

## MUSCLES OF THE HUMAN BODY

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Abductor digiti minimi of foot	Medial and lateral tubercles of tuberosity of calcaneus, plantar aponeurosis, intermuscular septa	Lateral side of base of proximal phalanx of 5th toe	Lateral plantar nerve (S2 and S3)	Abducts and flexes 5th toe
Abductor digiti minimi of hand	Pisiform, pisohamate ligament, flexor retinaculum	Medial side of base of proximal phalanx of little finger	Deep branch of ulnar nerve (C8 and T1)	Abducts 5th toe
Abductor hallucis	Medial tubercle of tuberosity of calcaneus, flexor retinaculum, plantar aponeurosis	Medial side of base of proximal phalanx of 1st toe	Medial plantar nerve (S2 and S3)	Abducts and flexes 1st toe (great toe, hallux)
Abductor pollicis brevis	Flexor retinaculum and tubercles of scaphoid and trapezium	Lateral side of base of proximal phalanx of thumb	Recurrent branch of median nerve (C8 and T1)	Abducts thumb and helps oppose it
Abductor pollicis longus	Posterior surfaces of ulna, radius, interosseous membrane	Base of 1st metacarpal	Posterior interosseous nerve (C7 and C8), continuation of deep branch of radial nerve	Abducts longus of thumb and extends it at carpometacarpal joint
Adductor brevis	Body and inferior ramus of pubis	Pectineal line and proximal part of linea aspera of femur	Obturator nerve (L2–L4), branch of anterior division	Adducts thigh and to some extent flexes it
Adductor hallucis	Oblique head: bases of metatarsals 2–4 Transverse head: plantar ligaments of metatarsophalangeal joints	Tendons of both heads attach to lateral side of base of proximal phalanx of great toe	Deep branch of lateral plantar nerve (S2 and S3)	Adducts great toe; assists in maintaining transverse arch of foot
Adductor longus	Body of pubic bone inferior to pubic crest	Middle third of linea aspera of femur	Obturator nerve, branch of anterior division (L2–L4)	Adducts thigh
Adductor magnus	Proximal part: inferior ramus of pubis, ramus of ischium Ischial tuberosity	Proximal part: gluteal tuberosity, linea aspera, medial supracondylar line Adductor tubercle of femur	Proximal part: obturator nerve (L2–L4), branches of posterior division Tibial part of sciatic nerve (L4)	Adducts thigh Proximal part: flexes thigh Extends thigh
Adductor minimus	Inferior pubic ramus	Medial lip, uppermost linea aspera of femur	Obturator nerve (L2–L4)	Adducts and rotates thigh laterally
Adductor pollicis	Oblique head: bases of 2nd and 3rd metacarpals, capitate, adjacent carpals Transverse head: anterior surface of body of 3rd metacarpal	Medial side of base of proximal phalanx of thumb	Deep branch of ulnar nerve (C8 and T1)	Adducts thumb toward middle digit
Anconeus	Lateral epicondyle of humerus	Lateral surface of olecranon and superior part of posterior surface of ulna	Radial nerve (C7, C8, and T1)	Assists triceps in extending forearm; stabilizes elbow joint; abducts ulna during pronation
Articularis cubiti	Distal portion of posterior aspect of shaft of humerus	Posterior fibrous capsule of elbow joint	Radial nerve (C7, C8)	Retracts posterior joint capsule during extension of elbow
Articularis genus	Distal portion of anterior aspect of shaft of femur	Synovial membrane of suprapatellar bursa of knee joint	Femoral nerve (L2–L4)	Retracts synovial membrane during extension of knee
Arytenoid, transverse and oblique	Posterolateral border of 1 arytenoid cartilage	Posterolateral border of opposite arytenoid cartilage	Recurrent laryngeal nerve (branch of vagus [CN X])	Closes intercartilaginous portion of rima glottidis
Auricularis, anterior, posterior, and superior	Epicranial aponeurosis and mastoid part of temporal bone	Auricle (external ear)	Facial nerve (CN VII)	Protraction, retraction, elevation of auricle on side of head
Biceps brachii	Short head: tip of coracoid process of scapula Long head: supraglenoid tubercle of scapula	Tuberosity of radius and fascia of forearm by bicipital aponeurosis	Musculocutaneous nerve (C5, C6)	Supinates forearm and, when supine, flexes forearm
Biceps femoris	Long head: ischial tuberosity Short head: linea aspera and lateral supracondylar line of femur	Lateral side of head of fibula; tendon split at this site by fibular collateral ligament of knee	Long head: tibial division of sciatic nerve (L5, S1, and S2) Short head: common fibular (peroneal) division of sciatic nerve (L5, S1, and S2)	Flexes leg and rotates it laterally when knee is flexed; extends thigh (e.g., when starting to walk)
Brachialis	Distal two thirds of anterior surface of humerus	Coronoid process and tuberosity of ulna	Musculocutaneous nerve (C5 and C6)	Flexes forearm in all positions
Brachioradialis	Proximal two thirds of lateral supracondylar ridge of humerus	Lateral surface of distal end of radius	Radial nerve (C5–C7)	Flexes forearm

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Buccinator	Mandible, pterygomandibular raphe, and alveolar processes of maxilla and mandible	Angle of mouth	Facial nerve (CN VII)	Presses cheek against molar teeth, thereby aiding chewing; expels air from oral cavity, as when a wind instrument is played; draws mouth to one side when acting unilaterally
Bulbospongiosus	Male: median raphe, ventral surface of bulb of penis, and perineal body Female: perineal body	Male: corpora spongiosum and cavernosa and fascia of bulb of penis Female: fascia of corpora cavernosa	Deep branch of perineal nerve, a branch of pudendal nerve (S2, S3, and S4)	Works with external anal sphincter to support/fix perineal body Male: compresses bulb of penis to expel last drops of urine or semen; assists erection by pushing blood into body of penis and compressing outflow veins Female: "sphincter" of vagina; assists in erection of clitoris
Ciliary	Scleral spur	Meridional, radial, and circular fibers intrinsic to ciliary body	Parasympathetic fibers of oculomotor nerve and ciliary ganglion	Relieve tension on lens of eye, allowing it to become more convex for near vision
Coccygeus (ischio-coccygeus)	Ischial spine	Inferior end of sacrum	Branches of S4 and S5 nerves	Forms small part of pelvic diaphragm that supports pelvic viscera; flexes coccyx
Coracobrachialis	Tip of coracoid process of scapula humerus	Middle third of medial surface of (C5–C7)	Musculocutaneous nerve	Helps to flex and adduct arm
Corrugator supercillii	Medial end of superciliary arch of frontal bone	Skin above middle of eyebrow	Facial nerve (CN VII)	Draws eyebrow medially and inferiorly, producing vertical wrinkles above nose
Cremaster	Internal oblique muscle and inguinal ligament	Spermatic cord and tunica vaginalis	Genital branch of genitofemoral nerve (L1–L2)	Elevation of testis
Cricopharyngeus	Posterolateral cricoid cartilage on one side	Posterolateral cricoid cartilage of other side	Vagus (CN X)	Serves as upper esophageal sphincter
Cricothyroid	Anterolateral part of cricoid cartilage	Inferior margin and inferior horn of thyroid cartilage	External laryngeal nerve	Stretches and tenses vocal fold
Deep transverse perineal muscle	Internal surface of ischiopubic ramus and ischial tuberosity	Median raphe, perineal body, and external anal sphincter	Deep branch of perineal nerve, a branch of pudendal nerve (S2, S3, and S4)	Support and fix perineal body (pelvic floor) to support abdominopelvic viscera and resist increased intraabdominal pressure
Deltoid	Lateral third of clavicle, acromion, and spine of scapula	Deltoid tuberosity of humerus	Axillary nerve (C5, C6)	Anterior part: flexes and medially rotates arm Middle part: abducts arm Posterior part: extends and laterally rotates arm
Depressor labii inferioris/anguli oris	Anterolateral aspect of body of mandible	Lower lip/angle of mouth	Marginal mandibular branch of facial nerve (CN VII)	Depresses and/or everts lower lip; pulls angle of mouth and modiolus inferiorly
Depressor septi nasi	Incisor fossa of maxilla	Mobile part of nasal septum	Facial nerve (CN VII)	Helps to dilate nostril during deep inspiration and depresses nasal septum
Diaphragm	Xiphoid process, inferior 6 costal cartilages and adjoining ribs, arcuate ligaments, anterior longitudinal ligaments and bodies and discs of lumbar vertebrae 1–3	Central tendon of diaphragm	Phrenic nerve (C3–C5)	Diaphragm descends, decreasing intrathoracic pressure and thus resulting in inhalation and assisting return of venous blood to heart
Digastric	Anterior belly: digastric fossa of mandible Posterior belly: mastoid notch of temporal bone	Intermediate tendon to body and greater horn of hyoid bone	Anterior belly: mylohyoid nerve, a branch of inferior alveolar nerve Posterior belly: facial nerve (CN VII)	Depresses mandible; raises hyoid bone and steadies it during swallowing and speaking
Dorsal interossei (4 muscles) of foot	Adjacent sides of metatarsals 1–5	1st: medial side of proximal phalanx of 2nd toe 2nd–4th: lateral sides of 2nd–4th toes	Lateral plantar nerve (S2, S3)	Abduct toes (2–4) and flex metatarsophalangeal joints
Dorsal interossei 1–4 of hand	Adjacent sides of 2 metacarpals (bipennate muscles)	Extensor expansions and bases of proximal phalanges of digits 2–4	Deep branch of ulnar nerve (C8, T1)	Abduct digits from axial line and act with lumbricals to flex metacarpophalangeal joints and extend interphalangeal joints

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Erector spinae	Arises by a broad tendon from posterior part of iliac crest, posterior surface of sacrum, sacral and inferior lumbar spinous processes, and supraspinous ligament	Iliocostalis—lumborum, thoracis, cervicis: fibers run superiorly to angles of lower ribs and cervical transverse processes Longissimus—thoracis, cervicis, capitis: fibers run superiorly to ribs between tubercles and angles, to transverse processes in thoracic and cervical regions, and to mastoid process of temporal bone Spinalis—thoracis, cervicis, capitis: fibers run superiorly to spinous processes in upper thoracic region and to skull	Posterior rami of spinal nerves	Acting bilaterally, extend vertebral column and head; as back is flexed, control movement by gradually lengthening fibers; acting unilaterally, laterally bend vertebral column
Extensor carpi radialis brevis	Lateral epicondyle of humerus	Base of 3rd metacarpal bone	Deep branch of radial nerve (C7, C8)	Extend and abduct hand at wrist joint
Extensor carpi radialis longus	Lateral supracondylar ridge of humerus	Base of 2nd metacarpal bone	Radial nerve (C6, C7)	Extend and abduct hand at wrist joint
Extensor carpi ulnaris	Lateral epicondyle of humerus and posterior border of ulna	Base of 5th metacarpal bone	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends and adducts hand at wrist joint
Extensor digiti minimi	Lateral epicondyle of humerus	Extensor expansion of 5th digit	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends 5th digit at metacarpophalangeal and interphalangeal joints
Extensor digitorum	Lateral epicondyle of humerus	Extensor expansions of medial 4 digits	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends medial 4 digits at metacarpophalangeal joints; extends hand at wrist joint
Extensor digitorum brevis	Antermost portions of lateral and superior surfaces of calcaneus	Lateral side of long extensor tendons, with slips to proximal phalanges of 2nd–4th toes	Deep fibular (peroneal) nerve (L5, S1)	Assists in extending middle 3 toes
Extensor digitorum longus	Lateral condyle of tibia and superior three fourths of medial surface of fibula and interosseous membrane	Middle and distal phalanges of lateral 4 digits	Deep fibular (peroneal) nerve (L5, S1)	Extends lateral 4 digits and dorsiflexes ankle
Extensor hallucis brevis	Antermost portion of superior surface of calcaneus	Dorsal aspect of base of proximal phalanx of great toe (hallux)	Deep fibular (peroneal) nerve (L5, S1)	Extends great toe
Extensor hallucis longus	Middle part of anterior surface of fibula and interosseous membrane	Dorsal aspect of base of distal phalanx of great toe (hallux)	Deep fibular (peroneal) nerve (L5, S1)	Extends great toe and dorsiflexes ankle
Extensor indicis	Posterior surface of ulna and interosseous membrane	Extensor expansion of 2nd digit	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends 2nd digit and helps to extend wrist
Extensor pollicis brevis	Posterior surface of radius and interosseous membrane	Base of proximal phalanx of thumb	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends proximal phalanx of thumb at carpometacarpal joint
Extensor pollicis longus	Posterior surface of middle third of ulna and interosseous membrane	Base of distal phalanx of thumb	Posterior interosseous nerve (C7, C8), continuation of deep branch of radial nerve	Extends distal phalanx of thumb at metacarpophalangeal and interphalangeal joints
External anal sphincter	Skin and fascia surrounding anus and coccyx via anococcygeal ligament	Perineal body	Inferior anal nerve	Closes anal canal; works with bulbospongiosus to support and fix perineal body
External intercostal	Inferior border of ribs, from tubercle to costochondral junction	Superior border of ribs below	Intercostal nerves	Elevate ribs (when upper ribs are fixed by scalene and sternocleidomastoid muscles)
External oblique	External surfaces of 5th–12th ribs	Linea alba, pubic tubercle, anterior half of iliac crest	Thoracoabdominal nerves (inferior 6 thoracic nerves) and subcostal nerve	Compress and support abdominal viscera; flex and rotate trunk
External urethral sphincter	Internal surface of ischiopubic ramus and ischial tuberosity	Surrounds urethra; in males, also ascends anterior aspect of prostate; in females, some fibers also enclose vagina (urethrovaginal sphincter)	Deep branch of perineal nerve, a branch of pudendal nerve (S2–S4)	Compresses urethra to maintain urinary continence; in females, urethrovaginal sphincter portion also compresses vagina

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Fibularis (peroneus) brevis	Inferior two thirds of lateral surface of fibula	Dorsal surface of tuberosity on lateral side of base of 5th metatarsal	Superficial fibular (peroneal) nerve (L5, S1, S2)	Everts foot and weakly plantarflexes ankle
Fibularis (peroneus) longus	Head and superior two thirds of lateral surface of fibula	Base of 1st metatarsal and medial cuneiform	Superficial fibular (peroneal) nerve (L5, S1, S2)	Everts foot and weakly plantarflexes ankle
Fibularis (peroneus) tertius	Inferior third of anterior surface of fibula and interosseous membrane	Dorsum of base of 5th metatarsal	Deep fibular (peroneal) nerve (L5, S1)	Dorsiflexes ankle and aids in eversion of foot
Flexor carpi radialis	Medial epicondyle of humerus	Base of 2nd metacarpal bone	Median nerve (C6, C7)	Flexes and abducts hand (at wrist) radially
Flexor carpi ulnaris	Humeral head: medial epicondyle of humerus Ulnar head: olecranon and posterior border of ulna	Pisiform bone, hook of hamate bone, and 5th metacarpal bone	Ulnar nerve (C7, C8)	Flexes and adducts hand (at wrist) ulnarly
Flexor digiti minimi brevis of foot	Base of 5th metatarsal	Base of proximal phalanx of 5th digit	Superficial branch of lateral plantar nerve (S2, S3)	Flexes proximal phalanx of 5th digit, thereby assisting with its flexion
Flexor digiti minimi brevis of hand	Hook of hamate and flexor flexor retinaculum	Medial side of base of proximal phalanx of little finger	Deep branch of ulnar nerve (C8, T1)	Flexes proximal phalanx of 5th digit
Flexor digitorum brevis	Medial tubercle of tuberosity of calcaneus, plantar aponeurosis, intermuscular septa	Both sides of middle phalanges of lateral 4 digits	Medial plantar nerve (S2, S3)	Flexes lateral 4 digits
Flexor digitorum longus	Medial part of posterior surface of tibia inferior to soleal line and by a broad tendon to fibula	Bases of distal phalanges of lateral 4 digits	Tibial nerve (S2, S3)	Flexes lateral 4 digits and plantarflexes ankle; supports longitudinal arch of foot
Flexor digitorum profundus	Proximal three fourths of medial and anterior surfaces of ulna and interosseous membrane	Bases of distal phalanges of medial 4 digits	Medial part: ulnar nerve (C8, T1). Lateral part: median nerve (C8, T1)	Flexes distal phalanges at distal interphalangeal joints of medial 4 digits; assists with flexion of hand
Flexor digitorum superficialis	Humeral head: medial epicondyle of humerus, ulnar collateral ligament, and coronoid process of ulna Radial head: superior half of anterior border of radius	Bodies of middle phalanges of medial 4 digits	Median nerve (C7, C8, T1)	Flexes middle phalanges at proximal interphalangeal joints of medial 4 digits; acting more strongly, also flexes proximal phalanges at metacarpophalangeal joints and hand at wrist
Flexor hallucis brevis	Plantar surfaces of cuboid and lateral cuneiforms	Both sides of base of proximal phalanx of 1st digit	Medial plantar nerve (S2, S3)	Flexes proximal phalanx of 1st digit
Flexor hallucis longus	Inferior two thirds of posterior surface of fibula and inferior part of interosseous membrane	Base of distal phalanx of great toe (hallux)	Tibial nerve (S2, S3)	Flexes great toe at both joints and weakly plantarflexes ankle; supports medial longitudinal arches of foot
Flexor pollicis brevis	Flexor retinaculum and tubercles of scaphoid and trapezium	Lateral side of base of proximal phalanx of thumb	Recurrent branch of median nerve (C8, T1)	Flexes thumb
Flexor pollicis longus	Anterior surface of radius and adjacent interosseous membrane	Base of distal phalanx of thumb	Anterior interosseous nerve from median (C8, T1)	Flexes phalanges of 1st digit (thumb)
Gastrocnemius	Lateral head: lateral aspect of lateral condyle of femur Medial head: popliteal surface of femur superior to medial condyle	Posterior surface of calcaneus by calcaneal tendon	Tibial nerve (S1, S2)	Plantarflexes ankle when knee is extended, raises heel during walking, flexes leg at knee joint
Gemelli, superior and inferior	Superior: ischial spine Inferior: ischial tuberosity	Medial surface of greater trochanter (trochanteric fossa) of femur	Superior gemellus: nerve to obturator internus (L5, S1) Inferior gemellus: nerve to quadratus femoris (L5, S1)	Laterally rotate extended thigh and abduct flexed thigh; keep femoral head steady in acetabulum
Genioglossus	Superior part of mental spine of mandible	Dorsum of tongue and body of hyoid bone	Hypoglossal nerve (CN XII)	Depresses tongue; posterior part pulls tongue anteriorly for protrusion
Geniohyoid	Inferior mental spine of mandible	Body of hyoid bone	C1 through hypoglossal nerve	Pulls hyoid bone anterosuperiorly; shortens floor of mouth; widens pharynx
Gluteus maximus	Ilium posterior to posterior gluteal line, dorsal surface of sacrum and coccyx, and sacrotuberous ligament	Most fibers end in iliotibial tract that inserts into lateral condyle of tibia; some fibers insert on gluteal tuberosity of femur	Inferior gluteal nerve (L5, S1, S2)	Extends thigh (especially from flexed position) and assists in its lateral rotation; steadies thigh and assists in rising from sitting position
Gluteus medius	External surface of ilium between anterior and posterior gluteal lines	Lateral surface of greater trochanter of femur	Superior gluteal nerve (L5, S1)	Abducts and medially rotates thigh; keeps pelvis level when opposite leg is raised off ground

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Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Gluteus minimus	External surface of ilium between anterior and inferior gluteal lines	Anterior surface of greater trochanter of femur	Superior gluteal nerve (L5, S1)	Abducts and medially rotates thigh; keeps pelvis level when opposite leg is raised off ground
Gracilis	Body and inferior ramus of pubis	Superior part of medial surface of tibia	Obturator nerve (L2, L3)	Adducts thigh; flexes leg, helps rotate it medially
Hyoglossus	Body and greater horn of hyoid bone	Side and inferior aspect of tongue	Hypoglossal nerve (CN XII)	Depresses and retracts tongue
Iliacus	Iliac crest, superior two thirds of iliac fossa, ala of sacrum, and anterior sacroiliac ligaments	Lesser trochanter of femur and shaft inferior to it, and to psoas major tendon	Femoral nerve (L2–L4)	Flexes thigh and stabilizes hip joint; acts with psoas major
Inferior constrictor of pharynx	Oblique line of thyroid cartilage and side of cricoid cartilage	Median raphe of pharynx	Cranial root of accessory nerve (CN XI) branches of external and recurrent laryngeal nerves of vagus (CN X)	Constricts wall of pharynx during swallowing
Inferior longitudinal muscle of tongue	Root of tongue and body of hyoid bone	Apex of tongue	Hypoglossal nerve (CN XII)	Curls tip of tongue inferiorly and shortens tongue
Inferior oblique	Anterior part of floor of orbit	Sclera deep to lateral rectus muscle	Oculomotor nerve (CN III)	Abducts, elevates, and laterally rotates eyeball
Inferior rectus	Common tendinous ring	Sclera just posterior to cornea	Oculomotor nerve (CN III)	Depresses, adducts, and rotates eyeball medially
Infraspinatus	Infraspinous fossa of scapula	Middle facet on greater tubercle of humerus	Suprascapular nerve (C5, C6)	Laterally rotates arm; helps to hold humeral head in glenoid cavity of scapula
Innermost intercostal	Inner surfaces of ribs, from angles to costochondral junction	Superior borders of ribs below	Intercostal nerves	Probably depress ribs
Internal intercostal	Inferior borders of ribs	Superior border of ribs below	Intercostal nerves	Depress ribs
Internal oblique	Thoracolumbar fascia, anterior two thirds of iliac crest, and lateral half of inguinal ligament	Inferior borders of 10th–12th ribs, linea alba, and pecten pubis through conjoint tendon	Thoracoabdominal (anterior rami of inferior 6 thoracic) and 1st lumbar nerves	Compresses and supports abdominal viscera; flexes and rotates trunk
Interspinales	Superior surfaces of spinous processes of cervical and lumbar vertebrae	Inferior surfaces of spinous processes of vertebrae superior to vertebrae of origin	Posterior rami of spinal nerves	Aid in extension and rotation of vertebral column
Intertransversarii	Transverse processes of cervical and lumbar vertebrae	Transverse processes of adjacent vertebrae	Posterior and anterior rami of spinal nerves	Aid in lateral bending of vertebral column; acting bilaterally, stabilize vertebral column
Ischiocavernosus	Internal surface of ischiopubic ramus and ischial tuberosity	Crus of penis or clitoris	Deep branch of perineal nerve, a branch of pudendal nerve (S2–S4)	Maintains erection of penis or clitoris by compressing outflow veins and pushing blood into body of penis or clitoris
Lateral cricoarytenoid	Arch of cricoid cartilage	Muscular process of arytenoid cartilage	Recurrent laryngeal nerve (branch of vagus [CN X])	Adducts vocal fold (interligamentous portion)
Lateral pterygoid	Superior head: infratemporal surface and infratemporal crest of greater wing of sphenoid bone Inferior head: lateral surface of lateral pterygoid plate	Neck of mandible (pterygoid fovea); articular disc and capsule of temporomandibular joint	Mandibular nerve (CN V3) through lateral pterygoid nerve from anterior trunk, which enters its deep surface	Acting together, protrude mandible and depress chin; acting alone and alternately, produce side-to-side movements of mandible
Lateral rectus	Common tendinous ring	Sclera just posterior to cornea	Abducent nerve (CN VI)	Abducts eyeball
Latissimus dorsi	Spinous processes of inferior 6 thoracic vertebrae, thoraco-lumbar fascia, iliac crest, and inferior 3 or 4 ribs	Floor of intertubercular groove of humerus	Thoracodorsal nerve (C6–C8)	Extends, adducts, and medially rotates humerus; raises body toward arms during climbing
Levator anguli oris	Canine fossa of maxilla	Orbicularis oris and skin at angle of mouth	Facial nerve (CN VII)	Raises angle of mouth, as in smiling
Levator ani (pubococcygeus, puborectalis, and iliococcygeus)	Body of pubis, tendinous arch of obturator fascia, and ischial spine	Perineal body, coccyx, anococcygeal ligament, walls of prostate or vagina, rectum, and anal canal	Nerve to levator ani (branches of S4) and inferior anal (rectal) nerve and coccygeal plexus	Helps support pelvic viscera and resists increases in intraabdominal pressure
Levatores costarum	Tips of transverse processes of C7 and T1–T11 vertebrae	Pass inferolaterally and insert on subjacent rib between its tubercle and angle	Posterior rami of C8–T11 spinal nerves	Elevate ribs, assisting inspiration; assist with lateral bending of vertebral column
Levator labii superioris	Frontal process of maxilla and infraorbital region	Skin of upper lip and alar cartilage of nose	Facial nerve (CN VII)	Elevates lip, dilates nostril, and raises angle of mouth

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Levator palpebrae superioris	Lesser wing of sphenoid bone, superior and anterior to optic canal	Tarsal plate and skin of superior (upper) eyelid	Oculomotor nerve (CN III); deep layer (superior tarsal muscle) is supplied by sympathetic fibers	Elevates superior (upper) eyelid
Levator scapulae	Posterior tubercles of transverse processes of C1–C4 vertebrae	Superior part of medial border of scapula	Dorsal scapular (C5) and cervical (C3 and C4) nerves	Elevates scapula and tilts its glenoid cavity inferiorly by rotating scapula
Levator veli palatini	Cartilage of pharyngotympanic (auditory) tube and petrous part of temporal bone	Palatine aponeurosis	Cranial part of CN XI through pharyngeal branch of vagus nerve (CN X) through pharyngeal plexus	Elevates soft palate during swallowing and yawning
Longus capitis	Basilar part of occipital bone	Anterior tubercles of C3–C6 transverse processes	Anterior rami of C1–C3 spinal nerves	Flexes head
Longus colli	Anterior tubercle of C1 vertebra (atlas); bodies of C1–C3 and transverse processes of C3–C6 vertebrae	Bodies of C5–T3 vertebrae, transverse processes of C3–C5 vertebrae	Anterior rami of C2–C6 spinal nerves	Flexes neck with rotation (torsion) to opposite side if acting unilaterally
Lumbricals of foot	Tendons of flexor digitorum longus	Medial aspects of bases of proximal phalanges of lateral 4 toes	Medial 1: medial plantar nerve (S2, S3) Lateral 3: lateral plantar nerve (S2, S3)	Flex proximal phalanges and extend middle and distal phalanges of lateral 4 digits
Lumbricals 1 and 2 of hand	Lateral 2 tendons of flexor digitorum profundus (unipennate muscles)	Lateral sides of extensor expansions of 2nd and 3rd digits	Median nerve (C8, T1)	Flex digits at metacarpophalangeal joints and extend interphalangeal joints
Lumbricals 3 and 4 of hand	Medial 3 tendons of flexor digitorum profundus (bipennate muscles)	Lateral sides of extensor expansions of 4th and 5th digits	Deep branch of ulnar nerve (C8 and T1)	Flex digits at metacarpophalangeal joints and extend interphalangeal joints
Masseter	Inferior border and medial surface of zygomatic arch	Lateral surface of ramus of mandible and its coronoid process	Mandibular nerve (CN V3) through masseteric nerve, which enters its deep surface	Elevates and protrudes mandible, thus closing jaws; deep fibers allow retrusion
Medial pterygoid	Deep head: medial surface of lateral pterygoid plate and pyramidal process of palatine bone Superficial head: tuberosity of maxilla	Medial surface of ramus of mandible, inferior to mandibular foramen	Mandibular nerve (CN V3) through medial pterygoid nerve	Acting bilaterally, elevates mandible, closing jaws; assists in protruding mandible; acting alone, assists in protruding same side of jaw; acting alternately, produces a grinding motion
Medial rectus	Common tendinous ring	Sclera just posterior to cornea	Oculomotor nerve (CN III)	Adducts eyeball
Mentalis	Incisive fossa of mandible	Skin of chin	Facial nerve (CN VII)	Elevates and protrudes lower lip
Middle constrictor of pharynx	Stylohyoid ligament and superior (greater) and inferior (lesser) horns of hyoid bone	Median raphe of pharynx	Cranial root of accessory nerve (CN XI); branches of external and recurrent laryngeal nerves of vagus (CN X)	Constricts wall of pharynx during swallowing
Mylohyoid	Mylohyoid line of mandible	Raphe and body of hyoid bone	Mylohyoid nerve, a branch of inferior alveolar nerve of CN V3	Elevates hyoid bone, floor of mouth, and tongue during swallowing and speaking
Nasalis	Superior part of canine ridge of maxilla	Nasal cartilages	Facial nerve (CN VII)	Draws ala (side) of nose toward nasal septum
Obliquus capitis inferior	Spinous process of axis (C2 vertebra)	Transverse process of atlas (C1 vertebra)	Suboccipital nerve	Rotation of head at atlantoaxial joint
Obliquus capitis superior	Spinous process of atlas (C1 vertebra)	Lateral third of inferior nuchal line of occipital bone	Suboccipital nerve	Rotation of head at atlantoaxial joint
Obturator externus	Margins of obturator foramen and obturator membrane	Trochanteric fossa of femur	Obturator nerve (L3, L4)	Laterally rotates thigh; steadies head of femur in acetabulum
Obturator internus	Pelvic surface of obturator membrane and surrounding bones	Medial surface of greater trochanter (trochanteric fossa) of femur	Nerve to obturator internus (L5, S1)	Laterally rotates extended thigh and abducts flexed thigh; steadies femoral head in acetabulum
Occipitofrontalis (occipital belly/frontal belly)	Lateral two thirds of superior nuchal line and mastoid temporal bone/epicranial aponeurosis	Epicranial aponeurosis/skin of forehead and eyebrows	Posterior branch/temporal branch of facial nerve (CN VII)	Retracts scalp/elevates eyebrows and skin of forehead
Omohyoid	Superior border of scapula near suprascapular notch	Inferior border of hyoid bone	C1–C3 by a branch of ansa cervicalis	Depresses, retracts, and steadies hyoid bone

## MUSCLES OF THE HUMAN BODY

APP 39

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Opponens digiti minimi	Hook of hamate and flexor retinaculum	Medial border of 5th metacarpal	Deep branch of ulnar nerve (C8, T1)	Draws 5th metacarpal anteriorly and rotates it, bringing digit 5 into opposition with thumb
Opponens pollicis	Flexor retinaculum and tubercles of scaphoid and trapezium	Lateral side of 1st metacarpal	Recurrent branch of median nerve (C8, T1)	Draws 1st metacarpal bone laterally to oppose thumb toward center of palm and rotates it medially
Orbicularis oculi	Medial orbital margin, medial palpebral ligament, and lacrimal bone	Skin around margin of orbit; tarsal plate	Facial nerve (CN VII)	Closes eyelids; palpebral part closes lids gently; orbital part gently closes lids tightly
Orbicularis oris	Some fibers arise near median plane of maxilla superiorly and mandible inferiorly; others arise from deep surface of skin	Mucous membrane of lips	Facial nerve (CN VII)	As sphincter of oral opening, compresses and protrudes lips (e.g., purses them during whistling and sucking)
Palatoglossus	Palatine aponeurosis	Side of tongue	Cranial part of accessory nerve (CN XI) through pharyngeal branch of vagus nerve (CN X) by way of pharyngeal plexus	Elevates posterior part of tongue and draws soft palate onto tongue
Palatopharyngeus	Hard palate and palatine aponeurosis	Lateral wall of pharynx	Cranial part of accessory nerve (CN XI) through pharyngeal branch of vagus nerve (CN X) by way of pharyngeal plexus	Tenses soft palate and pulls walls of pharynx superiorly, anteriorly, and medially during swallowing
Palmar interossei 1–3	Palmar surfaces of 2nd, 4th, and 5th metacarpals (unipennate muscles)	Extensor expansions of digits and bases of proximal phalanges of 2nd, 4th, and 5th digits	Deep branch of ulnar nerve (C8, T1)	Adduct digits toward axial line and assist lumbricals in flexing metacarpophalangeal joints and extending interphalangeal joints
Palmaris brevis	Ulnar side of central portion of palmar aponeurosis	Skin of ulnar side of hand	Superficial ulnar nerve (T1)	Wrinkles skin on palmar side of hand
Palmaris longus	Medial epicondyle of humerus	Distal half of flexor retinaculum and palmar aponeurosis	Median nerve (C7, C8)	Flexes hand (at wrist) and tightens palmar aponeurosis
Pectineus	Superior ramus of pubis	Pectineal line of femur, just inferior to lesser trochanter	Femoral nerve (L2, L3); may receive a branch from obturator nerve	Adducts and flexes thigh; assists with medial rotation of thigh
Pectoralis major	Clavicular head: anterior surface of medial half of clavicle. Sternocostal head: anterior surface of sternum, superior 6 costal cartilages, aponeurosis of external oblique muscle	Lateral lip of intertubercular groove of humerus	Lateral and medial pectoral nerves; clavicular head (C5, C6), sternocostal head (C7, C8, T1)	Adducts and medially rotates humerus; draws scapula anteriorly and inferiorly; acting alone: clavicular head flexes humerus and sternocostal head extends it
Pectoralis minor	3rd–5th ribs near their costal cartilages	Medial border and superior surface of coracoid process of scapula	Medial pectoral nerve (C8, T1)	Stabilizes scapula by drawing it inferiorly and anteriorly against thoracic wall
Piriformis	Anterior surface of sacrum and sacrotuberous ligament	Superior border of greater trochanter of femur	Branches of anterior rami of S1, S2	Laterally rotate extended thigh and abduct flexed thigh; steady femoral head in acetabulum
Plantar interossei 1–3	Bases and medial sides of metatarsals 3rd–5th	Medial sides of bases of proximal phalanges of 3rd–5th digits	Lateral plantar nerve (S2, S3)	Adduct 2nd–4th digits and flex metatarsophalangeal joints
Plantaris	Inferior end of lateral supracondylar line of femur and oblique popliteal ligament	Posterior surface of calcaneus through calcaneal tendon	Tibial nerve (S1, S2)	Weakly assists gastrocnemius in plantarflexing ankle and flexing knee
Platysma	Superficial fascia of deltoid and pectoral regions	Mandible, skin of cheek, angle of mouth, and orbicularis oris	Facial nerve (CN VII)	Depresses mandible and tenses skin of lower face and neck
Popliteus	Lateral surface of lateral condyle of femur and lateral meniscus	Posterior surface of tibia, superior to soleal line	Tibial nerve (L4, L5, S1)	Weakly flexes knee and unlocks it
Posterior cricoarytenoid	Posterior surface of lamina of cricoid cartilage	Muscular process of arytenoid cartilage	Recurrent laryngeal nerve (branch of vagus [CN X])	Abducts vocal fold
Procerus	Aponeurosis covering bridge of nose	Skin of lower forehead between eyebrows	Facial nerve (CN VII)	Depresses medial end of eyebrow; produces transverse wrinkles over bridge of nose; produces look of concentration
Pronator quadratus	Distal fourth of anterior surface of ulna	Distal fourth of anterior surface of radius	Anterior interosseous nerve from median (C8, T1)	Pronates forearm; deep fibers bind radius and ulna together
Pronator teres	Medial epicondyle of humerus and coronoid process of ulna	Middle of lateral surface of radius	Median nerve (C6, C7)	Pronates and flexes forearm (at elbow)

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Psoas major	Sides of T12–L5 vertebrae and discs between them; transverse processes of all lumbar vertebrae	Lesser trochanter of femur	Anterior rami of lumbar nerves (L1–L3)	Flexes and rotates thigh laterally at hip joint; when thigh is fixed, flexes lumbar vertebrae anteriorly and laterally
Psoas minor	Sides of T12–L1 vertebrae and intervertebral discs	Pectineal line, iliopectineal eminence via iliopectineal arch	Anterior rami of lumbar nerves (L1, L2)	Acts conjointly with psoas major to flex thigh at hip joint and stabilize this joint
Pyramidalis	Crest of pubis	Lower portion of linea alba	Subcostal nerve	Tenses linea alba
Quadratus femoris	Lateral border of ischial tuberosity	Quadratus tubercle on intertrochanteric crest of femur and area inferior to it	Nerve to quadratus femoris (L5, S1)	Laterally rotates thigh; steadies femoral head in acetabulum
Quadratus lumborum	Medial half of inferior border of 12th rib and tips of lumbar transverse processes	Iliolumbar ligament and internal lip of iliac crest	Ventral branches of T12 and L1–L4 nerves	Extends and laterally flexes vertebral column; fixes 12th rib during inspiration
Quadratus plantae	Medial surface and lateral margin of plantar surface of calcaneus	Posterolateral margin of tendon of flexor digitorum longus	Lateral plantar nerve (S2, S3)	Assists flexor digitorum longus in flexing lateral 4 digits
Rectus abdominis	Pubic symphysis and pubic crest	Xiphoid process and 5th–7th costal cartilages	Thoracoabdominal nerves (anterior rami of inferior 6 thoracic nerves)	Flexes trunk (lumbar vertebrae) and compresses abdominal viscera (indirectly opposing diaphragm)
Rectus capitis anterior	Anterior surface of lateral mass of C1 vertebra (atlas)	Base of skull, just anterior to occipital condyle	Branches from loop between C1 and C2 spinal nerves	Flexes head at atlantooccipital joint
Rectus capitis lateralis	Transverse process of C1 vertebra (atlas)	Jugular process of occipital bone	Branches from loop between C1 and C2 spinal nerves	Flexes head and helps to stabilize it
Rectus capitis posterior major	Spinous process of C2 vertebra (axis)	Middle of inferior nuchal line of occipital bone	Suboccipital nerve	Extends head at atlantooccipital joint
Rectus capitis posterior minor	Dorsal tubercle of C1 vertebra (atlas)	Medial third of inferior nuchal line of occipital bone	Suboccipital nerve	Extends head at atlantooccipital joint
Rectus femoris	Anterior inferior iliac spine and ilium superior to acetabulum	Base of patella and by patellar ligament to tibial tuberosity	Femoral nerve (L2–L4)	Extend leg at knee joint; rectus femoris also steadies hip joint and helps iliopsoas to flex thigh
Rhomboid minor and major	Minor: nuchal ligament and spinous processes of C7 and T1 vertebrae Major: spinous processes of T2–T5 vertebrae	Medial border of scapula from level of spine to inferior angle	Dorsal scapular nerve (C4, C5)	Retract scapula and rotate it to depress glenoid cavity; fix scapula to thoracic wall
Risorius	Platysma and fascia of masseter	Orbicularis oris, skin of corner of mouth, modiolus	Facial nerve (CN VII)	Retracts angle of mouth, lengthening rima oris
Salpingopharyngeus	Cartilaginous part of auditory tube	Blends with palatopharyngeus	Cranial root of accessory nerve through pharyngeal branch of vagus and pharyngeal plexus	Elevates (shortens and widens) pharynx and larynx during swallowing and speaking
Sartorius	Anterior superior iliac spine and superior part of notch inferior to it	Superior part of medial surface of tibia	Femoral nerve (L2, L3)	Flexes, abducts, and laterally rotates thigh at hip joint; flexes leg at knee joint
Scalenus anterior	Transverse processes of C4–C6 vertebrae	1st rib	Cervical spine nerves (C4–C6)	Elevates 1st rib; flexes and rotates neck laterally
Scalenus medius	Posterior tubercles of transverse processes of C4–C6 vertebrae	Superior surface of 1st rib, posterior groove for subclavian artery	Anterior rami of cervical spinal nerves	Flexes neck laterally; elevates 1st rib during forced inspiration
Scalenus posterior	Posterior tubercles of transverse processes of C4–C6 vertebrae	External border of 2nd rib	Anterior rami of cervical nerves C7 and C8	Flexes neck laterally; elevates 2nd rib during forced inspiration
Semimembranosus	Ischial tuberosity	Posterior part of medial condyle of tibia; reflected attachment forms oblique popliteal ligament (to lateral femoral condyle)	Tibial division of sciatic nerve (L5, S1, S2)	Extends thigh; flexes leg and, when knee is flexed, rotates it medially; when hip is flexed and knee is extended, can raise trunk against gravity
Semitendinosus	Ischial tuberosity	Medial surface of superior part of tibia	Tibial division of sciatic nerve (L5, S1, S2)	Extends thigh; flexes leg and, when knee is flexed, rotates it medially; when hip is flexed and knee is extended, can raise trunk against gravity



## MUSCLES OF THE HUMAN BODY

APP 41

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Serratus anterior	External surfaces of lateral parts of 1st–8th ribs	Anterior surface of medial border of scapula	Long thoracic nerve (C5, C6, C7)	Protracts scapula and holds it against thoracic wall; rotates scapula
Serratus posterior inferior	Spinous processes of vertebrae	Inferior borders of 8th–12th ribs near their angles	Anterior rami of 9th–12th thoracic spinal nerves	Depresses ribs
Serratus posterior superior	Ligamentum nuchae, spinous processes of C7–T3 vertebrae	Superior borders of 2nd–4th ribs	2nd–5th intercostal nerves	Elevates ribs
Soleus	Posterior aspect of head of fibula, superior fourth of posterior surface of fibula, soleal line and medial border of tibia	Posterior surface of calcaneus via calcaneal tendon	Tibial nerve (S1, S2)	Plantarflexes ankle independently of position of knee and steadies leg on foot
Splenius capitis et cervicis	Arises from inferior half of ligamentum nuchae and spinous processes of C7–T3 of T4 vertebrae	Splenius capitis: fibers run superolaterally to mastoid process of temporal bone and lateral third of superior nuchal line of occipital bone Splenius cervicis: posterior tubercles of transverse processes of C1–C3 or C4 vertebrae	Posterior rami of spinal nerves	Acting alone, laterally bend and rotate head to side of active muscles; acting together, extend head and neck
Stapedius	Internal walls of pyramidal eminence of posterior wall of tympanic cavity	Neck of stapes	Facial nerve (CN VII)	Damps vibrations of stapes reflexively in response to loud noise
Sternocleidomastoid	Lateral surface of mastoid process of temporal bone and lateral half of superior nuchal line	Sternal head: anterior surface of manubrium of sternum Clavicular head: superior surface of medial third of clavicle	Spinal root of accessory nerve (CN XI) (motor) and C2 and C3 nerves (pain and proprioception)	Tilts head to one side, i.e., laterally; flexes neck and rotates it so face is turned superiorly toward opposite side; acting together, the right and left sternocleidomastoid muscles flex neck so chin is thrust forward
Sternohyoid	Manubrium of sternum and medial end of clavicle	Body of hyoid bone	C1–C3 by a branch of ansa cervicalis	Depresses hyoid bone after it has been elevated during swallowing
Sternothyroid	Posterior surface of manubrium of sternum	Oblique line of thyroid cartilage	C2 and C3 by a branch of ansa cervicalis	Depresses hyoid bone and larynx
Styloglossus	Styloid process and stylohyoid ligament	Side and inferior aspect of tongue	Hypoglossal nerve (CN XII)	Retracts tongue and draws it up to create a trough for swallowing
Stylohyoid	Styloid process of temporal bone	Body of hyoid bone	Cervical branch of facial nerve (CN VII)	Elevates and retracts hyoid bone, thereby elongating floor of mouth
Stylopharyngeus	Styloid process of temporal bone	Posterior and superior borders of thyroid cartilage with palatopharyngeus	Glossopharyngeal nerve (CN IX)	Elevates (shortens and widens) pharynx and larynx during swallowing and speaking
Subclavius	Junction of 1st rib and its costal cartilage	Inferior surface of middle third of clavicle	Nerve to subclavius (C5, C6)	Anchors and depresses clavicle
Subcostal	Internal surfaces of lower ribs near their angles	Superior borders of 2nd or 3rd ribs below	Intercostal nerves	Elevates ribs
Subscapularis	Subscapular fossa	Lesser tubercle of humerus	Upper and lower subscapular nerves (C5–C7)	Rotates arm medially and adducts it; helps to hold humeral head in glenoid cavity
Superficial transverse perineal muscle	Ramus of ischium	Perineal body	Deep branch of perineal nerve, a branch of pudendal nerve (S2–S4)	Supports and fixes perineal body (pelvic floor) to support abdominopelvic viscera and to resist increased intraabdominal pressure
Superior constrictor of pharynx	Pterygoid hamulus, pterygo-mandibular raphe, posterior end of mylohyoid line of mandible and side of tongue	Median raphe of pharynx and pharyngeal tubercle on basilar part of occipital bone	Cranial root of accessory nerve through pharyngeal branch of vagus and pharyngeal plexus	Constricts wall of pharynx during swallowing
Superior longitudinal muscle of tongue	Submucous fibrous layer and median fibrous septum	Margins of tongue and mucous membrane	Hypoglossal nerve (CN XII)	Curls tip and sides of tongue superiorly and shortens tongue
Superior oblique	Body of sphenoid bone	Its tendon passes through a fibrous ring or trochlea, changes its direction, and inserts into sclera deep to superiorrectus muscle	Trochlear nerve (CN IV)	Abducts, depresses, and rotates eyeball medially
Superior rectus	Common tendinous ring	Sclera just posterior to cornea	Oculomotor nerve (CN III)	Elevates, adducts, and rotates eyeball medially

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Supinator	Lateral epicondyle of humerus, radial collateral and anular ligaments, supinator fossa, and crest of ulna	Lateral, posterior, and anterior surfaces of proximal third of radius	Deep branch of radial nerve (C5, C6)	Supinates forearm (i.e., rotates radius to turn palm anteriorly)
Supraspinatus	Supraspinous fossa of scapula	Superior facet on greater tubercle of humerus	Suprascapular nerve (C4–C6)	Initiates and assists deltoid in abduction of arm and acts with rotator cuff muscles
Temporalis	Floor of temporal fossa and deep surface of temporal fascia	Tip and medial surface of coronoid process and anterior border of ramus of mandible	Deep temporal branches of mandibular nerve (CN V3)	Elevates mandible, closing jaws; its posterior fibers retract mandible after protrusion (SEE ALSO masseter)
Tensor fascia latae	Anterior superior iliac spine and anterior part of iliac crest	Iliotibial tract that attaches to lateral condyle of tibia	Superior gluteal (L4, by L5)	Abducts, medially rotates, and flexes thigh; helps to keep knee extended; steadies trunk on thigh
Tensor tympani	Canal for tensor tympani of petrous part of temporal bone and cartilage of pharyngotympanic (auditory) tube	Handle of malleus	Branch of mandibular nerve (CN V3) by otic ganglion	Tenses tympanic membrane to damp excessive vibration caused by loud noise
Tensor veli palatini	Scaphoid fossa of medial pterygoid plate, spine of sphenoid bone, and cartilage of pharyngotympanic (auditory) tube	Palatine aponeurosis	Medial pterygoid nerve (a branch of mandibular nerve—CN V3) by otic ganglion	Tenses soft palate and opens mouth of auditory tube during swallowing and yawning
Teres major	Dorsal surface of inferior angle of scapula	Medial lip of intertubercular groove of humerus	Lower subscapular nerve (C6, C7)	Adducts and medially rotates arm
Teres minor	Superior part of lateral border of scapula	Inferior facet on greater tubercle of humerus	Axillary nerve (C5, C6)	Laterally rotate arm; help to hold humeral head in glenoid cavity of scapula
Thyroarytenoid	Posterior surface of thyroid cartilage	Muscular process of arytenoid cartilage	Recurrent laryngeal nerve	Relaxes vocal fold
Thyrohyoid	Oblique line of thyroid cartilage	Inferior border of body and greater horn of hyoid bone	C1 by hypoglossal nerve	Depresses hyoid bone and elevates larynx
Tibialis anterior	Lateral condyle and superior half of lateral surface of tibia and interosseous membrane	Medial and inferior surfaces of medial cuneiform and base of 1st metatarsal	Deep fibular (peroneal) nerve (L4, L5)	Dorsiflexes ankle and inverts foot
Tibialis posterior	Interosseous membrane, posterior surface of tibia inferior to soleal line, and posterior surface of fibula	Tuberosity of navicular, cuneiform, and cuboid and bases of 2nd, 3rd, and 4th metatarsals	Tibial nerve (L4, L5)	Plantarflexes ankle and inverts foot
Transverse muscle of tongue	Median fibrous septum	Fibrous tissue at margins of tongue	Hypoglossal nerve (CN XII)	Narrows and elongates tongue; acts simultaneously to protrude tongue
Transversospinalis	Transverse processes: Semispinalis arises from transverse processes of C4–T12 vertebrae Multifidus arises from sacrum and ilium, transverse processes of T1–T3, and articular processes of C4–C7 Rotatores arise from transverse processes of vertebrae; are most highly developed in thoracic region	Spinous processes: Semispinalis—thoracic, cervicis, and capitis: fibers run superomedially to occipital bone and spinous processes in thoracic and cervical regions, spanning 4–6 segments Multifidus: fibers pass superomedially to spinous processes of vertebrae above, spanning 2–4 segments Rotatores: pass superomedially to attach to junction of lamina and transverse process, or spinous process, of vertebra above their origin, spanning 1–2 segments	Posterior rami of spinal nerves	Extend head and thoracic and cervical regions of vertebral column and rotate them contralaterally; stabilize vertebrae during local movements of vertebral column; stabilize vertebrae and assist with local extension and rotary movements of vertebral column; may function as organs of proprioception
Transversus abdominis	Internal surfaces of 7th–12th costal cartilages, thoracolumbar fascia, iliac crest, and lateral third of inguinal ligament	Linea alba with aponeurosis of internal oblique, pubic crest, and pecten pubis through conjoint tendon	Intercostal nerves 7–12, iliohypogastric nerve, ilioinguinal nerve	Compresses and supports abdominal viscera
Transversus thoracis	Posterior surface of lower sternum	Internal surface of costal cartilages 2–6	Intercostal nerves	Depress ribs

## MUSCLES OF THE HUMAN BODY

APP 43

Muscle(s)	Origin	Insertion	Innervation	Main Action(s)
Trapezius	Medial third of superior nuchal line; external occipital protuberance, nuchal ligament, and spinous processes of C7–T12 vertebrae	Lateral third of clavicle, acromion, and spine of scapula	Spinal root of accessory nerve (CN XI) (motor) and cervical nerves (C3, C4) (pain and proprioception)	Elevates, retracts, and rotates scapula; superior fibers elevate, middle fibers retract, and inferior fibers depress scapula; superior and inferior fibers act together in superior rotation of scapula
Triceps brachii	Long head: infraglenoid tubercle of scapula Lateral head: posterior surface of humerus, superior to radial groove Medial head: posterior surface of humerus, inferior to radial groove	Proximal end of olecranon of ulna and fascia of forearm	Radial nerve (C6–C8)	Chief extensor of forearm at elbow; long head steadies head of abducted humerus
Uvula muscle	Posterior nasal spine and palatine aponeurosis	Mucosa of uvula	Cranial part of CN XI through pharyngeal branch of vagus nerve (CN X) via pharyngeal plexus	Shortens uvula and pulls it superiorly
Vastus intermedius	Anterior and lateral surfaces of body of femur	Base of patella and by patellar ligament to tibial tuberosity	Femoral nerve (L2–L4)	Extend leg at knee joint
Vastus lateralis	Greater trochanter and lateral lip of linea aspera of femur	Base of patella and by patellar ligament to tibial tuberosity	Femoral nerve (L2–L4)	Extend leg at knee joint
Vastus medialis	Intertrochanteric line and medial lip of linea aspera of femur	Base of patella and by patellar ligament to tibial tuberosity	Femoral nerve (L2–L4)	Extend leg at knee joint
Vertical muscle of tongue	Superior surface of borders of tongue	Inferior surface of borders of tongue	Hypoglossal nerve (CN XII)	Flattens and broadens tongue; acts simultaneously to protrude tongue
Vocalis	Vocal process of arytenoid cartilage	Vocal ligaments	Recurrent laryngeal nerve (branch of vagus [CN X])	Relaxes posterior vocal ligament while maintaining (or increasing) tension of anterior part
Zygomaticus major and zygomaticus minor	Zygomatic bone anterior/posterior to temporozygomatic suture	Muscles at angle of mouth and orbicularis oris of upper lip	Facial nerve (CN VII)	Elevate and evert upper lip