JING ADVANCED MASSAGE TRAINING

LESSON 5A - MOVE OVER GREY'S ANATOMY...

all aboard for Jing's anatomy!

This section describes the anatomy of the neck and shoulder muscles and how we can find and palpate them accurately.

To do this it is important to have an understanding of the anatomical language we use to describe the location and actions of musculoskeletal structures in the body. Firstly, it is important to be aware of the universal reference point for describing anatomical terms – anatomical position.

ANATOMICAL POSITION

Used as a reference point, anatomical position is when the body is standing erect with palms facing forward.

TERMS FOR DIRECTIONS AND POSITION

In anatomy rather than using vague terms like up, down or behind, we use precise terms so that we know exactly what we are referring to.

- **Superior:** A structure closer to the head
- **Inferior:** A structure closer to the feet
- **Posterior/Dorsal:** Towards the back of the body
- **Anterior/Ventral:** Towards the front of the body
- **Medial:** Closer to the midline
- **Lateral:** Further away from the midline
- **Distal:** Further away from limb's origin, the body's midline
- **Proximal:** Closer to a limb's origin
- **Superficial:** Closer to the body's surface
- **Deep:** Deeper in the body

TERMS OF MOVEMENT

Throughout the course we will be referring to certain anatomical movements. Below is a guide to understanding what these terms mean:

- **Flexion:** A movement that brings the bones closer together, decreases the angle at a joint and occurs in the sagittal plane. Usually brings a body part forward from anatomical position (except for the knee).

- **Extension:** A movement that straightens or opens a joint, increases the angle of a joint, occurs in the sagittal plane and brings a body part backwards from anatomical position, except for the knee.

- **Abduction:** Moves a limb laterally away from the midline. Occurs on frontal plane. Only pertains to appendages e.g. to abduct the fingers is to spread them apart.

- **Adduction:** Moves a limb medially toward the body's midline. Occurs on frontal plane. Pertains only to appendages. NB: To adduct the fingers is to bring them together.

- **Rotation:** Pertains only to head and vertebral column. Occurs on transverse plane.

- **Lateral flexion:** Occurs at neck and trunk i.e. when head or vertebral column bend laterally to the side.

- **Protraction and retraction:** Pertains to scapula, clavicle, head and jaw only. Protraction is moving one of these structures anteriorly. Retraction is movement posteriorly.

- **Elevation and depression:** Refers to movement of the scapula and jaw. Elevation is movement superiorly. Depression is movement inferiorly.

- **Medial/internal rotation:** Occurs at shoulder and hip joints. Limb turns in towards midline. Occurs on transverse plane.

- **Lateral/external rotation:** Occurs at shoulder and hip joint. Swings limb away from midline. Occurs on transverse plane.

- **Circumduction:** At shoulder and hip joints. Combination of extension, adduction, flexion and abduction. Together the actions form a cone shaped movement i.e. swimming backstroke.

- **Supination:** Occurs when radius and ulna lie parallel to each other (carrying a bowl of soup) i.e. palms up.

- **Pronation:** Takes place when the radius crosses over the ulna turning the palm down (prone to spill it).

- **Plantar flexion and dorsiflexion:** Refers only to the ankle. Bending the ankle to point your foot into the earth i.e. planting your foot. Dorsiflexion points toes to the sky, i.e. dor-sky flexion).

- **Inversion/eversion:** Occurs at the feet. Inversion brings the sole of the foot medially. Eversion moves the sole laterally.

MOVEMENTS OF THE NECK

This is how these movements look in the cervical spine:

↗ Flexion of the head and neck

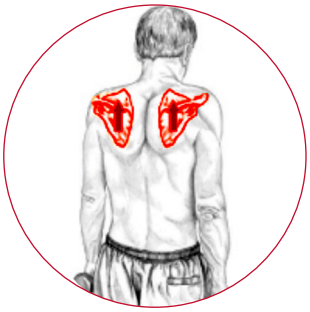
↗ Extension of the head and neck

↗ Rotation of the head and neck

↗ Lateral flexion of the head and neck

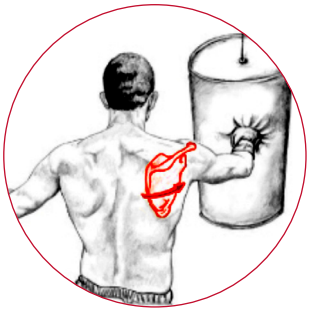
MOVEMENTS OF THE SCAPULOTHORACIC JOINT

The video also makes reference to movements of the scapula at the scapulothoracic joint which are illustrated below:



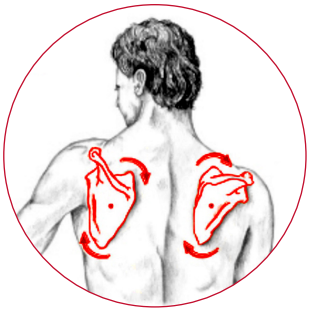
← Elevation of scapula

← Depression of scapula



← Abduction (protraction) of scapula

← Adduction (retraction) of scapula



← Upward and downward rotation of scapula. Left scapula = upward rotation and right scapula = downward rotation

A NOTE ON ATTACHMENT POINTS

[O] = ORIGIN **[I]** = INSERTION **[A]** = ACTION

ATTACHMENT POINTS

These are places where muscle attaches to bone. Classically these have been known as origins and insertions.

The origin of a muscle has been defined as the attachment of the muscle that stays fixed and does not move when the muscle contracts.

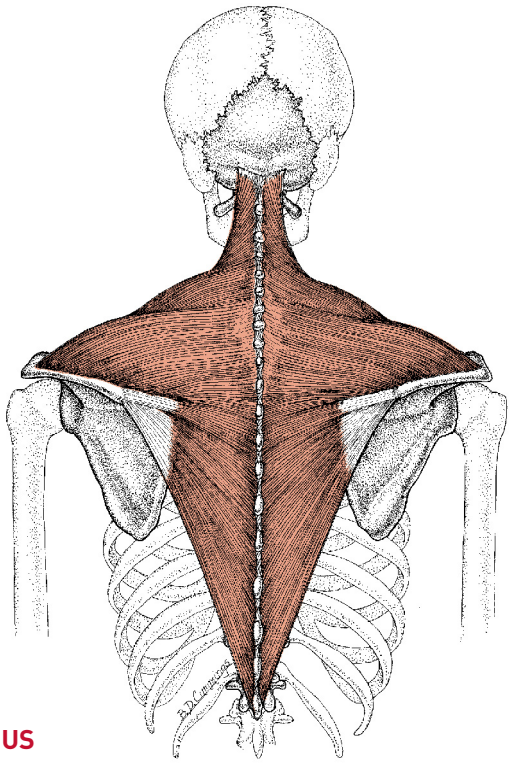
The insertion has been defined as the attachment that does move when the muscle contracts.

However this terminology can lead to confusion as it creates an impression that one attachment point is always fixed and the the other attachment point always moves. In reality origins and insertions often switch – in other words the insertion stays fixed while the origin moves.

This is known as reverse action. For example the psoas can cause the thigh to move toward the trunk in hip flexion but can also cause the trunk to move toward the thigh (as in a forward bend or sit up).

Because of this a simpler terminology is becoming more widespread with attachment points being defined as simply 'attachment points' or 'proximal' and 'distal' attachment points according to their anatomical location.

You will find the classical origin and insertion points in most text books, but be aware that reverse actions can happen.



TRAPEZIUS

There are three parts to the trapezius - upper, middle and lower. Each part performs different actions.

O: External occipital protuberance, medial portion of superior nuchal line of the occiput, ligamentum nuchae and spinous processes of C7- T12

I: Lateral one third of the clavicle, acromion and spine of the scapula

A: UPPER FIBRES

Bilaterally:
- Extend the head and neck

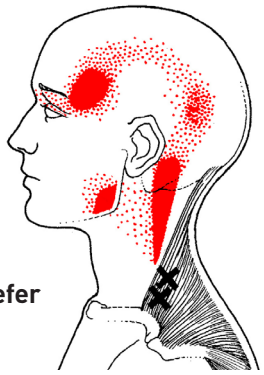
Unilaterally:
- Laterally flex the head and neck to the SAME side
- Elevate the scapula (scapulothoracic joint)
- Rotate the head and neck to the OPPOSITE side
- Upwardly rotate the scapula (scapulothoracic joint)

A: MIDDLE FIBRES
- Adduct (retract) the scapula
- Stabilise the scapula

A: LOWER FIBRES
- Depress the scapula
- Upwardly rotate the scapula

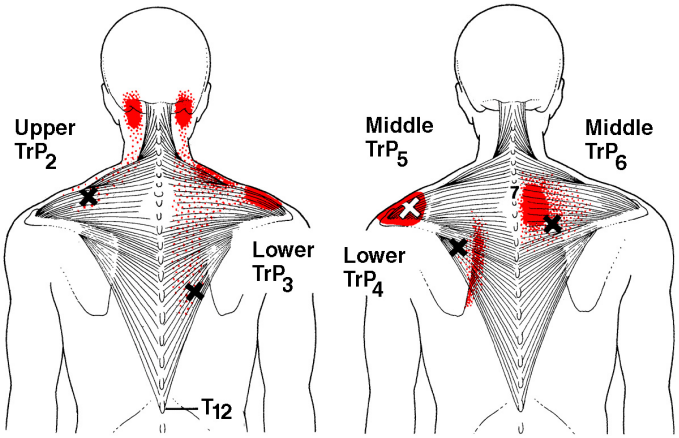
NERDY FACT!
Because of the way that the upper and lower fibres of the trapezius are oriented, they both do an upward rotation of the scapula.

TRIGGER POINTS



Trigger points in the trapezius refer to the following areas:

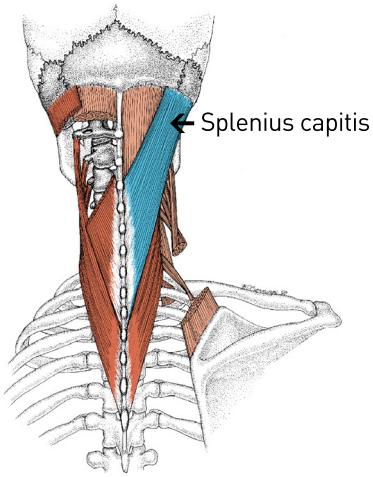
- Locally around the shoulders and the muscle itself.
- In a question mark like pattern around the head.
- Up and under the head (so a big contributor to headaches).
- Between the scapula.



NERDY FACT!

Trigger points in the trapezius are the number one site of trigger point activity in the body.

SPLENIUS CAPITIS



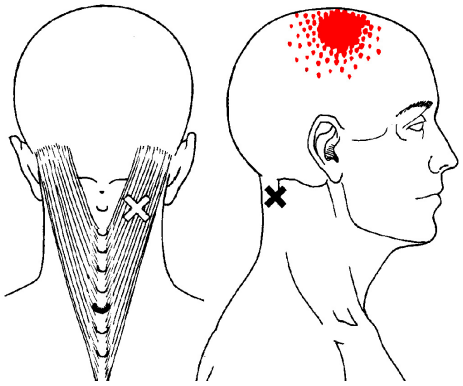
Splenius Capitis is found deep to the trapezius.

O: Inferior one half of the ligamentum nuchae and spinous processes of C7-T3/T4

I: Mastoid process and lateral portion of superior nuchal line.

A: Unilaterally:
- Laterally flex the head and neck
- Rotate the head and neck to the SAME side

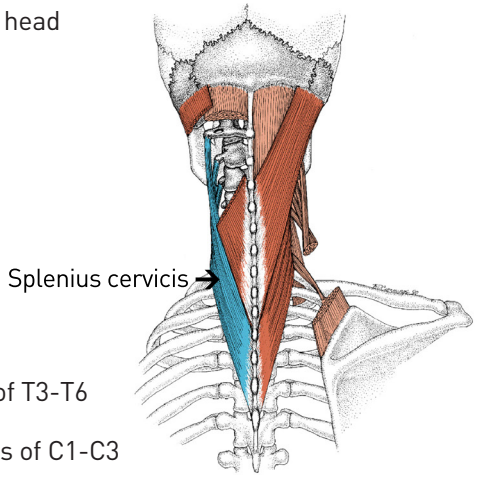
Bilaterally:
- Extend the head and neck



TRIGGER POINTS

Trigger points in the splenius capitis are responsible for:

- Headache pain
- Pain in the top of the head



SPLENIUS CERVICIS

O: Spinous processes of T3-T6

I: Transverse processes of C1-C3

Actions are the same as splenius capitis:

Unilaterally:
- Laterally flex the head and neck
- Rotate the head and neck to the SAME side

Bilaterally:
- Extend the head and neck

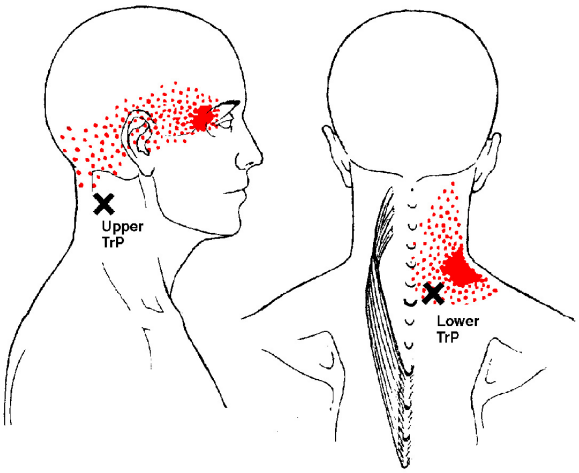
NERDY FACT!

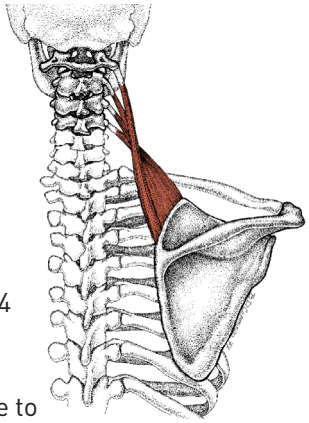
The names of these muscles are derived from the Greek splénion, meaning bandage.

TRIGGER POINTS

Trigger points in the splenius cervicis are responsible for:

- Pain inside the head and behind the eye
- Band of pain around the head
- Stiff neck





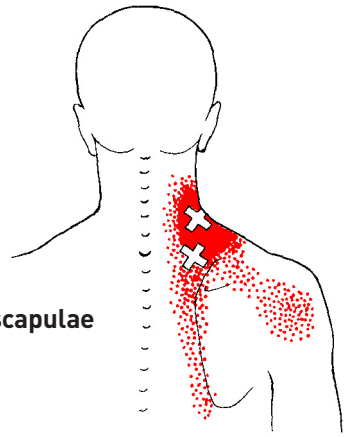
LEVATOR SCAPULAE

O: Transverse processes of C1- C4

I: The medial border of scapula extending from the superior angle to the superior portion of the spine of the scapula

A: Unilaterally
- Elevates the scapula
- Downwardly rotates the scapula
- Laterally flexes the head and neck
- Rotates the head and neck to SAME side

Bilaterally
- Extend head and neck



TRIGGER POINTS

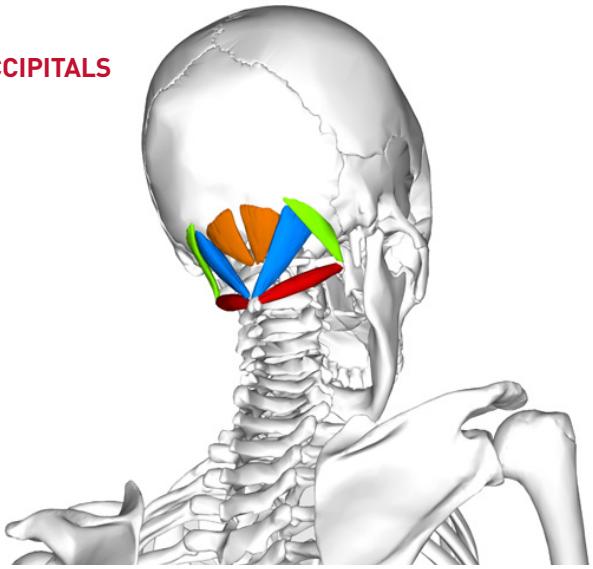
Trigger points in the levator scapulae cause pain:

- Locally around the area
- In a pattern that is similar to splenius cervicis
- Between shoulder blades

NERDY FACT!

Levator scapulae is the number one stiff neck muscle!

SUBOCCIPITALS



- Rectus capitis posterior minor muscle
- Rectus capitis posterior major muscle
- Obliquus capitis superior muscle
- Obliquus capitis inferior muscle

ACTIONS OF SUBOCCIPITALS AS A GROUP

- Rectus Capitis Posterior Major
- Rectus Capitis Posterior Minor
- Oblique Capitis Superior

Action: Rock and tilt the head into extension:

- Rectus Capitis Posterior Major
- Oblique Capitis Inferior

Action: Rotate the head to the same side

- Oblique Capitis Superior

Action: Laterally flex the head to the same side

ATTACHMENT POINTS OF INDIVIDUAL SUBOCCIPITAL MUSCLES

- Rectus Capitis Posterior Minor

Origin: Atlas (specifically the tubercle of the posterior arch of the Atlas)
Insertion: Inferior nuchal line of the occiput

- Rectus Capitis Posterior Major

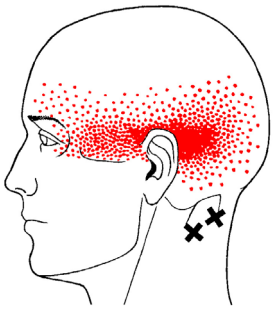
Origin: Spinous processes of axis (C2)
Insertion: Inferior nuchal line of occiput

- Oblique Capitis Superior

Origin: Transverse process of the atlas (C1)
Insertion: Between the nuchal lines of the occiput

- Oblique Capitis Inferior

Origin: Spinous process of the axis (C2)
Insertion: Transverse process of the atlas (C1)



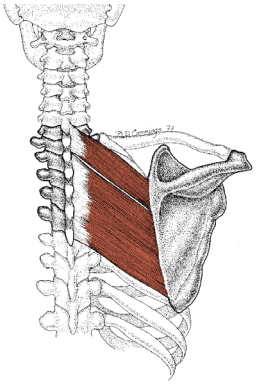
TRIGGER POINTS

Trigger points in the suboccipitals are responsible for:

- Headache pain
- Band of pain deep inside the head

NERDY FACT!

A fascial connection has been found between rectus capitis posterior minor and the dura mater of the brain. This structure has been called the 'myodural bridge' and potentially has important clinical ramifications in the understanding of chronic headaches.



RHOMBOIDS

Origin

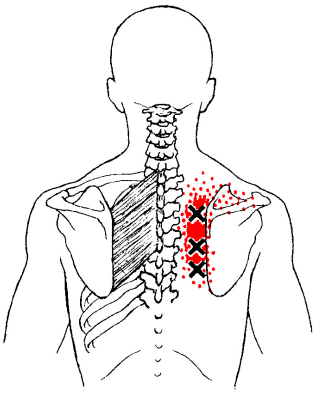
- **Minor:** Spinous processes of C7 and
- **Major:** Spinous processes of T2-T5

Insertion

- **Minor:** Upper portion of medial border of the scapula, across from the root of the spine of the scapula
- **Major:** Medial border of the scapula between the spine of the scapula and the inferior angle

Actions

- Adducts the scapula
- Elevates the scapula
- Downwardly rotates the scapul

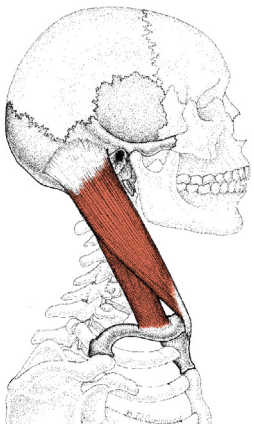


TRIGGER POINTS

Trigger points in the rhomboids refer pain:

- Locally around the medial border of the scapula

- Don't overwork the rhomboids. Pain between the scapulae can be due to a variety of causes (i.e. trigger points in the scalenes)



STERNOCLEIDOMASTOID (SCM)

O: Sternal head: Top of manubrium.

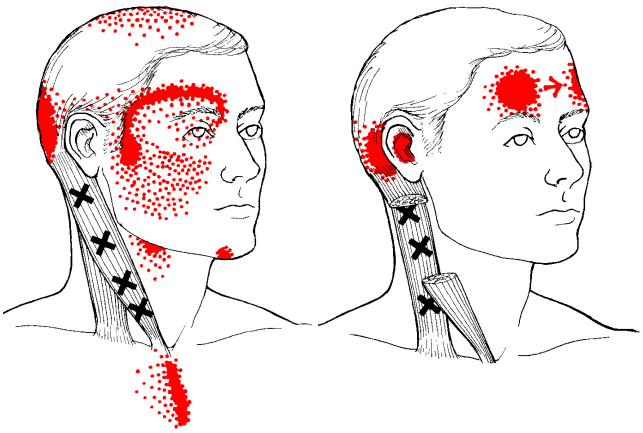
Clavicular head: Medial one third of clavicle.

I: Mastoid process of temporal bone and the lateral portion of superior nuchal line of occiput

A: Unilaterally: Laterally flex the head and neck to the SAME side. Rotate the head and neck to the OPPOSITE side

Bilaterally:

- Flex the neck
- Assist to elevate the ribcage during inhalation



TRIGGER POINTS

Trigger points in the SCM:

- Are a big contributor to headache and migraine pain.
- Are responsible for autonomic phenomena such as tinnitus, ringing in the ear, dizziness, dry cough and watering of eyes.
- Have a pain pattern that is orbital around the eye and can refer into the jaw.
- Can cause a pain pattern that extends bilaterally across the forehead to the other eye.

SCALENES

- There are 3 scalenes - anterior, middle and posterior.
- Found between the trapezius and SCM (known anatomically as the posterior triangle).

Anterior scalene
O: Transverse processes of C3-C6 (anterior tubercles)
I: First rib

Middle scalene
O: Transverse processes of C2-C7 (posterior tubercles)
I: First rib

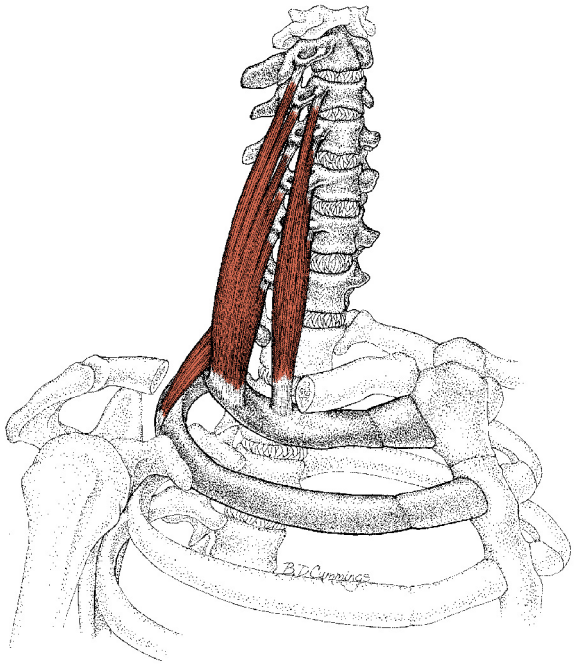
Posterior scalene
O: Transverse processes of C5 and C6/C7 (posterior tubercles)
I: Second rib

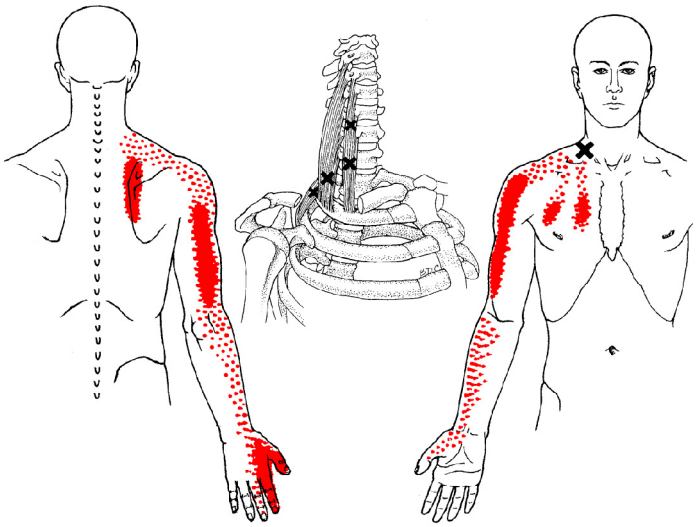
Actions (All scalenes)

Unilaterally:
With the ribs fixed, laterally flex the head and neck to the SAME side (all). Rotate the head and neck to the OPPOSITE side (all)

Bilaterally:
Elevate the ribs during inhalation (all)
Flex the head and beck (anterior)

To feel the scalenes on yourself, place your soft finger pads just posterior to the SCM. Take a quick breath into the top of your chest and you should feel the scalenes pop up.





TRIGGER POINTS

Trigger points in the scalenes can cause:

- Pain down the hands and arm.
- A pain pattern of finger like projections into the chest.
- Pain in the thumb and first finger (often misdiagnosed as RSI or carpal tunnel syndrome).
- Interscapular pain.
- The muscle to become short and tight and press on the brachial plexus (a major nerve bundle which passes between the anterior and middle scalene). This can result in the symptoms of numbness and tingling down the hand and arm known as Thoracic Outlet Syndrome.