



MUSCLE ORIGIN, INSERTION, AND ACTION LIST CHARTS

Muscles of Facial Expression (that do not work by crossing a joint)

| | ACTION | ORIGIN | INSERTION |
|-------------------|--------------------------------------|------------------------------------|------------------------------------|
| Orbicularis oculi | Closes eye (squint), lowers eyebrows | Frontal bone and maxilla | Eyelid |
| Orbicularis oris | Closes lips (purses, protrudes) | Maxilla and mandible | Skin and muscle around mouth |
| Zygomaticus major | Raises corners of mouth (smile) | Zygomatic bone | Skin and muscle at corner of mouth |
| Buccinator | Compress cheeks (whistling, sucking) | Mandible and maxilla molar regions | Orbicularis oris |
| Frontalis | Raise eyebrows | Epicranial aponeurosis | Skin of eyebrows |

Muscles that act on the Jaw (for mastication and facial expression)

| | ACTION | ORIGIN | INSERTION |
|------------|--|-----------------------------------|------------------------------|
| Masseter | Elevates mandible (as in closing mouth while chewing) | Zygomatic arch and bone | Mandible ramus and angle |
| Temporalis | Elevates mandible | Temporal, frontal, parietal bones | Coronoid process of mandible |
| Platysma | Pulls lower lip down (as in frowning) Depresses mandible (opening mouth as when chewing or surprised) | Pectoralis muscle | Mandible, skin of lower face |

Muscles that act on Neck (to move head)

| | ACTION | ORIGIN | INSERTION |
|---------------------|--|---------------------|----------------------------------|
| Sternocleidomastoid | Both sides: flexes neck (as in looking down) One side: cocks head | Manubrium, clavicle | Mastoid process of temporal bone |
| Splenius capitis | Both sides: extends neck (as in looking up) One side: cocks head | C7 to T3 (variable) | Nuchal line and mastoid process |

Muscles that act on Shoulder (to move the arm)

| | ACTION | ORIGIN | INSERTION |
|---------------------|---|---|---|
| Deltoid (anterior) | Flexion and medial rotation of humerus at shoulder | Clavicle | Deltoid tuberosity of humerus |
| Deltoid (middle) | Abducts humerus at shoulder (as in upward flap) | Acromion | Deltoid tuberosity of humerus |
| Deltoid (posterior) | Extension and lateral rotation of humerus at shoulder | Scapular spine | Deltoid tuberosity of humerus |
| Pectoralis major | Flexion, adduction, medial rotation of humerus at shoulder (as in overhead fist raise, or bench press motion) | Sternum to rib 7 Medial half of clavicle | Intertubercular groove of humerus |
| Latissimus dorsi | Extension, adduction, medially rotation humerus at shoulder (gym lat pull-downs) | T7 to L5, ribs 10 to 12, iliac crest | Intertubercular groove of humerus (muscle travels <u>under</u> axillary region) |

Rotator Cuff Muscles (ALL these small muscles help to keep head of humerus snug in glenoid fossa)

| | ACTION | ORIGIN | INSERTION |
|---------------|---|-------------------------------|--|
| Subscapularis | Medially rotates humerus at shoulder. Stabilizes shoulder. | Subscapular fossa of scapula | Lesser tubercle of anterior humerus |
| Supraspinatus | Abducts arm at shoulder. Stabilizes shoulder . | Supraspinous fossa of scapula | Greater tubercle of top of humerus |
| Infraspinatus | Laterally rotates humerus at shoulder. Stabilizes shoulder. | Infraspinous fossa of scapula | Middle part of greater tubercle of posterior humerus |
| Teres minor | Laterally rotates humerus at shoulder. Stabilizes shoulder. | Lateral border of scapula | Inferior part of greater tubercle of posterior humerus |

Muscles that act on Scapula (to move shoulder)

| | ACTION | ORIGIN | INSERTION |
|--------------------|---|-----------------------|---|
| Levator scapulae | Elevates and retracts scapula (as in bringing shoulder up and in toward ear) | C1 to C4 | Medial border of scapula, superior to spine |
| Rhomboideus major | Retracts scapula (as in pulling the shoulders back) | T2 to T5 | Medial border of scapula |
| Serratus anterior | Protracts scapula (which pushes the arm forward in front of the scapula, as in punching or hugging) | Ribs 1 to 9 | Anterior surface of vertebral border of scapula |
| Trapezius (upper) | Elevates scapula (as in shrugging) | Occipital bone, C1-C7 | Lateral 1/3 clavicle and acromion process |
| Trapezius (middle) | Retracts scapula (as in pulling shoulders back) | T1 to T5 | Spine of scapula |
| Trapezius (lower) | Retracts and depresses scapula (as in pulling shoulders back and down) | T6 to T12 | Medial 1/3 of scapula spine |

Muscles that act on the Elbow (to move the forearm)

| | ACTION | ORIGIN | INSERTION |
|-----------------|---|--|----------------------------|
| Brachialis | Flexes elbow (as in bringing a spoon to your mouth) | Anterior distal shaft of humerus | Coronoid process of ulna |
| Pronator teres | Pronates forearm at elbow (as in turning a doorknob laterally) | Medial epicondyle of humerus, coronoid process of ulna | Lateral midshaft of radius |
| Biceps brachii | Flexes elbow, supinates forearm (as in scooping up water in your hand to drink) | Long head: supraglenoid tubercle of scapula Short head: coracoid process of scapula | Radial tuberosity |
| Triceps brachii | Extends forearm at elbow (as in lowering a spoon back to the table) | Long head: infraglenoid tubercle of scapula Lateral head: posterior proximal shaft of humerus Medial head: posterior distal shaft of humerus | Olecranon of ulna |

Muscles that act on Wrist (to move the hand and fingers)

| | ACTION | ORIGIN | INSERTION |
|--------------------------------|--|--|---------------------------------------|
| Extensor carpi radialis brevis | Extends wrist, radially deviates wrist (aBduction) | Lateral epicondyle of humerus | Metacarpal III (base) |
| Flexor carpi radialis | Flexes wrist, radially deviates wrist (aBduction) | Medial epicondyle of humerus | Metacarpals II and III (base) |
| Extensor carpi ulnaris | Extends wrist, ulnar deviates wrist (aDduction) | Lateral epicondyle of humerus, posterior shaft of ulna | Metacarpal V (base) |
| Flexor carpi ulnaris | Flexes wrist, ulnar deviates wrist (aDduction) | Medial epicondyle of humerus | Pisiform, hamate, metacarpal V (base) |
| Extensor digitorum | Extends digits of hand, and wrist | Lateral epicondyle of humerus | Dorsal side of digits 2 to 5 |
| Flexor digitorum | Flexes digits of the hand, and wrist | Medial epicondyle of humerus | Anterior side of digits 2 to 5 |

Muscles that act on Vertebral Column

| | ACTION | ORIGIN | INSERTION |
|-------------------|---|---------------------------|--|
| Spinalis thoracis | One side: lateral flexion of vertebral column Both sides: extension and hyperextension of vertebral column | T11 to L2 | T3 to T7 |
| Rectus abdominis | Compresses abdomen, flexes vertebral column | Pubis crest and symphysis | Xiphoid process, costal cartilage 5 to 7 |

Muscles of Breathing (muscles that work on the vertebral column)

| | ACTION | ORIGIN | INSERTION |
|-----------------------|--|---|---|
| External intercostals | Pulls ribs up toward origin, elevates ribcage to cause inspiration | Inferior border of rib above | Superior borders of rib below |
| Diaphragm | Diaphragm drops down to enlarge thoracic cavity, causing inspiration | Xiphoid process, ribs 10 to 12, costal cartilage 5 to 9, lumbar vertebrae 1-5 | Central tendon (in center of the disc shaped diaphragm) |

Muscles that act at Hip (to move leg)

| | ACTION | ORIGIN | INSERTION |
|----------------------|--|--|--|
| Pectineus | Flexes hip, adducts leg | Pubis and pubic ramus | From lesser trochanter to superior part of linea aspera of femur |
| Adductor longus | Flexes hip, adducts leg | Superior ramus of pubis | Linea aspera (shorter insertion than adductor magnus) |
| Adductor magnus | Extends hip, adducts leg | Inferior ischial ramus | Linea aspera of femur |
| Gluteus maximus | Extends hip (as in pushing down while climbing a stair), rotates leg laterally | Ilium, sacrum, coccyx | Gluteal tuberosity of femur |
| Gracilis | Adducts leg at hip, flexes knee | Pubis | Medial aspect of proximal tibia |
| Tensor fasciae latae | (tenses or stabilizes hip and knee joints), abducts leg at hip | Iliac crest near anterior superior spine | Lateral condyle of tibia |
| Psoas major | Flexes hip (as in lifting leg to place on stair) | Vertebral bodies T12 to L5 | Lesser trochanter of femur |
| Sartorius | Flexes hip and flexes knee, laterally rotates thigh (into cross legged position) | Anterior superior iliac spine | Medial aspect of tibial tuberosity |

Muscles that Flex Knee (hamstrings work as a group, as when pulling back in preparation to kick a ball)

| | ACTION | ORIGIN | INSERTION |
|-----------------|---|---|--|
| Biceps femoris | Extends hip, flexes knee, laterally rotates leg | Long head: Ischial tuberosity Short head: Posterior mid-shaft of femur | Head of fibula |
| Semimembranosus | Extends hip, flexes knee | Ischial tuberosity | Posterior medial condyle of tibia |
| Semitendinosus | Extends hip, flexes knee | Ischial tuberosity | Medial surface of proximal tibia (slightly anterior to insertion of semimembranosus) |

Muscles that Extend Knee (quadriceps work as a group, as when kicking a ball)

| | ACTION | ORIGIN | INSERTION |
|--------------------|---|---|-------------------------------|
| Vastus lateralis | Extends knee | Greater trochanter, lateral lip of linea aspera (wraps around to anterior surface) | Tibial tuberosity and patella |
| Vastus medialis | Extends knee | Intertrochanteric line, medial lip of linea aspera (wraps around to anterior surface) | Tibial tuberosity and patella |
| Vastus intermedius | Extends knee | Anterior shaft of femur | Tibial tuberosity and patella |
| Rectus femoris | Extends knee, flexes hip (kicking a ball) | Anterior inferior iliac spine of coxal bone | Tibial tuberosity and patella |

Muscles that act on Ankle (to move foot)

| | ACTION | ORIGIN | INSERTION |
|-------------------|---------------------------------------|--|--------------------------------------|
| Soleus | Plantar flexion at ankle | Proximal third of tibia and fibula | Calcaneus |
| Gastrocnemius | Plantar flexion at ankle, flexes knee | Medial and lateral epicondyles of femur | Calcaneus |
| Tibialis anterior | Dorsiflexion and inversion at ankle | Lateral condyle and antero-lateral tibia | Medial cuneiform, under metatarsal 1 |