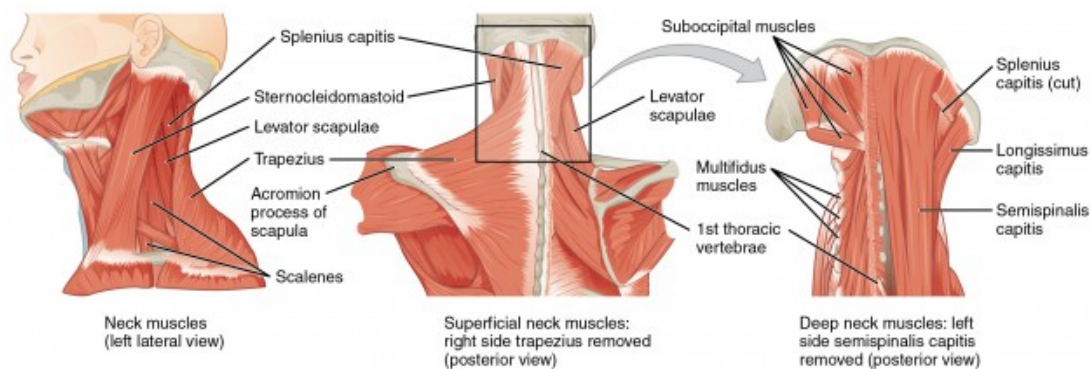


Anatomy of the Head and Neck: The Ventral Neck Muscles

[See online here](#)

Medical students must be informed as early as possible about this very important muscle group. In addition to the origin, attachment, and function they also have to be aware of innervation and possible pathologies. In medical terminology, these muscles are a part of the group of prevertebral muscles. The literature reveals mixed opinions regarding segmental innervation. It is therefore recommended that medical students take the most current version of muscle tables for learning assistance.



The Superficial (Platysma) of the Ventral Neck Muscles

The platysma belongs to the subgroup of muscles **supplied by the cranial nerves** and covers almost the entire anterior surface of the neck. It originates from the fascia covering the pectoralis major and deltoid. Therefore, the platysma is in contact with the shoulder girdle and thorax and so has a major impact on the associated osseous structures.

The platysma's base runs caudally to the oblique line of the mandible.

Additionally, fibrous elements can insert in the *mentalis* muscle or the *depressor anguli oris* muscle. Therefore, functionally, the platysma belongs to the mimic muscles.

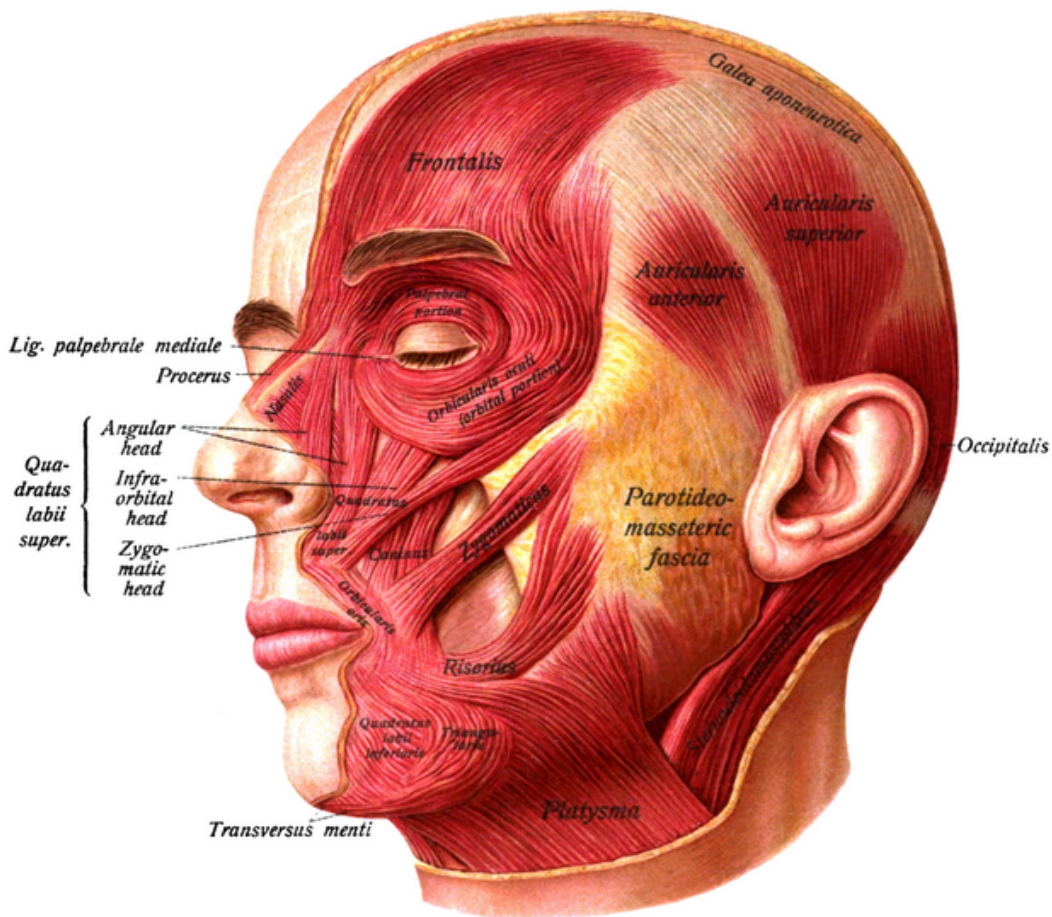


Image: Muscles of the face.

The platysma is innervated by the facial nerve (**ramus colli**). Contraction of the platysma causes the lower jaw, corners of the mouth, and lower lip to be pulled to the caudal direction. The mandible causes the tension in the skin of the neck. In facial nerve paresis, the platysma tenses only on the healthy side after the patient pulls down the corners of the mouth.

The Prevertebral Muscles of the Ventral Neck Muscles

The prevertebral muscles belong to the group of ventral neck muscles. They include the **rectus capitis anterior**, the **longus capitis**, and the **longus colli** that are located in pairs on the left and right side of spine. They rest directly on the spine, creating the deepest layer and **connecting the vertebral bodies to transverse processes of the cervical spine as well as the basilar occipital bone on the ventral side.**

In a pathologic hyperextension, the prevertebral muscles are massively irritated, such as during a whiplash, which often results in painful contractures. It is very difficult to treat.

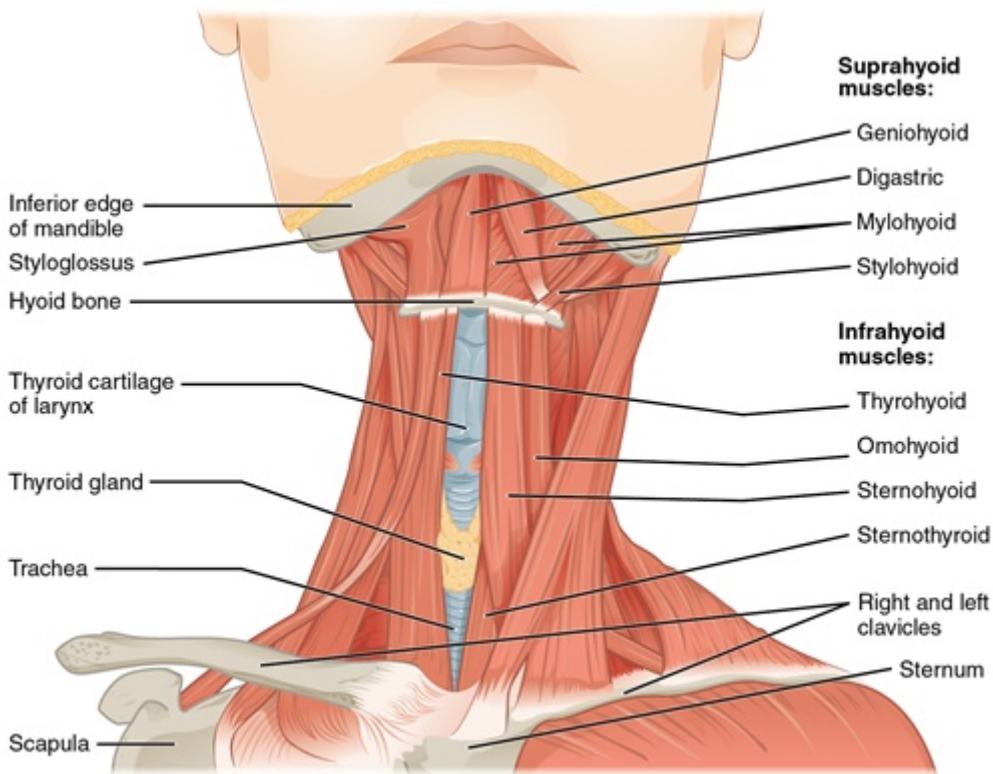


Image: 'Muscles of the anterior neck' by PhilSchatz.com. License: [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).

Rectus capitis anterior muscle

The *rectus capitis anterior* arises from the **massa lateralis atlantis** and inserts at the **basilar ossis occipital**. Due to its course, it supports the head when leaning forward. It is innervated by the cervical plexus (C1).

Longus capitis muscle

The *longus capitis* originates from the anterior tubercles of the transverse processes of C3–C6. Its base is identical with that of the *rectus capitis anterior* (**basilar ossis occipital**). Thus, its function is also the same—to bend the head forward. This muscle can also cause lateral flexion of the head due to the unilateral innervation by the cervical plexus (C1–C4).

Longus colli muscle

The *longus colli* possesses three groups of fibers: **pars recta**, **pars obliqua inferior**, and **pars obliqua superior**. The joint is innervated by the **cervical plexus (C2–C6)**. In a unilateral innervation, the cervical spine is laterally inflected and rotated to the innervated side, while the bilateral innervation results in a ventral flexion of the cervical spine.

The *pars recta* arise from the **ventral surface of C5–T3 corpi** and insert at the **ventral surfaces of C2–C4 corpi**.

The **T1–T3 corpi** are the origins of the *pars obliqua*, while the **anterior tubercle** base is part of the **transverse processes of C5–C6**. The fibers of the *pars superior obliqua*

arise from the **anterior tubercles** of the **transverse processes of C2-C5** and attach to the **tuberculum anterius atlantis**.

The scalene muscles (*scalenus* muscles) of the ventral neck muscles

The scalene muscles—also called the *scalenus* muscles or the *scalenus* group—continue as the intercostal muscles in the cranial direction. **The group consists of four muscles: anterior scalene, middle scalene, posterior scalene, and middle scalene *minimus*.**

Clinically, it is important to know that the **scalenus aperture** is located between the anterior and middle scalene muscles. **The brachial plexus and subclavian artery pass through the scalenus aperture.**

In retroversion of the arm, incarceration of these sensitive structures can occur when the convergence of the osseous starting points is too strong. These symptoms can be treated by manual therapy or physical therapy.

Regarding the function of the scalene muscles, physicians should know that most textbooks describe these muscles as **auxiliary muscles of inspiration** even though they are already activated during normal inspiration by the fixing and raising of the ribs.

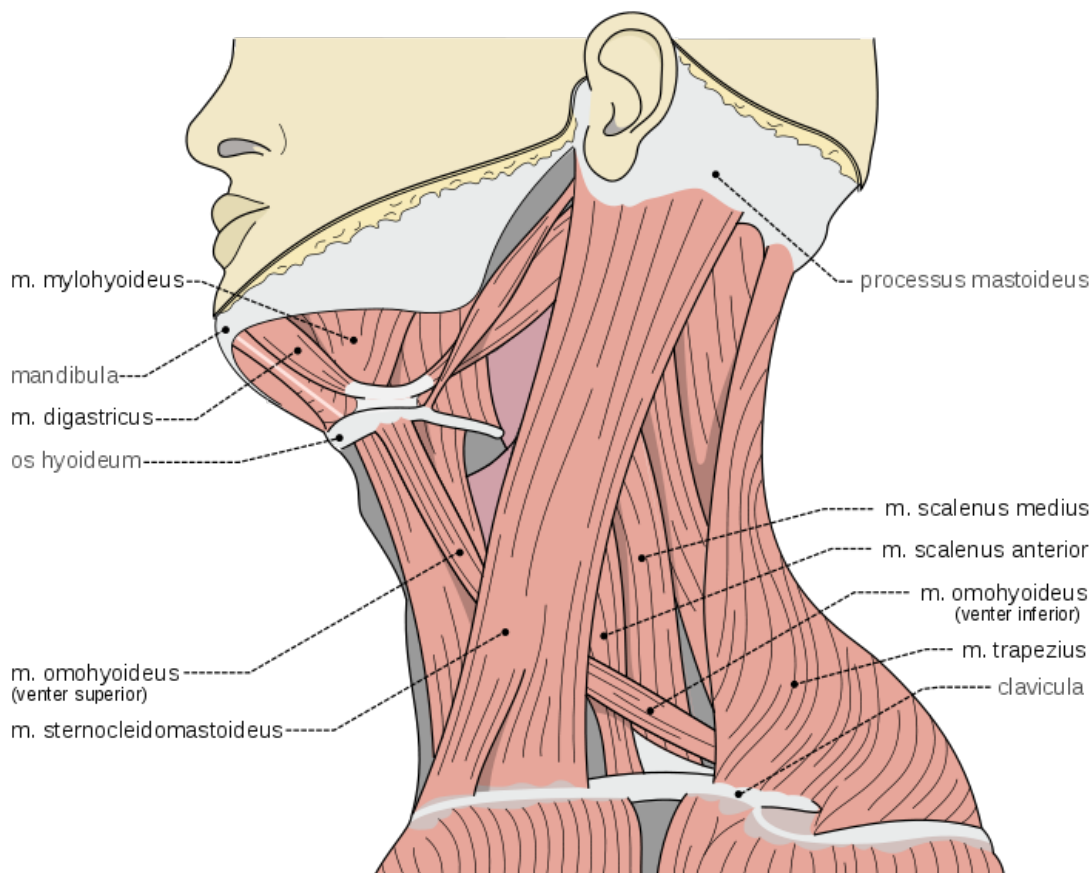


Image: 'Scheme of muscles of the neck' by von Olek Remesz. License: [CC BY-SA 2.5](https://creativecommons.org/licenses/by-sa/2.5/).

Scalenus anterior muscle

The anterior muscle arises from the **anterior tubercles of the C3-C6 transverse processes** and is positioned at the **scalenus tubercle of the first rib**. Its innervation is ensured by the **cervical plexus (C4/5-C7)**. In a unilateral innervation, the cervical spine is laterally inflected, while a bilateral innervation causes flexion of the cervical spine as well as the raising of the first rib.

Scalenus medius muscle

The origins of the *scalenus medius* muscle are the **posterior tubercles of the C1/2-C7 transverse processes** and its base is in the dorsal direction from the *sulcus arteriae subclaviae* of the first, and proportionate to the second rib. In a unilateral innervation through the **cervical plexus (C3/4-C8)**, a lateral flexion of the cervical spine takes place, resulting in the raising of the first rib as well as the second rib proportionately during bilateral innervation.

Scalenus minimus muscle

This muscle is not always used and has its origin at the **anterior tubercle of the C6/7 transverse process**. It inserts on the inner edge of the first rib **dorsal of the anterior scalene muscle and the pleural cupula**, which stabilizes the muscle functionally and, therefore, belongs to the inspiration muscles. Furthermore, it supports the lateral flexion of the cervical spine. Its innervation is affected by the **cervical nerve VIII (C8)**.

Further Important Muscles Near the Ventral Neck Muscles

There are other major **muscles located in the area of the ventral neck that are assigned to other muscle groups**. In the pre-clinic examination (preliminary examination) the **sternocleidomastoid muscle and the rectus capitis lateralis are listed as ventral neck muscles due to their localization**, even if they are assigned to different subgroups.

The **rectus capitis lateralis** belongs to the subgroup of secondary respectively immigrated ventrolateral muscles, while the **sternocleidomastoid muscle**, part of the head muscles subgroup with a base on the shoulder girdle, belongs to the cranial nerve-supplied muscles.

Rectus capitis lateralis muscle

The *rectus capitis lateralis* muscle evolutionarily complies with the anterior intertransversarius muscle. Its origin is the **processus transversus atlantis** and it inserts at the **pars basilaris of the occipital bone, lateral to the occipital condyles**. The **cervical plexus (ramus ventralis C1)**-mediated innervation results in lateral flexion in the atlanto-occipital articulation.

Sternocleidomastoid muscle

The sternocleidomastoid muscle has two origins. The **medial/sternal head** originates from the **manubrium sterni** and the **lateral/clavicular head originates from the**

medial third of the clavicle. Both parts insert together at the **mastoid process of the temporal bone** and the **superior nuchal line of the occipital bone.**

It is innervated by the spinal **accessory nerve (cranial nerve XI)**. In a unilateral innervation, the cervical spine and the head are laterally inflected as well as rotated to the opposite side. During a bilateral innervation, the head joints are dorsally extended and, therefore, the head is raised. **In some sources, the sternocleidomastoid muscle is called the “head-nodder,” which is wrong, because it has no maximally inflected component.**

Therefore, the **function of this muscle is a popular examination topic in medical studies** as well as in the training of physical therapists. Furthermore, it is a breathing auxiliary muscle on inspiration during bilateral innervation.

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