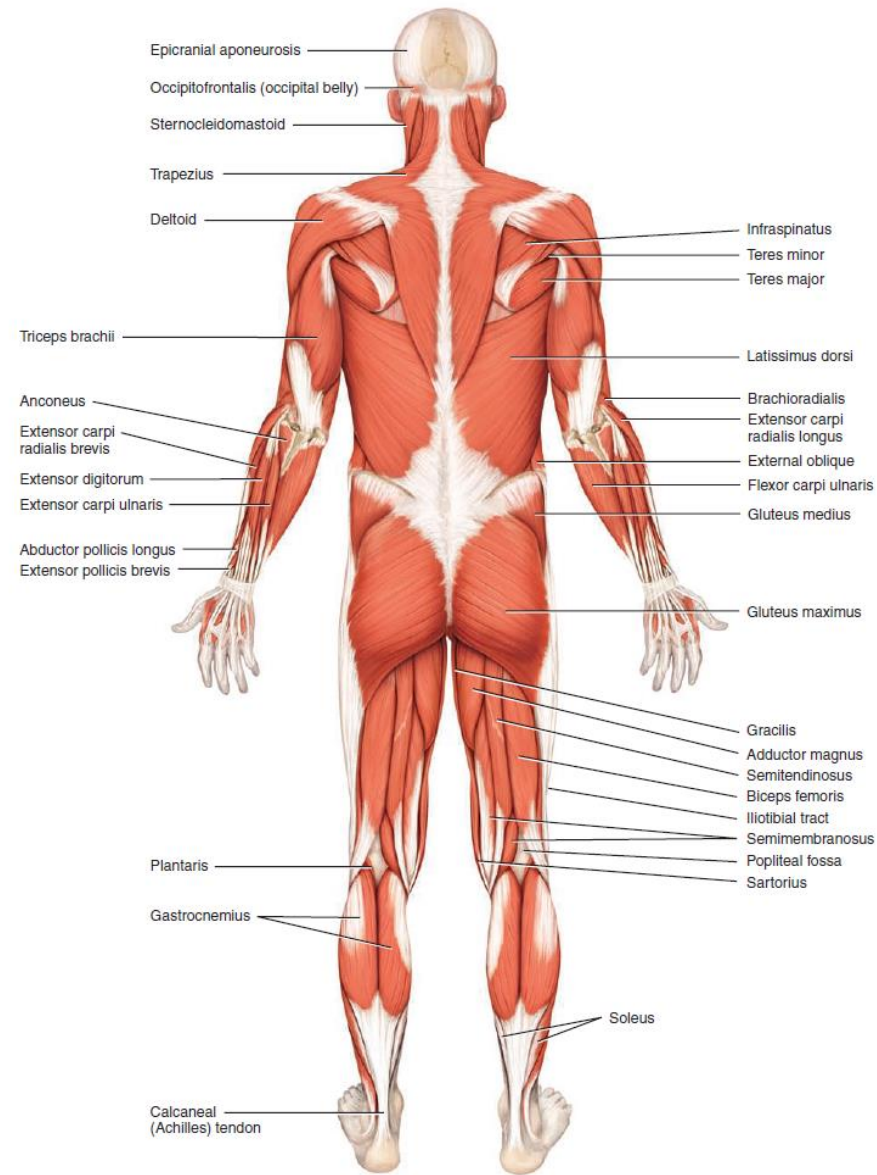
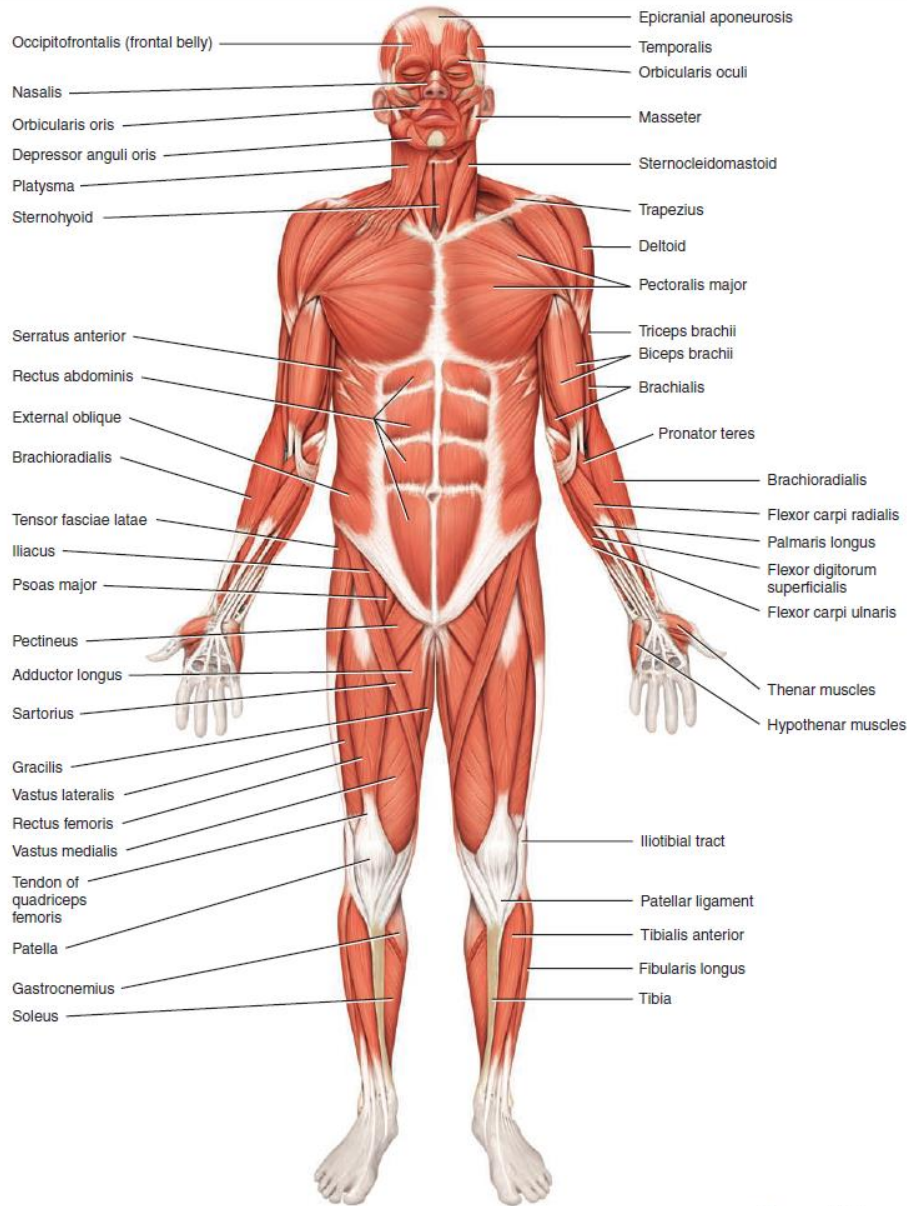


The Muscular System



(b) Posterior view

Respiratory Muscles Of The Thorax

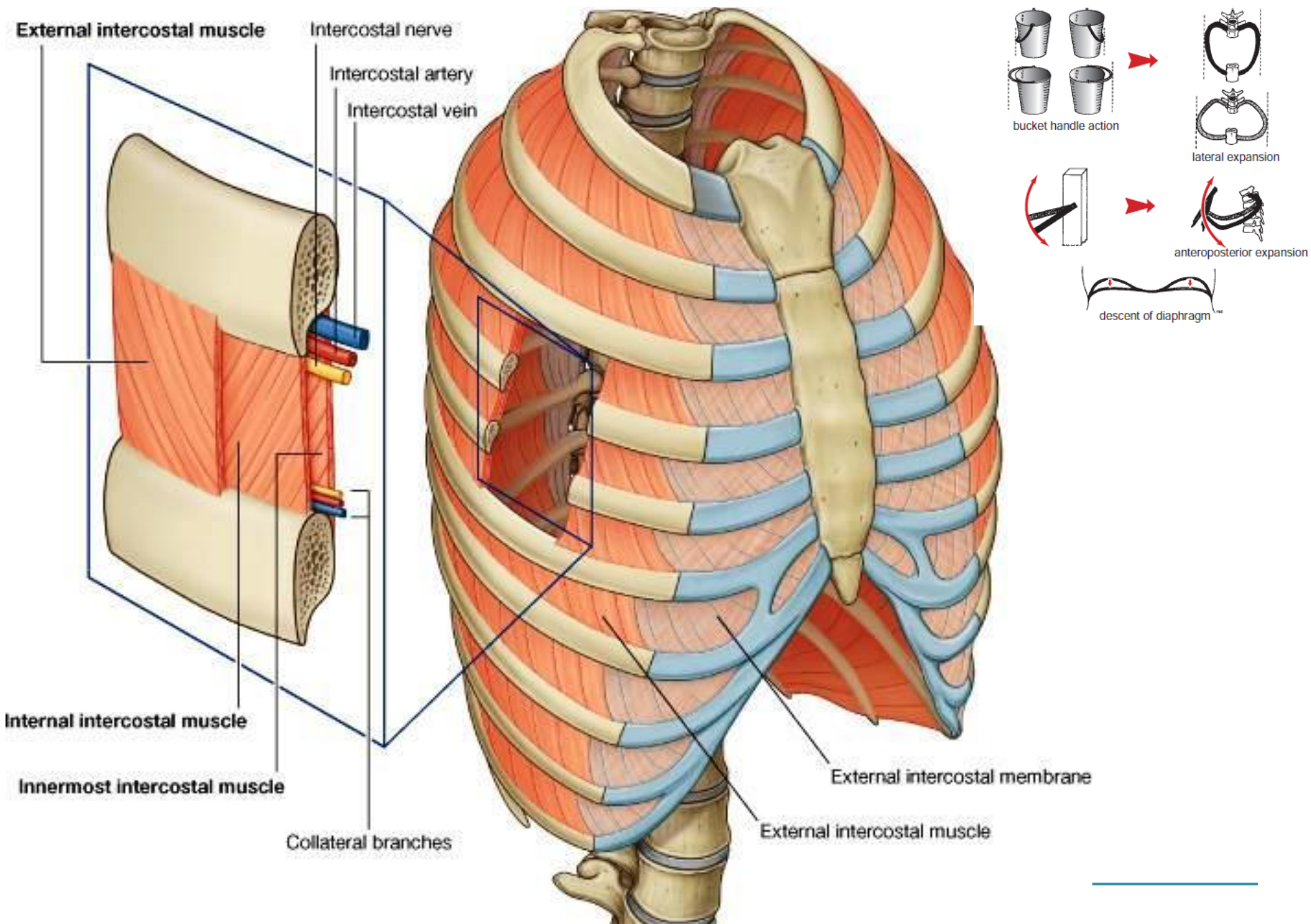
- Respiratory muscles alter the size of the thoracic cavity which affects the pressure in the lungs, and that determines whether we inhale or exhale.

Intercostal muscles arranged in three layers: the

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

Accessory muscles useful in forced breathing:

- 1. SCM (Sternocleidomastoid muscle)**
- 2. Scaleni muscles**

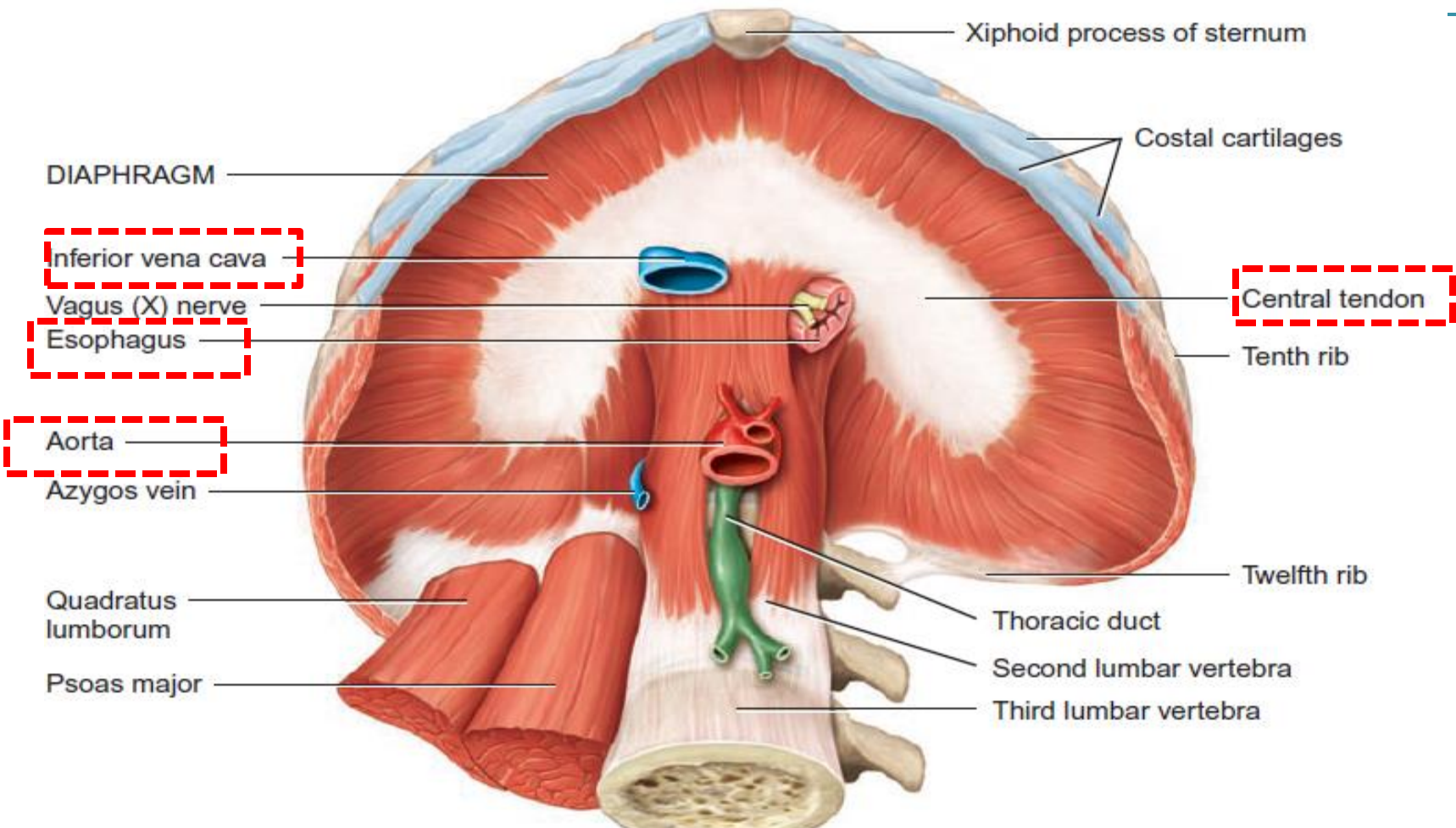


The Diaphragm

The diaphragm is the most important muscle of respiration

Muscle	Origin	Insertion	Nerve	Action
Diaphragm	<ol style="list-style-type: none">Sternal part: Xiphoid processCostal part: Lower 6 costal cartilages and adjacent ribsVertebral part: Upper 3 lumbar vertebrae and their discs	All muscle fibers converge to be inserted into a centrally located tendon	Phrenic nerve	Contraction of the diaphragm increases vertical diameter of thoracic cage causing inhalation. Its relaxation leads to exhalation.




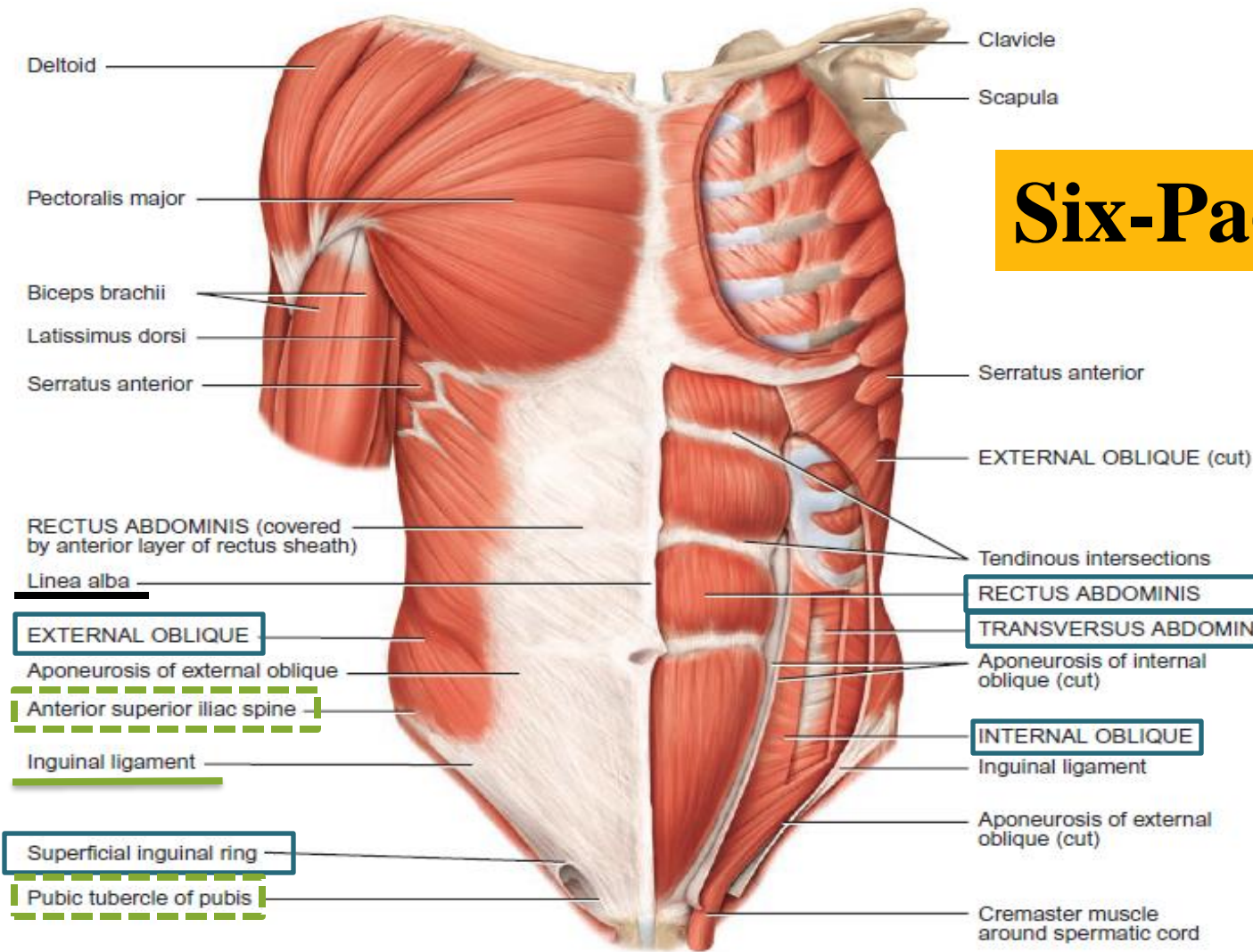


Three major openings

- **Caval opening (inferior vena cava) T8**
- **Esophageal hiatus T10**
- **Aortic hiatus T12**

Anterior Abdominal Wall Muscles

- The anterolateral abdominal wall includes:
 1. **External oblique muscle**
 2. **Internal oblique muscle**
 3. **Transversus abdominis muscle**
 4. **Rectus abdominis muscle**
- The **aponeuroses** of #1+2+3 form the **rectus sheaths**.
- **Rectus sheath** encloses #4 **right and left Rectus abdominis**
- **Linea alba**: a median connective tissue band of the rectus sheath extending from the xiphoid process to the pubic symphysis.
- **Inguinal ligament**: Thick ligament formed of the aponeurosis of the external oblique extend from
Anterior superior iliac spine  Pubic tubercle



Six-Pack Abs

(b) Anterior superficial view

(c) Anterior deep view

Superficial inguinal ring, the outer opening of the inguinal canal an inguinal hernia

Actions:

1. They retain the organs within the abdominal cavity.
 2. The oblique muscles laterally flex and rotate the trunk.
 3. The rectus abdominis flexes the lumbar vertebrae.
 4. By contracting simultaneously with the diaphragm, they increase intra-abdominal pressure and help in micturition, defecation, vomiting, and labor.
 5. They may contract at the end of expiration, pushing the relaxed diaphragm further upwards into the thorax **(forced exhalation)**.
-

Posterior Abdominal Wall Muscles

Psoas minor

Quadratus lumborum: depresses 12th rib,
lateral flexion of lumbar region spine

Iliac crest

PSOAS MAJOR

ILIACUS

Flex thigh on trunk. If thigh is fixed, flexes trunk on thigh (Waking up muscle)

TENSOR
FASCIAE LATAE

Sartorius

Rectus femoris

Pectineus

Adductor longus

Gracilis

(a) Anterior deep view

