INTRODUCTION

Muscles can be grouped into anatomical regions such as muscles of the head, arm or torso. Muscles can also be functionally related, for example, muscles that act on the thigh or muscles that flex the hand.

Origin, Insertion, Action

The origin of the muscle is the stable part of the muscle. The majority of muscles have origins that are superior, proximal, or medial to the insertion. There are only a few exceptions to this rule. The insertion of the muscle is the part of the muscle that has the greatest motion when the muscle contracts. In some cases a muscle can move either the origin or the insertion and you should learn the origins and insertions as presented. The action of a muscle is what the muscle does. Some muscles are flexors and decrease joint angles. Some are extensors, adductors, abductors, rotators, etc. The action of the muscle is every movement the muscle does.

When you study muscles, it helps to take two or three at a time and learn just the origins of the muscles. When you know those, then study the insertions, and finally, the actions. After you know the muscles well, then take another group of muscles and add them to the list. If you try to learn twenty muscles at a time, the task will be frustrating, so it is best to take them in small groups.

Muscle Names

The muscles are named by different criteria and understanding how they are named can help you to remember the muscle. Muscles can be named for their shape. The trapezius is a trapezoid-like muscle. The rhomboideus muscles are shaped like a rhombus. Muscles can be named by the number of heads they have. The triceps brachii has three heads. Muscles can be named by location. The rectus abdominis literally means “the straight muscle of the abdomen.” The tibialis anterior is the front muscle on the tibia. Muscles can be named according to size. The teres major is the large muscle and the teres minor is the small muscle. Teres means “round.” Some muscles are superficial while others are deep. The flexor digitorum superficialis is superficial to the flexor digitorum profundus. Muscles can also be named for their action. There are the adductors, the flexors and extensor muscles, etc.

Muscles that cross joints of the body move those joints. The main muscle that causes the joint to move is called the prime mover or agonist. A muscle that helps the prime mover is called a synergist. A muscle that opposes the prime mover is called an antagonist. If both the prime mover and the antagonist contract, then the joint is fixed.

Muscle Groups

There are groups of muscles that act together. The rotator cuff (musculotendinous cuff) muscles stabilize the shoulder joint. These are the supraspinatus, the infraspinatus the teres minor and the subscapularis. The abdominal muscles are the rectus abdminis, the external oblique, the internal oblique, and the transversus abdminis. The quadriceps femoris group are the muscles of the anterior thigh. These are the rectus femoris, the vastus lateralis, the vastus medialis, and the vastus intermedius. The hamstrings are muscles on the posterior thigh and they consist of the biceps femoris, the semitendinosus, and the semimembranosus. There are many more functional groups of muscles but these are a few of the major ones.

The muscles of the body are numerous and flash cards are a great tool to learn muscles. Cut out the cards along the lines. As we said before, it is best to take a few cards at a time and learn them well. You should color each muscle on the front side of the card and put a small ‘O’ where the origin of the muscle is and a small ‘I’ where the insertion of the muscle is. Each muscle is illustrated isolated from other muscles so that the origin and the insertion are plainly visible. The name of the muscle is on the back of the illustration. The origin (O), insertion (I), and action (A) are listed for each muscle on the back of the card.
MUSCLES, ANTERIOR VIEW

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Origin</th>
<th>Insertion</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OCCIPITALIS</strong></td>
<td>Occipital bone and temporal bone</td>
<td>Galea aponeurotica</td>
<td>Pulls scalp posteriorly</td>
</tr>
<tr>
<td><strong>FRONTALIS</strong></td>
<td>Galea aponeurotica</td>
<td>Skin near eyebrows</td>
<td>Raises eyebrows, pulls scalp anteriorly</td>
</tr>
<tr>
<td><strong>MASSETER</strong></td>
<td>Zygomatic arch</td>
<td>Ramus of mandible</td>
<td>Closes mandible</td>
</tr>
<tr>
<td><strong>TEMPORALIS</strong></td>
<td>Temporal fossa</td>
<td>Coronoid process and ramus of the mandible</td>
<td>Closes mandible</td>
</tr>
<tr>
<td><strong>ORBICULARIS OLEI</strong></td>
<td>Frontal bone and maxilla on medial orbit</td>
<td>Eyelid</td>
<td>Closes eye</td>
</tr>
<tr>
<td><strong>MEDIAL AND LATERAL PTERYGOIDS</strong></td>
<td>Pterygoid processes of sphenoid bone</td>
<td>Ramus and condylar process of mandible on medial side</td>
<td>Lateral movement of mandible</td>
</tr>
</tbody>
</table>
MENTALIS
O: Anterior, medial mandible
I: Skin of chin
A: Elevates lower lip

ORBICULARIS ORIS
O: Muscles encircling mouth
I: Skin of lips
A: Closes mouth

ZYGOMATICUS
O: Zygomatic bone
I: Angle of mouth
A: Elevates corners of mouth (in a smile or laugh)

BUCCINATOR
O: Mandible and maxilla
I: Orbicularis oris
A: Tightens cheek

DEPRESSOR LABII INFERIORIS
O: Inferior border of mandible
I: Skin of inferior lip, and orbicularis oris muscle
A: Depresses lower lip

SCALENUS
O: Transverse process of C 2–6
I: Ribs 1 and 2
A: Flexes and rotates neck, elevates first and second ribs
**LEVATOR SCAPULAE**

O: Transverse processes of C1–4
I: Superior angle of scapula
A: Elevates scapula, rotates and abducts neck

**STERNOHYOID**

O: Manubrium of sternum
I: Hyoid bone
A: Depresses hyoid bone

**OMOHYOID**

O: Superior border of scapula
I: Hyoid bone
A: Depresses hyoid

**STERNOCLEIDOMASTOID**

O: Sternum and clavicle
I: Mastoid process
A: One: rotates and extends head, both: flexes neck

**STERNOTHYROID**

O: Manubrium of sternum
I: Thyroid cartilage of larynx
A: Depresses thyroid cartilage

**PLATYSMA**

O: Fascia over pectoralis major and deltoid muscles
I: Mandible and skin inferior to lower lip
A: Depresses lower lip
DIGASTRIC
O: Anterior, inferior mandible, mastoid notch of temporal bone
I: Hyoid bone
A: Protracts, retracts, and elevates hyoid, opens mandible

MYLOHYOID
O: Inner margin of mandible
I: Hyoid bone
A: Elevates floor of oral cavity

TRAPEZIUS
O: Occipital protuberance, ligamentum nuchae, C7–T12
I: Clavicle, acromion, and spine of scapula
A: Abducts and extends head, rotates and adducts scapula

SPLENIUS
O: Ligamentum nuchae, C7–T6
I: C2–4, occipital bone, temporal bone
A: Extends and rotates head

LATISSIMUS DORSI
O: T7–T12, L1–L5, sacrum, iliac crest, ribs 10–12
I: Intertubercular groove of humerus
A: Adducts, extends, and medially rotates arm, pulls shoulder inferiorly

SEMISPINALIS
O: C4–T12
I: Occipital bone, T1–4
A: Extends head, rotates vertebral column
DELTOID
O: Clavicle, acromion, and spine of scapula
I: Deltoid tuberosity
A: Abducts, flexes, extends medially, and laterally rotates arm

SUPRASPINATUS
O: Supraspinous fossa
I: Greater tubercle of humerus
A: Abducts arm, stabilizes shoulder

INFRASPINATUS
O: Infraspinous fossa
I: Greater tubercle of humerus
A: Extends, laterally rotates arm, stabilizes shoulder

TERES MINOR
O: Axillary border of scapula
I: Greater tubercle of humerus
A: Extends, laterally rotates, adducts arm, stabilizes shoulder

SUBSCAPULARIS
O: Subscapular fossa
I: Lesser tubercle of humerus
A: Extends, medially rotates arm, stabilizes shoulder

RHOMBOIDEUS MAJOR
O: T1–T4
I: Inferior, medial border of scapula
A: Adducts scapula
TERES MAJOR
O: Axillary border of scapula
I: Crest of lesser tubercle of humerus
A: Extends, adducts, medially rotates arm

ERECTOR SPINAES: (SPINALIS, LONGISSIMUS, IlioCOSTALIS) AND MULTIFIDUS
O: Vertebral column, ilium, sacrum, ribs
I: Ribs, vertebral column, occipital bone, temporal bone
A: Rotates and extends vertebral column and head

QUADRATUS LUMBORUM
O: Iliac crest, lower lumbar vertebrae
I: T12, L1–L4, rib 12
A: Abducts vertebral column, depresses rib 12

Rhomboideus Minor
O: Ligamentum nuchae, C6–C7
I: Superior, medial border of scapula
A: Adducts scapula

PECTORALIS MAJOR
O: Clavicle, sternum, and ribs 1–7
I: Crest of greater tubercle of humerus
A: Adducts, flexes, and rotates arm medially

SERRATUS ANTERIOR
O: Ribs 1–8 or 9
I: Vertebral border of scapula
A: Abducts scapula

SERRATUS POSTERIOR
O: Ribs 2–9
I: Spine of scapula
A: Adducts scapula
PECTORALIS MINOR
O: Ribs 3–5
I: Coracoid process of scapula
A: Depresses scapula, elevates ribs 3–5

EXTERNAL INTERCOSTALIS
O: Inferior margin of ribs 1–11
I: Superior margin of ribs 2–12
A: Elevates ribs (increases thoracic volume)

INTERNAL INTERCOSTALIS
O: Inferior margin of ribs 1–11
I: Superior margin of ribs 2–12
A: Depresses ribs (decreases thoracic volume)

EXTERNAL INTERCOSTALIS
O: Inferior margin of ribs 1–11
I: Superior margin of ribs 2–12
A: Elevates ribs (increases thoracic volume)

RECTUS ABDOMINIS
O: Symphysis pubis and pubic crest
I: Cartilages of ribs 5–7 and xiphoid process
A: Flexes lumbar vertebrae, compresses abdomen

DIAPHRAGM
O: Xiphoid process, ribs 10–12, lumbar vertebrae
I: Central tendon
A: Inspiration

INTERNAL OBLIQUE
O: Inguinal ligament, iliac crest
I: Linea alba, inferior 4 ribs
A: Compresses abdomen, laterally rotates trunk
EXTERNAL OBLIQUE
O: Ribs 5–12
I: Iliac crest, inguinal ligament, linea alba
A: Compresses abdomen, laterally rotates trunk

TRANSVERSUS ABDOMINIS
O: Iliac crest, inguinal ligament, ribs 7–12
I: Linea alba, pubis
A: Compresses abdomen, laterally rotates trunk

BICEPS BRACHII
O: Supraglenoid tubercle, coracoid process
I: Radial tuberosity
A: Flexes arm, flexes and laterally rotates forearm (supinates hand)

TRICEPS BRACHII
O: Infraglenoid tuberosity of scapula, posterior surface of humerus
I: Olecranon process
A: Adducts arm, extends arm and forearm

CORACOBRACHIALIS
O: Coracoid process
I: Medial shaft of humerus
A: Adducts and flexes arm

BRACHIORADIALIS
O: Lateral supracondylar ridge of humerus
I: Styloid process of radius
A: Flexes forearm
BRACHIALIS
O: Anterior, distal humerus
I: Coronoid process of ulna
A: Flexes forearm

PRONATOR TERES
O: Medial epicondyle of humerus, coronoid process of ulna
I: Lateral radius
A: Flexes and medially rotates forearm (pronates hand)

SUPINATOR
O: Lateral epicondyle of humerus, proximal ulna
I: Proximal shaft of radius
A: Supinates hand

PALMARIS LONGUS
O: Medial epicondyle of humerus
I: Palmar aponeurosis
A: Flexes hand

PRONATOR QUADRATUS
O: Anterior, distal ulna
I: Anterior, distal radius
A: Medially rotates forearm (pronates hand)

FLEXOR CARPI ULNARIS
O: Medial epicondyle of humerus olecranon and proximal ulna
I: Pisiform, hamate, metacarpal 5
A: Flexes and adducts hand
FLEXOR CARPI RADIALIS
O: Medial epicondyle of humerus
I: Metacarpals 2 and 3
A: Flexes and abducts hand

FLEXOR DIGITORUM SUPERFICIALIS
O: Medial epicondyle of humerus, coronoid process of ulna, proximal shaft of radius
I: Middle phalanges of digits 2–5
A: Flexes proximal and middle phalanges of digits 2–5, flexes hand

FLEXOR DIGITORUM PROFUNDUS
O: Proximal ulna, interosseus membrane
I: Anterior distal phalanges of digits 2–5
A: Flexes phalanges 2–5, flexes hand

FLEXOR POLlicis LONGUS
O: Anterior aspect of radius and interosseus membrane
I: Distal phalanx of thumb (pollex)
A: Flexes thumb

EXTENSOR CARPI ULNARIS
O: Lateral epicondyle of humerus, posterior ulna
I: Metacarpal 5
A: Extends and adducts hand

EXTENSOR CARPI RADIALIS LONGUS
O: Lateral supracondylar ridge of humerus
I: Metacarpal 2
A: Extends and abducts hand
**ABDUCTOR POLLICIS LONGUS**

O: Posterior radial and ulnar surface, interosseus membrane
I: Metacarpal 1
A: Abducts and extends thumb

**EXTENSOR POLLICIS BREVIS**

O: Posterior radius, interosseus membrane
I: Proximal phalanx of thumb (pollex)
A: Extends thumb

**EXTENSOR CARPI RADIALIS BREVIS**

O: Lateral epicondyle of humerus
I: Metacarpal 3
A: Extends and abducts hand

**EXtenSor Digitorum**

O: Lateral epicondyle of humerus
I: Middle and distal phalanges of digits 2–5
A: Extends all phalanges of digits 2–5, extends hand

**PSOAS MAJOR**

O: T12, L1–5
I: Lesser trochanter of femur
A: Flexes thigh and lumbar vertebrae

**EXTENSOR POLLICIS LONGUS**

O: Posterior ulna, interosseus membrane
I: Distal phalanx of thumb (pollex)
A: Extends thumb
ILIACUS
O: Iliac fossa, sacrum
I: Lesser trochanter of femur
A: Flex thigh

SARTORIUS
O: Anterior superior iliac spine
I: Medial side of tibial tuberosity
A: Flexes and laterally rotates thigh, flexes leg

TENSOR FASCIAE LATAE
O: Anterior superior iliac spine
I: Lateral condyle of tibia by the iliotibial band
A: Flexes, medially rotates, and abducts thigh

PECTINEUS
O: Pubis
I: Proximal, posterior femur
A: Adducts and laterally rotates thigh

GRACILIS
O: Pubis
I: Proximal portion of medial tibia
A: Adducts thigh, flexes leg

ADDUCTOR LONGUS
O: Pubis
I: Middle linea aspera of femur
A: Adducts and laterally rotates thigh
ADDUCTOR BREVIS
O: Pubis
I: Proximal linea aspera of femur
A: Adducts and laterally rotates thigh

ADDUCTOR MAGNUS
O: Ischium and pubis
I: Linea aspera and adductor tubercle of femur
A: Adducts, flexes, extends, and laterally rotates thigh

ADDUCTOR MAGNUS
VASTUS LATERALIS
O: Greater trochanter and linea aspera of femur
I: Tibial tuberosity
A: Extends leg

VASTUS INTERMEDIUS
O: Anterior and lateral part of femur
I: Tibial tuberosity
A: Extends leg

RECTUS FEMORIS
O: Anterior inferior iliac spine
I: Tibial tuberosity
A: Flexes thigh, extends leg

GLUTEUS MAXIMUS
O: Lateral surface of ilium, sacrum, coccyx
I: Lateral condyle of tibia by lateral fascia, gluteal tuberosity of femur
A: Extends, abducts, and laterally rotates thigh
VASTUS MEDIALIS
O: Linea aspera of femur
I: Tibial tuberosity
A: Extends leg

GLUTEUS MEDIIUS
O: Outer ilium
I: Greater trochanter of femur
A: Medially rotates and abducts thigh

GLUTEUS MINIMUS
O: Outer ilium
I: Greater trochanter of femur
A: Medially rotates and abducts thigh

BICEPS FEMORIS
O: Ischial tuberosity, distal linea aspera of femur
I: Head of fibula, lateral tibia
A: Extends thigh, flexes and laterally rotates leg

SEMITENDINOSUS
O: Ischial tuberosity
I: Medial tibia near tibial tuberosity
A: Extends thigh, flexes and medially rotates leg

TIBIALIS ANTERIOR
O: Lateral tibia
I: First metatarsal and medial cuneiform
A: Dorsiflexes and inverts foot
SEMIMEMBRANOSUS
O: Ischial tuberosity
I: Medial tibial condyle
A: Extends thigh, flexes and medially rotates leg

EXTENSOR DIGITORUM LONGUS
O: Lateral tibial condyle, shaft of fibula
I: Middle and distal phalanges of digits 2-5
A: Extends digits 2-5, dorsiflexes and everts foot

FIBULARIS BREVIS
O: Fibula
I: Metatarsal 5
A: Plantar flexes and everts foot

FIBULARIS LONGUS
O: Proximal fibula, lateral condyle of tibia
I: First metatarsal, medial cuneiform
A: Plantar flexes and everts foot

GASTROCNEMIUS
O: Lateral and medial condyles of femur
I: Calcaneus
A: Flexes leg, plantar flexes foot

EXTENSOR HALLUCIS LONGUS
O: Medial shaft of fibula, interosseous membrane
I: Distal phalanx of hallux (first digit)
A: Extends hallux, dorsiflexes foot and inverts foot
FIBULARIS TERTIUS
O: Distal fibula, interosseous membrane
I: Superior aspect of metatarsal 5
A: Dorsiflexes and everts foot

POPLITEUS
O: Lateral condyle of femur
I: Proximal tibia
A: Flexes and medially rotates leg

SOLEUS
O: Posterior tibia and fibula
I: Calcaneus
A: Plantar flexes foot

FLEXOR DIGITORUM LONGUS
O: Posterior tibia
I: Distal phalanges of digits 2–5
A: Flexes toes, plantar flexes and inverts foot

TIBIALIS POSTERIOR
O: Posterior tibia and fibula
I: Metatarsals 2–4, navicular, cuneiforms and cuboid
A: Plantar flexes and inverts foot

FLEXOR HALLUCIS LONGUS
O: Middle fibula
I: Distal phalanx of hallux
A: Flexes hallux, plantar flexes and inverts foot