

## AJ Petto's Top 20 Muscles for BIOSCI 202

Name	Topography	Proximal Attachment	Distal Attachment	Action
1. <i>Temporalis</i>	Cranium; temporal bone above cheek	Temporal fossa	Anterior portion of mandibular ramus and coronoid process	Elevates mandible; also involved in retraction and lateral excursion
2. <i>Sternocleidomastoid</i>	Muscular ridge in the anterolateral neck	Mastoid process and superior nuchal line	Manubrium and medial portion of the clavicle	Rotates and flexes atlanto-occipital joint; head; flexes neck; unilaterally flexes neck ipsilaterally while rotating contralaterally.
3. <i>Rectus abdominis</i>	Medial ventral surface from ribs to pubis	Xiphoid process and inferior ribs (5-7)	Pubic crest and symphysis	Flexes lumbar spine; compresses abdomen; unilaterally flexes trunk ipsilaterally
4. <i>Iliopsoas</i>	No external appearance	<u><i>Iliacus</i></u> : inner surface of ilium  <u><i>Psoas major</i></u> & <u><i>Psoas minor</i></u> : on intervertebral cartilages, along bodies and on lower borders of transverse processes of L1-5; body of T12, on sacrum lateral and inferior to L5-S1 articulation	<u><i>Iliacus &amp; psoas major</i></u> : lesser trochanter of femur and shaft immediately inferior.  <u><i>Psoas minor</i></u> : Pectineal line and iliopectineal eminence of ilium	Flexion of the hip; Flexion and external rotation of the femur

Name	Topography	Proximal Attachment	Distal Attachment	Action
5. <i>Pectoralis major</i>	Upper half of the chest and anterior margin of axilla	Medial half of anterior surface of clavicle, anterior surface of costal cartilages of ribs 1–6 and adjacent sternum	Greater tubercle of the humerus and intertubercular crest (lateral aspect of intertubercular groove)	Adducts in frontal plane, flexes in sagittal plane, horizontally adducts in transverse plane, and internally rotates arm
6. <i>Latissimus dorsi</i>	Lower half of back, posterior margin of axilla	Posterior crest of ilium, spinous processes of T7–S3, ribs 10–12	Medial side of intertubercular groove of humerus	Adducts in frontal plane, extends in sagittal plane, horizontally abducts in transverse plane, and internally (medially) rotates arm
7. <i>Deltoid</i>	Rounded upper surface of “shoulder”	<u>3 portions</u> : anterior lateral 1/3 of clavicle, lateral aspect of acromion process, and inferior edge scapular spine	Deltoid tuberosity of humerus (lateral)	(1) Adducts arm, assists in flexion, horizontal adduction, and internal rotation of glenohumeral joint (GHJ); (2) abduction of GHJ; (3) abduction, extension, horizontal abduction, and lateral rotation of GHJ
8. <i>Biceps brachii</i>	Anterior surface of upper arm	<u>Long head</u> : superior margin of glenoid fossa; <u>Short head</u> : coracoid process of scapula	Radial (bicipital) tuberosity of radius and bicipital aponeurosis	Flexes elbow, weakly flexes glenohumeral joint; supinates hand
9. <i>Triceps brachii</i>	Posterior surface of upper arm	Infraglenoid tubercle of scapula (1), lateral (2) and posterior (3) surfaces of the humerus	Olecranon process of ulna	Extends elbow (1–3); adducts and extends glenohumeral joint (1)

Name	Topography	Proximal Attachment	Distal Attachment	Action
10. <i>Extensor digitorum</i>	Lateral surface of dorsum of forearm	Lateral epicondyle of humerus	4 tendons to the dorsal surfaces of the base of middle and distal phalanges of fingers 2–5	Extends digits 2–5 at metacarpophalangeal (MCP) joints and wrist; weak extension of elbow
11. <i>Flexor digitorum superficialis</i>	Anterior surface of the wrist on the ulnar side	Medial epicondyle of humerus; medial coronoid process of ulna; upper 2/3 of anterior border of radius	4 tendons that divide and attach to the sides of medial phalanges of fingers 2–5	Flexes digits at MCP and PIP joints, flexes wrist; weak flexion of elbow
12. <i>Gluteus maximus</i>	Wide area on posterior surface of pelvis	Posterior 1/4 of iliac crest; posterior surface of sacrum and coccyx near ilium; and lumbar fascia	Oblique ridge on lateral surface of greater trochanter and iliotibial band of <i>fascia latae</i>	Stabilizes trunk in hip extension; extension and external rotation of hip; lower fibers assist in hip adduction
13. <i>Rectus femoris</i>	Anterior surface of thigh	Anterior surface of inferior iliac spine and superior & posterior margin of acetabulum	Superior aspect of patella and patellar tendon to the tibial tuberosity	Extension of the knee and flexion of the hip
14. <i>Biceps femoris</i>	Lateral posterior surface of thigh, near knee	<u>Long head</u> : ischial tuberosity; <u>Short head</u> : lower half of <i>linea aspera</i> and lateral condylar ridge of femur	Lateral condyle of tibia and head of fibula	Flexion of knee, extension of hip, external rotation of hip and knee
15. <i>Gastrocnemius</i>	Posterior aspect of lower leg (“calf” muscle)	<u>Medial head</u> : posterior surface of the medial femoral condyle; <u>Lateral head</u> : posterior surface of the lateral femoral condyle	Posterior surface of calcaneus via calcaneal (Achilles’) tendon	Plantar flexion of ankle; weak flexion of the knee

Name	Topography	Proximal Attachment	Distal Attachment	Action
16. <i>Tibialis anterior</i>	Anterior lateral side of tibia	Upper 2/3 of the lateral surface of tibia	Inner surface of the medial cuneiform and the first metatarsal bone	Dorsiflexion of the ankle and inversion of the foot.
<b>Rotator Cuff Muscles</b>				
17. <i>Supraspinatus</i>	No external appearance	Medial 2/3 of the supraspinous fossa of the scapula	Superiorly on the greater tubercle of the humerus	Stabilizes glenohumeral joint (GHJ), weak abduction of GHJ
18. <i>Infraspinatus</i>	No external appearance	Medial aspect of infraspinous fossa of the scapula	Posteriorly on the greater tubercle of the humerus	Stabilizes GHJ joint, external rotation, horizontal abduction, and extension of the GHJ
19. <i>Teres minor</i>	No external appearance	Posteriorly on the upper and middle aspects of the lateral border of the scapula	Posteriorly on the greater tubercle of the humerus	Stabilizes GHJ, External rotation, horizontal abduction, and extension of GHJ
20. <i>Subscapularis</i>	No external appearance	Entire anterior surface of subscapular fossa	Lesser tubercle of humerus	Stabilizes GHJ; internal rotation, adduction, and extension of the GHJ

To analyze a muscle's actions properly, you must take into account its origin, insertion, direction of pull, orientation of fascicles, shape of the joint, and other mechanical variables that have an effect. Here is an example of the sort of analysis that you should be able to perform when you are asked how a particular muscle produces its observed actions.

**Pronator teres:** The pronator teres is difficult to see on the surface, but it can be found on the medial side of the “hollow” in front of the elbow (antecubital fossa). It attaches proximally at the medial epicondyle of the humerus and attaches distally on the pronator tuberosity of the radius. When the pronator teres contracts, it applies tension to the pronator tuberosity of the radius; it acts on the radioulnar and humeroradial pivot joints, as well as the humeroulnar hinge joint, which allow both rotation in the transverse plane and flexion–extension in the sagittal plane. Since the muscle is oriented diagonally in front of the joints in a superomedial to inferolateral position, its action can generate lateromedial rotation of the radius and/or flexion of the elbow.