

# Muscles of the Shoulder and Arm

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## 1 Back

### 1.1 Suboccipitals

Table 1: Suboccipital muscle group

Muscle	Origin	Insertion	Nerve	Action
Rectus Capitis Posterior Major	C2 (SP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L head rotation
Rectus Capitis Posterior Minor	C1 (posterior tubercle)	Occipital bone (inferior nuchal line, inner 1/3)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L head rotation
Obliquus Capitis Superior	C1 (TP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L SB, C/L rotation
Obliquus Capitis Inferior	C2 (SP)	C1 TP	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L rotation

## 1.2 Prevertebral Muscles

- Longus capitis
- Longus Colli Cervicis
- Rectus Capitis anterior
- Rectus Capitis Lateralis

Table 2: Prevertebral muscle group

Muscle	Origin	Insertion	Nerve	Action
Longus Capitis	C3-C6 (TP, ant tubercles)	Occipital bone (basilar part)	Direct branches from cervical plexus (C1-C3)	<b>BIL</b> flexes head; <b>UNIL</b> flexes and slight I/L rotation

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Longus colli cervicis</a>	<b>Vertical part:</b> C5-T3 (ant side of vertebral body); <b>Sup-oblique</b> C3-C5 (TP, Ant tubercle) <b>Inf-Oblique:</b> T1-T3 (ant side of vertebral body)	<b>Vertical part:</b> C2-C4 (ant sides of vertebral bodies); <b>Sup-oblique</b> C1 (TP, ant tubercle) <b>Inf-Oblique:</b> C5-C6 (TP, Ant tubercles)	Direct branches from cervical plexus (C2-C6)	<b>BIL:</b> Flex AO Joint; <b>UNIL:</b> Lat flex at AO joint
<a href="#">Rectus Capitis Anterior</a>	C1 (lateral mass)	Occipital bone (basilar part)	C1 Ant ramus	<b>BIL:</b> flex AO Joint; <b>UNIL:</b> Lateral Flexion of AO joint
<a href="#">Rectus Capitis Lateralis</a>	C1 (TP)	Occipital bone (basilar part, lateral to occipital condyles)	C1 Anterior Ramus	<b>BIL:</b> flex AO Joint; <b>UNIL:</b> Lateral Flexion of AO joint

### 1.3 Superficial intrinsic back Muscles

- [Serratus posterior superior](#)
- [Serratus posterior inferior](#)
- [Splenius capitis](#)
- [Splenius cervicis](#)

Table 3: Superficial intrinsic back Muscles OIANS

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Serratus Posterior Superior</a>	<a href="#">Nuchal ligament</a> , C7-T3 SP	2-4th ribs (sup border)	<a href="#">Spinal nn.</a> T2-T5 (Ant ramus)	Elevates ribs
<a href="#">Serratus Posterior Inferior</a>	T11-L2 (SP)	8-12th ribs (inferior borders near angles)	<a href="#">Spinal nn.</a> T9-T12 (Anterior rami)	Depresses ribs

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Splenius Capitis</a>	<a href="#">Nuchal ligament</a> , C7-T3/T4 SP	Lateral 1/3 nuchal line (occipital bone), Mastoid process (temporal bone)	<a href="#">spinal nn.</a> C1-C6 (Post rami, lateral branches)	<b>BIL:</b> Extends C/S and head; <b>UNIL:</b> I/L head SB and Rotation
<a href="#">Splenius Cervicis</a>	T3-T6/T7 (SP)	C1-C3/4 (TP)	<a href="#">Spinal nn.</a> C1-C6 (Post rami, lateral branches)	<b>BIL:</b> <a href="#">Extends C/S and head</a> ; <b>UNIL:</b> <a href="#">I/L head SB and Rotation</a>

## 1.4 Intermediate intrinsic back muscles (Erector Spinae)

- Iliocostalis
  - [Iliocostalis Cervicis](#)
  - [Iliocostalis Thoracis](#)
  - [Iliocostalis lumborum](#)
- Longissimus
  - [Longissimus Capitis](#)
  - [Longissimus Cervicis](#)
  - [Longissimus Thoracis](#)
- Spinalis
  - [Spinalis Cervicis](#)
  - [Spinalis Thoracis](#)

Table 4: Erector Spinae OIAN

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Iliocostalis cervicis</a>	3rd-7th ribs	C4-C6 TP	<a href="#">Spinal nn.</a> C8-L1 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L spine lat-flexion
<a href="#">Iliocostalis thoracis</a>	7-12th ribs	1st-6th ribs	<a href="#">Spinal nn.</a> C8-L1 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L spine lat-flexion

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Iliocostalis lumborum</a>	Sacrum, iliac crest, lumbar vertebrae SP; lower thoracic vertebrae TP	6-12th ribs, thoracolumbar fascia (posterior layer), upper lumbar vertebrae (TP)	<a href="#">Spinal nn.</a> C8-L1 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L spine lat-flexion
<a href="#">Longissimus Capitis</a>	T1-T3 (TP), C4-C7 (TP & articular process)	Temporal bone (Mastoid process)	<a href="#">Spinal nn.</a> C1-L5 (Post rami, lateral branches)	<b>BIL:</b> Extends head; <b>UNIL:</b> Flexes and I/L rotation
<a href="#">Longissimus Cervicis</a>	T1-T6 (TP)	C2-C5 (TP)	<a href="#">Spinal nn.</a> C1-L5 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L SB
<a href="#">Longissimus Thoracis</a>	Sacrum; Iliac crest; Lumbar vertebrae (SP); Lower thoracic vertebrae (TP)	2nd-12th ribs; Thoracic & Lumbar vertebrae (TP)	<a href="#">Spinal nn.</a> C1-L5 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L SB
<a href="#">Spinalis Cervicis</a>	C5-T2 (SP)	C2-C5 (SP)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends C/S and T/S; <b>UNIL:</b> I/L SB cervical and thoracic spine
<a href="#">Spinalis Thoracis</a>	T10-L3 (SP, lat surface)	T2-T8 (SP, lat surface)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends C/S and T/S; <b>UNIL:</b> I/L SB cervical and thoracic spine

## 1.5 Transversospinalis Muscles

Table 5: Transversospinalis Muscles OIAN

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Rotatores Breves</a>	T1-T12 TP of lower vertebrae	T1-T12: SP of adjacent vertebrae	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends T/S; <b>UNIL:</b> C/L Rotation of T/S

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Rotatores Longi</a>	T1-T12 TP of lower vertebrae	T1-T12: SP of vertebrae 2 above (it skips a vertebrae)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends T/S; <b>UNIL:</b> C/L Rotation of T/S
<a href="#">Multifidi</a>	Sacrum, ilium, mamillary process of L1-L5, T1-T4 (TP and Articular process), C4-C7	Superomedially to SP (skipping 2-4 vertebrae)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends extends spine; <b>UNIL:</b> I/L SB and C/L Rotation
<a href="#">Semispinalis Capitis</a>	C4-T7 (TP and Articular process)	Occipital bone (between superior and inferior nuchal lines)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); <b>UNIL:</b> I/L SB of head, cervical, and thoracic spine; C/L Rotation
<a href="#">Semispinalis Cervicis</a>	T1-T6 (TP)	C2-C5 (SP)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); <b>UNIL:</b> I/L SB of head, cervical, and thoracic spine; C/L Rotation

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Semispinalis Thoracis</a>	T6-T12 (TP)	C6-T4 (SP)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); <b>UNIL:</b> I/L SB of head, cervical, and thoracic spine; C/L Rotation

## 1.6 Deep Segmental Back Muscles

Table 6: Deep Segmental Back Muscles OIAN

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Interspinales Cervicis</a>	C1-C7: SP of inferiorly adjacent vertebrae	C1-C7: SP of superiorly adjacent vertebrae	<a href="#">Spinal nn. (Posterior Rami)</a>	Extends cervical and Lumbar spines
<a href="#">Interspinales Lumbora</a>	L1-L5: SP of inferiorly adjacent vertebrae	L1-L5: SP of superiorly adjacent vertebrae	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Stabilizes and extends cervical and lumbar vertebrae; <b>UNIL:</b> I/L SB cervical and lumbar spines

## 2 Head and Neck

### 2.1 Muscles of Facial Expression

Table 7: Muscles of Facial Expression OIAN

Muscle	Origin	Insertion	Nerve	Action
<b>Calvaria</b>				
<b>Occipitofrontalis</b> (Frontal belly)	Epicranial aponeurosis	Skin and subcutaneous tissue of eyebrows and forehead	Facial Nerve CN VII	Elevates eyebrows; wrinkles skin of forehead
<b>Palpebral Fissure and Nose</b>				
<b>Procerus</b>	Nasal bone, Lateral nasal cartilage (upper part)	Skin of lower forehead between eyebrows	Facial Nerve CN VII	Pulls medial angle of eyebrows inferiorly, producing transverse wrinkles over bridge of nose
<b>Orbicularis Oculi</b>	Medial orbital margin, medial palpebral ligament, lacrimal bone	Skin around margin of orbit, superior and inferior tarsal plates	Facial Nerve CN VII	Acts as orbital sphincter (closes eyelids): Palpebral portion gently closes, orbital portion tightly closes (winking)
<b>Nasalis</b>	Maxilla (superior region of canine ridge)	Nasal cartilages	Facial Nerve CN VII	Flares nostrils by drawing ala (side) of nose toward nasal septum
<b>Levator Labii superioris alaeque nasi</b>	Maxilla (Frontal process)	Alar cartilage of nose and upper lip	Facial Nerve CN VII	Elevates upper lip; Opens nostril
<b>Ear</b>				
<b>Anterior Auricular Muscle</b>	Temporal fascia (ant. portion)	Helix of the ear	Facial Nerve CN VII	Pulls ear superiorly and anteriorly
Muscle	Origin	Insertion	Nerve	Action



Muscle	Origin	Insertion	Nerve	Action
Superior Auricular Muscle	Epicranial aponeurosis on side of head	Upper portion of auricle	Facial Nerve CN VII	Elevates ear
Posterior Auricular Muscle	Mastoid process	Convexity of concha of ear	Facial Nerve CN VII	Pulls ear superiorly and posteriorly
<b>Mouth</b>				
Zygomaticus major	Zygomatic bone (lateral surface, post. part)	Skin at the corner of the mouth	Facial Nerve CN VII	Pulls corner of mouth superiorly and laterally
Zygomaticus Minor	Zygomatic bone (Lat surface, post. part)	Upper lip just medial to corner of the mouth	Facial Nerve CN VII	Pulls upper lips superiorly
Levator Labii superioris alaeque nasi	Maxilla (Frontal process)	Alar cartilage of nose and upper lip	Facial Nerve CN VII	Elevates upper lip; Opens nostril
Levator Labii superioris	Maxilla (Frontal process) and infraorbital region	Skin of upper lip, Alar cartilages of nose	Facial Nerve CN VII	Elevates upper lip, Dilates nostril, Raises angle of mouth
Depressor labii inferioris	Mandible (ant portion of oblique line)	Lower lip at midline; blends with muscle from opposite side	Facial Nerve CN VII	Pulls lower lip inferiorly and laterally
Levator Anguli Oris	Maxilla (below infraorbital foramen)	Skin at corner of mouth	Facial Nerve CN VII	Raises angle of mouth, Helps form nasolabial furrow
Depressor Anguli Oris	Mandible (oblique line below canine, premolar, and 1st molar teeth)	Skin at corner of the mouth; Blends with orbicularis oris	Facial Nerve CN VII	Pulls angle of mouth inferiorly and laterally

Muscle	Origin	Insertion	Nerve	Action
Buccinator	Mandible, Alveolar process of maxilla and mandible, Pterygomandibular raphe	Angle of mouth, Orbicularis Oris	Facial Nerve CN VII	<b>BIL:</b> Presses cheek against molar teeth, working with tongue to keep food between occlusal surfaces and out of oral vestibule; expels air from oral cavity/resists distension when blowing; <b>UNIL:</b> Draws mouth to one side
Orbicularis Oris	Deep surface of skin; <b>Superiorly:</b> maxilla (median plane); <b>Inferiorly:</b> mandible	Mucous membrane of lips	Facial Nerve CN VII	Acts as oral sphincter: Compresses and protrudes lips (whistling, sucking, kissing); Resists distension (when blowing)
Risorius	Fascia over masseter	Skin of corner of the mouth	Facial Nerve CN VII	Retracts corner of mouth as in grimacing
Mentalis muscle	Mandible (incisive fossa)	Skin of chin	Facial Nerve CN VII	Elevates and protrudes lower lip
<b>Neck</b> Platysma muscle	Skin over lower neck and upper lateral thorax	Mandible (inferior border), Skin over lower face, Angle of mouth	Facial Nerve CN VII	Depresses and wrinkles skin of lower face and mouth; Tenses skin of neck; Aids in forced depression of the mandible

## i Innervation

\*There are no bony insertions for the muscles of facial expression<sup>1</sup>

\*\*All muscles of facial expression are innervated by the facial nerve (CN VII) via temporal, zygomatic, buccal, mandibular, or cervical branches arising from the parotid plexus<sup>1</sup>

## 2.2 Muscles of Mastication

Table 8: Muscles of Mastication OIAN

Muscle	Origin	Insertion	Nerve	Action
Masseter muscle	<b>SF layer:</b> zygomatic arch (ant 2/3); <b>Deep layer:</b> Zygomatic arch (post. 1/3)	Mandibular angle (Masseteric tuberosity)	Trigeminal CN V: Mandibular (V <sub>3</sub> )	<b>Entire muscle:</b> Elevates mandible; <b>SF Fibers:</b> Protrude mandible
Temporalis muscle	Temporal fossa (inferior temporal line)	Coronoid process of mandible (apex and medial surface)	Mandibular (V <sub>3</sub> ) divison of CN V via deep temporal nn	<b>Vertical fibers:</b> Elevate mandible; <b>Horizontal Fibers:</b> Retract (retrude) mandible; <b>Unilateral Fibers:</b> Lateral movement of mandible (chewing)
Lateral Pterygoid	<b>Superior Head:</b> Greater wing of sphenoid bone (infratemporal crest); <b>Inferior head:</b> Lateral surface of pterygoid plate (lat surface)	<b>Superior Head:</b> Tem- pormandibular joint (articular disc); <b>Inferior head:</b> Mandible (condylar process)	Mandibular (V <sub>3</sub> ) divison of CN V via lateral pterygoid n.	<b>BIL:</b> Protrudes mandible (pulls articular disk forward); <b>UNIL:</b> Lateral movements of mandible (chewing)

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Medial Pterygoid</a>	<b>SF Head:</b> Maxilla (tuberosity); <b>Deep head:</b> Medial surface of lateral pterygoid plate and pterygoid fossa	Pterygoid tuberosity on medial surface of the mandibular angle	<a href="#">Mandibular (V<sub>3</sub>)</a> <a href="#">divison of CN V via medial pterygoid n.</a>	<b>BIL:</b> Elevates mandible with masseter and contributes to protrusion; <b>UNIL:</b> Small grinding movements

## 2.3 Muscles of the Neck

### 2.3.1 Superficial Neck Muscles

- Platysma
- Sternocleidomastoid
- Trapezius

### 2.3.2 Nuchal muscles (Intrinsic back muscles)

Table 9: Nuchal muscles (Intrinsic back muscles)

Muscle	Origin	Insertion	Nerve	Action
<a href="#">Semispinalis Capitis</a>	C4-T7 (TP and Articular process)	Occipital bone (between superior and inferior nuchal lines)	<a href="#">Spinal nn. (Posterior Rami)</a>	<b>BIL:</b> Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); <b>UNIL:</b> I/L SB of head, cervical, and thoracic spine; C/L Rotation

Muscle	Origin	Insertion	Nerve	Action
Semispinalis Cervicis	T1-T6 (TP)	C2-C5 (SP)	Spinal nn. (Posterior Rami)	<b>BIL:</b> Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); <b>UNIL:</b> I/L SB of head, cervical, and thoracic spine; C/L Rotation
Splenius Capitis	Nuchal ligament, C7-T3/T4 SP	Lateral 1/3 nuchal line (occipital bone), Mastoid process (temporal bone)	spinal nn. C1-C6 (Post rami, lateral branches)	<b>BIL:</b> Extends C/S and head; <b>UNIL:</b> I/L head SB and Rotation
Splenius Cervicis	T3-T6/T7 (SP)	C1-C3/4 (TP)	Spinal nn. C1-C6 (Post rami, lateral branches)	<b>BIL:</b> Extends C/S and head; <b>UNIL:</b> I/L head SB and Rotation
Longissimus Capitis	T1-T3 (TP), C4-C7 (TP & articular process)	Temporal bone (Mastoid process)	Spinal nn. C1-L5 (Post rami, lateral branches)	<b>BIL:</b> Extends head; <b>UNIL:</b> Flexes and I/L rotation
Longissimus Cervicis	T1-T6 (TP)	C2-C5 (TP)	Spinal nn. C1-L5 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L SB
Iliocostalis cervicis	3rd-7th ribs	C4-C6 TP	Spinal nn. C8-L1 (Post rami, lateral branches)	<b>BIL:</b> Extends spine; <b>UNIL:</b> I/L spine lat-flexion
Rectus Capitis Posterior Major	C2 (SP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L head rotation
Rectus Capitis Posterior Minor	C1 (posterior tubercle)	Occipital bone (inferior nuchal line, inner 1/3)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L head rotation

Muscle	Origin	Insertion	Nerve	Action
Obliquus Capitis Superior	C1 (TP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L SB, C/L rotation
Obliquus Capitis Inferior	C2 (SP)	C1 TP	Suboccipital N.	<b>BIL:</b> Extend head; <b>UNIL:</b> I/L rotation

### 3 Shoulder and Arm

#### 3.1 Deltoid Muscles

Table 10: Deltoid Muscles OIAN

Muscle	Origin	Insertion	Nerve	Action
Anterior Deltoid	Lateral 1/3 of clavicle	Humerus (deltoid tuberosity)	Axillary n. (C5, C6)	Flexion, internal rotation, adduction
Lateral Deltoid	Acromion	Humerus (deltoid tuberosity)	Axillary n. (C5, C6)	Abduction
Posterior Deltoid	Scapular spine	Humerus (deltoid tuberosity)	Axillary n. (C5, C6)	Extension, external rotation, adduction

#### 3.2 Rotator Cuff

Table 11: Rotator Cuff OIAN

Muscle	Origin	Insertion	Nerve	Action
Supraspinatus	Supraspinous Fossa of scapula	Greater tubercle of Humerus	Suprascapular nerve (C4-C6)	Initiates abduction
Infraspinatus	Infraspinous Fossa of scapula	Greater tubercle of Humerus	Suprascapular nerve (C4-C6)	External rotation

Muscle	Origin	Insertion	Nerve	Action
Teres Minor	Lateral border of scapula	Greater tubercle of Humerus	Axillary n. (C5, C6)	External rotation, weak adduction, stabilizes GHJ
Subscapularis	Subscapular fossa of scapula	Lesser tubercle of Humerus	Upper and Lower subscapular nerves (C5, C6)	Internal Rotation

### 3.3 Pectoral Girdle

Table 12: Anterior Appendicular Muscles

Muscle	Origin	Insertion	Nerve	Action
Pec Major	Clavicle (medial half), sternum, costal cartilages 1–6, rectus sheath (anterior layer)	Humerus (crest of greater tubercle)	Lateral pectoral nerve and Medial pectoral nerve (C5-T1)	<b>Entire muscle:</b> adduction, internal rotation; <b>Clavicular and sternocostal parts:</b> flexion; assist in respiration when shoulder is fixed
Coracobrachialis	Scapula (coracoid process)	Humerus (in line with crest of lesser tubercle)	Musculocutaneous n. (C5–C7)	Flexion, adduction, internal rotation
Subclavius	1st rib	Clavicle (inferior surface)	N. to subclavius (C5, C6)	Steadies the clavicle in the sternoclavicular joint
Pectoralis Minor	3rd to 5th ribs	Coracoid process	Medial Pectoral n. (C8, T1)	Draws scapula downward, causing inferior angle to move posteromedially; rotates glenoid inferiorly; assists in respiration

1. Gilroy AM, MacPherson BR, Wikenheiser JC, Voll MM, Wesker K, Schünke M, eds. *Atlas of Anatomy*. 4th ed. Thieme; 2020.