

Anatomy and Physiology Lab

Unit One Skeletal Muscles

Instructor: Cliff Belleau / revised 9/11/2015

Head and Neck Muscles Primary Action, Insertion, and Origin

Buccinator

(BUC-sin-AY-tur) / Compresses cheek against teeth and gums / O: alveolar processes on lateral surfaces of mandible and maxilla / I: orbicularis oris

Masseter

(ma-SEE-tur) / elevation of the mandible / O: zygomatic arch / I: lateral surface of mandibular ramus

Platysma

(plah-TIZ-muh) / draws lower lip and angle of mouth downward in expressions of horror or surprise / O: fascia of deltoid and pectoralis major / I: mandible and skin of lower face

Sternocleidomastoid

(STIR-no-CLY-do-MAST-oyd) / unilateral action tilts head in opposite side or as in rotating head - bilateral action to draw head forward as when reading / O: manubrium of sternum and clavicle / I: mastoid process

Temporalis

(TEM-po-RAY-liss) / elevation and retraction of mandible / O: temporal line and temporal fossa of temporal bone / I: coronoid process of mandibular ramus

Trunk and Shoulder Muscles Primary Action, Insertion, and Origin

Deltoid

anterior fibers flex and medially rotate arm - lateral fibers abduct arm - posterior fibers extend and laterally rotate arm / O: acromion and spine of scapula / I: deltoid tuberosity of humerus

External Intercostal

(IN-tur-COSS-tulz) / elevate and protract ribs 2 through 12, expanding the thoracic cavity, aid to forced inspiration / O: inferior margins rib 1 through 11 / I: superior margin of next lower rib

Internal Intercostal

intercartilaginous attachment aids in inspiration - interosseous attachment aids in expiration / O: superior margins and costal cartilages of ribs 2 through 12 / I: inferior margins of next higher rib

Infraspinatus

(IN-fra-spy-NAY-tus) / aids deltoid in abduction of arm / O: infraspinous fossa of scapula / I: greater tubercle of humerus

Latissimus Dorsi

(la-TISS-ih-mus DOR-sye) / adducts and medially rotates humerus / O: vertebrae T7 through L5 / I: floor of intertubercular sulcus of humerus

Pectoralis Major

(PECK-toe-RAY-liss) / flexes, adducts, medially rotates humerus as in aid to hugging / O: medial half of clavicle, lateral margin of sternum, costal cartilages of 1 through 7 / I: lateral lip of intertubercular sulcus of humerus

Pectoris Minor

(PECK-toe-RAY-liss) / with serratus anterior, draws scapula laterally and forward around chest wall, rotates scapula and depresses apex of shoulder, as in reaching down to pick up a box / O: ribs 3-5 and overlying fascia / I: coracoid process

Rhomboideus

(rom-BOYD-ee-us) / retract scapula and braces shoulder; fixes scapula during arm movements / O: spinous process of vertebrae / I: medial border of scapula

Serratus Anterior

(serr-AY-tus) / draws scapula laterally and forward around chest / O: nearly all ribs / I: medial border of scapula

Subscapularis

(SUB-SCAP-you-LERR-iss) / modulates action of deltoid preventing humerus from slipping upward; rotates humerus medially / O: subscapular fossa of scapula / I: lesser tubercle of humerus; anterior surface of joint capsule

Supraspinatus

(SOO-pra-spy-NAY-tus) / aids deltoid in abduction of arm; resist downward slipping of humeral head / O: supraspinous fossa of scapula / I: greater tubercle of humerus

Teres Major

(TERR-ezz) / extends and medially rotates humerus / O: inferior angle of scapula / I: medial lip of intertubercular sulcus of humerus

Teres Minor

(TERR-ezz) / prevents humeral head from sliding upward as arm is abducted, rotates humerus laterally / O: lateral border and adjacent posterior surface of scapula / I: greater tubercle of humerus, posterior surface of joint capsule

Trapezius

(tra-PEE-zee-us) / extends and laterally flexes neck / O: external occipital protuberance, medial one-third superior nuchal line, spinous processes of vertebrae C7-T4 / I: acromion and spine of scapula, lateral third of clavicle

Upper Extremity Muscles

Primary Action, Insertion, and Origin

Biceps Brachii

(BY-seps BRAY-kee-eye) / forceful supination of forearm, synergist in elbow flexion / O: the long head to superior margin of glenoid cavity, the short head to coracoid process of scapula / I: tuberosity of radius

Brachialis

(BRAY-kee-AY-lis) / prime mover of elbow flexion / O: anterior surface of distal half of humerus / I: coronoid process and tuberosity of ulna

Brachioradialis

(BRAY-kee-oh-RAY-dee-AY-lis) / flexes elbow / O: lateral supracondylar ridge of humerus / I: lateral surface of radius near styloid process

Coracobrachialis
(COR-uh-co-BRAY-kee-AY-lis) / flexes and medially rotates arm / O: coracoid process of ulna / I: medial aspect of humeral shaft

Pronator Teres

(PRO-nay-tur TERR-ezz) / assists pronator quadratus in pronation but only in forceful action / O: humeral shaft near medial epicondyle, coronoid process of ulna / I: lateral surface of radial shaft

Triceps Brachii

(TRI-seps-BRAY-kee-eye) / extends elbow, long head extends and adducts humerus / O: long head to inferior margin of glenoid cavity, lateral head to posterior surface of proximal end of humerus, medial head to posterior surface of entire humeral shaft / I: olecranon process of ulna

Abdominal Muscles

Primary Action, Insertion, and Origin

External Oblique

supports abdominal viscera against pull of gravity / O: ribs 5-12 / I: anterior half of iliac crest, symphysis and superior margin of pubis

Internal Oblique

supports abdominal viscera against pull of gravity plus unilateral contraction causes ipsilateral rotation of waist / O: inguinal ligament, iliac crest, thoracolumbar fascia / I: ribs 10-12, costal cartilage 7-10, pubis

Rectus Abdominis

(REC-tus ab-DOM-ih-nis) / flexes lumbar region of vertebral column / O: pubis symphysis, superior margin of pubis / I: xiphoid process, costal cartilage 5-7

Transverse Abdominis

compresses abdominal content / O: inguinal ligament, iliac crest, thoracolumbar fascia / I: linea alba, pubis, aponeurosis of internal oblique

Pelvic Muscles

Primary Action, Insertion, and Origin

Gluteus Maximus

extends thigh at hip as in stair climbing, backswing of leg as when walking / O: posterior gluteal line of ilium, posterior surface from iliac crest to posterior superior spine / I: gluteal tuberosity of femur

Gluteus Medius

abducts and medially rotate thigh as in walking / O: most of lateral surface of ilium / I: greater trochanter of femur

Iliacus

(ih-LY-uh-cus) / flexes thigh at hip, flexes trunk at hip when thigh fixed / O: iliac crest, iliac fossa / I: lesser trochanter

Psoas major

(SO-ass) / flexes thigh at hip, flexes trunk at hip when thigh fixed / bodies of vertebrae T12-L5 / I: lesser trochanter

Iliopsoas

Most muscles that act on the femur originate on the hip bone. The two principle muscles are the iliacus and the psoas, collectively, they are called the iliopsoas.

Lower Extremity Muscles

Primary Action, Insertion, and Origin

Adductor Longus

adducts and medially rotates thigh, flexes thigh at hip / O: body and inferior ramus of pubis / I: linea sapera of femur

Adductor Magnus

adducts and medially rotates thigh, flexes thigh at hip / O: inferior ramus of pubis, tuberosity of ischium / I: gluteal tuberosity and medial supracondylar line of femur

Biceps Femoris

flexes knee, extends hip / O: long head to ischial tuberosity, short head to lateral supracondylar line of femur / I: head of femur

Calcaneal (Achilles) tendon not a muscle / tendon inserts onto calcaneus

Extensor Digitorum longus

(DIDJ-ih-TOE-rum) / extends toes, dorsiflexes foot / O: lateral condyle of tibia, shaft of fubula / I: middle and distal phalanges II-V

Gastrocnemius

(GAS-trock-Nee-me-us) / plantar flexes foot, flexes knee as in walking / O: condyles and supracondylar line of femur / I: calcaneus

Gracilis

(GRASS-ih-lis) / flexes and medially rotates tibia at knee / O: body and inferior ramus of pubis, ramus of ishium / I: medial surface of tibia just below condyle

Rectus Femoris

extends knee, flexes thigh or truck / O: ilium at anterior inferior spine / I: patella, tibial tuberosity, condyles of tibia

Sartorius

aids in knee and hip flexion, abducts and laterally rotates thigh / O: anterior superior spine of ilium / I: medial surface of proximal end of tibia

Semimembranosus

(SEM-ee-MEM-bran-OH-sus) / flexes knee, medially rotates tibia on femur, medially rotates femur when hip is extended / O: ischial tuberosity / I: medial condyle of tibia, lateral condyl of femur

Semitendinosus

(SEM-ee-TEN-din-OH-sus) / flexes knee, medially rotates tibia on femur, medially rotates femur when hip is extended / O: ischial tuberosity / I: medial surface of upper tibia

Soleus

(SO-lee-us) / plantar flexes foot, steadies leg on ankle when standing / O: posterior surface of head and proximal one-fourth of fibula, middle one-third of tibia / I: calcaneus

Tibialis Anterior

(TIB-ee-AY-lis) / dorsiflexes and invert foot, resist backward tipping of body / O: lateral condyle and lateral margin of proximal half of tibia / I: medial cuneiform, metatarsal I

Vastus Intermedius

extends knee / O: anterior and lateral surfaces of femoral shaft / I: patella, tibial tuberosity, lateral and medial condyles of tibia

Vastus Lateralis

extends knee / O: femur of greater trochanter / I: patella, tibial tuberosity, lateral and medial condyles of tibia

Vastus Medialis

extends knee / O: femur intertrochanteric line / I: patella, tibial tuberosity, lateral and medial condyles of tibia

Notes:

1. The “Quadriceps Femoris Group” consists of the rectus femoris, vastus intermedius, vastus lateralis, and vastus medialis.
2. The “Hamstring Group” consists of the biceps femoris, semitendinosus, and semimembranosus.
3. The “Rotator Cuff” consists of the subscapularis, infraspinatus, teres minor, and supraspinatus (SIIS)
4. There is a companion slide presentation to this handout posted on my Web site with images at www.mc3cb.com.