

# ANATOMY

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## Muscles of the BACK

Superficial

Intermediate

Deep

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## Muscle of the Back

### Superficial Muscles

#### 1 Trapezius

##### 1.1 Clinical Relevance: Testing the Accessory Nerve

#### 2 Latissimus Dorsi

#### 3 Levator Scapulae

#### 4 Rhomboids

##### 4.1 Rhomboid Major

##### 4.2 Rhomboid Minor

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The muscles of the back can be divided into three groups – superficial, intermediate and deep:

- **Superficial** – associated with movements of the shoulder.
- **Intermediate** – associated with movements of the thoracic cage.
- **Deep** – associated with movements of the [vertebral column](#).
- The deep muscles develop embryologically in the back, and are thus described as **intrinsic** muscles. The superficial and intermediate muscles do not develop in the back, and are classified as **extrinsic** muscles.

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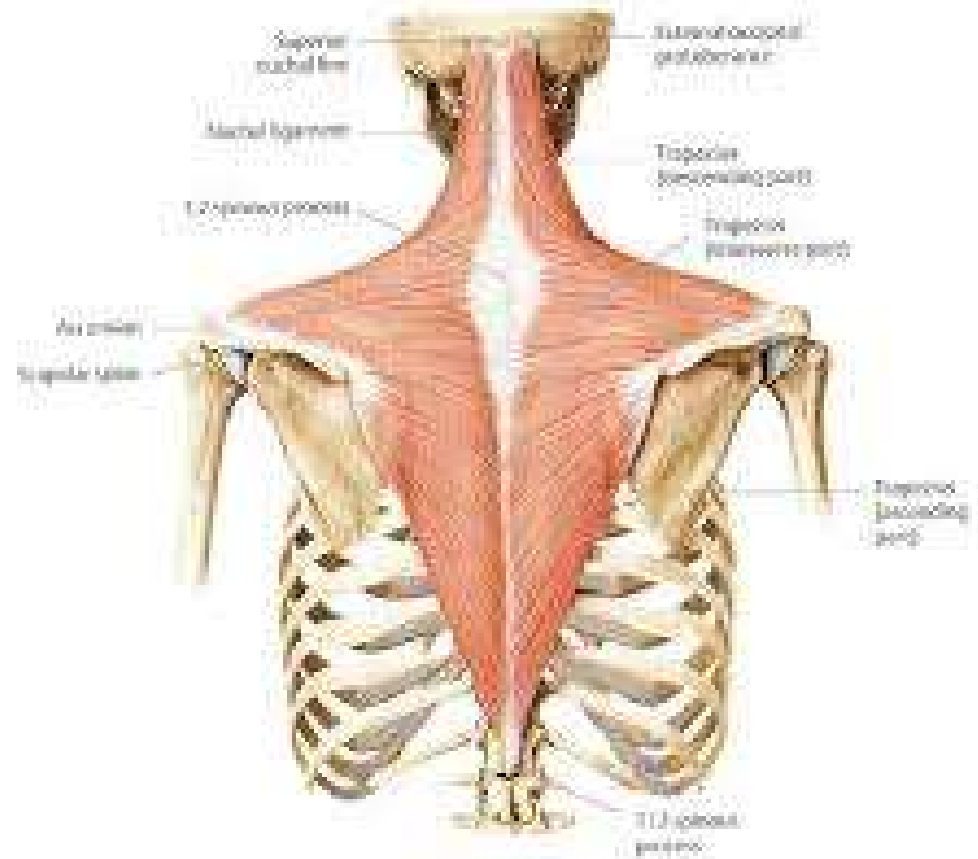
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## Trapezius

- The trapezius is a broad, flat and triangular muscle. The muscles on each side form a trapezoid shape. It is the most superficial of all the back muscles.
- **Attachments:** Originates from the skull, ligamentum nuchae and the spinous processes of C7-T12. The fibres attach to the clavicle, acromion and the scapula spine.
- **Innervation:** Motor innervation is from the accessory nerve. It also receives proprioceptor fibres from C3 and C4 spinal nerves.
- **Actions:** The upper fibres of the trapezius elevates the scapula and rotates it during abduction of the arm. The middle fibres retract the scapula and the lower fibres pull the scapula inferiorly.

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Trapezius



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## Clinical Relevance: Testing the Accessory Nerve

- The most common cause of [accessory nerve](#) damage is **iatrogenic** (i.e. due to a medical procedure). In particular, operations such as cervical lymph node biopsy or cannulation of the internal jugular vein can cause trauma to the nerve.
- To test the accessory nerve, trapezius function can be assessed. This can be done by asking the patient to shrug his/her shoulders. Other clinical features of accessory nerve damage include muscle wasting, partial paralysis of the sternocleidomastoid, and an asymmetrical neckline.

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## Latissimus Dorsi

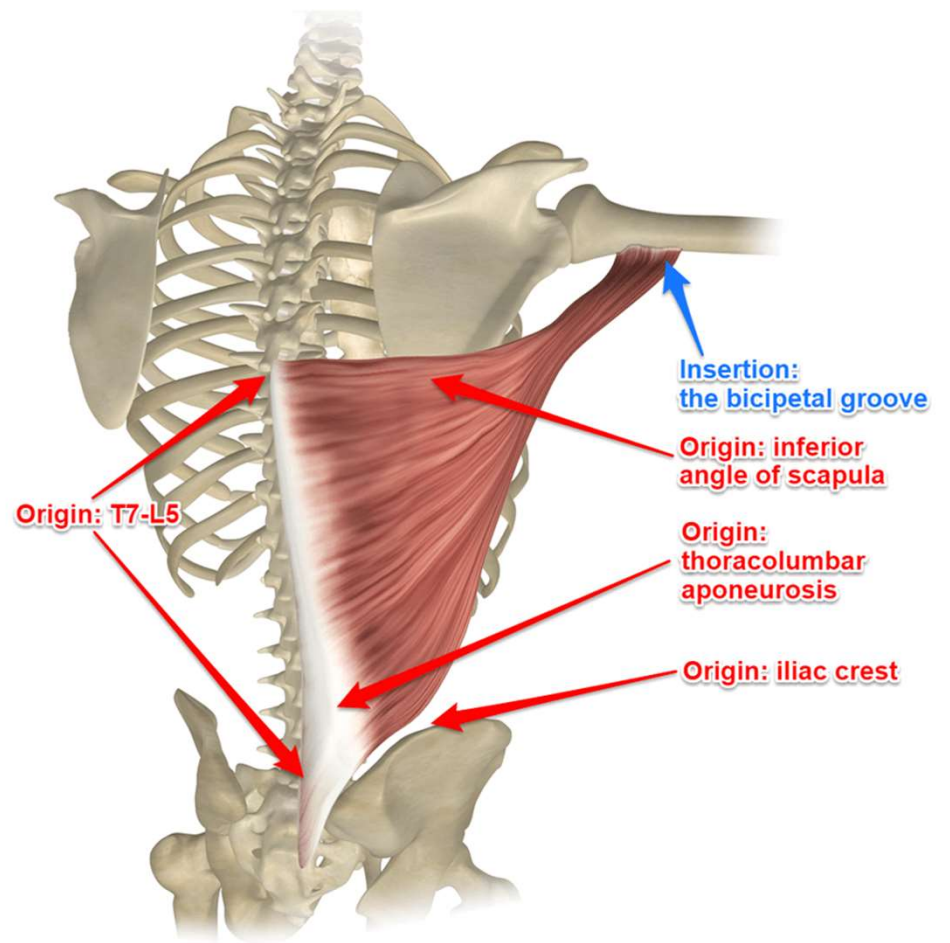
The latissimus dorsi originates from the lower part of the back, where it covers a wide area.

- **Attachments:** Has a broad origin – arising from the spinous processes of T6-T12, iliac crest, thoracolumbar fascia and the inferior three ribs. The fibres converge into a tendon that attaches to the intertubercular sulcus of the humerus.
- **Innervation:** Thoracodorsal nerve.
- **Actions:** Extends, adducts and medially rotates the upper limb



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## Latissimus Dorsi



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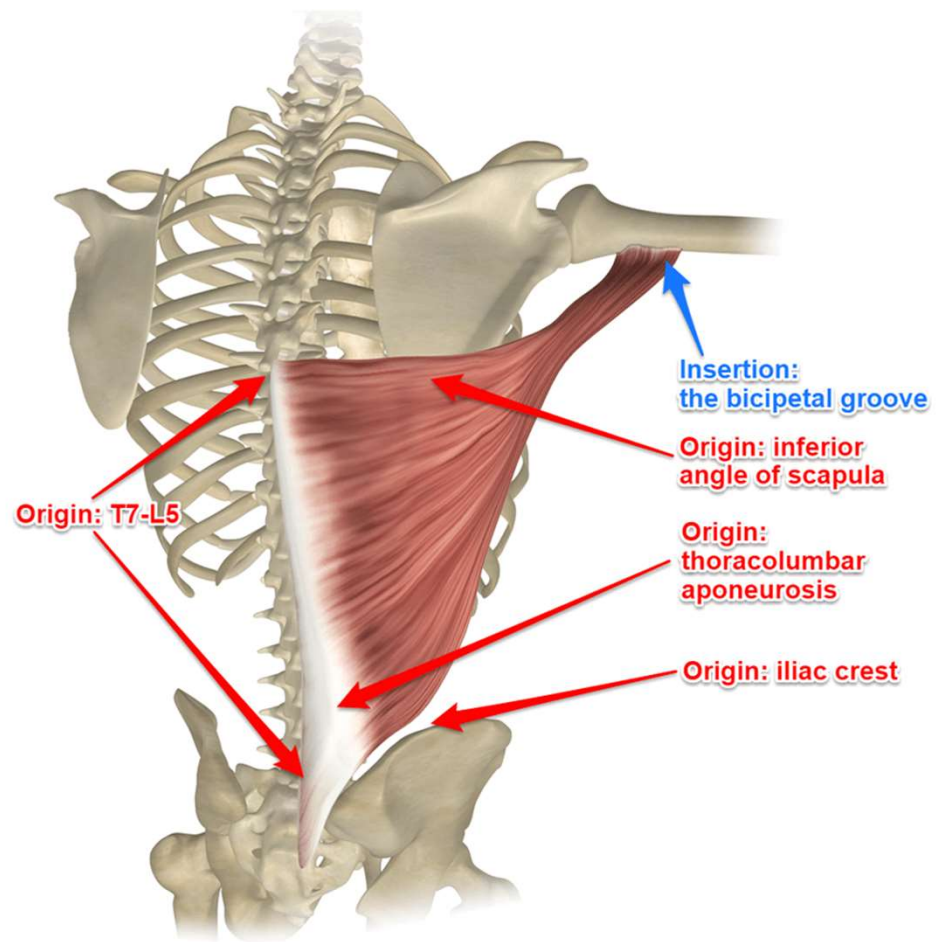
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## Levator Scapulae

- The levator scapulae is a small strap-like muscle. It begins in the neck, and descends to attach to the scapula.
- **Attachments:** Originates from the transverse processes of the C1-C4 vertebrae and attaches to the medial border of the scapula.
- **Innervation:** Dorsal scapular nerve.
- **Actions:** Elevates the scapula

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Latissimus Dorsi



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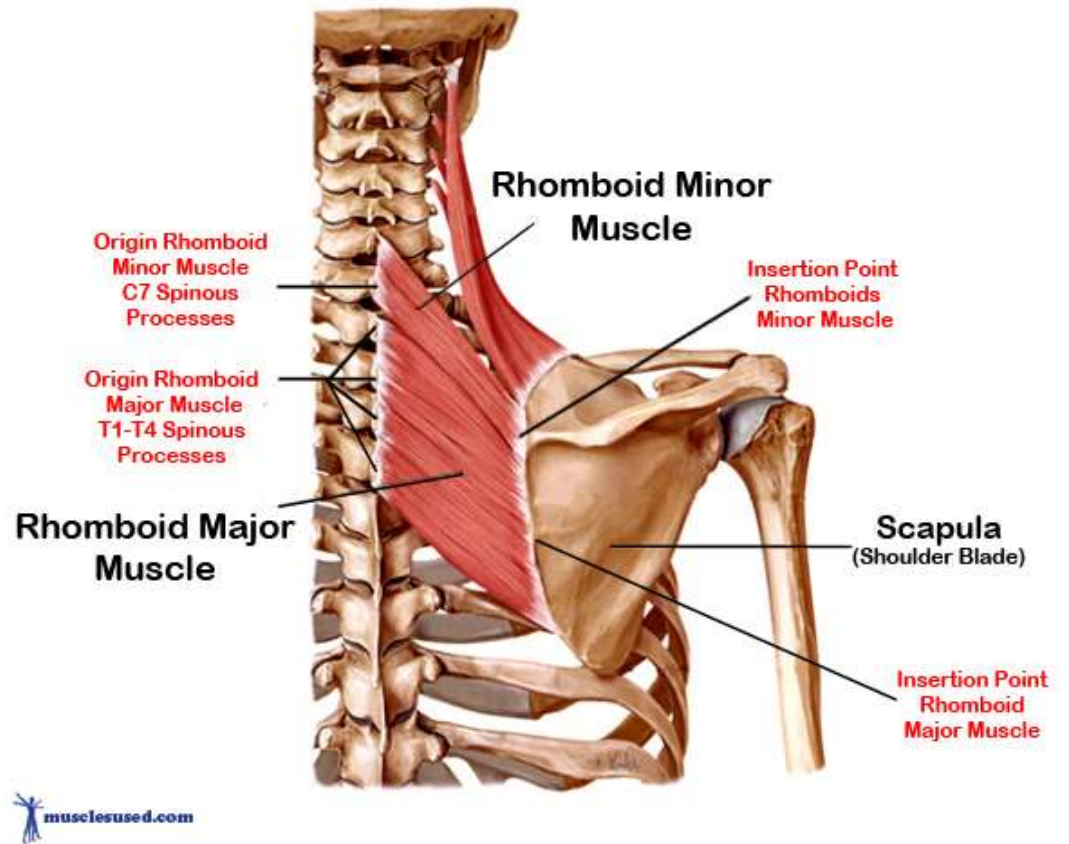
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## Rhomboids

- There are two Rhomboid muscles – Major and Minor. The rhomboid minor is situated superiorly to the major.
- **Rhomboid Major**
- **Attachments:** Originates from the spinous processes of T2-T5 vertebrae. Attaches to the medial border of the scapula, between the scapula spine and inferior angle.
- **Innervation:** Dorsal scapular nerve.
- **Actions:** Retracts and rotates the scapula.

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## Rhomboids



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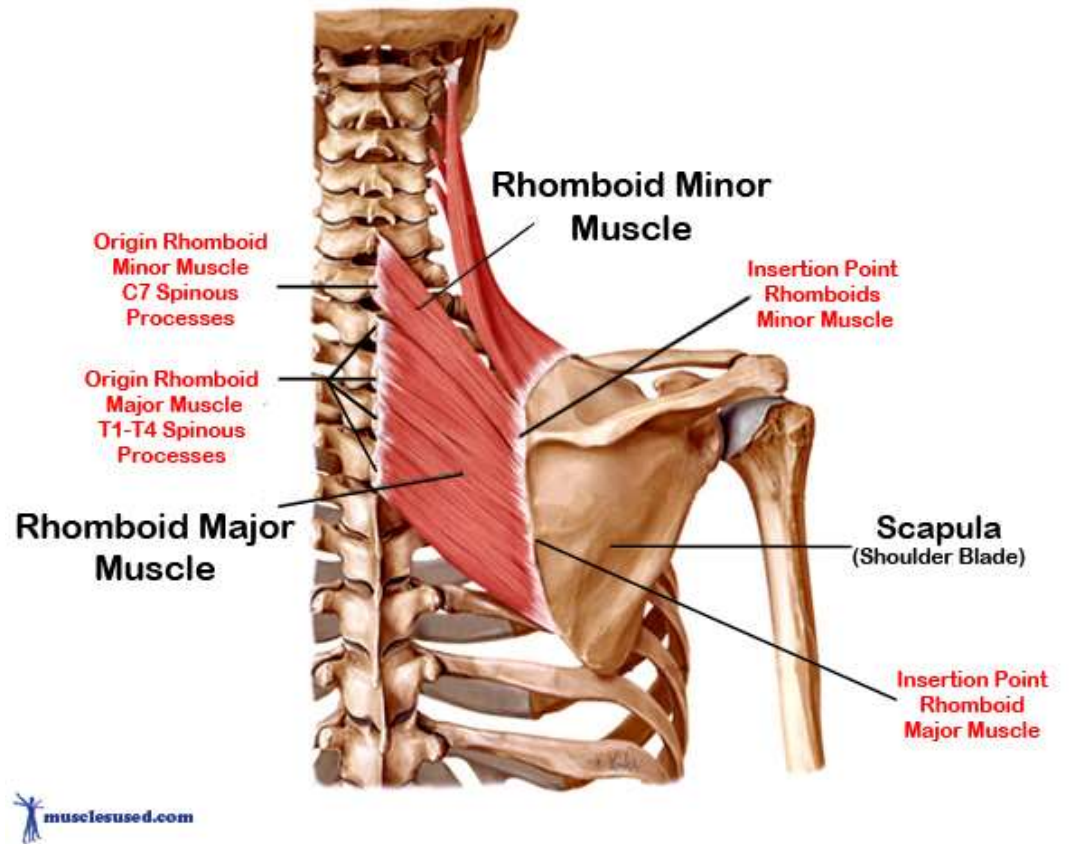
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## Rhomboid Minor

- **Attachments:** Originates from the spinous processes of C7-T1 vertebrae. Attaches to the medial border of the scapula, at the level of the spine of scapula.
- **Innervation:** Dorsal scapular nerve.
- **Actions:** Retracts and rotates the scapula.

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R Minor



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## Muscle of the Back

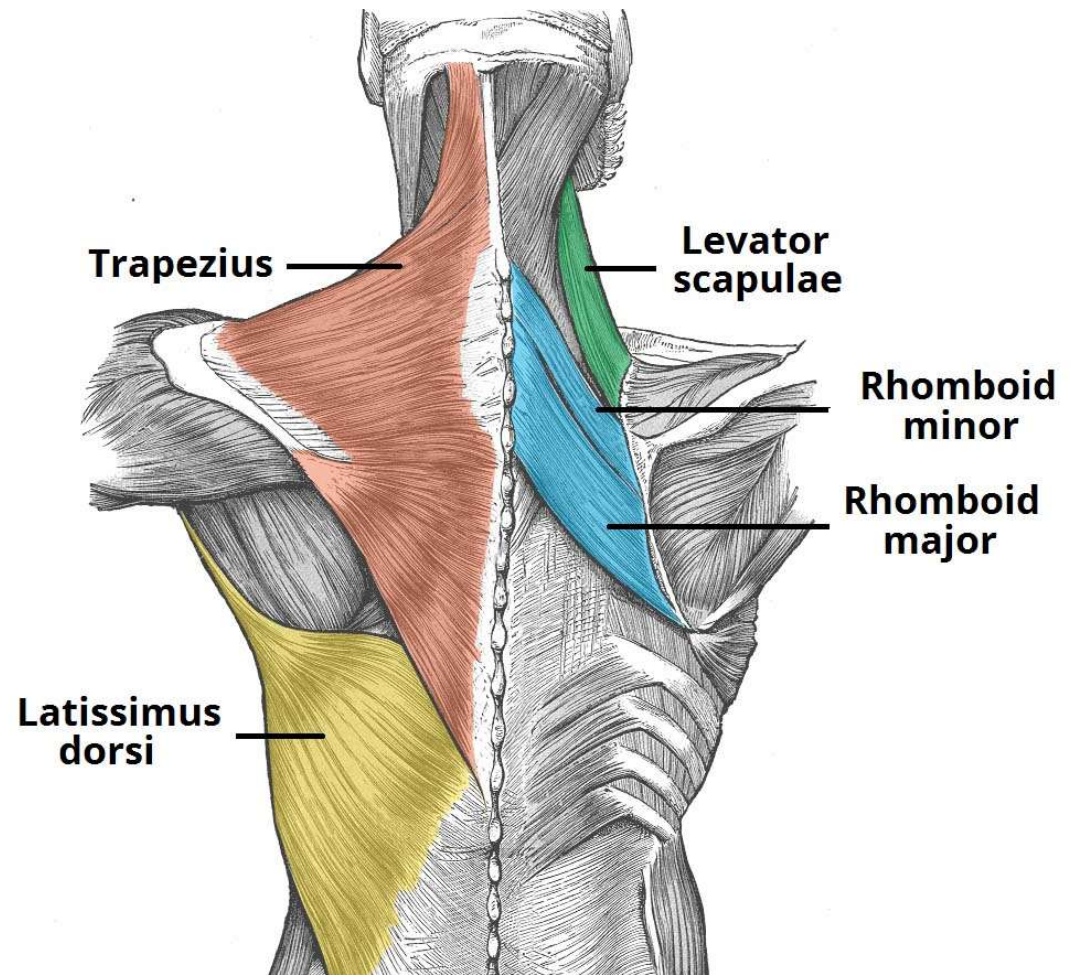
The muscles of the back can be divided into three groups – superficial, intermediate and intrinsic:

- **Superficial** – associated with movements of the shoulder.
- **Intermediate** – associated with movements of the thoracic cage.
- **Deep** – associated with movements of the vertebral column.



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Muscles of the Back



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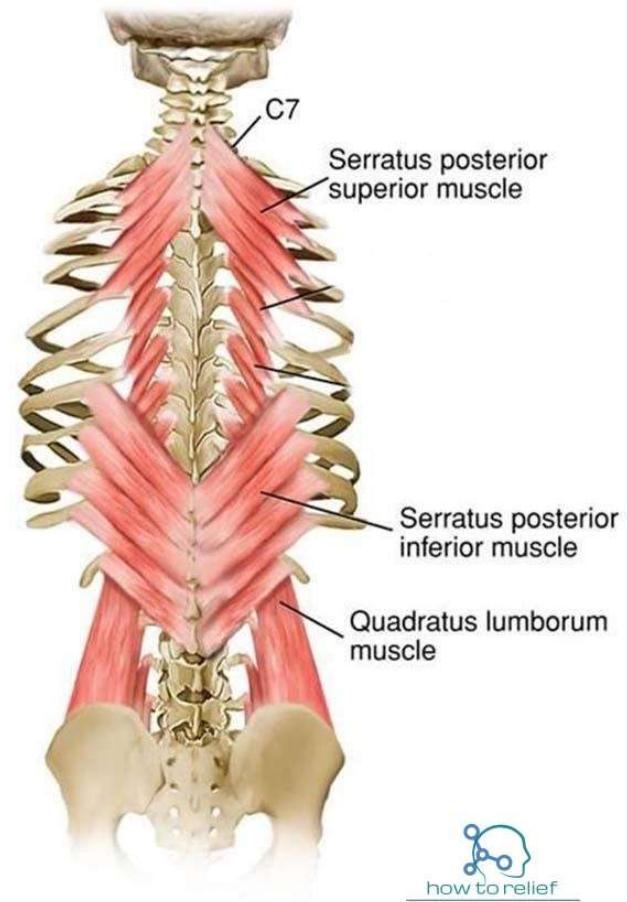
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## **Serratus Posterior Superior**

- The serratus posterior superior is a thin, rectangular shaped muscle. It lies deep to the rhomboid muscles on the upper back.
- **Attachments:** Originates from the lower part of the ligamentum nuchae, and the cervical and thoracic spines (usually C7 – T3). The fibres pass in an inferolateral direction, attaching to ribs 2-5.
- **Innervation:** Intercostal nerves.
- **Actions:** Elevates ribs 2-5

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Serratus Posterior



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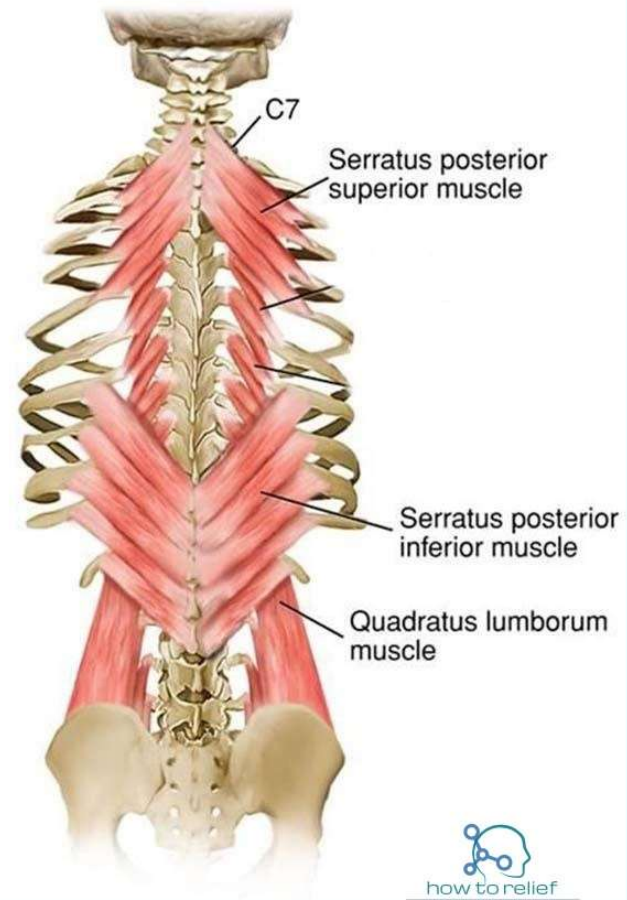
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## **Serratus Posterior Inferior**

- The serratus posterior inferior is broad and strong. It lies underneath the latissimus dorsi.
- **Attachments:** Originates from the thoracic and lumbar spines (usually T11 – L3). The fibres pass in a superolateral direction, attaching to ribs 9-12.
- **Innervation:** Intercostal nerves.
- **Actions:** Depresses ribs 9-12.

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## Serratus Posterior Inferior



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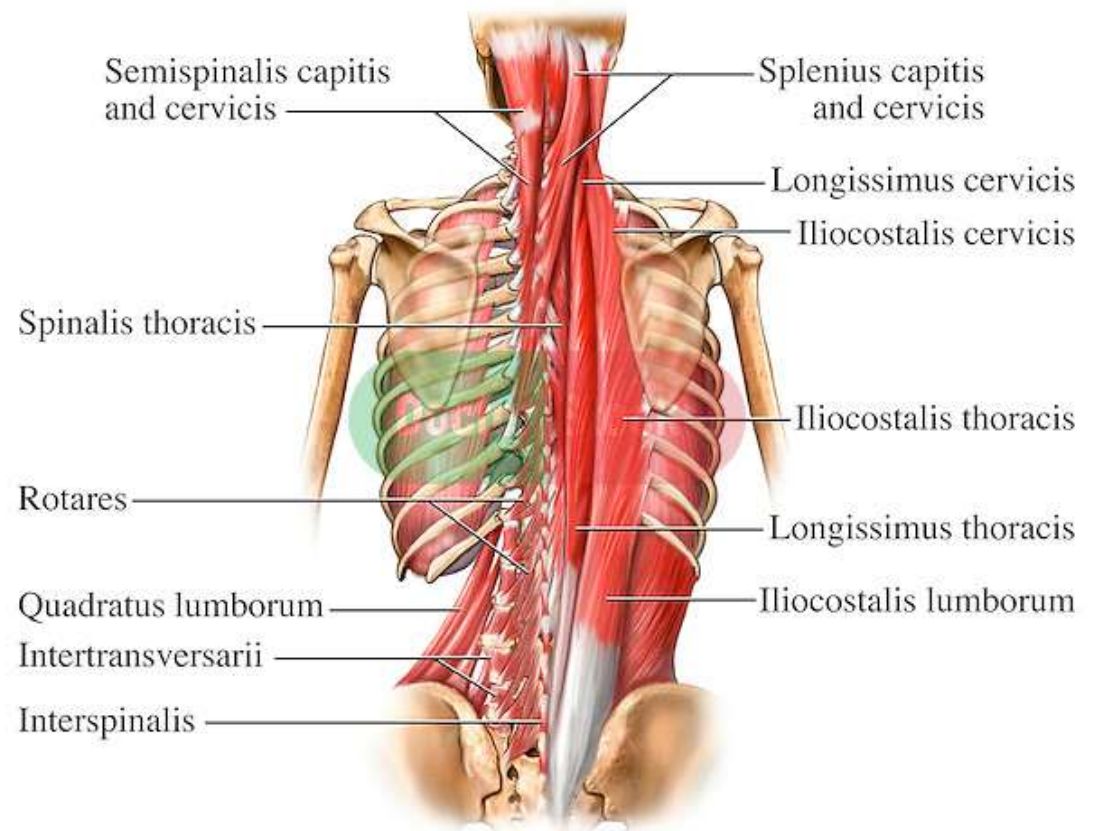
## Muscles of the Back

**Deep** – associated with movements of the [vertebral column](#).

- The deep muscles develop embryologically in the back, and are thus described as **intrinsic** muscles. The superficial and intermediate muscles do not develop in the back, and are classified as **extrinsic** muscles.
- This article is about the anatomy of the deep (intrinsic) back muscles – their attachments, innervations and functions.
- The deep muscles of the back are well-developed, and collectively extend from the sacrum to the base of the skull. They are associated with the movements of the vertebral column, and the control of posture.
- The muscles themselves are covered by deep fascia, which plays a key role in their organisation.

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## Deep Muscles of the back



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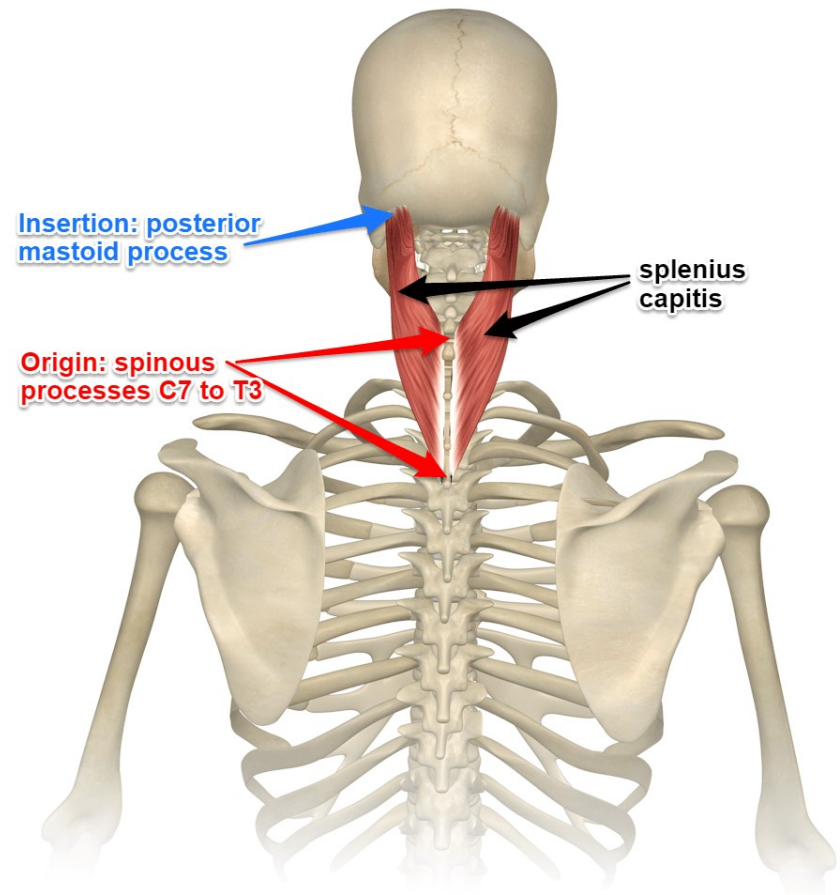
## Superficial

- The superficial muscles are also known as the **Spinotransversales**. There are two muscles in this group – **Splenius capitis** and **Splenius cervicis**. They are both associated with movements of the head and neck.
- They are located on the posterolateral aspect of the neck, covering the deeper neck muscles.



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Splenius Capitis



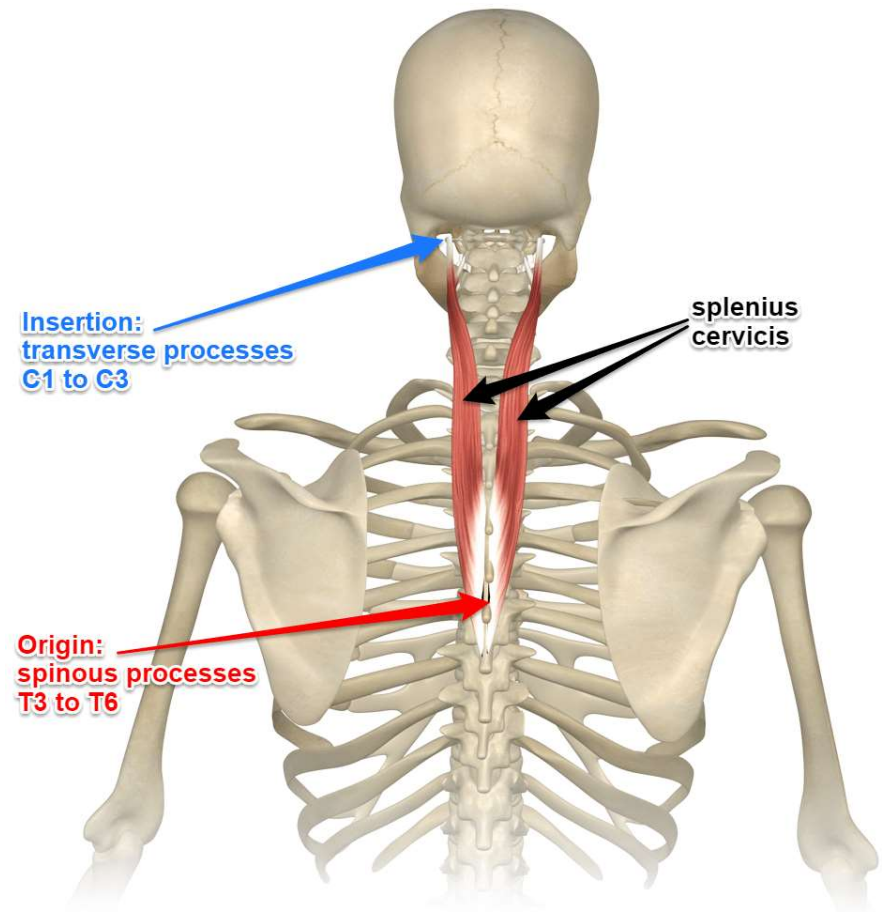
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- The deep muscles of the back are well-developed, and collectively extend from the sacrum to the base of the skull. They are associated with the movements of the vertebral column, and the control of posture.
- The muscles themselves are covered by deep fascia, which plays a key role in their organisation.
- Anatomically, the deep back muscles can be divided into three layers; superficial, intermediate and deep. We shall now look at each layer in more detail.

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Splenius Cervicis



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## Superficial

- The superficial muscles are also known as the **spinotransversales**. There are two muscles in this group – Splenius capitis and Splenius cervicis. They are both associated with movements of the head and neck.
- They are located on the posterolateral aspect of the neck, covering the deeper neck muscles.

## Splenius Capitis

- **Attachments:** Originates from the lower aspect of the ligamentum nuchae, and the spinous processes of C7 – T3/4 vertebrae. The fibres ascend, attaching to the mastoid process and the occipital bone of the skull.
- **Innervation:** Posterior rami of spinal nerves C3 and C4.
- **Actions:** Rotate head to the same side.

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## **Splenius Cervicis**

- **Attachments:** Originates from the spinous processes of T3-T6 vertebrae. The fibres ascend, attaching to the transverse processes of C1-3/4.
- **Innervation:** Posterior rami of the lower cervical spinal nerves.
- **Actions:** Rotate head to the same side.

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## Intermediate

- There are three intermediate intrinsic back muscles – the iliocostalis, longissimus and spinalis. Together these muscles form a column, known as the **erector spinae**.
- The erector spinae is situated posterolaterally to spinal column, between the vertebral spinous processes and the costal angle of the ribs.
- All three muscles can be subdivided by their superior attachments (into lumborum, thoracic, cervicis and capitis). They also all have a common tendinous origin, which arises from:
  - Lumbar and lower thoracic vertebrae.
  - [Sacrum](#).
  - Posterior aspect of iliac crest.
  - Sacroiliac and supraspinous ligaments.

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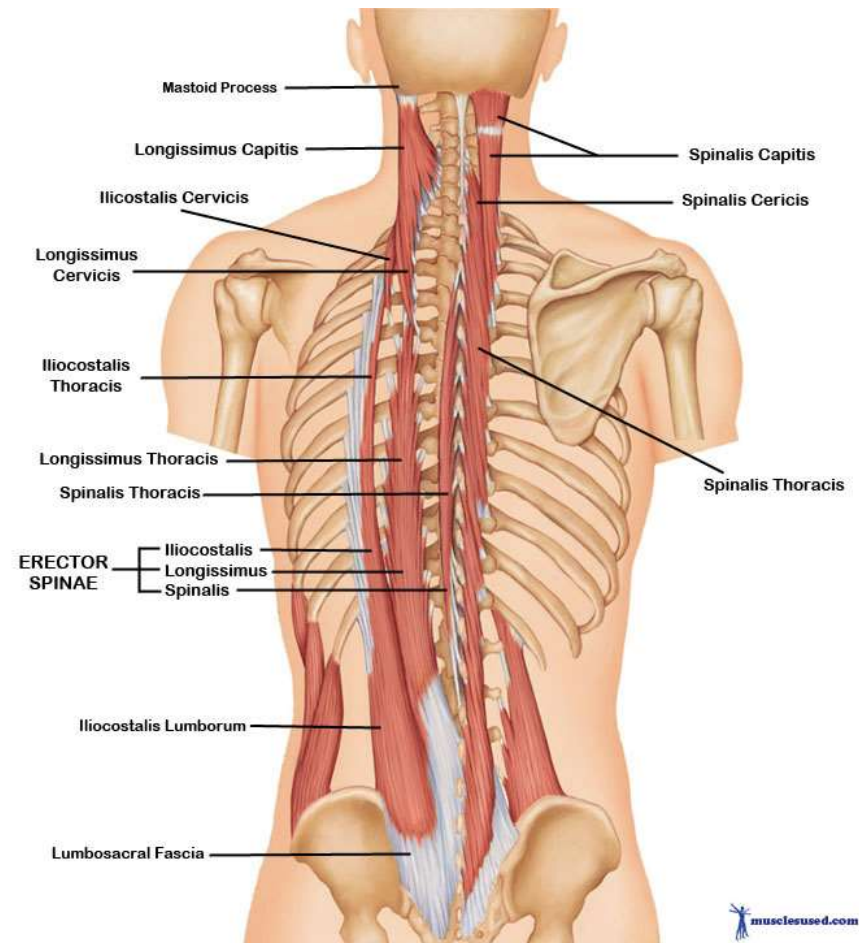
## Iliocostalis

The iliocostalis muscle is located laterally within the erector spinae. It is associated with the ribs, and can be divided into three parts – lumborum, thoracis, and cervicis.

- **Attachments:** Arises from the common tendinous origin, and attaches to the costal angle of the ribs and the cervical transverse processes.
- **Innervation:** Posterior rami of the spinal nerves.
- **Actions:** Acts unilaterally to laterally flex the vertebral column. Acts bilaterally to extend the vertebral column and head

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## Erector Spinus





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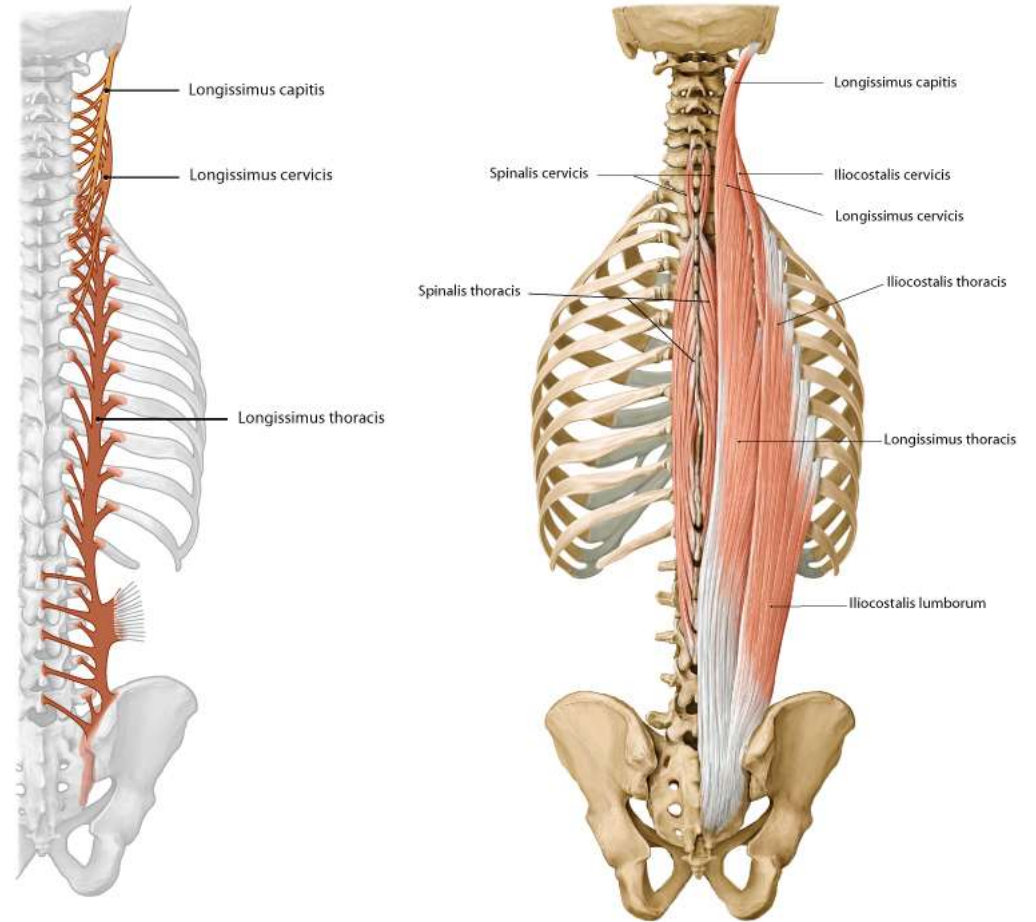
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## Longissimus

- The longissimus muscle is situated between the iliocostalis and spinalis. It is the largest of the three columns. It can be divided into three parts – thoracic, cervicis and capitis.
- **Attachments:** Arises from the common tendinous origin, and attaches to the lower ribs, the transverse processes of C2 – T12, and the mastoid process of the skull.
- **Innervation:** Posterior rami of the spinal nerves.
- **Actions:** Acts unilaterally to laterally flex the vertebral column. Acts bilaterally to extend the vertebral column and head.

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## Longissimus



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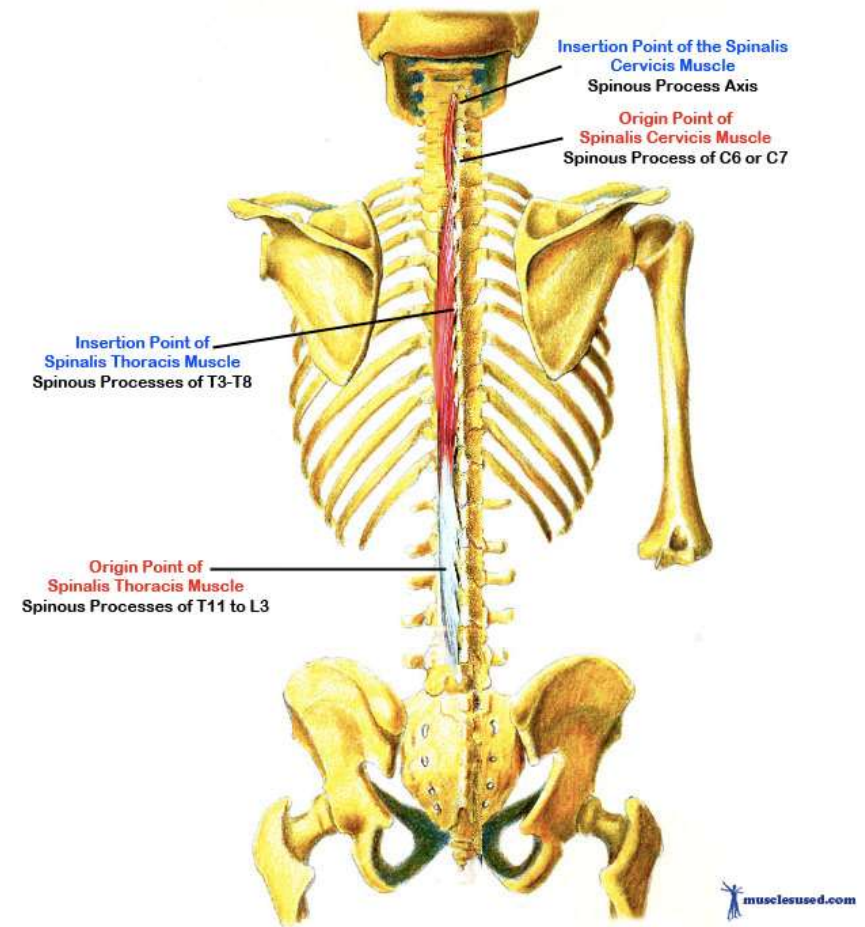
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## Spinalis

- The spinalis muscle is located medially within the erector spinae. It is the smallest of the three muscle columns. It can be divided into the thoracic, cervicis and capitis (although the cervicis part is absent in some individuals).
- **Attachments:** Arises from the common tendinous origin, and attaches to the spinous processes of C2, T1-T8 and the occipital bone of the skull.
- **Innervation:** Posterior rami of the spinal nerves.
- **Actions:** Acts unilaterally to laterally flex the vertebral column. Acts bilaterally to extend the vertebral column and head.

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Spinalis



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## Deep

- The deep intrinsic muscles are located underneath the erector spinae, and are known collectively as the **Transversospinales**. They are a group of short muscles, associated with the transverse and spinous processes of the vertebral column.
- There are three major muscles in this group – the Semispinalis, Multifidus and Rotatores

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## Semispinalis

The semispinalis is the most superficial of the deep intrinsic muscles. Much like the intermediate muscles, it can be divided by its superior attachments into thoracic, cervicis and capitis.

**Attachments:** Originates from the transverse processes of C4-T10. The fibres ascend 4-6 vertebral segments, attaching to the spinous processes of C2-T4, and to the occipital bone of the skull.

**Innervation:** Posterior rami of the spinal nerves.

**Actions:** Extends and contralaterally rotates the head and vertebral column.

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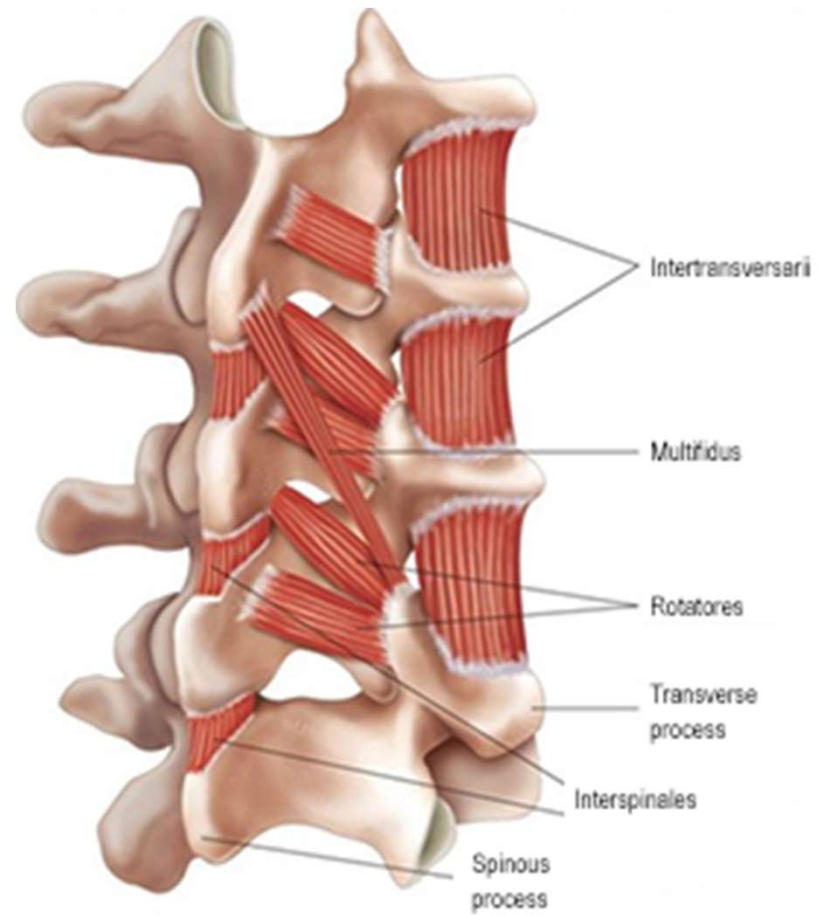
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## Multifidus

- The multifidus is located underneath the semispinalis muscle. It is best developed in the lumbar area.
- **Attachments:** Has a broad origin – arises from the sacrum, posterior iliac spine, common tendinous origin of the erector spinae, mamillary processes of lumbar vertebrae, transverse processes of T1-T3 and articular processes of C4-C7. The fibres ascend 2-4 vertebral segments, attaching the spinous processes of the vertebrae.
- **Innervation:** Posterior rami of the spinal nerves.
- **Actions:** Stabilises the vertebral column.

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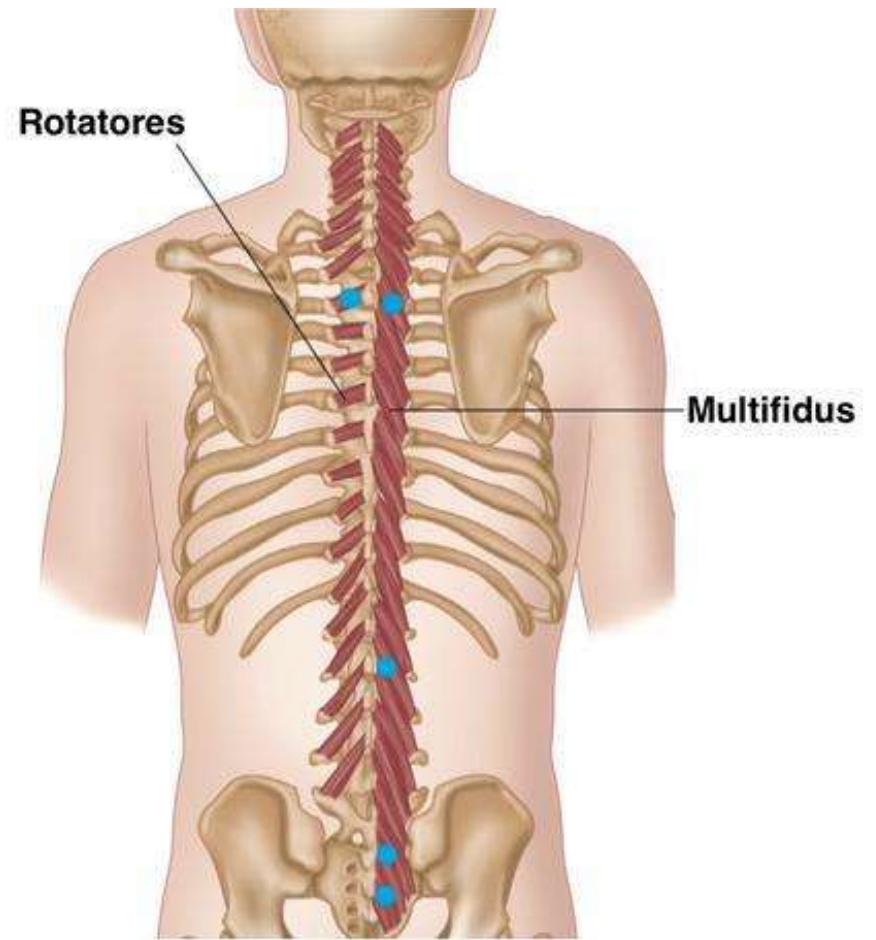
Multifidus





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Multifidus



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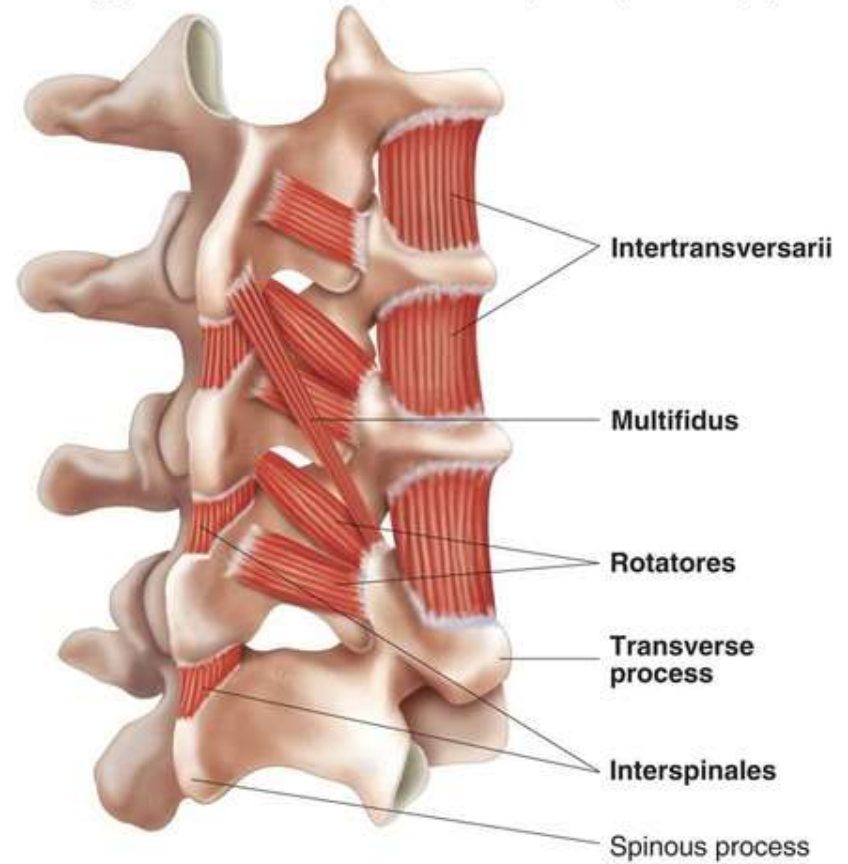
## Rotatores

- The rotatores are most prominent in the thoracic region
- **Attachments:** Originates from the vertebral transverse processes. The fibres ascend, and attach to the lamina and spinous processes of the immediately superior vertebrae.
- **Innervation:** Posterior rami of the spinal nerves.
- **Actions:** Stabilises the vertebral column, and has a proprioceptive function.

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Rotatores

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Posterolateral view

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## Minor Deep Intrinsic Muscles:

- **Interspinales:** Spans between adjacent spinous processes. Acts to stabilise the vertebral column.
- **Intertransversari** – Spans between adjacent transverse processes. Acts to stabilise the vertebral column.
- **Levatores costarum** – Originates from the transverse processes of C7-T11, and attaches to the rib immediately below. Acts to elevate the ribs.