



Done by: Rama Alwraikat

General Anatomy

Lecture 10: Muscles of Trunk

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المنوع مابين

A. Intercostal Muscles

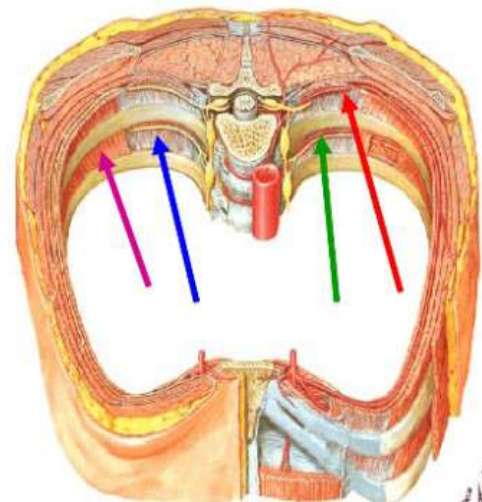
عضلات مابين المنوع

Thoracic Wall

* Formed by the thoracic cage + the soft tissues which occupy the intercostal spaces.

تحتوي

* It includes Intercostal muscles, membranes, nerves & vessels.

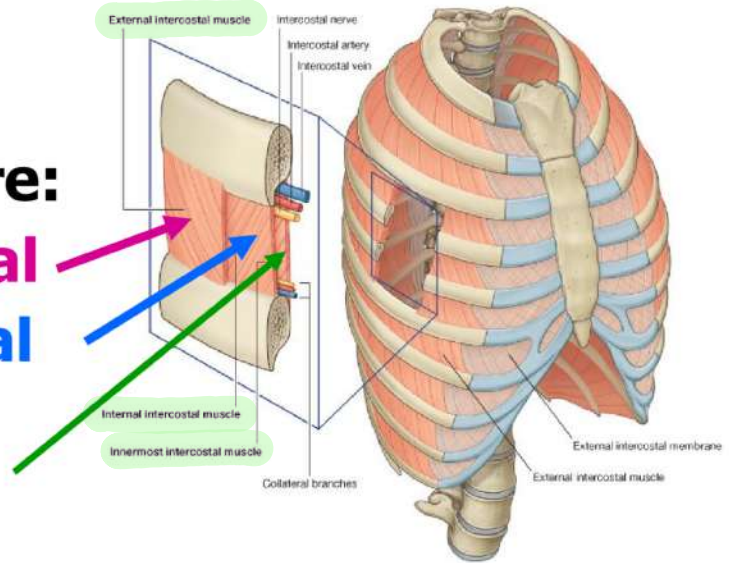


Handwritten signature or mark in the bottom right corner of the diagram.

Intercostal muscles and membranes

**** 3 layers of flat muscles from outside → inwards are:**

- 1. External intercostal**
- 2. Internal intercostal**
- 3. Innermost intercostal**



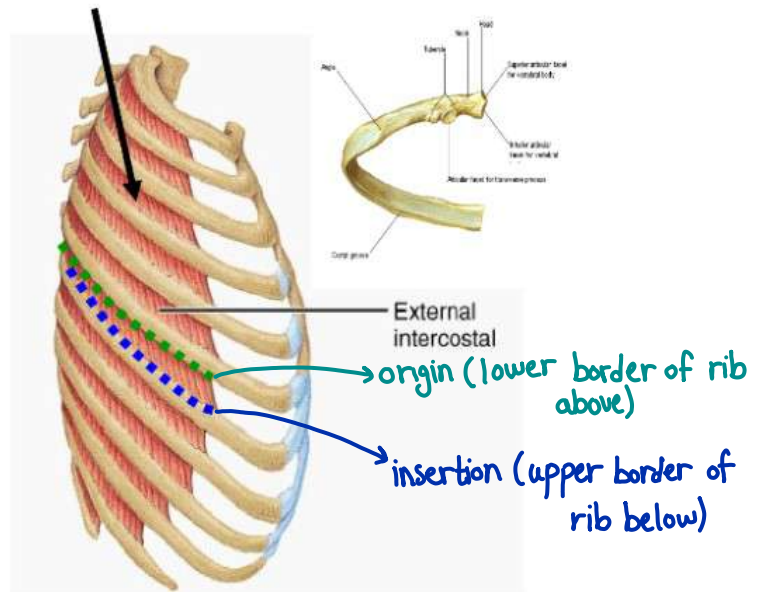
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1. External intercostal Muscle

* **Direction of fibers** → obliquely downwards & forwards.

* **Origin** → lower border of rib above.

* **Insertion** → upper border of rib below.



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Oblique → مائلة

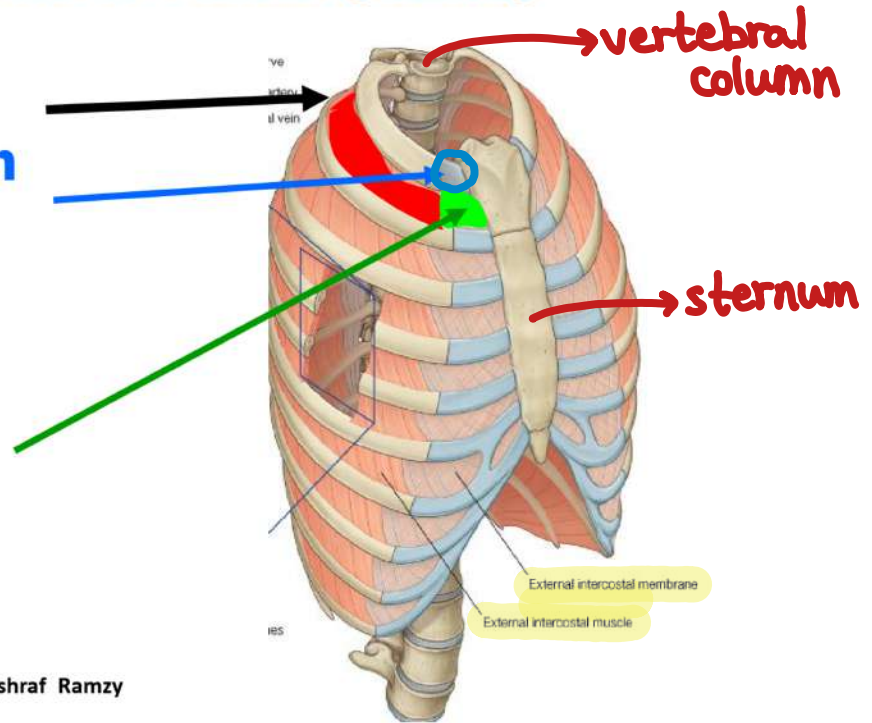
forwards → متجهة من الخلف للأمام

Downwards → متجهة من فوق لتحت

1. External intercostal Muscle (contd.)

* **Extent** → from from tubercle of rib posteriorly to junction of rib with its costal cartilage (costo-chondral junction) anteriorly where it is replaced by external (anterior) intercostal membrane which extends to lateral margin of sternum.

↓
حاجه



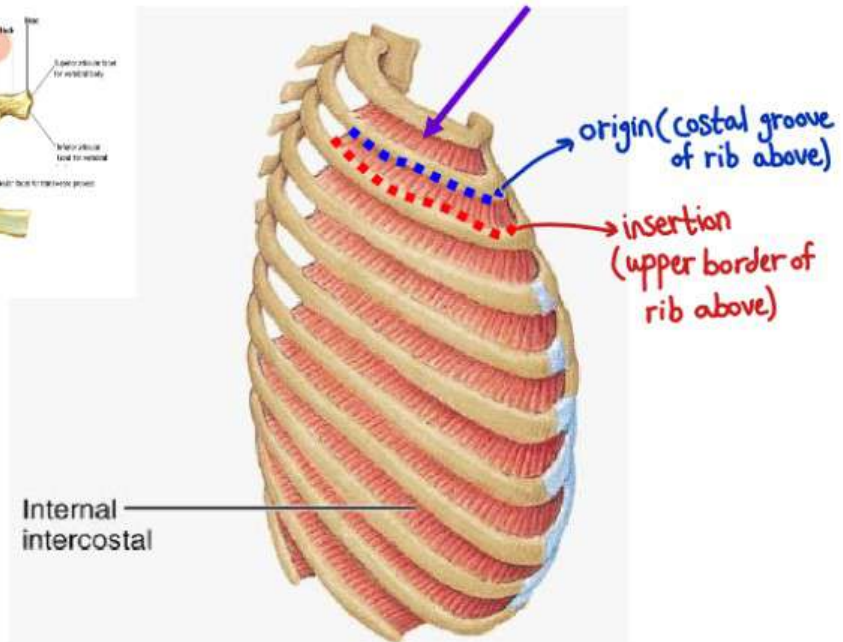
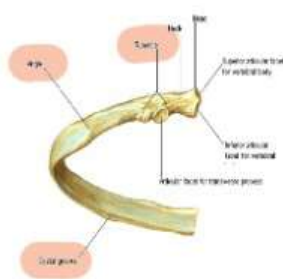
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2. Internal intercostal muscle

* **Direction of fibers** → downwards & backwards.

* **Origin** → costal groove of rib above.

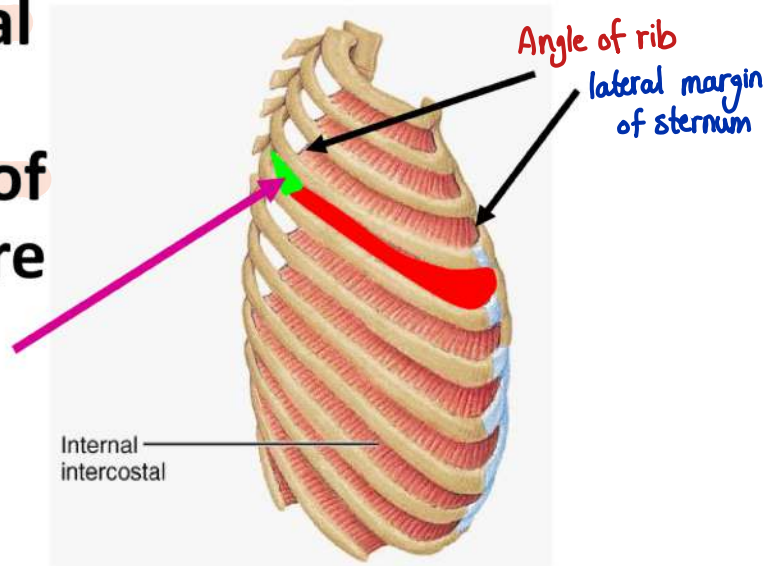
* **Insertion** → upper border of rib below.



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2. Internal intercostal muscle (contd.)

* Begins from lateral margin of sternum anteriorly to angle of rib posteriorly where it is replaced by internal (posterior) intercostal membrane.



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عند بداية تكون الجبين كانت Innermost Intercostal & Internal Intercostal



one muscle

بكن انفتلوا لعنلتين عن طريقه nerves & vesseles

والدليل على ذلك انه العنلتين لهم نفس Direction ← downwards & backwards

3. Innermost intercostal muscle

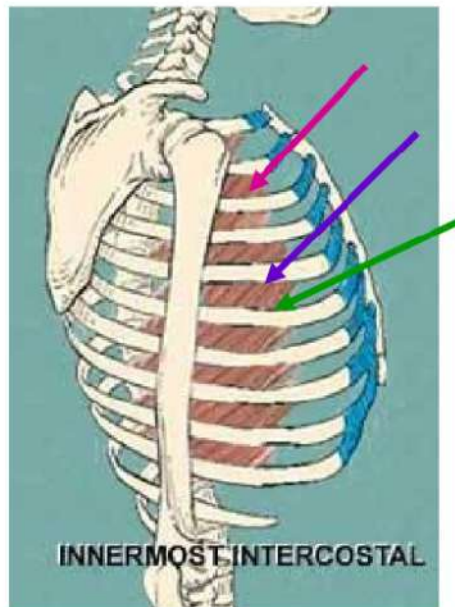
* It is the deepest part of internal intercostal which is split off by the intercostal nerve & vessels. انقسموا

* Direction of fibers → downwards & backwards.

* Origin → costal groove of rib above.

* Insertion → upper border of rib below.

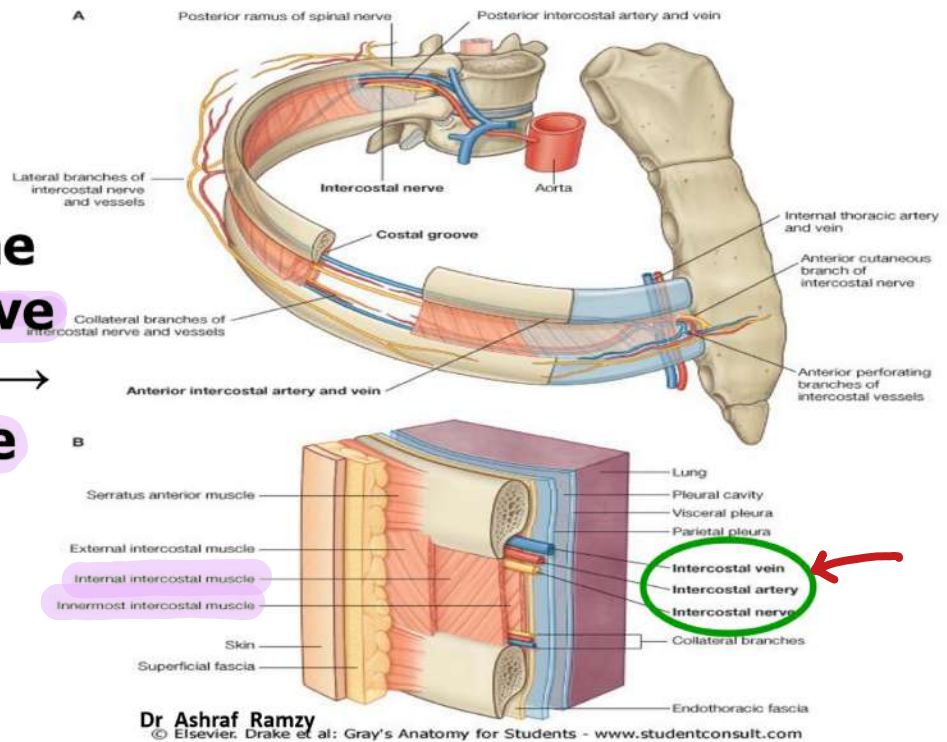
* Occupies the middle 2/4 of intercostal space.



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↓
it is absent in the anterior 1/4 of the intercostal space & in the posterior 1/4 of the intercostal space
← غير موجوده

* The neurovascular plane (i.e. the plane where the intercostal nerve & vessels run) → lie between the intercostal & innermost intercostal muscles.



** Action of Intercostals:

- **External intercostals** → elevate the ribs (**inspiration**). *الاستهوية*
- **Internal & innermost intercostals** → depress the ribs (**expiration**). *الزفير*

** Innervation of Intercostal Muscles:

All are supplied by the corresponding intercostal nerves.

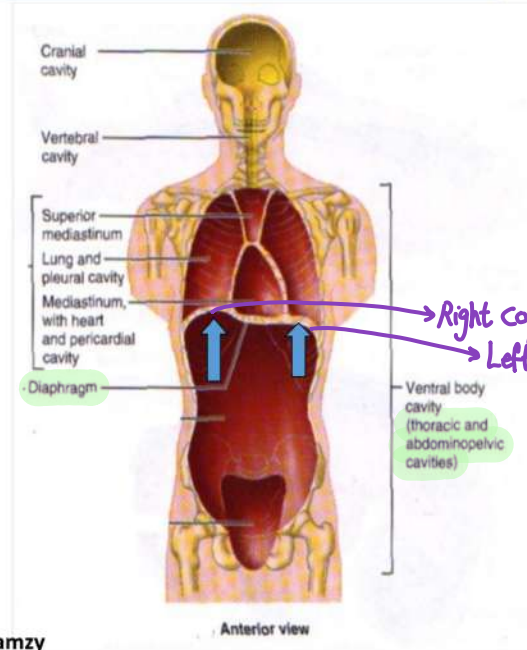
الحجاب الحاجز

SHAPE OF DIAPHRAGM

شكل القبة

- * **Dome shaped.**
- * **A musculo-tendinous partition which separates the thoracic cavity from the abdominal cavity.**
- * **Upper surface is convex towards the thoracic cavity.**
- * **Lower surface is concave towards the abdominal cavity.**
- * **Right side is called Right copula & bulges higher up than the left copula.**

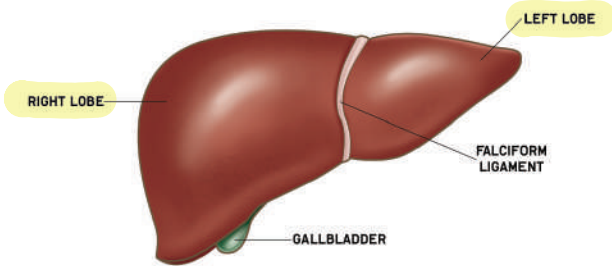
حاجز



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because below the right copula the right lobe of the liver which is larger than the left lobe

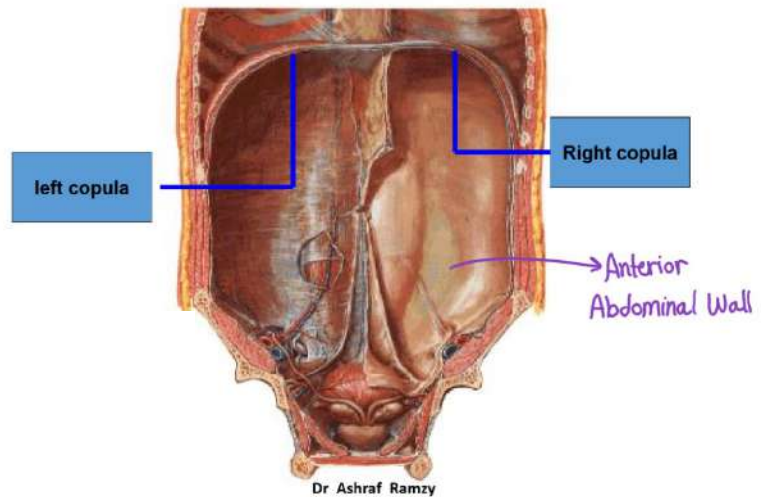
LIVER



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AnatomyStuff

Internal View

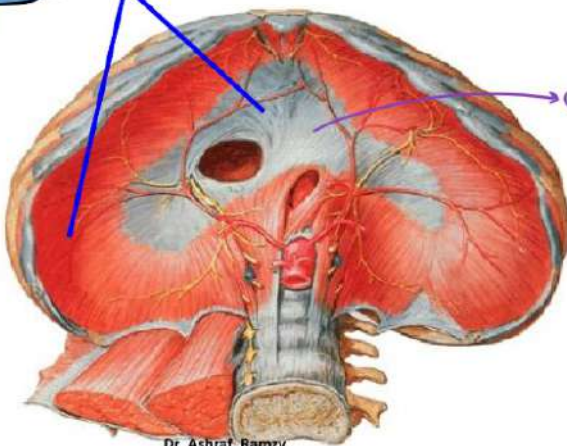


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Diaphragm
Abdominal Surface

musculotendinous

مزيج من
Muscles + Tendon



central tendon
مترتيب

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* Right Copula is supplied by Right Phrenic Nerve

* Left Copula is supplied by Left Phrenic Nerve

Nerve supply of Diaphragm:

* **Motor supply: right & left phrenic nerves**

Action of Diaphragm:

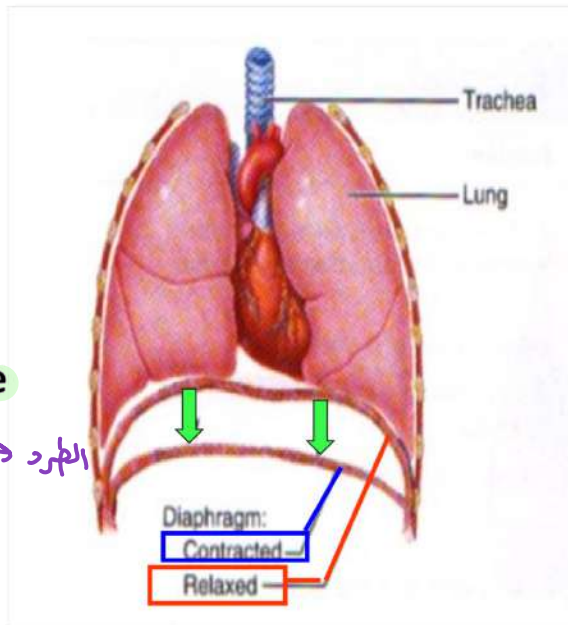
* Diaphragm is the main muscle of inspiration.

* When it contracts → it descends to increase the vertical diameter of the thoracic cavity.

* It is active during forced expulsive acts, e.g. coughing, vomiting, defecation, urination and parturition.

الولادة

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* Active Process

↓
Inspiration

↓
because of contraction of Diaphragm

* Passive Process

↓
Expiration

↓
because of relaxation of Diaphragm

* Most important Muscles → Cardiac Muscle
→ Diaphragm
↓
it's important for respiration

Major foramina of the diaphragm

1. **Inferior Vena caval opening**

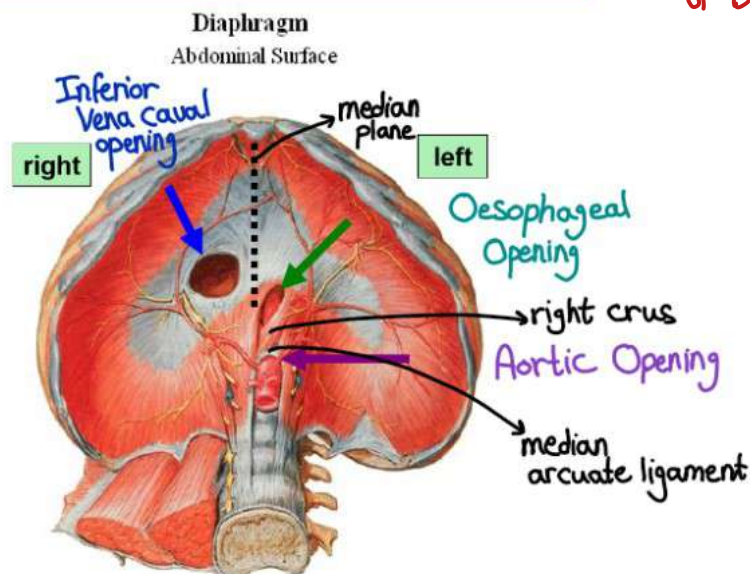
→ 1 inch to the right of median plane piercing central tendon.

2. **Oesophageal opening** → 1

inch to left of median plane piercing right crus.

3. **Aortic opening** → in mid line

behind median arcuate ligament.



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* معلومات للمعينة غير داخله بالامتحان :

When the Diaphragm contracts:

- Aortic Opening is not affected to maintain the blood flow to the lower half of the body
- Oesophageal Opening gets smaller to act as a sphincter to prevent the reflex of the food from Stomach to the esophagus.
- Inferior Vena Caval Opening get wider to help in the veinous flow of the veinal blood in the Vena Cava from below upwards.

* جدران Thoracic Cage ← عبارة عن Bones و Muscles تكونوا between Ribs

* جدران Abdomin ← عبارة عن Muscles

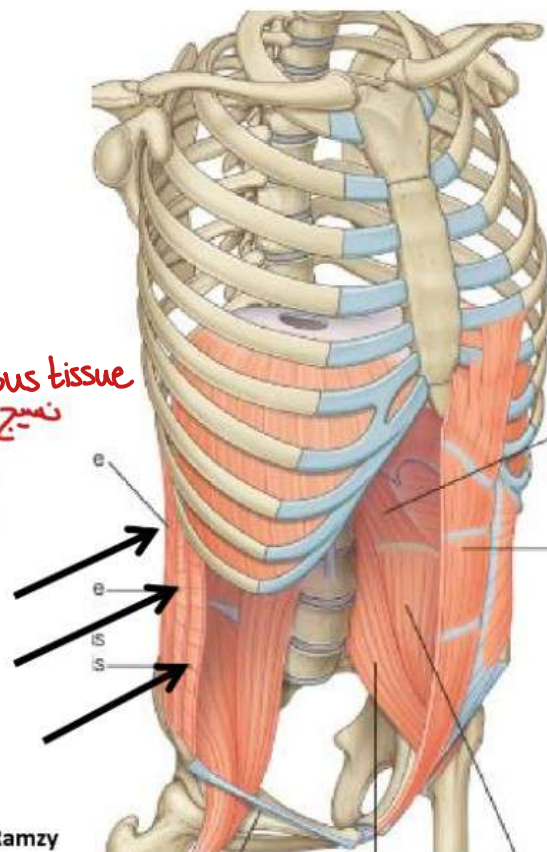
Muscles of Anterior Abdominal Wall

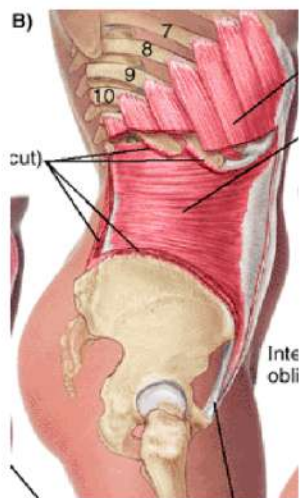
Muscles of Anterior Abdominal Wall

* Three flat muscles whose fibers begin posterolaterally, pass anteriorly, and are replaced by an aponeurosis as the muscle continues towards the midline:

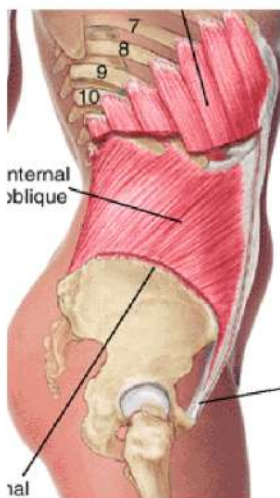
1. External oblique ms.
2. Internal oblique ms.
3. Transversus abdominis ms.

fibrous tissue
نسيج

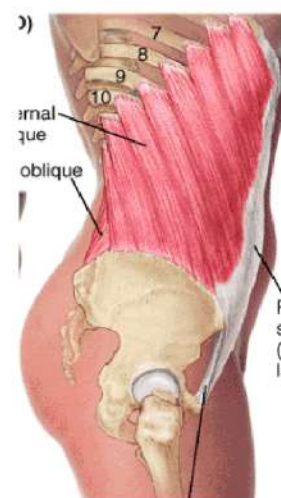




Transversus abdominis
(Its fibers run transeversely)



Internal oblique
(Its fibers run obliquely downwards, backwards & laterally)



External oblique
(Its fibers run obliquely downwards, forwards & medially)

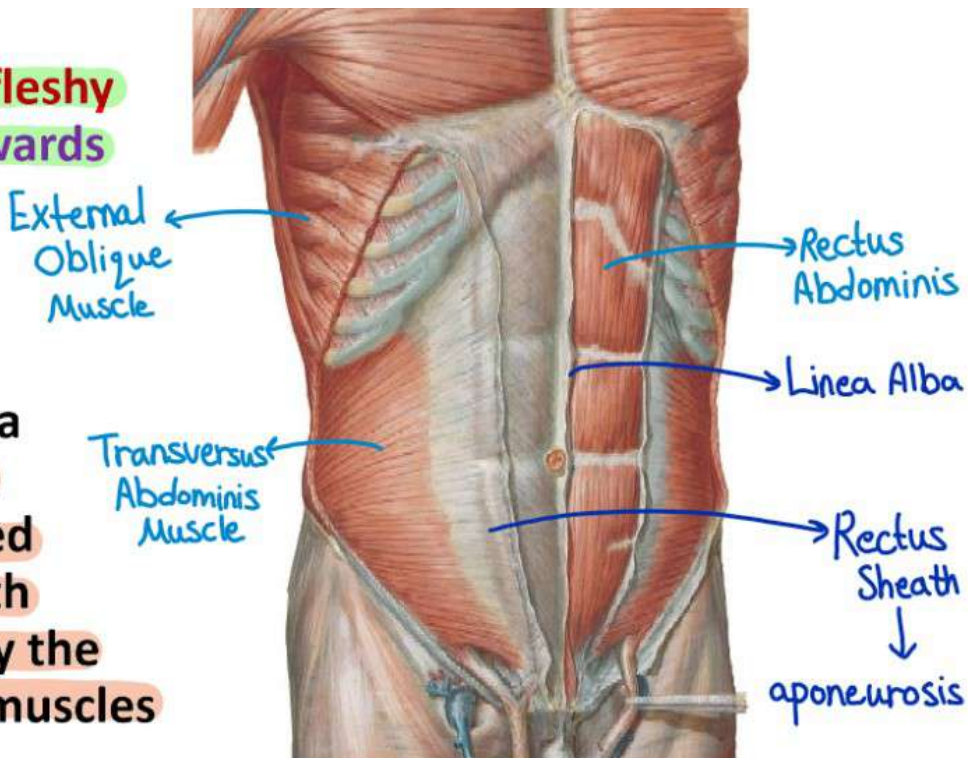
They have different direction of muscle fibers to strengthen the abd. wall.

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* The muscles have wide **fleshy origin** & **aponeurosis** towards **insertion** forming:

1. Rectus Sheath.
2. Linea alba

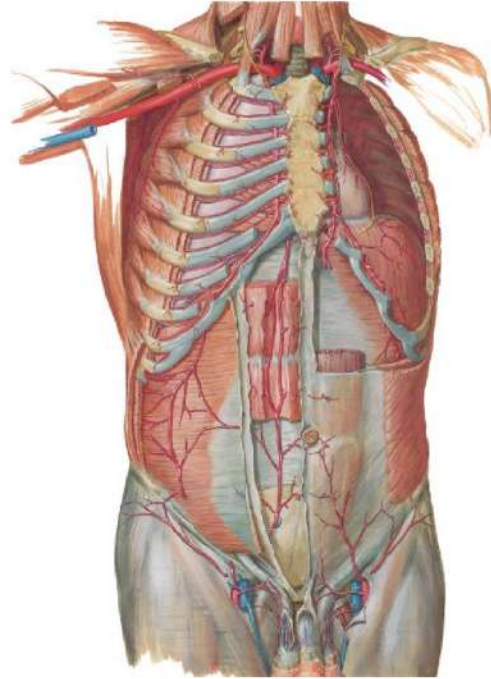
* The **rectus abdominis** is a **vertical muscle**, near the **midline**, which is **enclosed within a tendinous sheath (Rectus Sheath)** formed by the **aponeuroses of the flat muscles**



* Neurovascular plane:

* Lies between **internal oblique & transversus abdominis.**

* **Vessels & nerves run in this plane.**



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**** Innervation of muscles of Anterior Abdominal Wall:**
 The 3 anterolateral muscles & the rectus are supplied by **lower six thoracic spinal nerves (T7 to T12).**

** Action of muscles:

1. Support & protect abdominal contents.

2. Expiration.

3. Expulsive acts as vomiting, ^{التقيؤ} micturition, defecation, labour. → ^{الولادة}

4. Movements of the trunk:

* Flexion of the trunk.

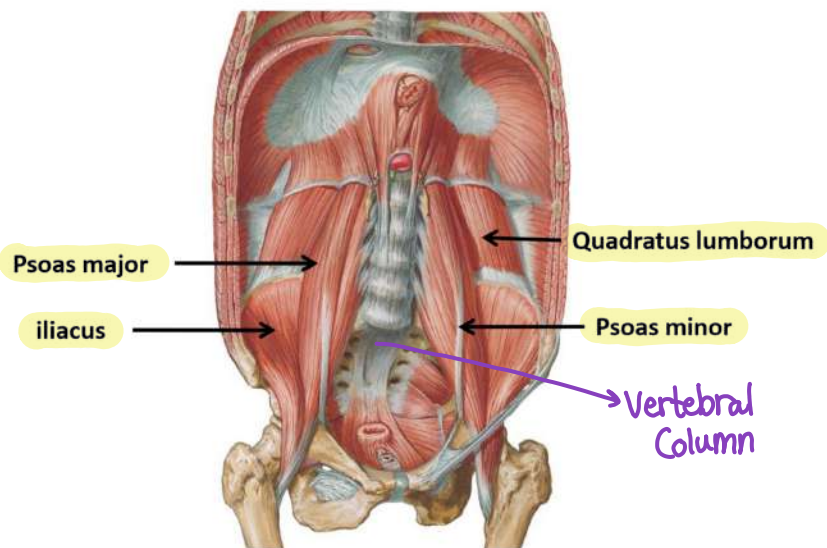
* Lat. Flexion of the trunk.

* Expiration → when these muscles contract, the intra abdominal pressure increases so the Diaphragm relaxed & lungs expire

MUSCLES OF POSTERIOR ABDOMINAL WALL

They are 4 muscles:

1. Psoas major.
2. Psoas minor (may be absent).
3. Quadratus lumborum.
4. Iliacus.



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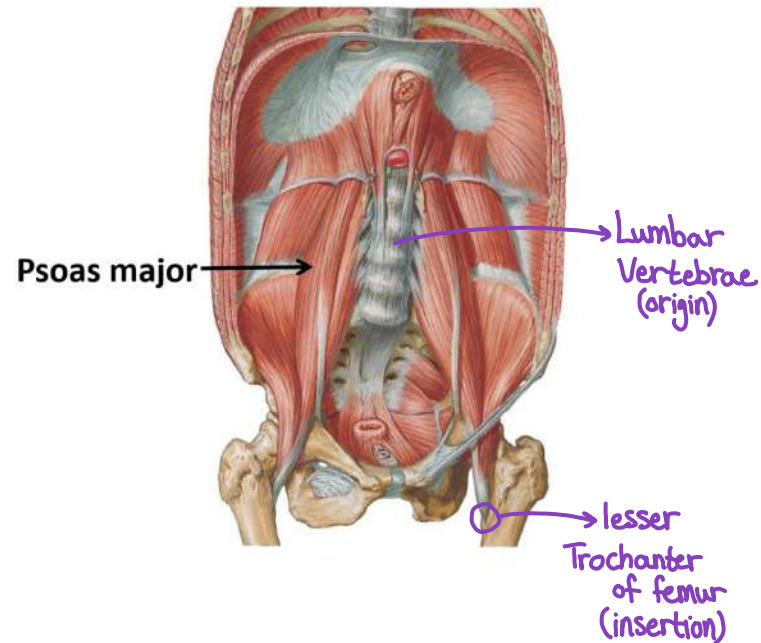
1. Psoas Major

* **Origin:** from lumbar vertebrae.

* **Insertion:** into lesser trochanter of femur.

* **Action:**

1. The main flexor of thigh (hip joint).
2. It can flex the trunk on the thigh



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2. Psoas Minor

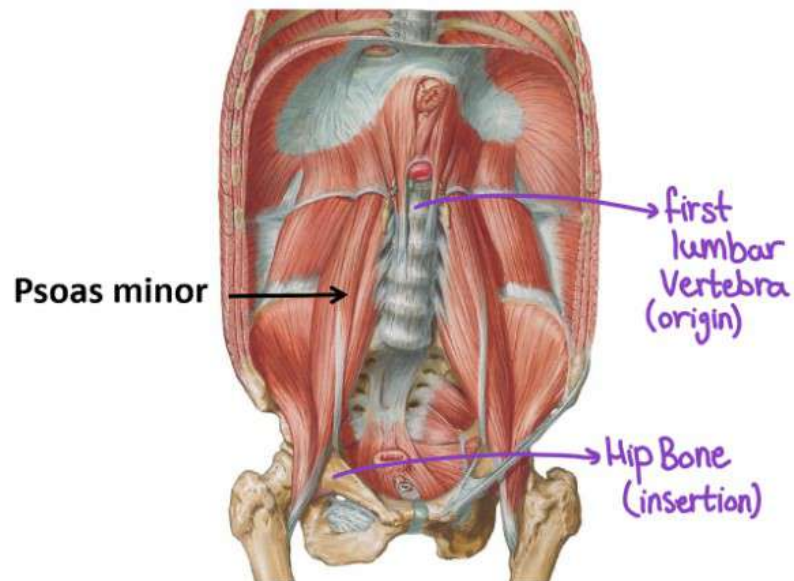
* **May be absent.**

* **Origin:** from 1st lumbar vertebra.

* **Insertion:** into hip bone.

* **Action:**

Helps in flexion of thigh (hip joint).



3. Quadratus Lumborum

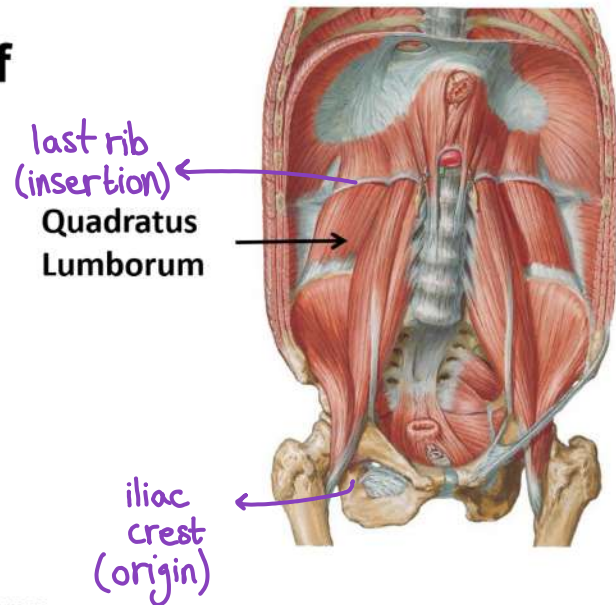
* **Origin:** from iliac crest of hip bone.

* **Insertion:** into last rib.

* **Action:**

1. Lateral flexion of the trunk.

2- Extension of trunk.



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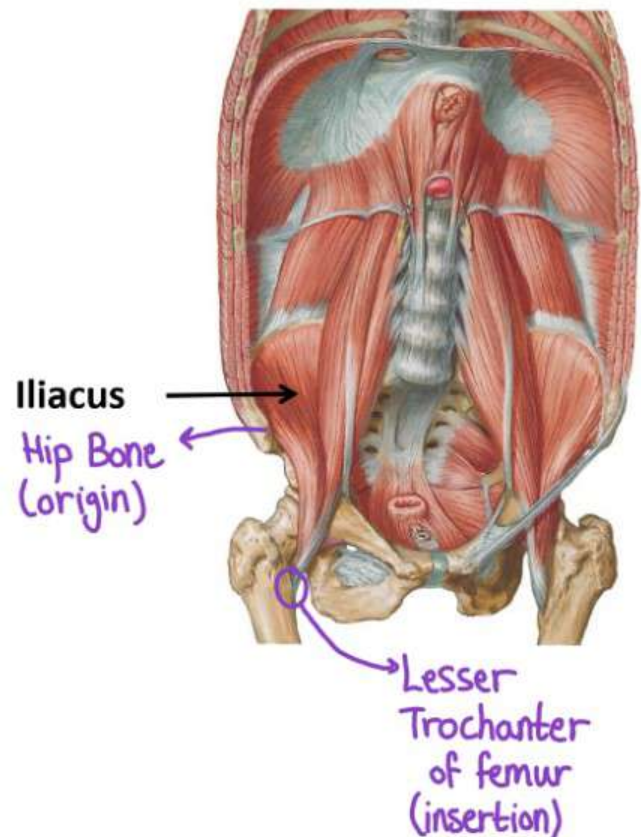
4. Iliacus

* **Origin:** from hip bone.

* **Insertion:** lesser trochanter of femur.

* **Action:**

Helps in flexion of thigh (hip joint).

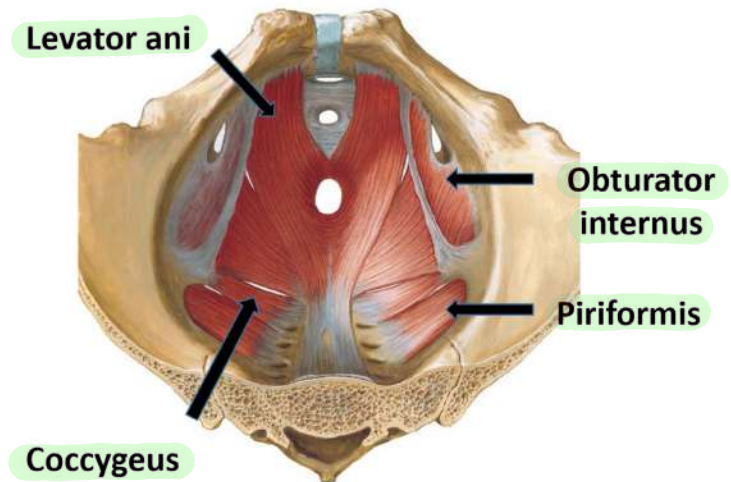


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MUSCLES OF PELVIS

**** Muscles of the pelvic wall: piriformis and obturator internus.**

**** Muscles of the pelvic floor (pelvic diaphragm): levator ani and coccygeus.**



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