

Introduction to Clinical Skills

Practical – Thoracic Spine

Learning Objectives

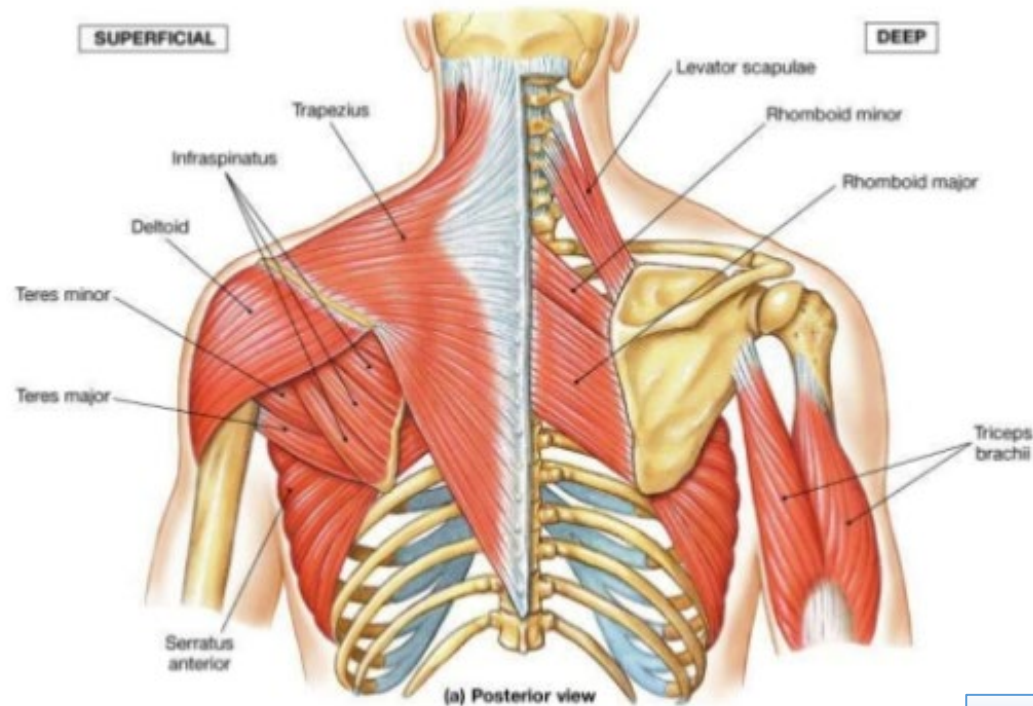
- Describe myology of the Upper Quadrant
- Understand where the origins and insertions are
- Explain the significance of the musculoskeletal anatomy of the region

Introduction

- Structures of upper quadrant perform are involved in a vast amount of movements
- Synergistic effect
- The design of a muscles will relate to its function

The Upper Trunk Region

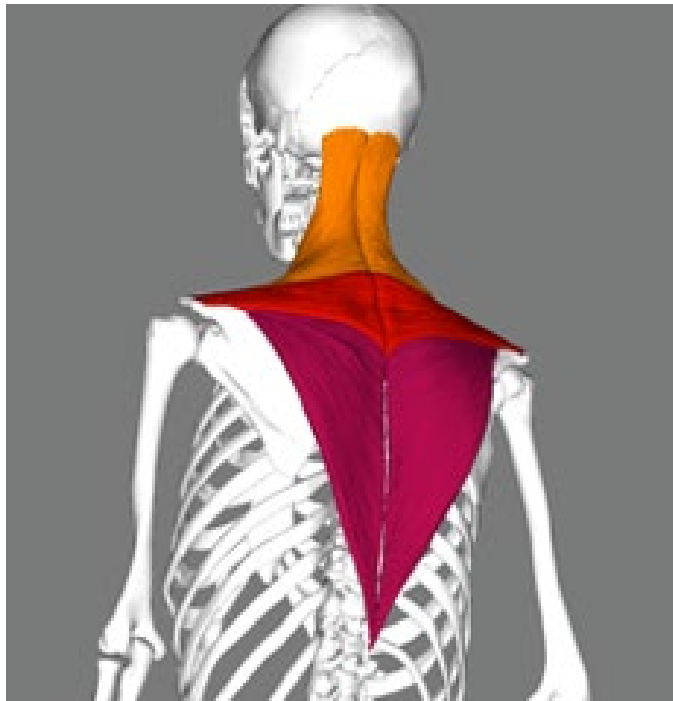
Pectoral Girdle Muscles



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

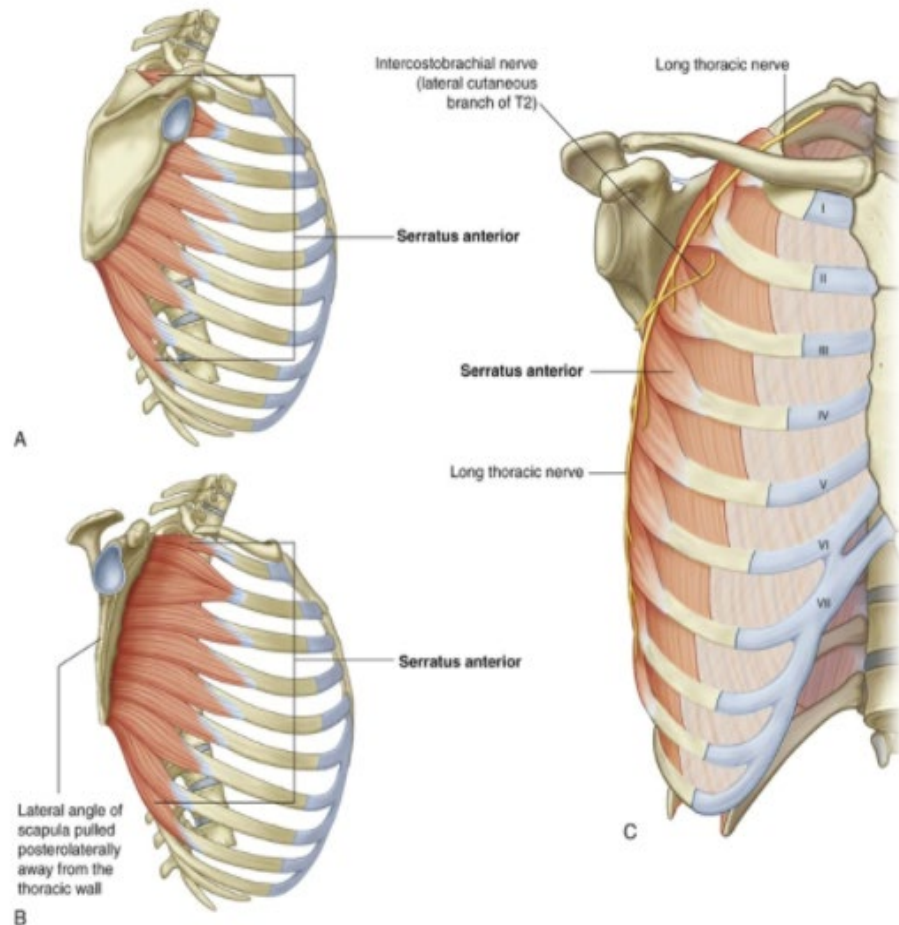
Trapezius

- Lower: put in to shoulder depression and try to take out
- Mid: elevate shoulders and try to depress
- Upper: elevate shoulders and extend neck, try to flex neck



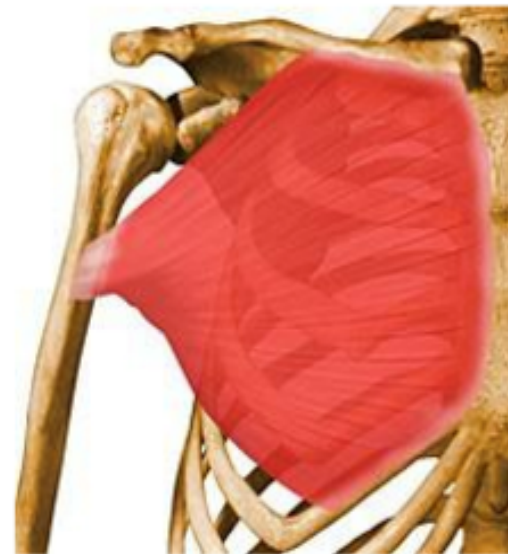
Serratus Anterior

- O: outer surface of upper 8 or 9 ribs and the intercostal fascia
- I: costal surface of the medial border of scapula
- A: protractor and lateral rotator of scapula



Pectoralis Major

- **Origin**
- **Clavicular head:** anterior surface of medial half of clavicle
- **Sternocostal head:** anterior surface of sternum, superior six costal cartilages
- **Insertion** Lateral lip of intertubercular groove of humerus
- **Action** Adducts and medially rotates humerus; draws scapula anteriorly
- **Innervation** Lateral and medial pectoral nerves;



Pectoralis Minor

- **Origin** 3rd to 5th ribs near their costal cartilages
- **Insertion** Medial border and superior surface of coracoid process of scapula
- **Action** Stabilizes scapula by drawing it inferiorly and anteriorly against thoracic wall
- **Innervation** Medial pectoral nerves;



Rhomboid Major and Minor

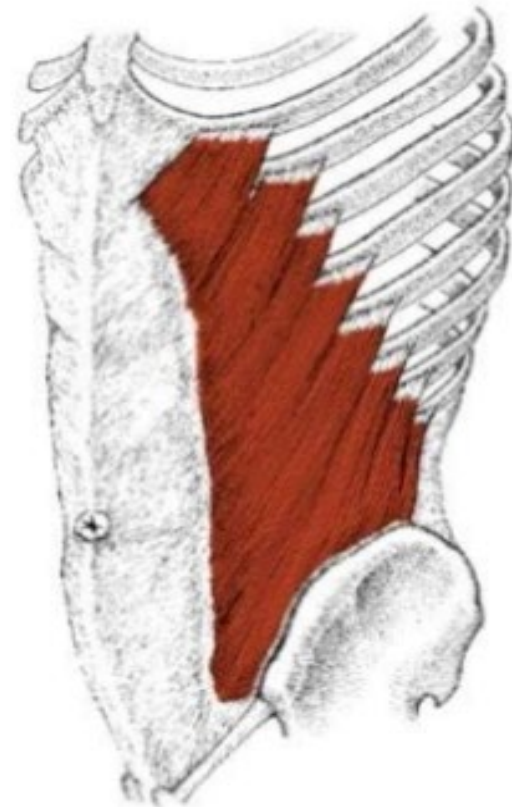
- **Origin**
- **Minor:** nuchal ligament and spinous processes of C7 and T1 vertebrae
Major: spinous processes of T2 - T5 vertebrae
- **Insertion** Medial border of scapula from level of spine to inferior angle
- **Action** Retract scapula and rotate it to depress glenoid cavity; fix scapula to thoracic wall
- **Innervation** Dorsal scapular nerve (C4 and **C5**)



Myology -

External oblique

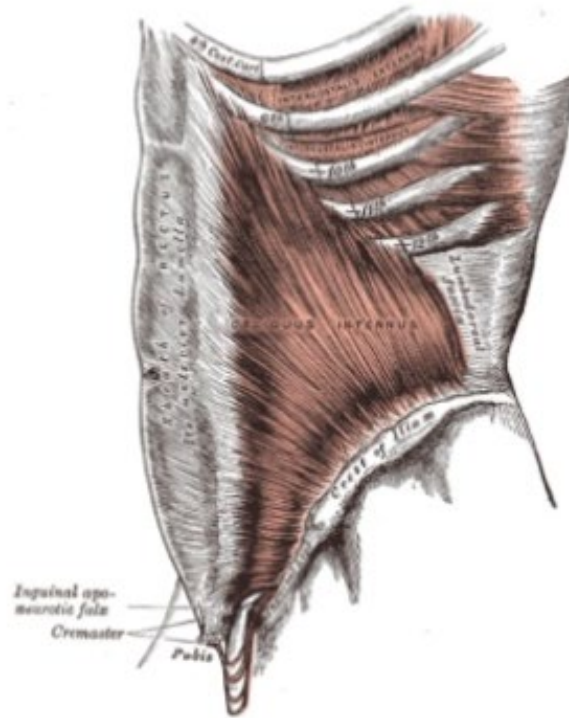
- **Origin:** external surfaces and inferior borders of 5-12 ribs with serr ant and lat dorsi
- **Insertion:** iliac crest, linea alba, forms inguinal ligament
- **Direction:** inferiorly and anteriorly
- **Nerve supply:** T7 – L1



Myology - Core and Pelvis

Internal oblique

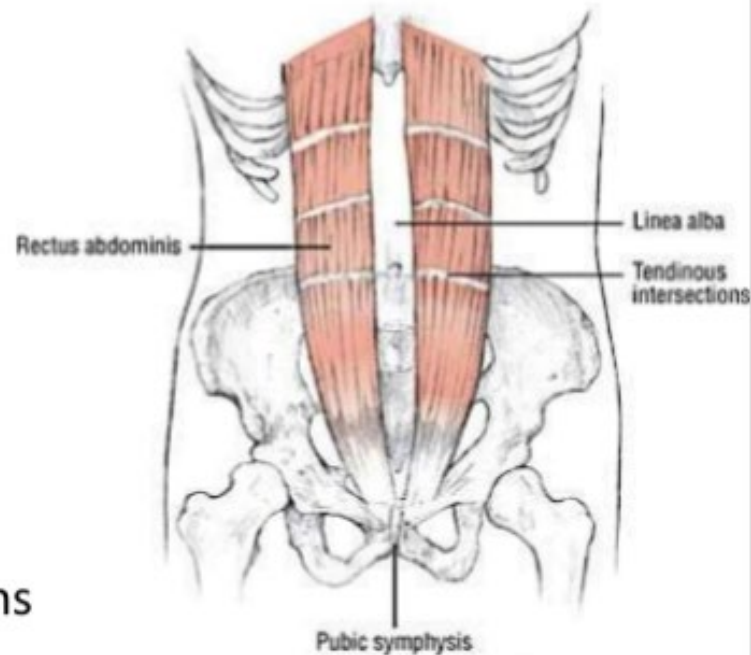
- **Origin:** thoracolumbar fascia, iliac crest, lat 2/3 of inguinal ligament
- **Insertion:** pectan pubis (conjoint tendon), linea alba, 10-12 ribs
- **Direction:** superiorly and anteriorly
- **Nerve supply:** T7 – L1



Myology – Core and Pelvis

Rectus abdominis

- **Origin:** Pubic crest
- **Insertion:** costal cartilage 5-7, xiphoid process
- **Direction:** vertical
- **Nerve supply:** T7-T11
- Tendinous intersections



Myology – Erector Spinae

Spinalis



Origin

- Spinous processes of cervical, thoracic and lumbar vertebrae

Insertion

- Spinous processes of superior vertebrae to origin

Joint crossed

- Vertebrae

Joint action

- Extends the spine

Myology – Core and Pelvis

Iliocostalis



Origin

- Ribs and iliac crest

Insertion

- Transverse processes of cervical vertebrae and ribs superior to origin

Joint crossed

- Vertebrae

Joint action

- Extends the spine

Myology – Core and Pelvis

Longissimus



Origin

- Transverse Processes of cervical, thoracic and lumbar vertebrae

Insertion

- Transverse Processes of superior vertebrae to origin

Joint crossed

- Vertebrae

Joint action

- Extends head and rotates it to same side, extends the spine

Myology – Core and Pelvis

Multifidus



Origin

- Sacrum, and transverse processes of vertebrae.

Insertion

- Spinous processes 2-4 vertebrae superior to origin.

Joint crossed

- Intervertebral joints of vertebral column.

Joint action

- Extension of vertebral column.
- Rotation of vertebral column.
- Important to lumbar spine stability because it is a 'local' muscle, controlling the fine positioning of adjacent vertebrae.

Myology – Core and Pelvis

Quadratus Lumborum



Origin

- Iliac crest and Iliolumbar fascia.

Insertion

- Upper 4 lumbar vertebrae and lower margin of 12th rib.

Joint crossed

- Intervertebral joints of lumbar vertebrae.

Joint action

- Unilateral concentric contraction: lateral flexion of lumbar spine.
- Unilateral isometric contraction: prevents lateral flexion of lumbar spine (e.g. when carrying a heavy suitcase in one hand).
- Bilateral eccentric contraction: assists in preventing hyperflexion of lumbar spine.

Manual Muscle Tests

- Erector Spinae
- Erector Spinae as a Side Flexor
- Rectus Abdominis
- Internal Oblique/ External Oblique
- Pectoralis Major
- Serratus Anterior

Active ROM

- Flexion
- Extension
- Right Side Flexion
- Left Side Flexion
- Right Rotation
- Left Rotation

Passive ROM

- Flexion
- Extension
- Right Side Flexion
- Left Side Flexion
- Right Rotation
- Left Rotation

Resisted ROM

- Flexion
- Extension
- Right Side Flexion
- Left Side Flexion
- Right Rotation
- Left Rotation