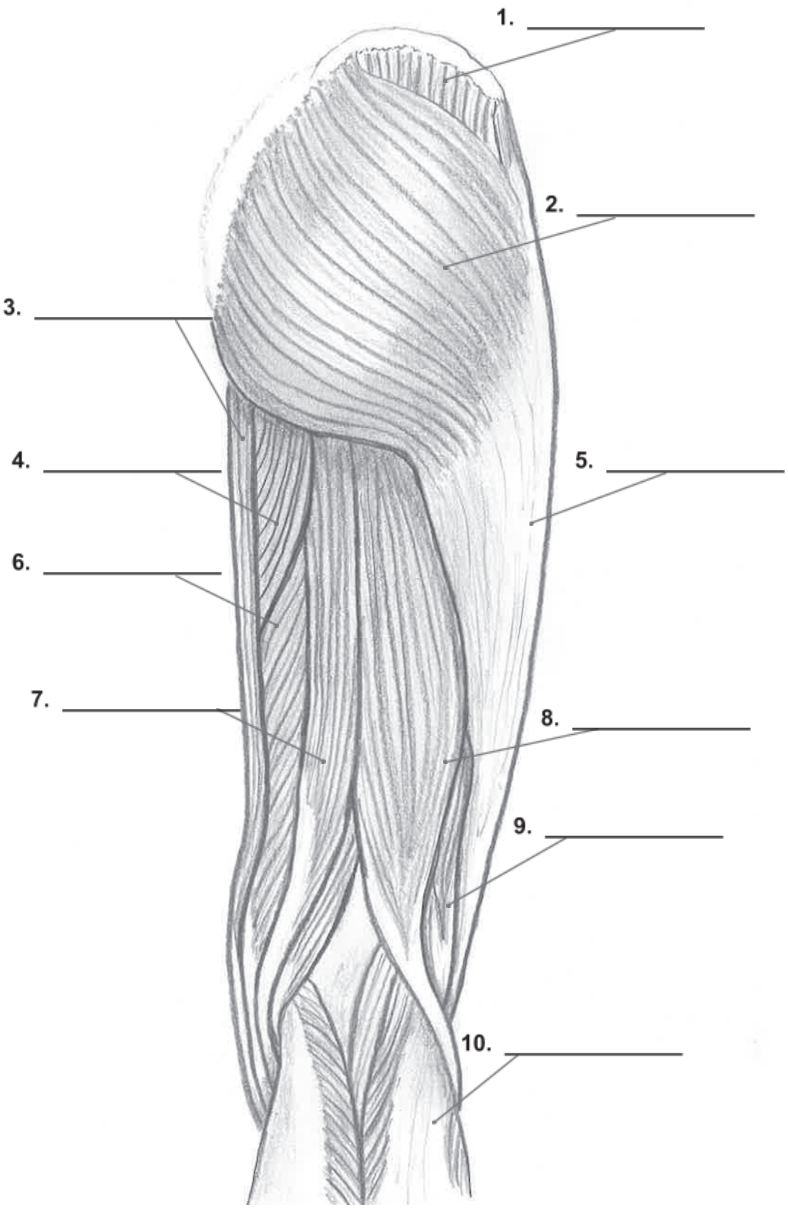

FIGURE 6-9.

TABLE 6-16. RIGHT LEG—ANTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION
1	fibularis longus			
2	tibialis anterior			
3	fibularis brevis			
4	extensor digitorum longus			
5	extensor hallucis longus			• •
6	gastrocnemius			
7	vastus medialis			
8	vastus lateralis			

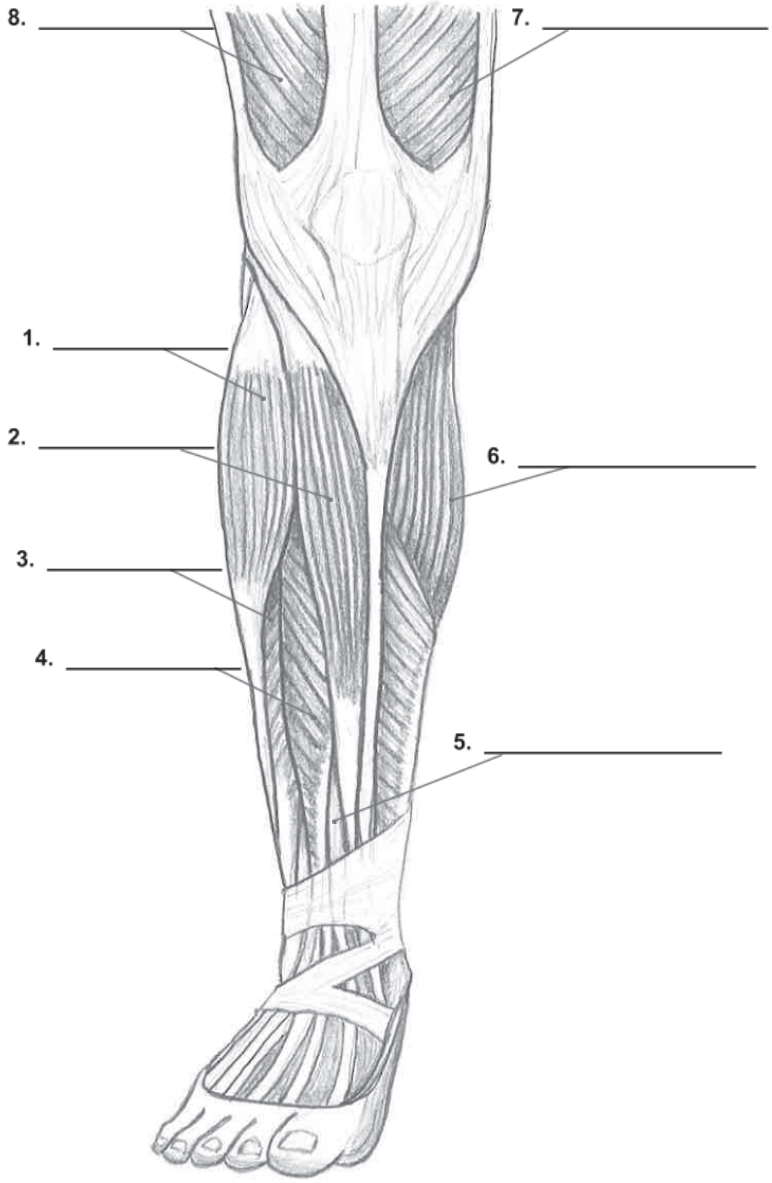

FIGURE 6-10.

TABLE 6-17. RIGHT LEG—LATERAL VIEW

#	NAME	ACTION
1	biceps femoris, long head	
2	biceps femoris, short head	
3	iliotibial tract ***or*** band	
4	vastus lateralis	
5	gastrocnemius	
6	soleus	
7	fibularis longus	
8	fibularis brevis	
9	tibialis anterior	
10	extensor digitorum longus	• •

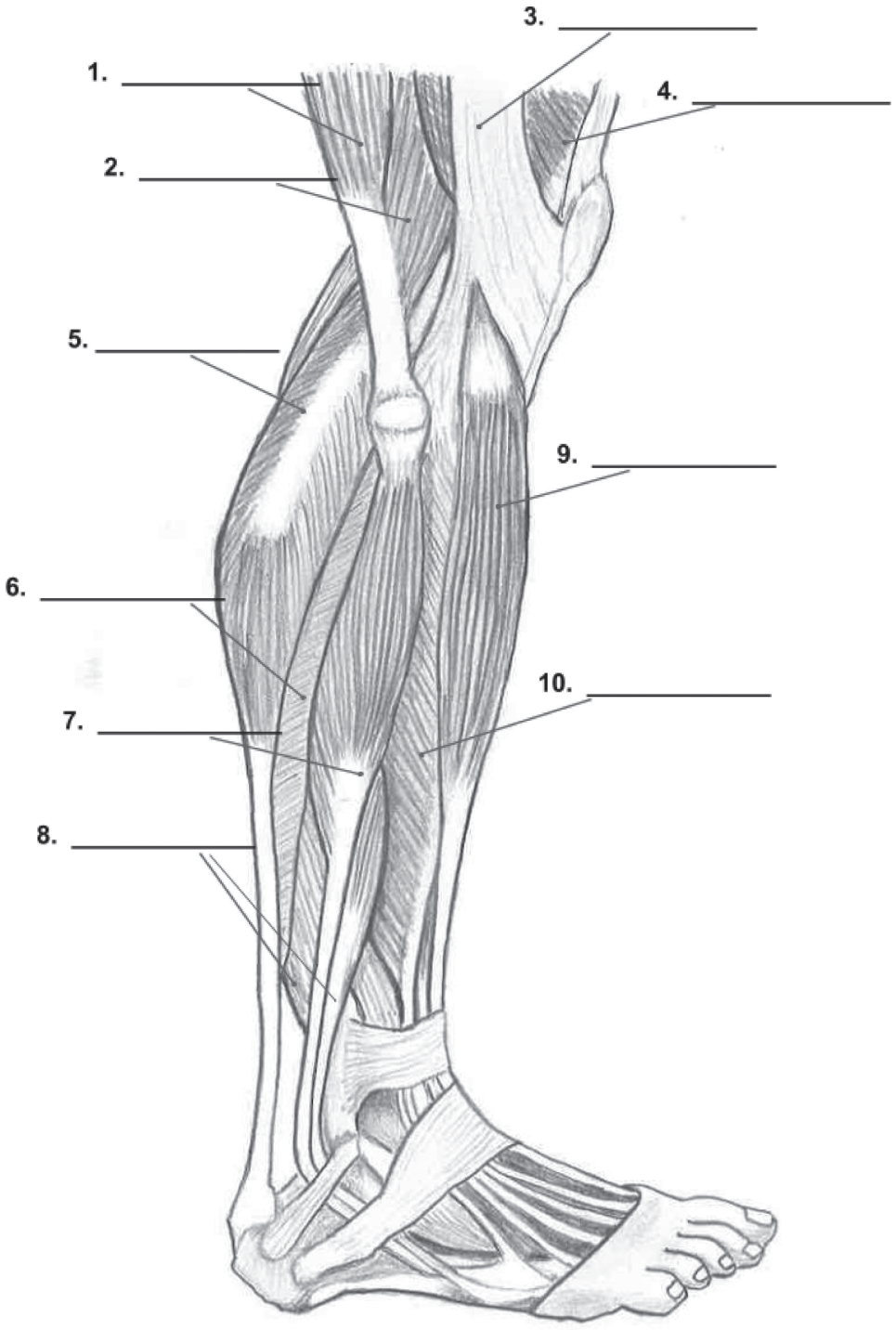

FIGURE 6-11.

TABLE 6-18. RIGHT LEG—POSTERIOR VIEW

#	NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (ORIGIN)	ACTION
1	biceps femoris, long head			
2	gastrocnemius	lateral and medial condyles of _____	_____	• •
3	soleus	• head & proximal shaft of _____ • medial border of _____	via calcaneal tendon	
4	fibularis longus			
5	tibialis posterior			
6	flexor digitorum longus			• •
7	fibularis brevis			

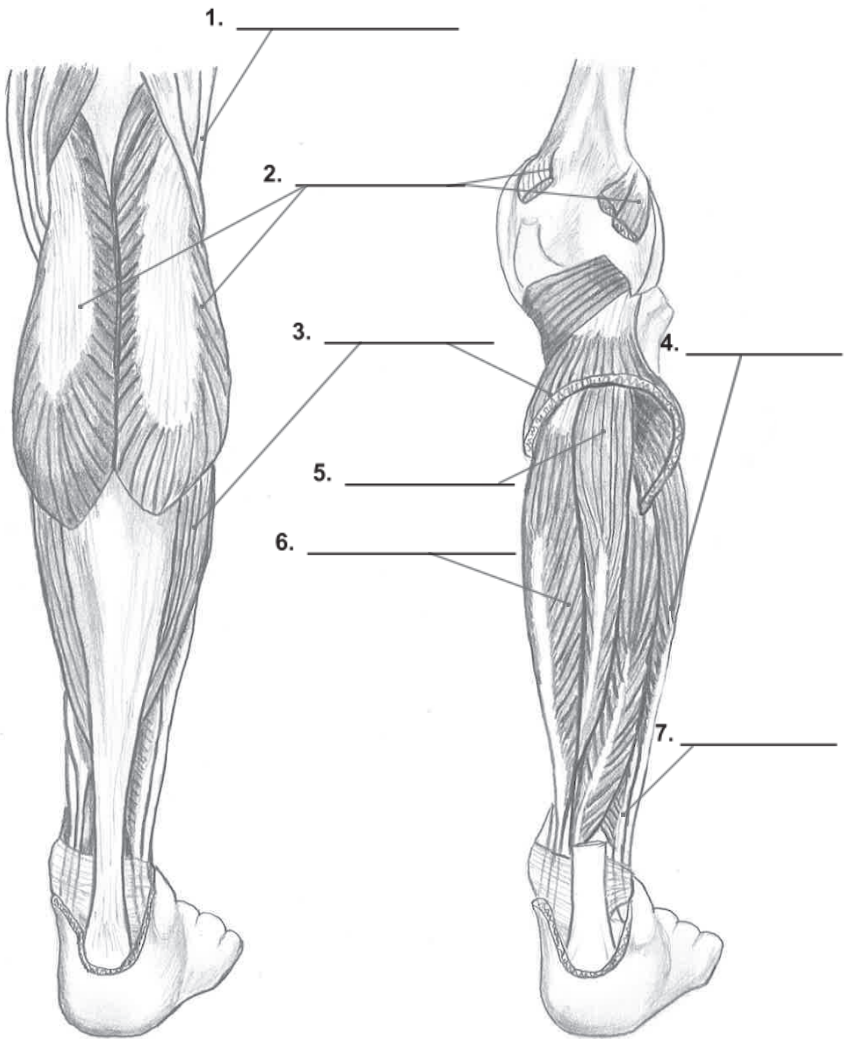

FIGURE 6-12.

TABLE 6-19. MUSCLES OF FACIAL EXPRESSION & THE NECK

#	NAME	ORIGIN	INSERTION	ACTION
1	occipitalis (occipital belly of occipitofrontalis)			
2	splenius capitis	•	•	• one side:
			• mastoid process of _____bone	• both sides:
3	trapezius			
4	frontalis (frontal belly of occipitofrontalis)			
5	orbicularis oculi			
6	zygomaticus minor			
7	zygomaticus major			
8	orbicularis oris			
9	masseter		coronoid process, angle and ramus of _____	
10	temporalis	•		
		•		
11	levator scapulae			
12	sternocleidomastoid	• manubrium of _____	mastoid process of _____bone	• one side:
		• sternal end of _____		• both sides:

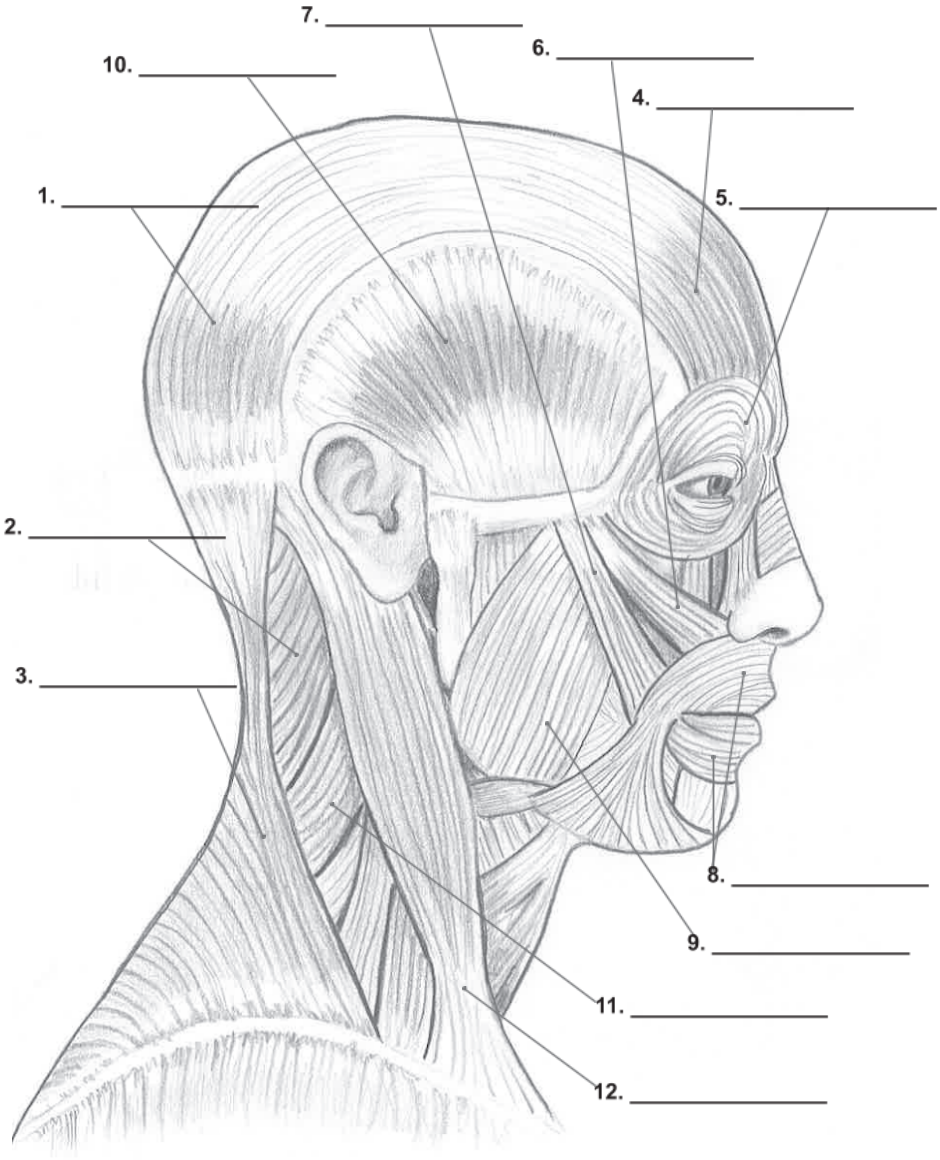

FIGURE 6-13.

STUDY AIDS FOR MUSCLES

Helpful terminology for muscle naming

ANATOMICAL TERMS	DESCRIPTION
biceps	bi = double, caput = head
buccinator	trumpeter
brevis	brief, short
deltoid	Greek capital delta, which has triangular shape
diaphragm	dia = across, phragma = wall, a partition
fascia/fasciae	band, bandage
gracilis	slender
gastrocnemius	gaster = belly, kheme = leg
hallucis	pertaining to the hallux
masseter	chewer
lata/latae	side
latissimus	latus = wide
longus	long
longissimus	longest
oculi	eye
oris	oral, mouth
pectineus	comb
pectoralis	the front of the chest
piriformis	pear; pear-shaped
platysma	flat object
pollicis	pertaining to the pollex
profundus	deep
psoas	loin
quadratus	square, rectangular
rectus	straight
retinaculum	thickened band of fascia
rhomboid	shape of a rhombus
sartorius	tailor, produces cross-legged posture that tailors once used
serratus	serrated or notched, like the edge of a saw
soleus	like the flatfish, sole
splenius	bandage
superficialis	superficial
tensor	muscle that produces tension
teres	rounded, cylindrical
trapezius	trapezium, diamond-shaped
vastus	vast, great
zygomatic	yoke (or crossbar by which oxen are attached to a plow or wagon)

MUSCLES WITH SHARED ATTACHMENT SITES

lateral border of the scapula:	teres minor
	teres major
coracoid process of the scapula:	biceps brachii (short head)
	coracobrachialis
	pectoralis minor
greater tubercle of the humerus:	supraspinatus
	infraspinatus
	teres minor
	pectoralis major
lesser tubercle of the humerus:	subscapularis
	teres major
intertubercular groove of the humerus:	teres major
	latissimus dorsi
	pectoralis major
anterior superior iliac spine:	sartorius
	tensor fascia latae
iliac crest:	gluteus maximus
	gluteus medius
	tensor fascia latae
ischial tuberosity:	semitendinosus
	semimembranosus
	biceps femoris (long head)
iliotibial band:	gluteus maximus
	tensor fasciae latae
lesser trochanter of femur:	iliacus
	psoas major
greater trochanter of femur:	gluteus medius
	gluteus minimus
	piriformis
tibial tuberosity:	sartorius (medially)
	quadriceps femoris group
	rectus femoris
	vastus medialis
	vastus lateralis
	vastus intermedius
proximal medial surface of the tibia:	gracilis
	semitendinosus
	sartorius