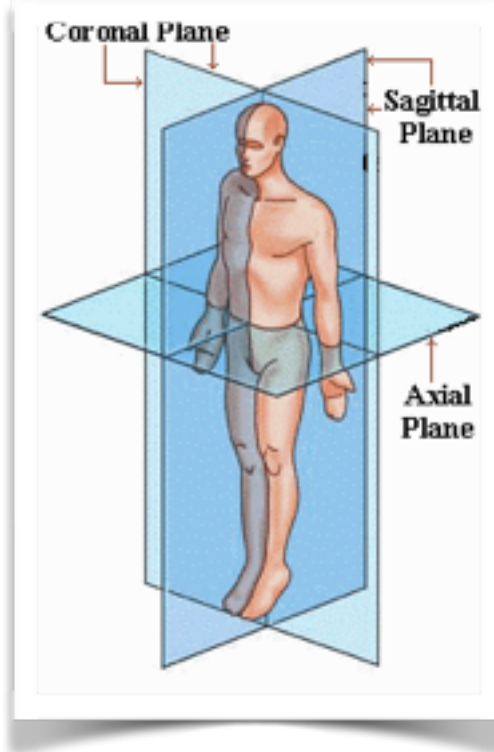


Basic Anatomy & Kinesiology Terms

Anatomical Position: Allows a standard of terms of location and enables precise description with which all communication can be delineated in regards to animal and human anatomy; standing erect on both feet with both arms slightly away from the trunk, palms facing forward.



Sagittal Plane: right and left sides

Frontal/Coronal Plane: anterior and posterior

Transverse/Horizontal Plane: superior and inferior Anterior/Posterior & Ventral/ dorsal: front/back

Medial/ Lateral: towards midline, away from midline

Proximal/Distal: close to the body's center/away from body's center

Superficial/Deep: close to surface/not close to surface

Supine/Prone: lying face-up/lying face-down

Flexion/Extension

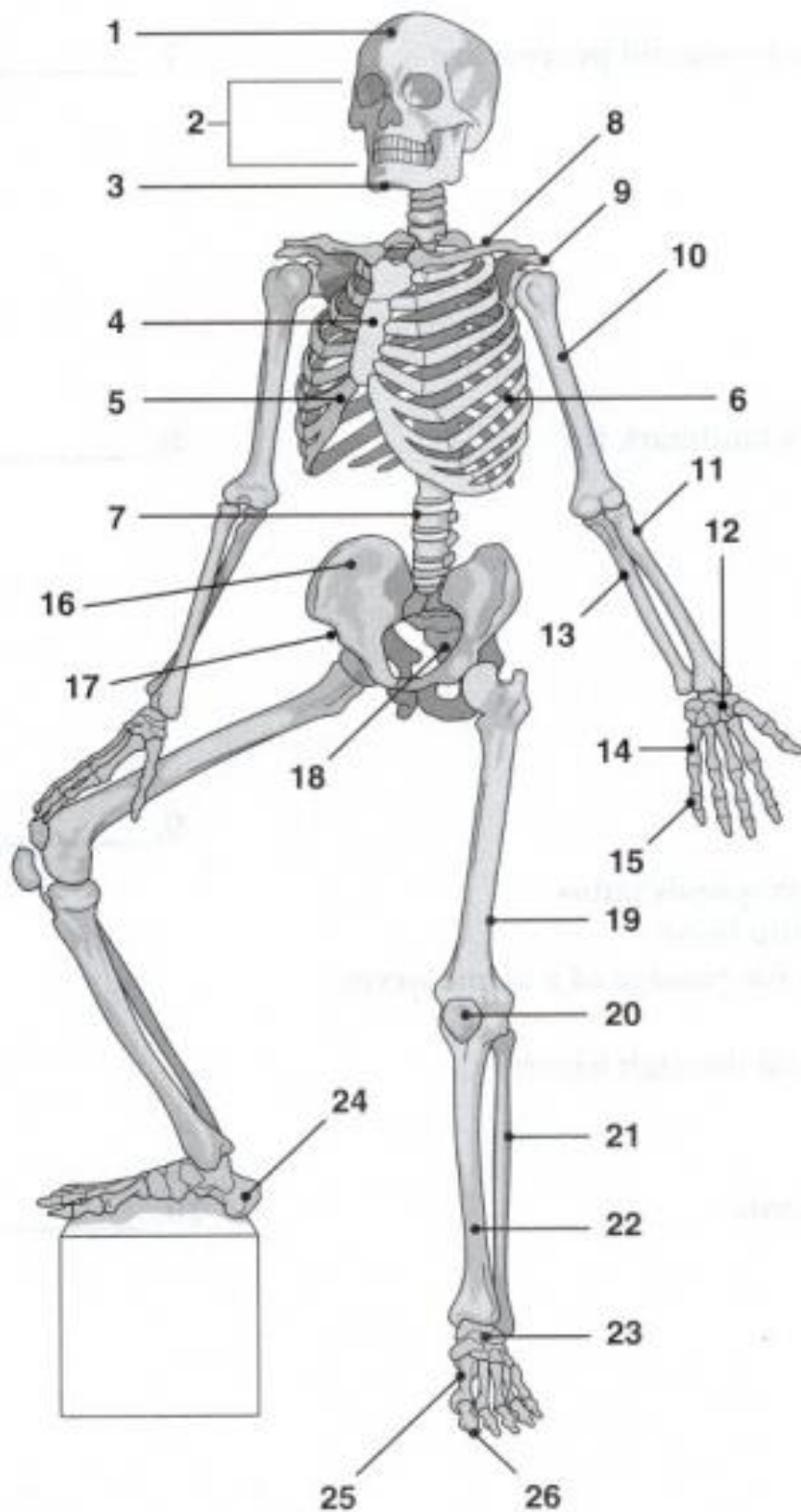
Abduction/Adduction: away from midline/towards midline

External/Lateral Rotation or Internal/Medial Rotation

Pronation/Supination

Protraction/Retraction

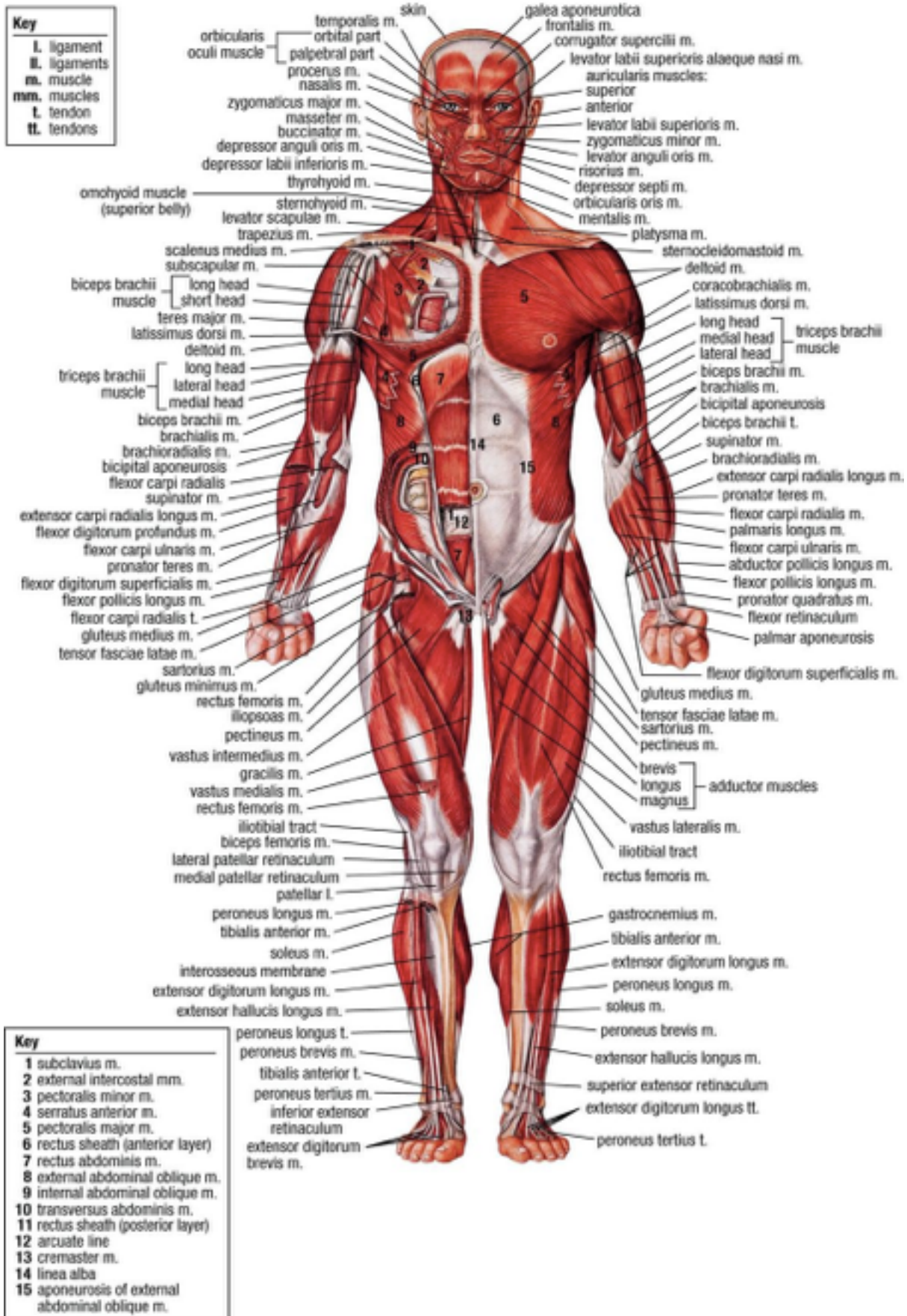
Elevation/Depression



The skeleton

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26

MUSCULAR SYSTEM (ANTERIOR VIEW)



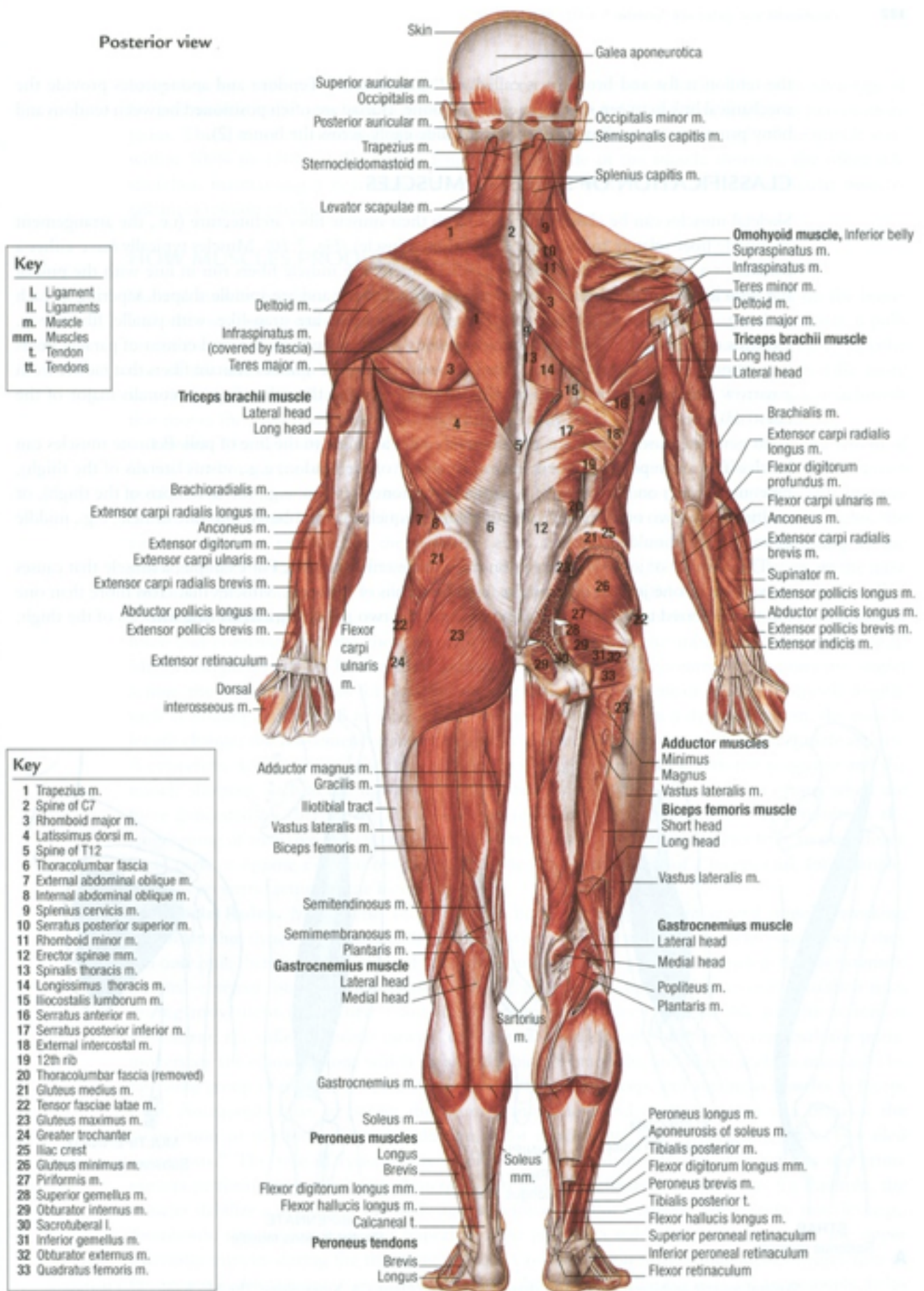
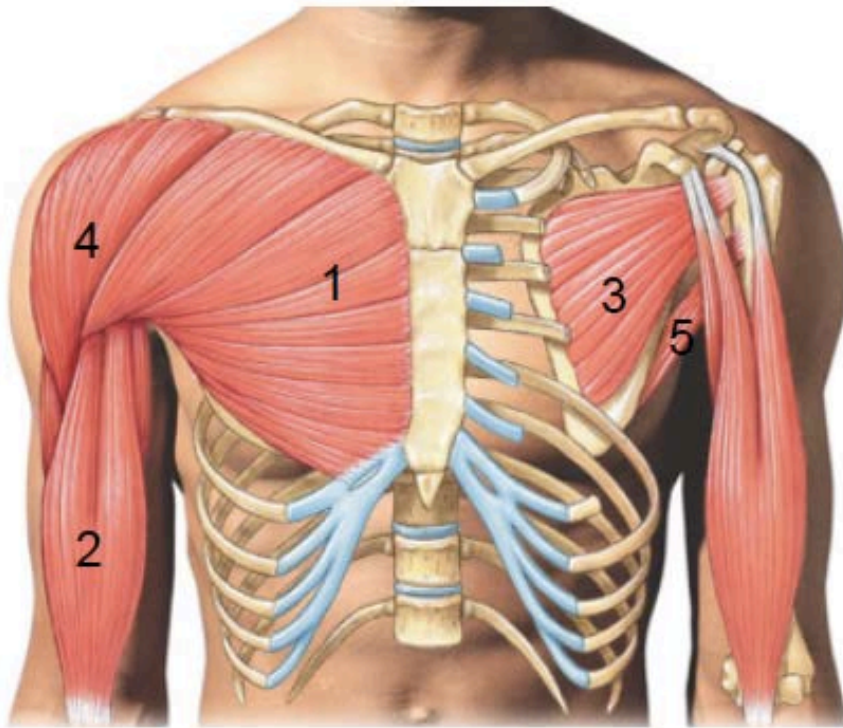


FIGURE 7.9. Superficial muscles—posterior view. (Asset provided by Anatomical Chart Co.)

Shoulder and Arm



1

2

3

4

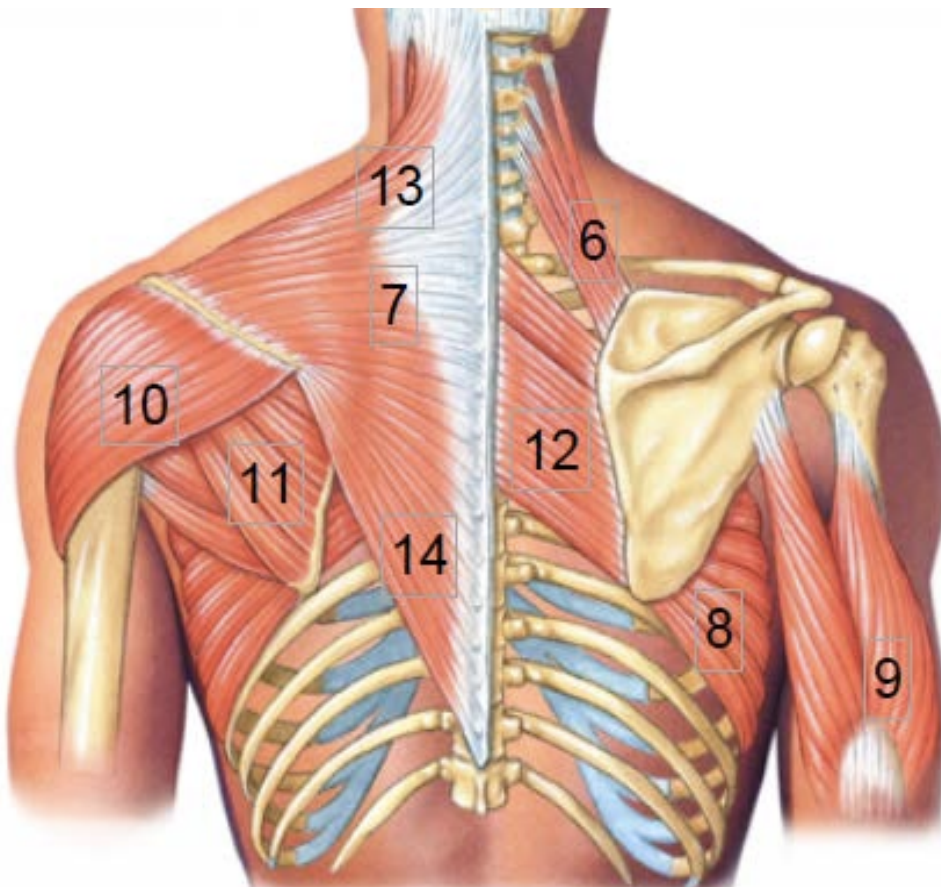
5

6

7

8

9



10

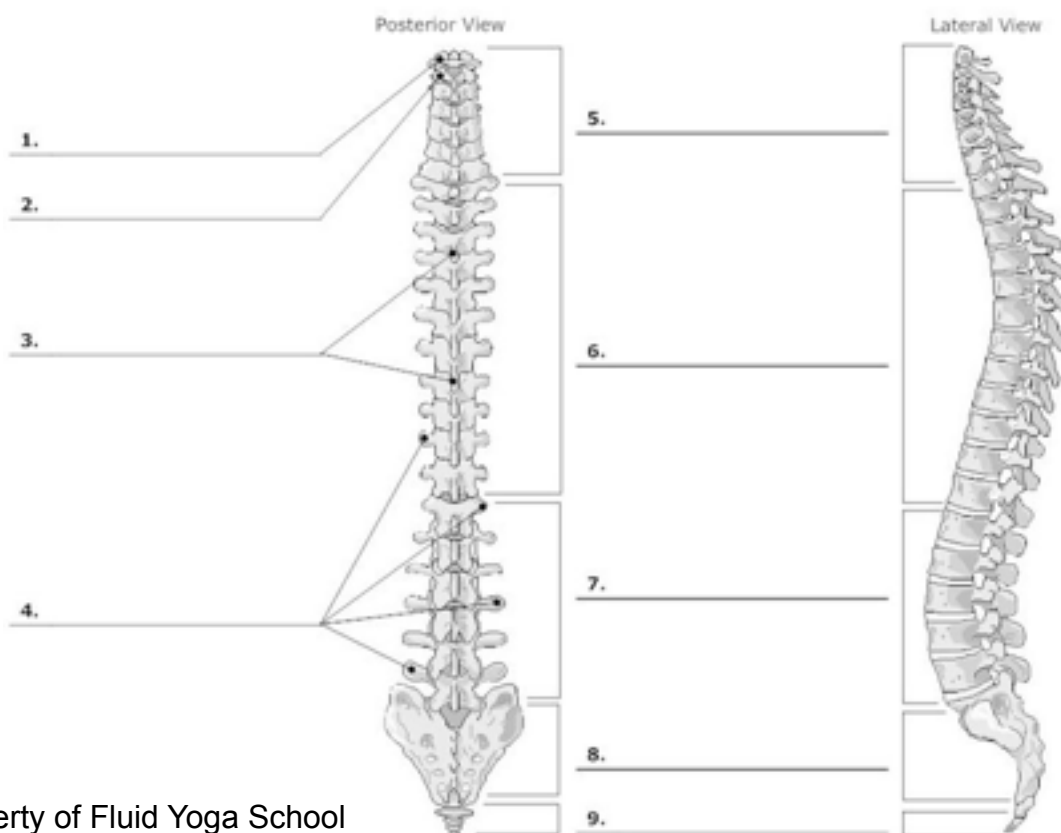
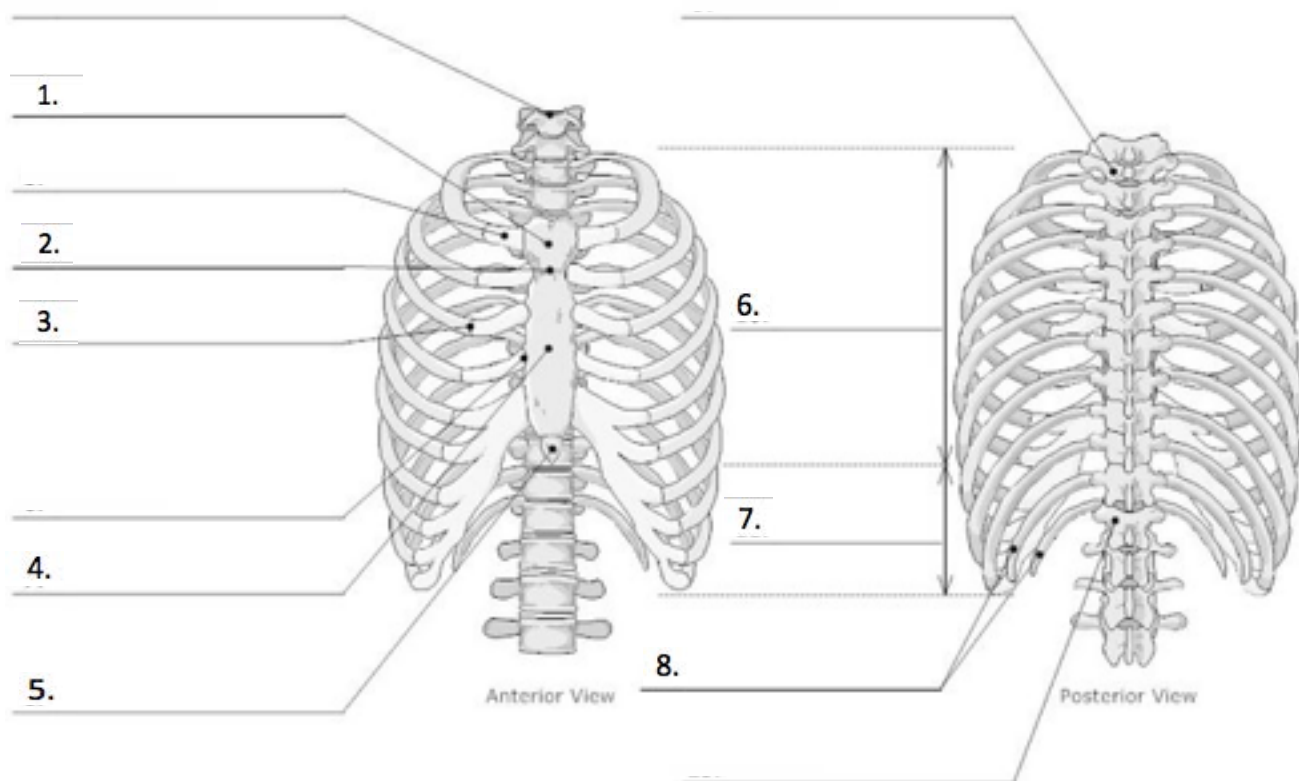
11

12

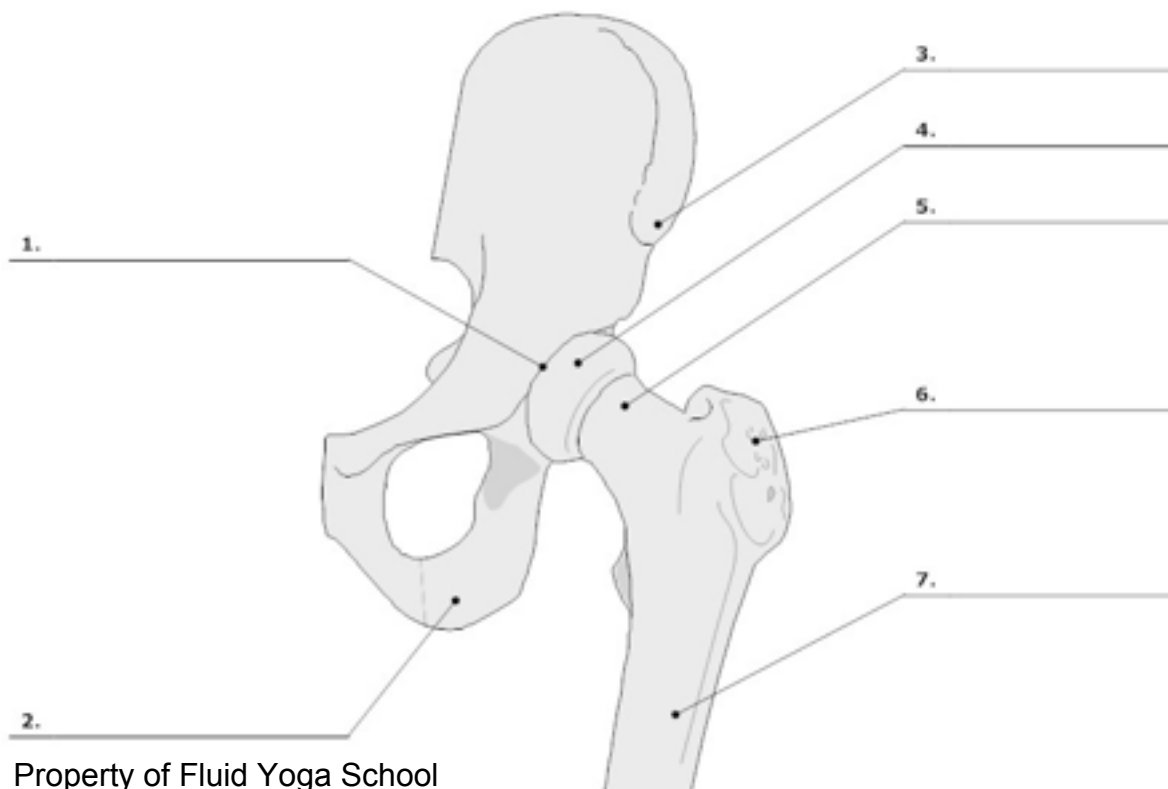
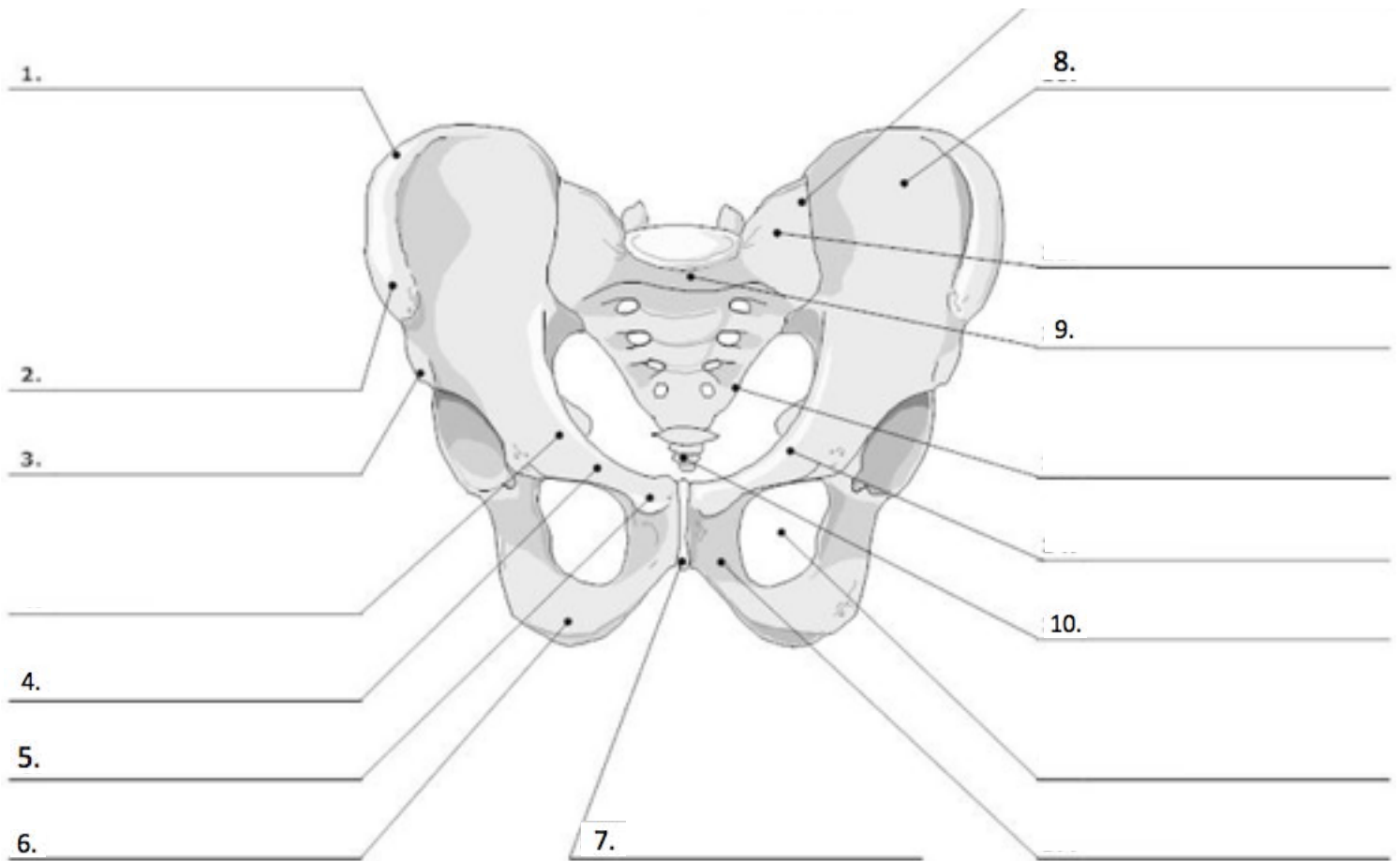
13

14

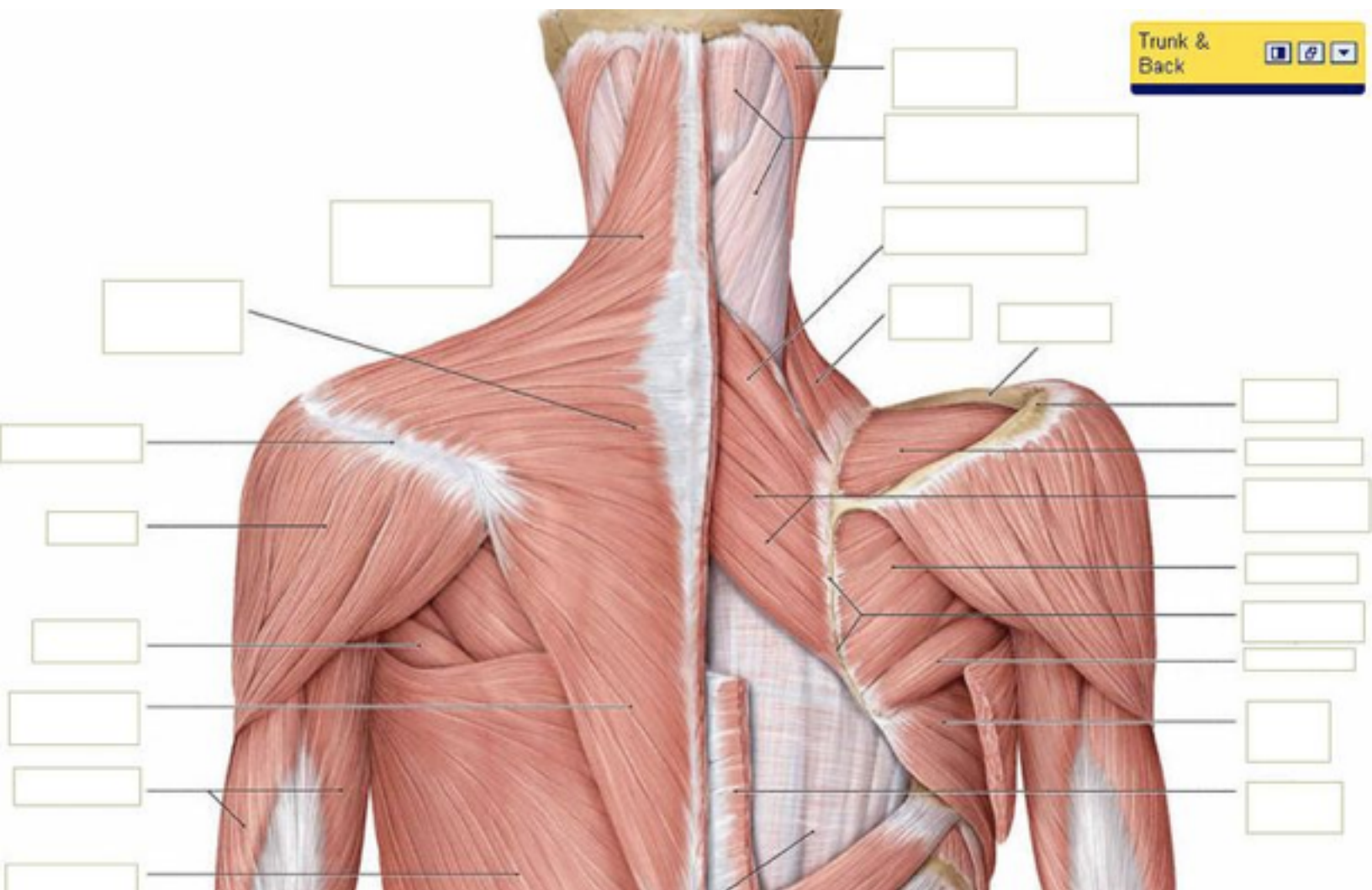
Thorax and Spine



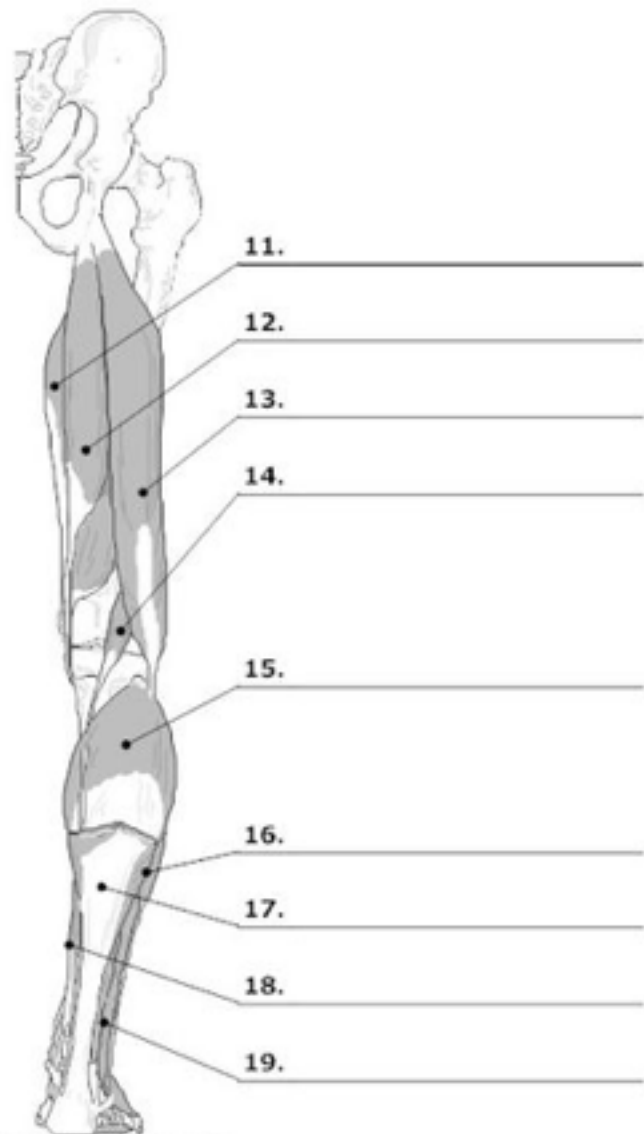
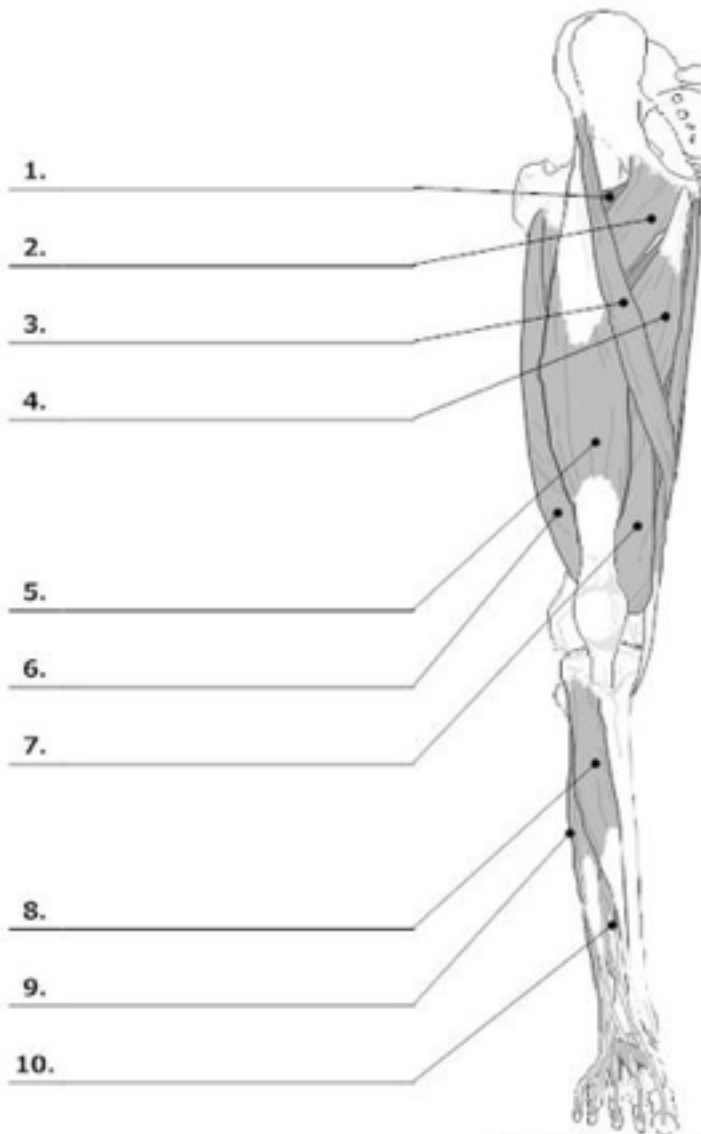
Pelvis and Thigh

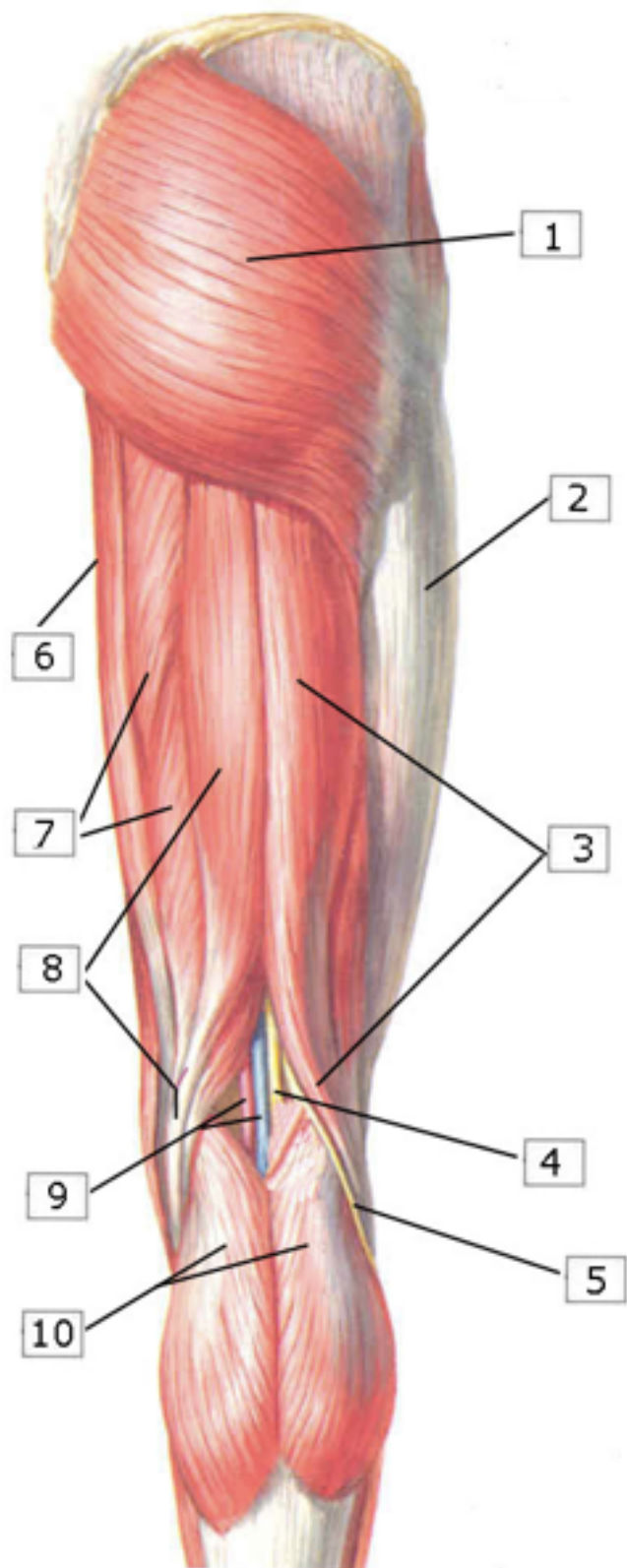


Shoulders and Arm Muscles

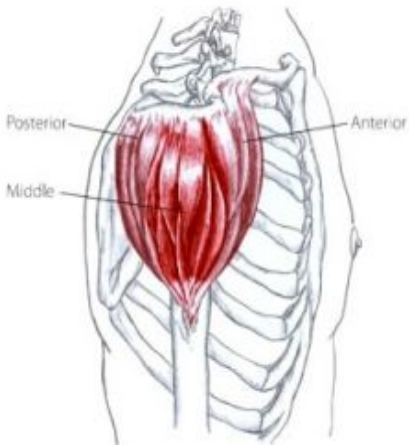

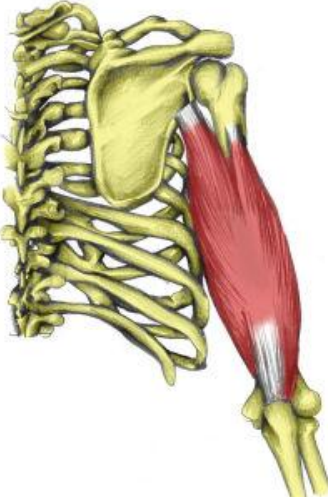


Pelvis and Thigh


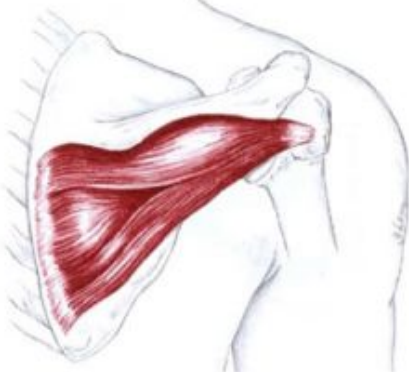





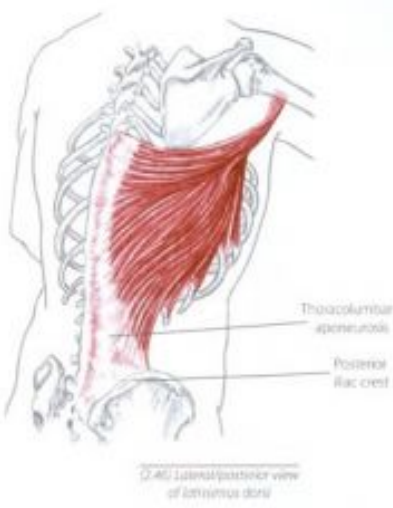
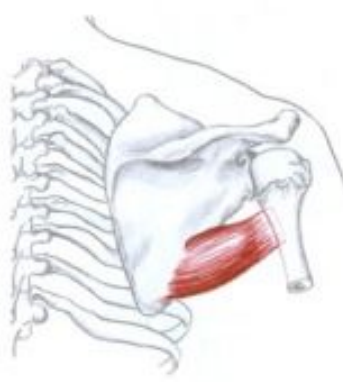


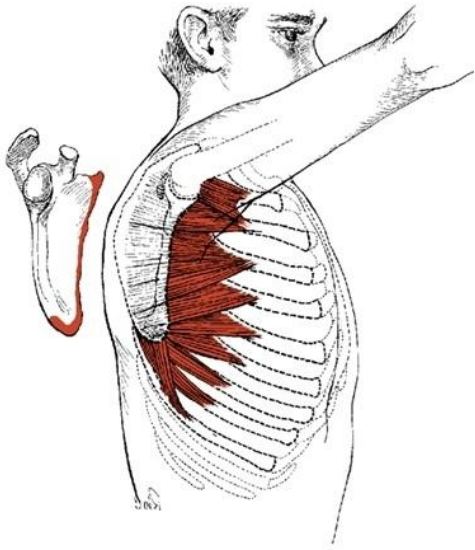
Muscles of the Upper Arm and Shoulder: Table 1

	<p>DELTOID</p> <p><u>Origin:</u> Anterior: lateral 1/3 of clavicle Middle: lateral acromion Posterior: spine of scapula</p> <p><u>Insertion:</u> Deltoid tuberosity of humerus</p> <p><u>Action:</u> Anterior: flexes, horizontally adducts, internally rotates humerus Middle: abducts humerus Posterior: extends, externally rotates, horizontally abducts</p>
	<p>BICEPS BRACHII</p> <p><u>Origin:</u> short head: coracoid process of the scapula. Long head: supraglenoid tubercle of scapula</p> <p><u>Insertion:</u> Tuberosity of radius and aponeurosis of the biceps</p> <p><u>Action:</u> Flexes the shoulder; flexes the elbow; supinates the forearm</p>
	<p>TRICEPS BRACHII</p> <p><u>Origin:</u> Long head: infraglenoid tuberosity of scapula. Medial head: Posterior body of the humerus Lateral head: Posterior process of the humerus</p> <p><u>Insertion:</u> Olecranon process of the ulna</p> <p><u>Action:</u> Long head: extend the shoulder and elbow joint Medial and lateral heads: extend the elbow</p>

Muscles of the Upper Arm and Shoulder: Table 2

	<p>SUPRASPINATUS</p> <p><u>Origin:</u> Supraspinatus fossa</p> <p><u>Insertion:</u> Highest point of greater tubercle of humerus</p> <p><u>Action:</u> Abducts shoulder joint and draws humerus into glenoid; stabilize head of humerus in glenoid cavity</p>
	<p>INFRASPINATUS</p> <p><u>Origin:</u> Infraspinatus fossa</p> <p><u>Insertion:</u> Greater tubercle of humerus</p> <p><u>Action:</u> Externally rotates humerus; stabilize head of humerus in glenoid cavity</p>
	<p>TERES MINOR</p> <p><u>Origin:</u> Superior half of lateral border of scapula</p> <p><u>Insertion:</u> Greater tubercle of humerus</p> <p><u>Action:</u> Externally rotates humerus; stabilize head of humerus in glenoid cavity</p>
	<p>SUBSCAPULARIS</p> <p><u>Origin:</u> Subscapular fossa</p> <p><u>Insertion:</u> Lesser tubercle of humerus</p> <p><u>Action:</u> Internally rotates humerus; stabilize head of humerus in glenoid cavity</p>

 <p>Labels in diagram: Superior nuchal line of the occiput, Upper fibers, Spinous process of C-7, Middle fibers, Lower fibers, Spinous process of T-12</p>	<p>TRAPEZIUS</p> <p><u>Origin:</u> External occipital protuberance; ligamentum nuchae; middle 1/3 of nuchal line of occipital bone; spinous process of C7 and T1-T12; supraspinal ligament</p> <p><u>Insertion:</u> Lateral 1/3 of clavicle medial acromium and spine of scapula</p> <p><u>Action:</u> Upper Fibers: elevate the scapula; upwardly rotate scapula Middle Fibers: adduct the scapula Lower Fibers: depress scapula; downwardly rotate scapula</p>
 <p>Labels in diagram: Thoracolumbar aponeurosis, Posterior iliac crest</p> <p>Q.40 Lateral/posterior view of latissimus dorsi</p>	<p>LATISSIMUS DORSI</p> <p><u>Origin:</u> Thoraco-lumbar fascia; lower 6 thoracic and all lumbar and sacral vertebrae; supraspinal ligament; posterior crest of ilium</p> <p><u>Insertion:</u> Upper humerus</p> <p><u>Action:</u> Extends, adducts and internally rotates arm; draws shoulder down and back</p>
	<p>TERES MAJOR</p> <p><u>Origin:</u> Posterior surface of inferior angle of scapula</p> <p><u>Insertion:</u> Lesser tubercle of anterior humerus</p> <p><u>Action:</u> Internally rotates and adducts humerus</p>

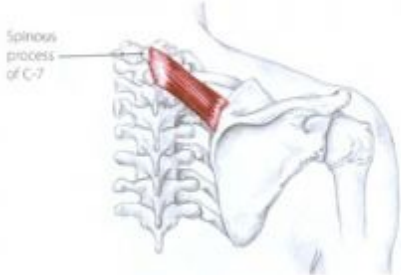
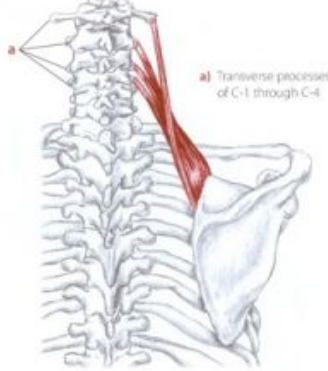
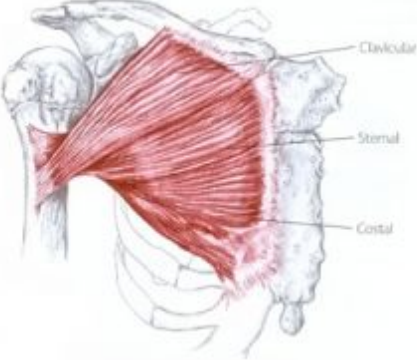



SERRATUS ANTERIOR

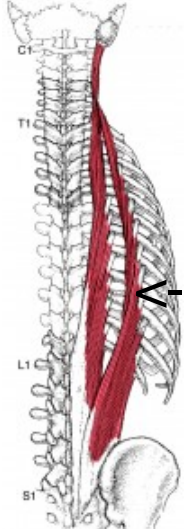
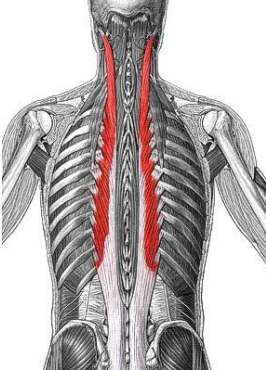
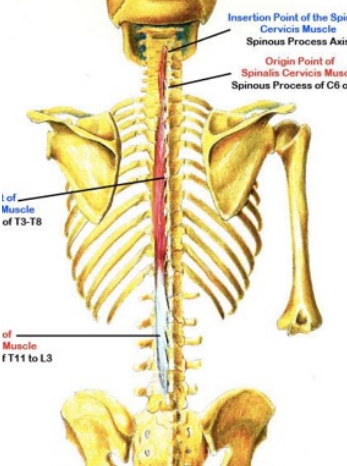
Origin: Lateral surfaces of upper 8-9 ribs

Insertion: Medial border of scapula

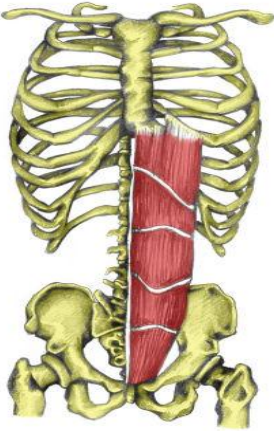

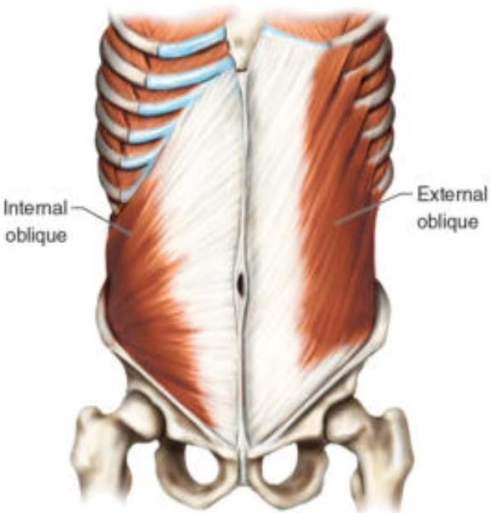
Action: Protraction of scapula, prevents winging of scapula


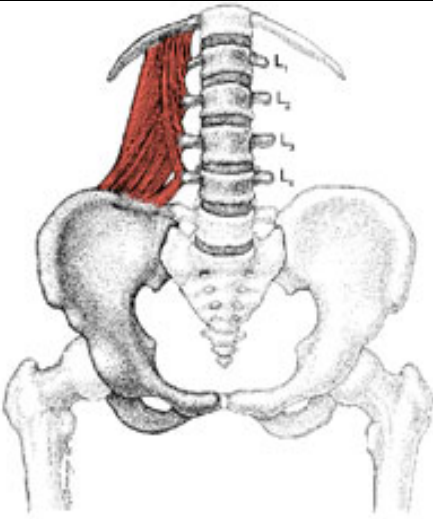

 <p>Spinous process of C-7</p>	<p>RHOMBOID MINOR AND MAJOR</p> <p><u>Origin:</u> Minor: spinous processes of C7 and T1 Major: spinous processes of T2-T5</p> <p><u>Insertion:</u> Medial border of scapula(minor above the spine; major below the spine)</p> <p><u>Action:</u> Adduct the scapula</p>
 <p>a) Transverse processes of C-1 through C-4</p>	<p>LEVATOR SCAPULA</p> <p><u>Origin:</u> Transverse of C1-C4</p> <p><u>Insertion:</u> Vertebral border of the scapula</p> <p><u>Action:</u> Elevates the scapula; side bends the neck and rotates it toward the same side</p>
 <p>Clavicular</p> <p>Sternal</p> <p>Costal</p>	<p>PECTORALIS MAJOR</p> <p><u>Origin:</u> Medial half of clavicle; sternum; cartilage of first 6 ribs</p> <p><u>Insertion:</u> Greater tubercle of humerus</p> <p><u>Action:</u> Flexes, adduct and internally rotates humerus</p>
	<p>PECTORALIS MINOR</p> <p><u>Origin:</u> Ribs 3-5</p> <p><u>Insertion:</u> coracoid process of scapula</p> <p><u>Action:</u> Pulls tip of shoulder down, protracts scapula</p>

Muscles of the Spine and Thorax: Table one –Erector Spinae Group

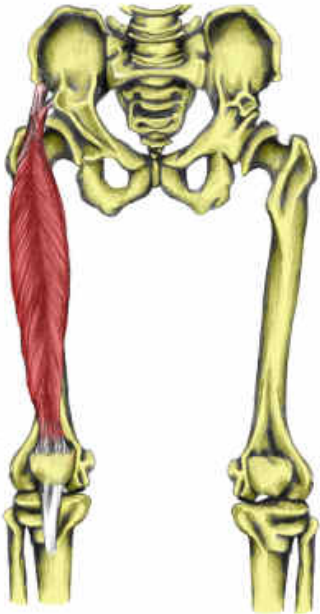
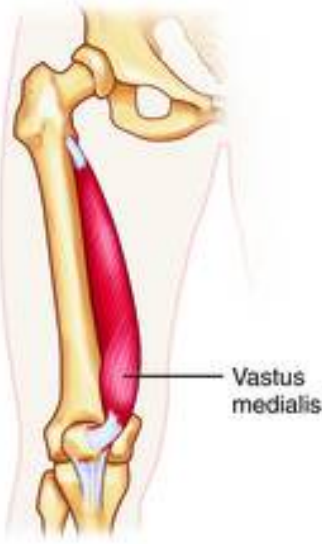
 <p style="text-align: right;">----- Iliocostalis</p>	<p>ILIOCOSTALIS</p> <p><u>Origin:</u> Posterior iliac crest, posterior sacrum, sacral and lumbar spinous processes, supraspinous ligament</p> <p><u>Insertion:</u> Angles of lower ribs and cervical transverse processes</p> <p><u>Action:</u> Bilaterally extends vertebral column; unilaterally side bends vertebral column</p>
	<p>LONGISSIMUS</p> <p><u>Origin:</u> Posterior iliac crest, posterior sacrum, sacral and lumbar spinous processes, supraspinous ligament</p> <p><u>Insertion:</u> Ribs and transverse processes of cervical and thoracic vertebrae; mastoid process of temporal bones</p> <p><u>Action:</u> Bilaterally extends vertebral column; unilaterally side bends vertebral column</p>
	<p>SPINALIS</p> <p><u>Origin:</u> Posterior iliac crest, posterior sacrum, sacral and lumbar spinous processes, supraspinous ligament</p> <p><u>Insertion:</u> Spinous processes of upper thoracic and mid-cervical processes to the skull</p> <p><u>Action:</u> Bilaterally extends vertebral column; unilaterally side bends vertebral column</p>

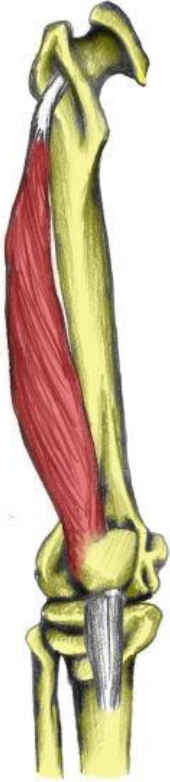
Abdominal Region

	<p>RECTUS ABDOMINIS</p> <p><u>Origin:</u> Pubic crest and pubic symphysis</p> <p><u>Insertion:</u> Cartilage of 5th, 6th, and 7th ribs and xiphoid process</p> <p><u>Action:</u> Flexes the vertebral column</p>
	<p>EXTERNAL OBLIQUE</p> <p><u>Origin:</u> Lower 8 ribs</p> <p><u>Insertion:</u> Anterior part of iliac crest abdominal aponeurosis to linea alba</p> <p><u>Action:</u> Laterally flexes the vertebral column to the same side; rotates the vertebral column to the opposite side; bilaterally helps flex the vertebral column and compress the abdominal contents</p>
	<p>INTERNAL OBLIQUE</p> <p><u>Origin:</u> Lateral inguinal ligament, iliac crest and thoracolumbar fascia</p> <p><u>Insertion:</u> Lower 3 ribs, abdominal aponeurosis to linea alba</p> <p><u>Action:</u> Laterally flexes vertebral column to the same side; rotates vertebral column to the same side; bilaterally helps flex the vertebral column and compresses the abdominal contents</p>

	<p>TRANSVERSE ABDOMINIS</p> <p><u>Origin:</u> xiphoid process, lower 6 ribs, linea alba</p> <p><u>Insertion:</u> pubic bone, iliac crest, thoracolumbar fascia</p> <p><u>Action:</u> Stabilizes the lumbar spine, rib cage and pelvis. Assists with forced exhalation.</p>
	<p>QUADRATUS LUMBORUM</p> <p><u>Origin:</u> posterior iliac crest</p> <p><u>Insertion:</u> last rib and transverse processes of 1st- 4th lumbar vertebrae</p> <p><u>Action:</u> laterally tilts pelvis, laterally flexes spine to the same side, extend spine</p>
 <p><small>Fig. 5.12.4 Copyright 2010 by Elsevier. All rights reserved. Illustration: Ken Hubbert</small></p>	<p>DIAPHRAGM</p> <p><u>Origin:</u> lower six ribs, upper two lumbar vertebrae, xiphoid process</p> <p><u>Insertion:</u> central tendon (runs through middle of diaphragm and attaches to tissue surrounding the lungs)</p> <p><u>Action:</u> draw down the central tendon to increase the volume of the thoracic cavity during inhalation</p>

Muscles of the Pelvis and Thigh: Quadriceps Group

	<p>RECTUS FEMORIS</p> <p><u>Origin:</u> Anterior inferior iliac spine (AIIS)</p> <p><u>Insertion:</u> Tibial tuberosity</p> <p><u>Action:</u> Extend knee. Flex hip</p>
	<p>VASTUS MEDIALIS</p> <p><u>Origin:</u> Medial side of linea aspera</p> <p><u>Insertion:</u> Tibial tuberosity</p> <p><u>Action:</u> Extend knee</p>



VASTUS LATERALIS

Origin: Later side of linea aspera gluteal tuberosity femur

Insertion: Tibial tuberosity

Action: Extend knee



VASTUS INTERMEDIUS

Origin: Anterior and lateral shaft of femur

Insertion: Tibial tuberosity

Action: Extend knee

Table 2- Hamstring Group




 <p>Long head</p> <p>Short head</p>	<p>BICEPS FEMORIS</p> <p><u>Origin:</u> Ischial tuberosity sits bones, lateral lip of linea aspera</p> <p><u>Insertion:</u> Head of fibula</p> <p><u>Action:</u> Flex knee, rotate flexed knee laterally; extend hip, externally rotate hip, tilt the pelvis posteriorly</p>
	<p>SEMITENDINOSUS</p> <p><u>Origin:</u> Ischial tuberosity (sits bones)</p> <p><u>Insertion:</u> Proximal shaft of tibia</p> <p><u>Action:</u> Flex knee, rotate flexed knee medially; extend hip, internally rotate hip; tilt the pelvis posteriorly</p>
	<p>SEMIMEMBRANOSUS</p> <p><u>Origin:</u> Ischial tuberosity (sits bones)</p> <p><u>Insertion:</u> Posterior aspect of medial condyle of tibia</p> <p><u>Action:</u> Flex knee, rotate flexed knee medially; extend hip, internally rotate hip; tilt the pelvis posteriorly</p>

Table 3 - Gluteals

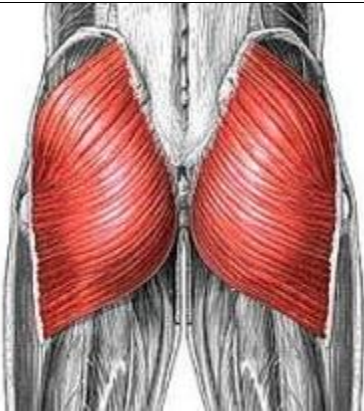
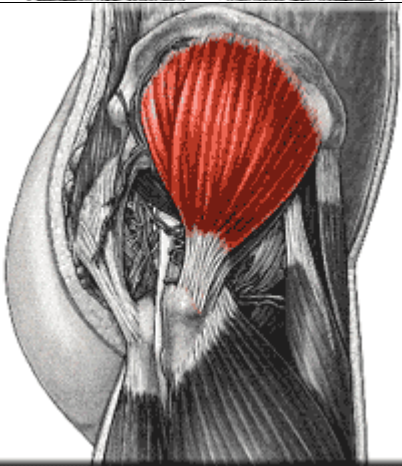
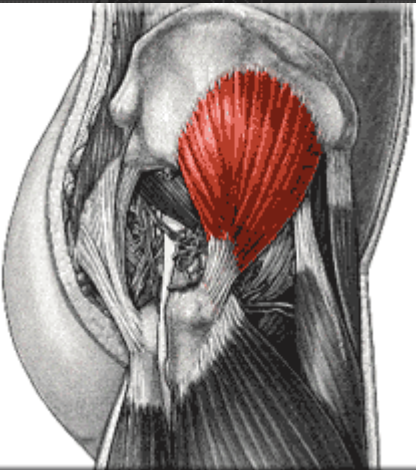


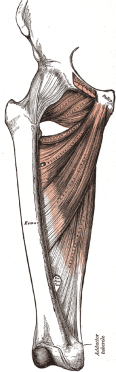
	<p>GLUTEUS MAXIMUS</p> <p><u>Origin:</u> Coccyx, edge of sacrum, posterior iliac crest, sacrotuberous and sacroiliac ligaments</p> <p><u>Insertion:</u> Gluteal tuberosity and iliotibial tract</p> <p><u>Action:</u> Extend hip, externally rotate hip, abduct hip</p>
	<p>GLUTEUS MEDIUS</p> <p><u>Origin:</u> Lateral ilium</p> <p><u>Insertion:</u> Greater trochanter</p> <p><u>Action:</u> Abducts hip Anterior fibers: internally rotates hip Posterior fibers: externally rotates hip</p>
	<p>GLUTEUS MINIMUS</p> <p><u>Origin:</u> Lateral ilium and margin of greater sciatic notch</p> <p><u>Insertion:</u> Anterior side of greater trochanter</p> <p><u>Action:</u> Abducts hip, internally rotates hip, helps flex hip</p>

Table 4 – Adductor Group

	<p>PECTINEUS</p> <p><u>Origin:</u> Superior ramus of pubis</p> <p><u>Insertion:</u> Pectineal line femur</p> <p><u>Action:</u> Adduct the hip, internally rotate the hip, assist to flex the hip</p>
	<p>ADDUCTOR LONGUS</p> <p><u>Origin:</u> Pubic tubercle</p> <p><u>Insertion:</u> Medial lip of linea aspera</p> <p><u>Action:</u> Adducts the hip, internally rotate the hip, assist to flex the hip</p>
	<p>ADDUCTOR MAGNUS</p> <p><u>Origin:</u> Inferior ramus of pubis, ramus of ischium and ischial tuberosity</p> <p><u>Insertion:</u> Medial lip of linea aspera and adductor tubercle</p> <p><u>Action:</u> Adducts hip; upper portion flexes and internally rotates the hip; lower portion externally rotates and extends the hip</p>


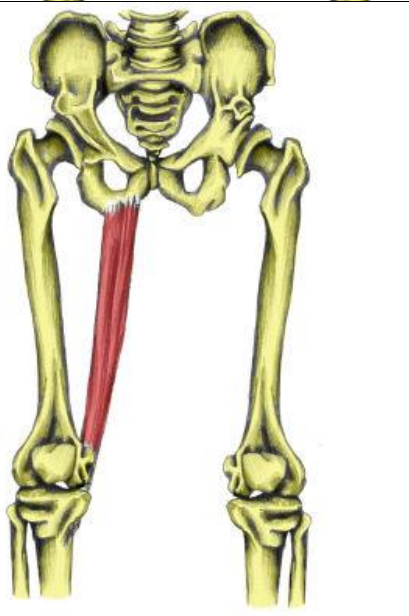
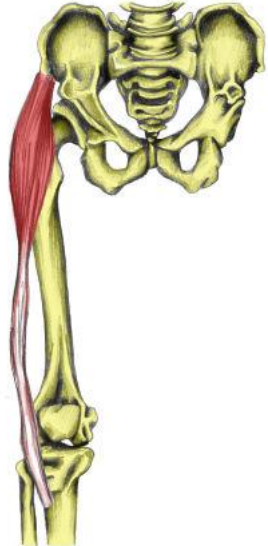
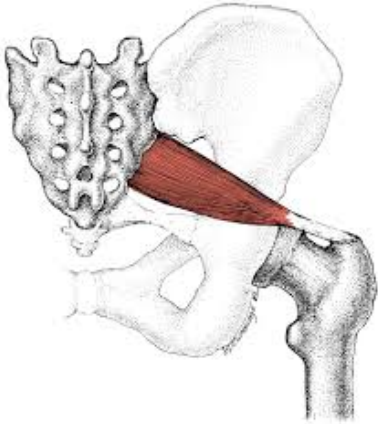
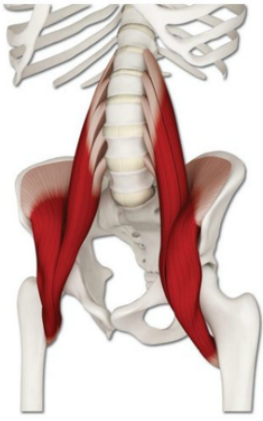
	<p>ADDUCTOR BREVIS</p> <p><u>Origin:</u> Lateral ilium and margin of greater sciatic notch</p> <p><u>Insertion:</u> Anterior side of greater trochanter</p> <p><u>Action:</u> Adduct the hip, internally rotate the hip, assist to flex the hip</p>
	<p>GRACILIS</p> <p><u>Action:</u> Adduct the hip, internally rotate the hip, flex the knee, internally rotate the flexed knee</p>

Table 5 - Other Muscles of Pelvis and Thigh

	<p>TENSOR FASCIAE LATAE & ILIOTIBIAL TRACT</p> <p><u>Origin:</u> Iliac crest</p> <p><u>Insertion:</u> lateral tibial condyle</p> <p><u>Action:</u> Flex hip, internally rotate the hip, abduct the hip</p>
	<p>PIRIFORMIS</p> <p><u>Origin:</u> Anterior sacrum</p> <p><u>Insertion:</u> Greater trochanter</p> <p><u>Action:</u> Externally rotates hip; abducts hip when it is flexed</p>
	<p>ILIOPSOAS</p> <p><u>Origin:</u> Transverse processes of lumbar of lumbar vertebrae, iliac fossa</p> <p><u>Insertion:</u> Lesser trochanter</p> <p><u>Action:</u> Flex hip, externally rotates hip, adduct hip</p>

Muscles of the Lower Leg: Table 1 – Anterior Crural Muscles


	<p>ANTERIOR TIBIALIS</p> <p><u>Origin:</u> Lateral condyle and lateral body of tibia</p> <p><u>Insertion:</u> Medial and plantar surface of the base of 1st metatarsal</p> <p><u>Action:</u> Dorsi flexes and supinates the foot</p>
---	--

Table 2 – Posterior Crural Muscles






	<p>GASTROCNEMIUS</p> <p><u>Origin:</u> Medial condyle of femur, medial capsule of the knee joint</p> <p><u>Insertion:</u> Achilles tendon to calcaneus</p> <p><u>Action:</u> Flexes the knee, plantar flexes the foot and helps to supinate it</p>
	<p>SOLEUS</p> <p><u>Origin:</u> Posterior head of the fibula, posterior fibula and medial tibia</p> <p><u>Insertion:</u> Gastrocnemius and Achilles tendon to calcaneus</p> <p><u>Action:</u> Plantar flexes the foot</p>

Table 3 – Lateral Crural Muscles

	<p>PERONEUS LONGUS</p> <p><u>Origin</u>: Head and lateral body of fibula</p> <p><u>Insertion</u>: Lateral base of 1st metatarsal and 3rd cuneiform</p> <p><u>Action</u>: Pronates and plantar flexes foot, stabilizes ankle</p>
	<p>PERONEUS BREVIS</p> <p><u>Origin</u>: Distal 2/3 of lateral surface of fibula</p> <p><u>Insertion</u>: Tuberosity of 5th metatarsal</p> <p><u>Action</u>: Pronates and plantar flexes foot , stabilizes ankle</p>
	<p>TIBIALIS POSTERIOR</p> <p><u>Origin</u>: Shaft and interosseous membrane of tibia and fibula</p> <p><u>Insertion</u>: navicular and medial cuneiform</p> <p><u>Action</u>: Inversion and plantar flexion of foot & ankle, supports arch while standing and walking</p>