

Superficial muscles of the back. Except for the two serratus posterior muscles, the superficial muscles of the back are involved in movement of the scapula.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Trapezius	Elevates, depresses, retracts, rotates and fixes scapula; extends neck	Spinal accessory n., and twigs from third and fourth cervical nn.	Superficial branch of transverse cervical a.
Latissimus dorsi	Adducts, medially rotates and extends arm	Thoracodorsal n.	Thoracodorsal a.
Rhomboideus minor	Retracts, slightly elevates, rotates and fixes scapula	Dorsal scapular n.	Descending scapular branch of transverse cervical a.
Rhomboideus major	Retracts, rotates and fixes scapula	Dorsal scapular n.	Descending scapular branch of transverse cervical a.
Levator scapulae	Elevates and retracts scapula; abducts neck	Third and fourth cervical nn., and dorsal scapular n.	Descending scapular branch of transverse cervical a.
Serratus posterior superior	Elevates ribs	Intercostal nn.	
Serratus posterior inferior	Depresses ribs	Intercostal nn.	

The triangle of auscultation is bounded by the trapezius muscle, the latissimus dorsi and the vertebral border of the scapula. This area is opened with the arms folded over the chest and the trunk is bent forward. It is used for clearer diagnostic listening to the structures within the thoracic cavity.

The lumbar triangle is formed by the lower lateral border of latissimus dorsi, the posterior edge of the external oblique muscle and the ilium. This is a weak point of the posterior abdominal wall.

Pectoral region. The muscles of the pectoral region are involved in movement of the arm, clavicle and scapula.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Pectoralis major	Adducts, flexes, extends and medially rotates arm	Medial and lateral pectoral nn.	Pectoral branches of the thoracoacromial a.
Pectoralis minor	Depresses scapula or elevates ribs	Medial pectoral n.	Pectoral branches of the thoracoacromial a.
Serratus anterior	Rotates and protracts scapula; elevates ribs	Long thoracic n.	Lateral thoracic a.
Subclavius	Fixes clavicle; elevates first rib	N. to subclavius	Clavicular branch of the thoracoacromial a.

The deltopectoral triangle is a triangular depression bounded by the anterior border of the deltoid, the upper border of pectoralis major, and the lower border of the middle portion of the clavicle. It contains fat, blood vessels and the deltopectoral lymph nodes which play an important role in the metastases of breast cancer.

When the thoracodorsal n. is damaged causing a functional loss of the serratus anterior m. the vertebral border of the scapula protrudes dorsally, a phenomenon called "winging of the scapula." The patient is unable to completely abduct the arm.

Axilla

Although it contains no muscles, the axilla is an important passage of vessels and nerves to the upper extremity, and lymph from the upper extremity and chest. Lymph nodes in this area are often involved in metastases of breast cancer and so are removed as part of a mastectomy.

Abnormal narrowing of the cervicoaxillary canal, at the apex of the axilla, can impinge on the vascularization and innervation of the upper extremity, resulting one of many neuromuscular compression syndromes.

**Deltoid region.** The deltoid muscle (not to be confused with the deltoid lig.) is the only muscle of this region.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Deltoid	Abducts, flexes, extends and rotates arm	Axillary n.	Posterior humeral circumflex a., deltoid branch of thoracoacromial a.

**Scapular region.** All of the muscles of this region are part of the rotator cuff except for the teres major m. which assists the latissimus dorsi in its movement of the arm.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Infraspinatus	Extends and laterally rotates arm	Suprascapular n.	Suprascapular a.
Teres minor	Adducts and laterally rotates arm	Inferior division of axillary n.	Circumflex scapular a.
Teres major	Adducts, extends and medially rotates arm	Lower subscapular n.	Circumflex scapular a.
Supraspinatus	Abducts arm	Suprascapular n.	Suprascapular a.

The supraspinatus tendon is frequently torn. Movement of the shoulder then becomes painful and abduction is difficult to accomplish without employing compensating movements.

The quadrangular space is formed by the lower border of teres minor, the upper border of teres major, the lateral margin of the long head of the triceps brachii, and the medial aspect of the surgical neck of the humerus. The axillary n. and posterior humeral circumflex a. pass through this space.

The triangular space is bounded by teres minor, teres major, and the medial border of the long head of triceps brachii. The scapular circumflex a. can be seen through here.

**Subscapular region.** The subscapularis muscle is the only muscle of this region. It reinforces the glenohumeral joint anteriorly.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Subscapularis	Extends and medially rotates arm	Upper and lower subscapular n.	Subscapular a.

**Anterior arm.** These muscles are principally involved in flexion of the forearm and, with the exception of the body of the brachioradialis m., all are located in the anterior compartment of the arm.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Coracobrachialis	Adducts and flexes arm	Musculotaneous n.	Brachial a.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Biceps brachii, long head	Flexes and supinates forearm; flexes and abducts arm	Musculotaneous n.	Brachial a.
Biceps brachii, short head	Flexes and supinates forearm	Musculotaneous n.	Brachial a.
Brachialis	Flexes forearm	Musculotaneous n.	Brachial a.
Brachioradialis	Flexes forearm	Radial n.	Radial recurrent a.

Posterior arm. This region is made up of the three heads of the triceps brachii which have a common insertion on the olecranon process of the ulna, resulting in extension of the arm. The anconeus, located in the forearm, also extends the arm.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Triceps brachii, long head	Extends forearm; extends and abducts arm	Radial n.	Profunda brachii a.
Triceps brachii, lateral head	Extends forearm	Radial n.	Profunda brachii a.
Triceps brachii, medial head	Extends forearm	Radial n.	Profunda brachii a.

The radial nerve, because of the path it takes down the posterior surface of the humerus, is subject to injury when there is a fracture of the humerus or when prolonged pressure is placed on the back of the arm ("Saturday night palsy"). Both of these result in a condition known as "wrist drop" where there is an inability to extend the wrist.

Anterior forearm. This region is divided into three layers.

Superficial layer, all arise from the medial epicondyle, common flexor tendon

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Pronator teres	Pronates forearm	Median n.	Ulnar a.
Flexor carpi radialis	Flexes and abducts wrist	Median n.	Radial a.
Palmaris longus	Tenses palmar fascia; flexes wrist	Median n.	Ulnar a.
Flexor carpi ulnaris	Flexes and adducts wrist	Ulnar n.	Ulnar a.

Middle layer

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Flexor digitorum superficialis	Flexes fingers and wrist (middle phalanx)	Median n.	Ulnar and radial aa.

Deep layer

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Flexor digitorum profundus	Flexes fingers and wrist (distal phalanx)	Ulnar n. supplies medial half, median n. supplies lateral half	Anterior interosseous a.
Flexor pollicis longus	Flexes thumb and wrist (distal phalanx)	Median n.	Anterior interosseous a.
Pronator quadratus	Pronates forearm	Median n.	Anterior interosseous a.

The arterial pulse is most often taken proximal to the wrist where the radial artery runs alongside the flexor carpi ulnaris tendon.

The ulnar n. passes behind the medial epicondyle of the humerus and is often struck (hitting your “funny bone”) producing a tingling sensation in the medial fingers. Severe injury to this nerve produces a condition known as “claw hand” with extended metacarpophalangeal and flexed interphalangeal joints due to the denervation of the lumbricale muscles.

The median nerve is subject to serious damage in the distal forearm and wrist resulting in a loss of sensation in the fingertips and of opposition of the thumb.

Carpal tunnel syndrome is due to swelling within the carpal tunnel, and results in numbness of the fingers supplied by the median nerve and in severe cases paralysis and atrophy of the thenar muscles.

Golfer’s elbow, also known as medial epicondylitis, results from an inflammation of the common flexor tendon due to overuse.

Posterior forearm. The muscles of this region are principally involved in extension of the fingers and wrist. The two exceptions are the supinator, which supinates the forearm, and the anconeus, which extends the arm.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
abductor pollicis longus	abducts and extends thumb; abducts wrist	posterior interosseous n.	posterior interosseous a.
extensor pollicis brevis	extends and abducts thumb; abducts wrist	posterior interosseous n.	posterior interosseous a.
extensor carpi radialis longus	extends and abducts wrist	radial n. or deep radial n.	posterior interosseous a.
extensor carpi radialis brevis	extends and abducts wrist	radial n. or deep radial n.	posterior interosseous a.
extensor pollicis longus	extends thumb	posterior interosseous n.	posterior interosseous a.
extensor digitorum	extends fingers and wrist	deep radial n.	posterior interosseous a.
extensor indicis	extends forefinger and wrist	posterior interosseous n.	posterior interosseous a.
extensor digiti minimi	extends little finger and wrist	deep radial n.	posterior interosseous a.
extensor carpi ulnaris	extends and adducts wrist	deep radial n.	posterior interosseous a.
supinator	supinates forearm	deep radial n.	posterior interosseous a.
anconeus	extends forearm	radial n.	interosseous recurrent a.

Tennis elbow, or lateral epicondylitis, results from inflammation of the common extensor tendon at the lateral epicondyle of the humerus.

Palm of the hand. The hand is divided into thenar (thumb), hypothenar (opposite thumb) and palmar regions.

#### Thenar eminence

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Abductor pollicis brevis	Abducts thumb	Median n.	Radial a.
Flexor pollicis brevis	Flexes thumb	Median n.	Radial a.
Opponens pollicis	Opposes thumb	Median n.	Radial a.
Adductor pollicis	Adducts thumb	Deep branch, ulnar n.	Deep palmar arch

#### Hypothenar eminence

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
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<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Abductor digiti minimi	Abducts and flexes little finger	Deep branch, ulnar n.	Ulnar a.
Flexor digiti minimi brevis	Flexes little finger	Deep branch, ulnar n.	Ulnar a.
Opponens digiti minimi	Opposes little finger	Deep branch, ulnar n.	Ulnar a.

#### Palmar region

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Palmaris brevis	Wrinkles skin on medial palm	Ulnar n.	Ulnar a.
Lumbricales	Flexes proximal phalanx; extends middle and distal phalanges	To fingers 2 and 3, median n.: to fingers 4 and 5, ulnar n.	Superficial and deep palmar arches.
Palmar interossei	Adducts second, fourth and fifth digits	Ulnar n.	Deep palmar arch
Dorsal interossei	Abducts second, third and fourth digits	Ulnar n.	Deep palmar arch

The interfascial spaces of the palm provide a route for infections to spread from the digits into the palm. The opposing fasciae confine the infection preventing its spread to the entire hand.

Gluteal region (lateral thigh). The gluteus maximus is the principal muscle of this region and makes up the fullness of the buttocks.

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
gluteus maximus	extends, abducts and laterally rotates thigh	inferior gluteal n.	superior and inferior gluteal aa.
gluteus medius	abducts and medially rotates thigh	superior gluteal n., superior and inferior branches	superior gluteal a.
gluteus minimus	abducts and medially rotates thigh	superior gluteal n., inferior branch	superior gluteal a.
piriformis	laterally rotates and abducts thigh	n. to piriformis	
superior gemellus	laterally rotates thigh	n. to obturator internus	
obturator internus	laterally rotates and abducts thigh	n. to obturator internus	
inferior gemellus	laterally rotates thigh	n. to quadratus femoris	
quadratus femoris	laterally rotates and adducts thigh	n. to quadratus femoris	
tensor fascia latae	tenses lateral fascia; flexes, abducts and medially rotates thigh	superior gluteal n., inferior branch	superior gluteal a.

There is a triangular space bounded by the sacrotuberous lig., superior gemellus, and sciatic n. From medial to lateral emerge the pudendal n., internal pudendal vessels, n. to obturator internus and n. to quadratus femoris.

The cruciate anastomosis is formed by branches of the inferior gluteal, medial femoral circumflex, lateral femoral circumflex and the first perforating aa. It provides collateral circulation between the internal and external iliac aa.

Since the sciatic n. emerges in the inferomedial region of the buttocks, intramuscular injections should only be made in the superolateral quadrant to avoid damage to the sciatic n.

## Anterior thigh

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Sartorius	Flexes and rotates thigh laterally; flexes and rotates leg medially	Femoral n.	Femoral a.
Rectus femoris	Flexes thigh; extends leg	Femoral n.	
Vastus medialis	Extends leg	Femoral n.	
Vastus intermedius	Extends leg	Femoral n.	
Vastus lateralis	Extends leg	Femoral n.	

The femoral triangle contains the femoral a., v., and n. as well as some fatty tissue and open space. Because of this open space, it represents a weak spot in the abdominal floor and is often the sight of femoral hernias. It is bounded above by the inguinal lig., laterally by the medial border of the sartorius m., and medially by the medial border of the adductor longus m. The roof is formed by the fascia lata and the floor by the anterior surfaces of the adductor longus, pectineus and iliopsoas muscles.

The adductor canal proceeds from the femoral triangle to the adductor hiatus, which is an opening in the adductor magnus where the femoral a. and v. pass to the posterior compartment of the thigh and enter the popliteal space.

## Medial thigh

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Iliopsoas	Flexes and medially rotates thigh	Lumbar plexus	
Pectineus	Adducts and flexes thigh	Femoral n.	Femoral a.
Gracilis	Adducts thigh; flexes leg	Anterior division of obturator n.	
Adductor longus	Adducts, flexes and laterally rotates thigh	Anterior division of obturator n.	Profunda femoris a.
Adductor brevis	Adducts, flexes and laterally rotates thigh	Anterior division of obturator n.	Profunda femoris a.
Adductor magnus	Adducts, extends and laterally rotates thigh	Posterior division of obturator n.	Profunda femoris a.
Obturator externus	Laterally rotates thigh	Obturator n.	

## Posterior thigh

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
semitendinosus	flexes and medially rotates leg; extends thigh	tibial n. (sciatic n.)	perforating aa.
semimembranosus	flexes and medially rotates leg; tenses capsule of knee joint; extends thigh	tibial n. (sciatic n.)	perforating aa.
long head of biceps femoris	flexes and laterally rotates leg; extends thigh	tibial n. (sciatic n.)	perforating aa.
short head of biceps femoris	flexes and laterally rotates leg	common peroneal n. (sciatic n.)	perforating aa.

## Anterior leg (anterior crural region)

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
tibialis anterior	dorsiflexes and inverts foot	deep peroneal n.	anterior tibial a.
extensor digitorum longus	extends four lateral toes; dorsiflexes and everts foot	deep peroneal n.	anterior tibial a.
peroneus tertius	dorsiflexes and everts foot	deep peroneal n.	anterior tibial a.
extensor hallucis longus	extends great toe; dorsiflexes and inverts foot	deep peroneal n.	anterior tibial a.

## Lateral leg (lateral crural region)

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
peroneus longus	everts and plantar flexes foot	superficial peroneal n.	
peroneus brevis	everts and plantar flexes foot	superficial peroneal n.	

Trauma to the head and neck of the fibula can damage the peroneal nerve resulting in “foot drop,” or the inability to dorsiflex the foot.

Posterior leg (posterior crural region). This region is divided into two compartments, superficial and deep.

## Superficial compartment

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
gastrocnemius	plantar flexes foot; flexes leg	tibial n.	popliteal a.
plantaris	plantar flexes foot; flexes leg	tibial n.	popliteal a.
soleus	plantar flexes foot	tibial n.	posterior tibial a.

## Deep compartment

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
popliteus	flexes and medially rotates leg	tibial n.	br. popliteal a.
flexor hallucis longus	flexes great toe; plantarflexes and inverts foot	tibial n.	peroneal a.
flexor digitorum longus	flexes four lateral toes; plantarflexes and inverts foot	tibial n.	posterior tibial a.
tibialis posterior	plantarflexes and inverts foot	tibial n.	peroneal a.

## Dorsum of the foot

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Extensor digitorum brevis	Extends toes	Lateral branch, deep peroneal n.	Dorsalis pedis artery

Sole of the foot (plantar region). This region is divided into four layers from superficial to deep.

First layer (most superficial)

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Abductor hallucis	Abducts great toe	Medial plantar n.	
Abductor digiti minimi	Abducts and flexes little toe	Lateral plantar n.	
Flexor digitorum brevis	Flexes lateral four toes	Medial plantar n.	

Second layer

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
<i>Tendons of flexor hallucis longus</i>			
<i>Tendons of flexor digitorum longus</i>			
Quadratus plantae	Flexes toes	Lateral plantar n.	
Lumbricales	Flexes proximal phalanx; extends middle and distal phalanges	To first toe, medial plantar n.	

Third layer

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Flexor hallucis brevis	Flexes great toe	Medial plantar n.	
Adductor hallucis	Adducts great toe	Lateral plantar n.	
Flexor digiti minimi brevis	Flexes little toe	Lateral plantar n.	

Fourth layer (deepest)

<b>Muscle</b>	<b>Action</b>	<b>Innervation</b>	<b>Vascularization</b>
Plantar interossei	Adducts third fourth and fifth toes	Lateral plantar n.	
Dorsal interossei	Abducts second, third and fourth toes; adducts second toe	Lateral plantar n.	