

# Introduction to Anatomy



**1<sup>st</sup> Year Medical Students**

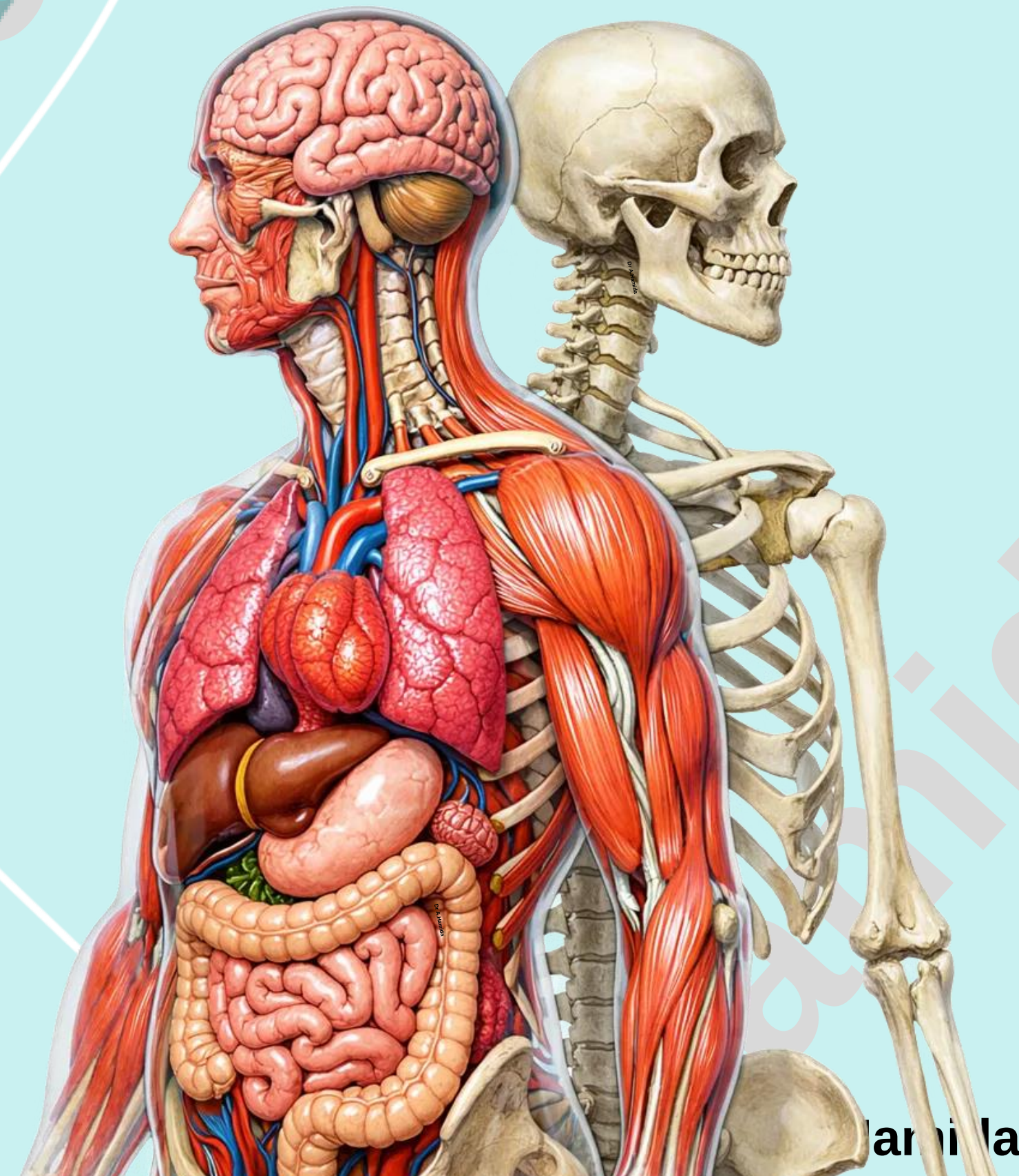
**2025-2026  
Second Semester**

**Dr. Abedallah Hamida, MBBS, PhD**

**Department of Anatomy and Histology**

**School of Medicine-The University of Jordan**

**[a\\_hamida@ju.edu.jo](mailto:a_hamida@ju.edu.jo)**



Hamida

6

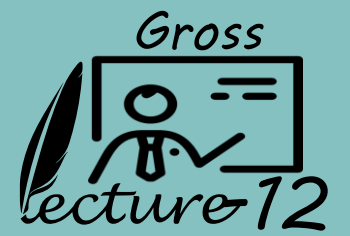
# Skeletal Muscles-2



# 6

## **Skeletal Muscles-2**

---



### **Lecture Outline:**

6.5

**Muscles of the Upper Limb**

6.6

**Muscles of the Lower Limb**

## ❖ Muscles Acting on the Shoulder Joint

### 1. Deltoid

#### Origin

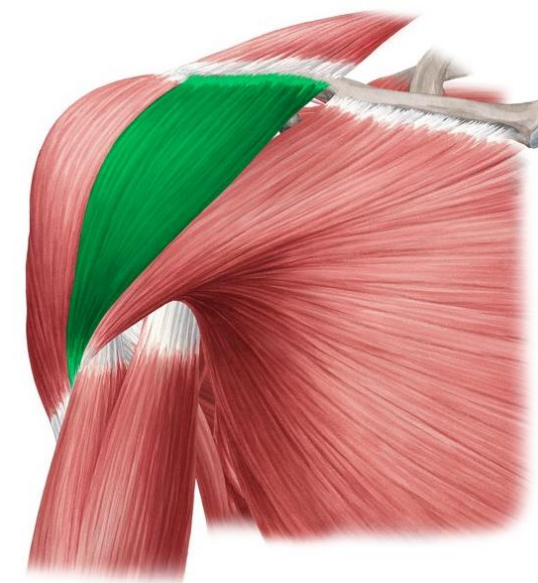
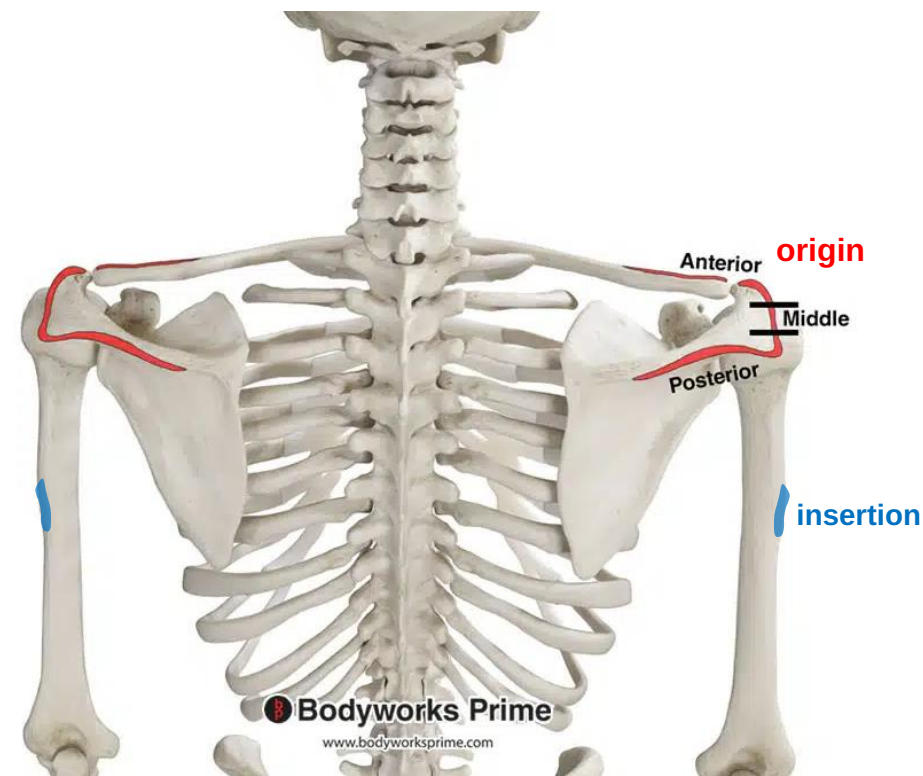
- Lateral third of clavicle and spine of scapula

#### Insertion

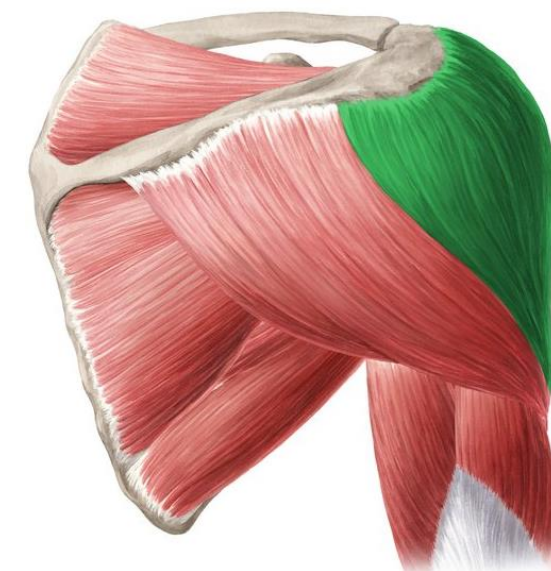
- Deltoid Tuberosity on the lateral aspect of the midshaft of the humerus

#### Action

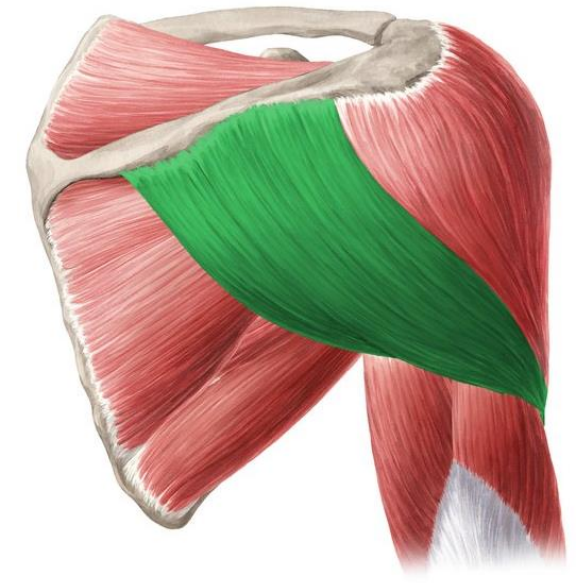
- Anterior fibers: flexion of the arm
- Middle fibers: abduction of the arm
- Posterior fibers: extension of the arm



Anterior fibers



Middle fibers



Posterior fibers

## ❖ Muscles Acting on the Shoulder Joint

### 2. Pectoralis major

#### Origin

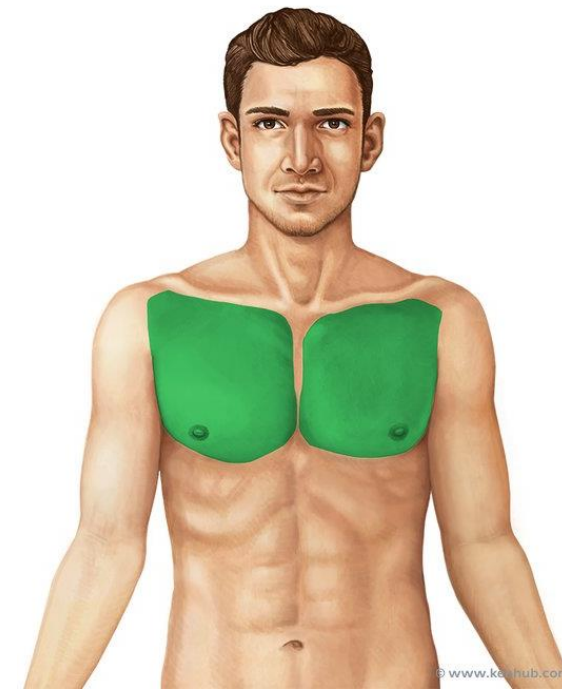
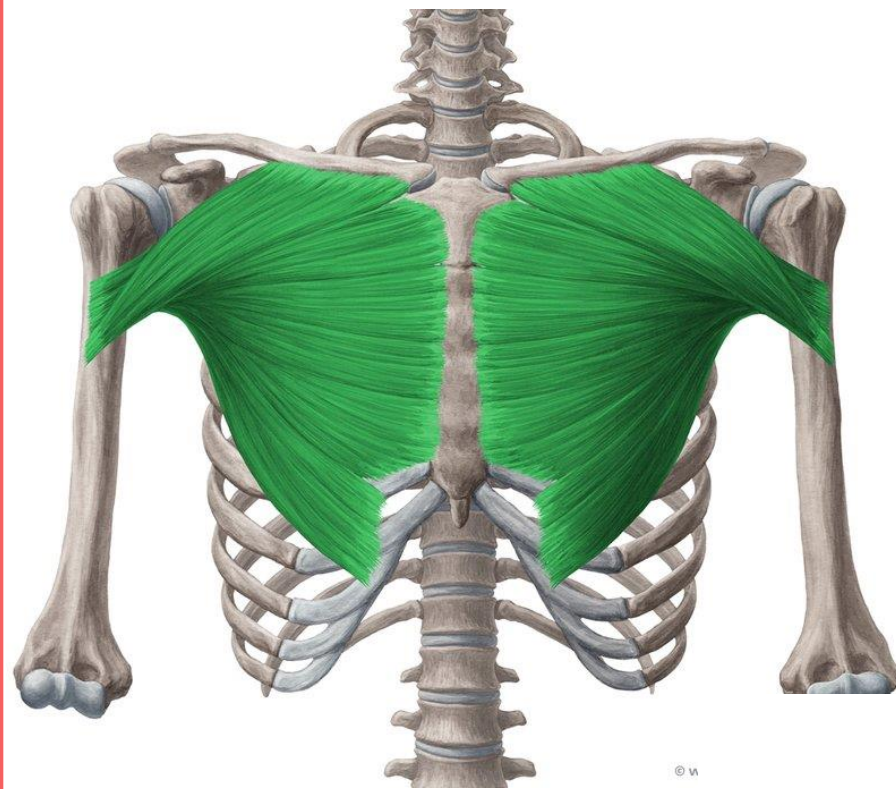
- Clavicular part: anterior surface of medial half of clavicle
- Sternocostal part: anterior surface of sternum and Costal cartilages of ribs 1-6

#### Insertion

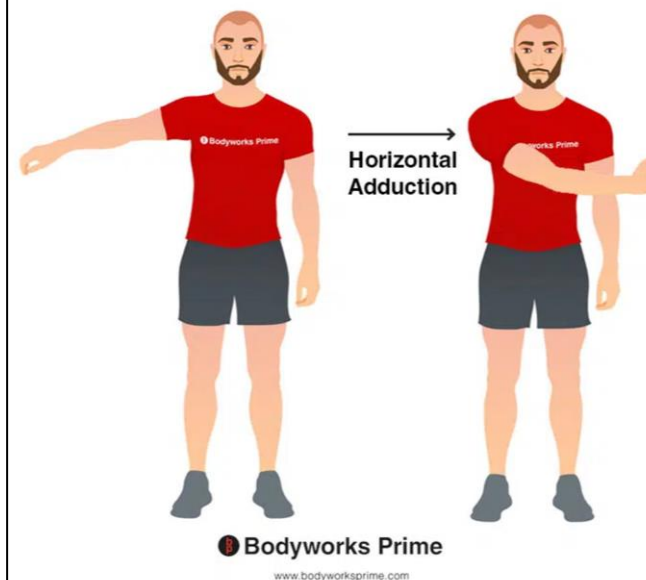
- Lateral lip of intertubercular sulcus (bicipital groove) of humerus

#### Action

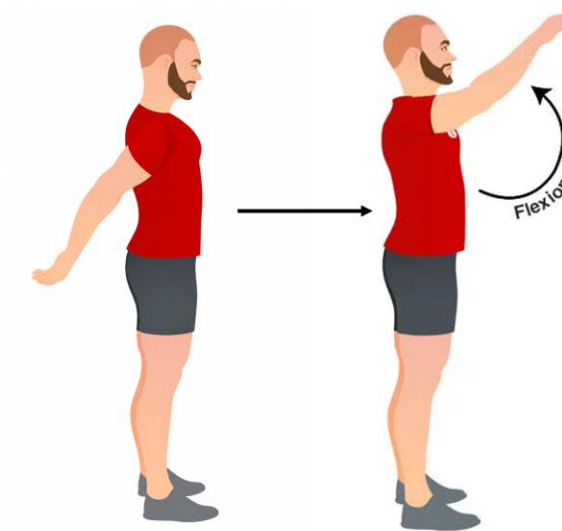
- Adduction, medial rotation, and flexion of the arm



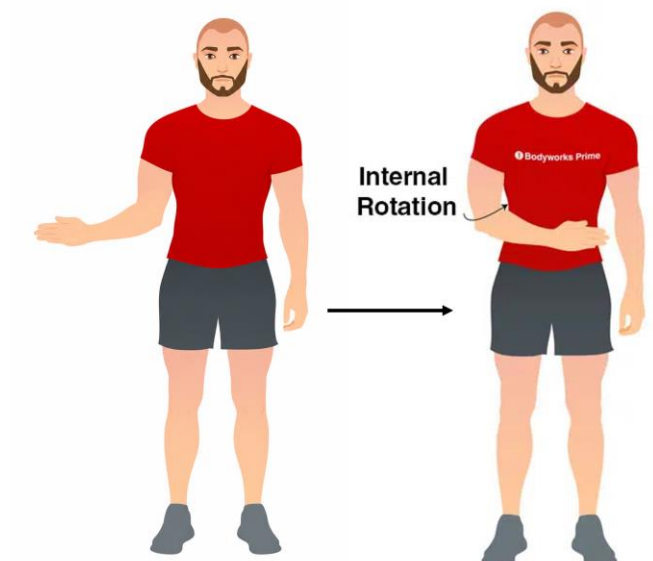
#### Shoulder Adduction



#### Shoulder Flexion



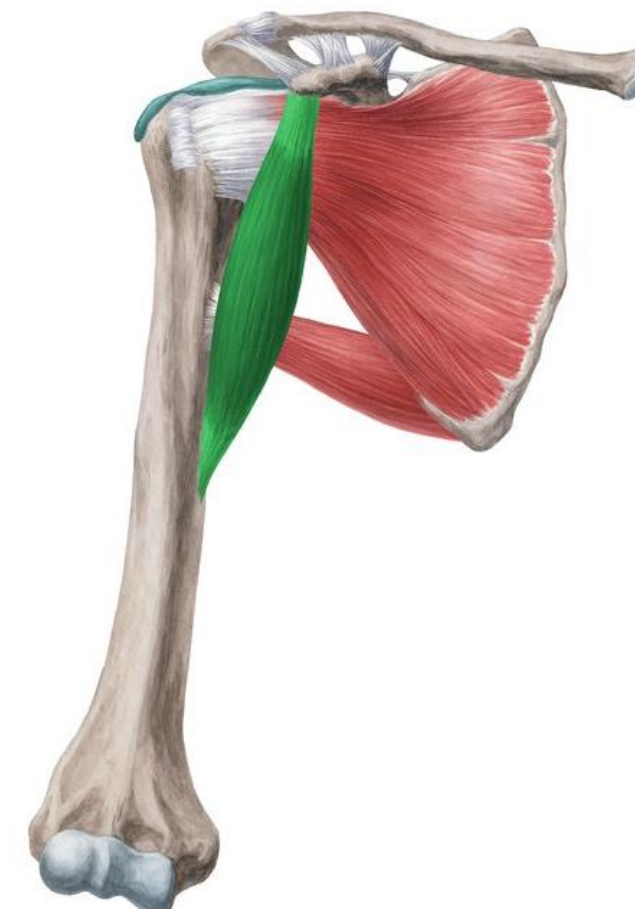
#### Shoulder Internal Rotation



## ❖ Muscles Acting on the Shoulder Joint

### 3. Coracobrachialis

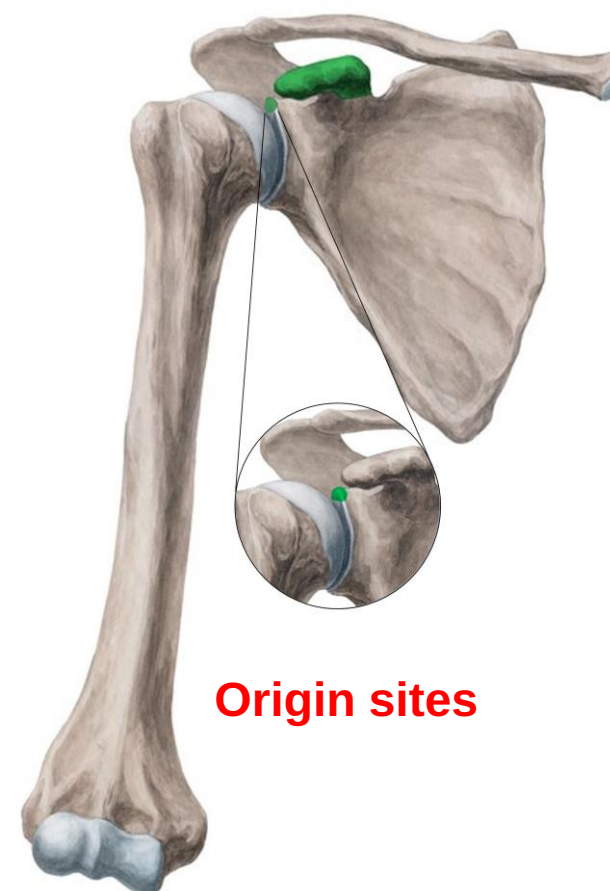
<b>Origin</b>	<ul style="list-style-type: none"> <li>• Coracoid process of scapula</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>• Shaft of humerus</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>• Flexion of the arm</li> </ul>



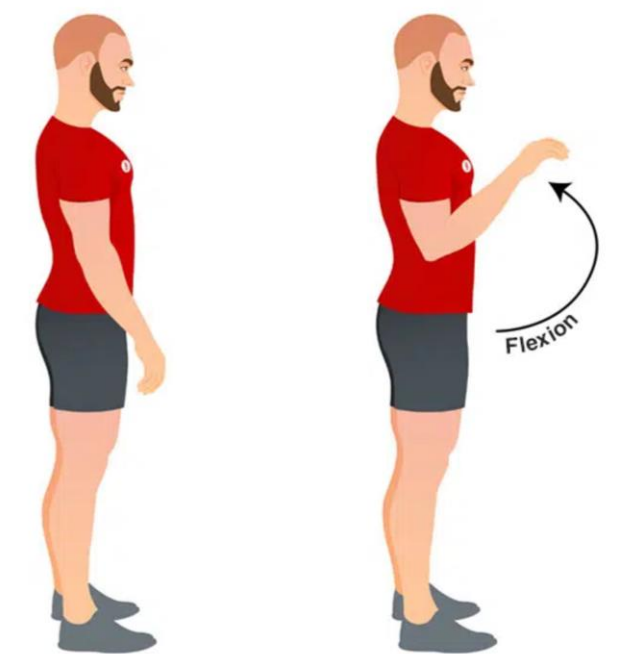
## ❖ Muscles Acting on the Elbow Joint

### 1. Biceps brachii

<b>Origin</b>	<ul style="list-style-type: none"> <li>Two heads – Long head: supraglenoid tubercle of scapula</li> <li>– Short head: coracoid process of scapula</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>Radial tuberosity of radius</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Flexion of the forearm at the elbow joint.</li> </ul>

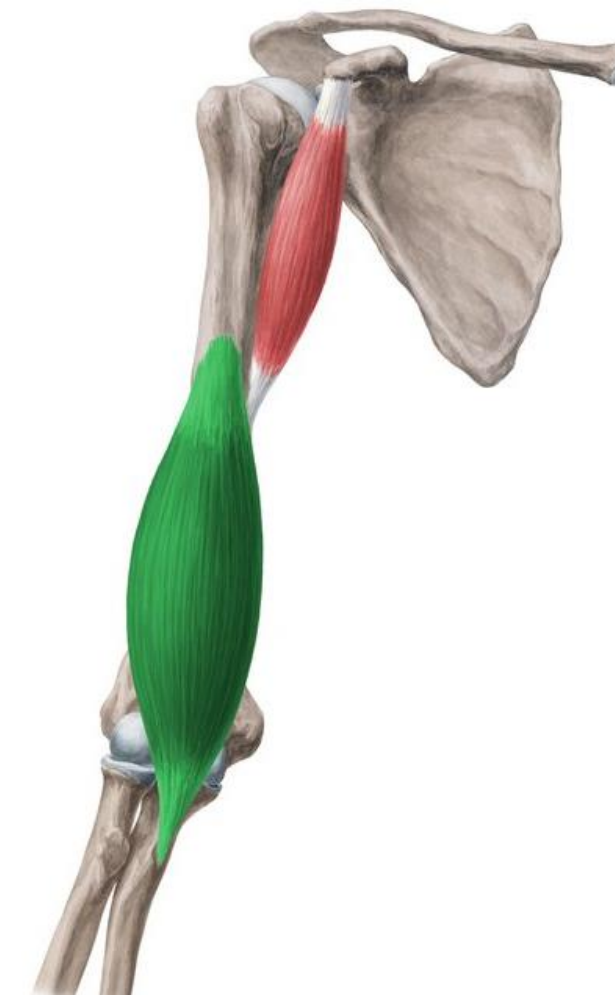


### Elbow Flexion



**❖ Muscles Acting on the Elbow Joint****2. Brachialis**

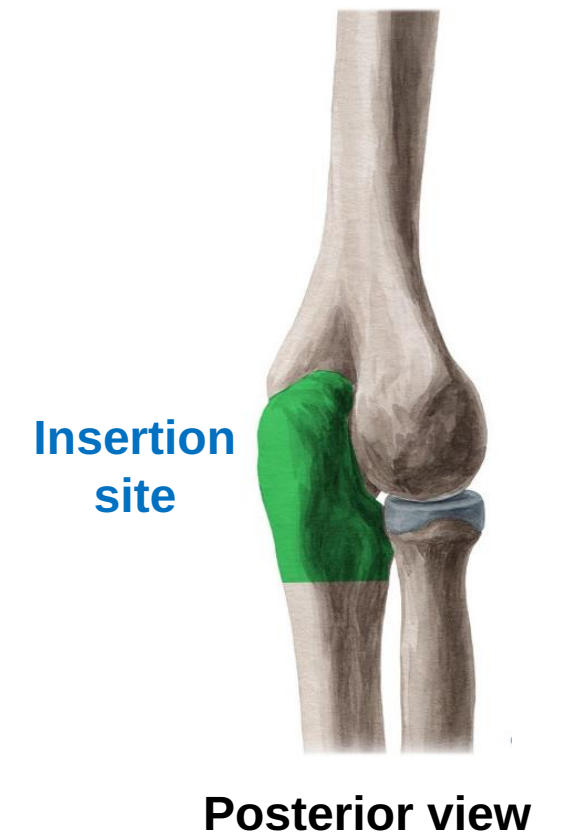
<b>Origin</b>	<ul style="list-style-type: none"><li>• Anterior surface of the lower half of humerus</li></ul>
<b>Insertion</b>	<ul style="list-style-type: none"><li>• Coronoid process of the ulna</li></ul>
<b>Action</b>	<ul style="list-style-type: none"><li>• Flexion of the forearm</li></ul>



## ❖ Muscles Acting on the Elbow Joint

### 3. Triceps brachii

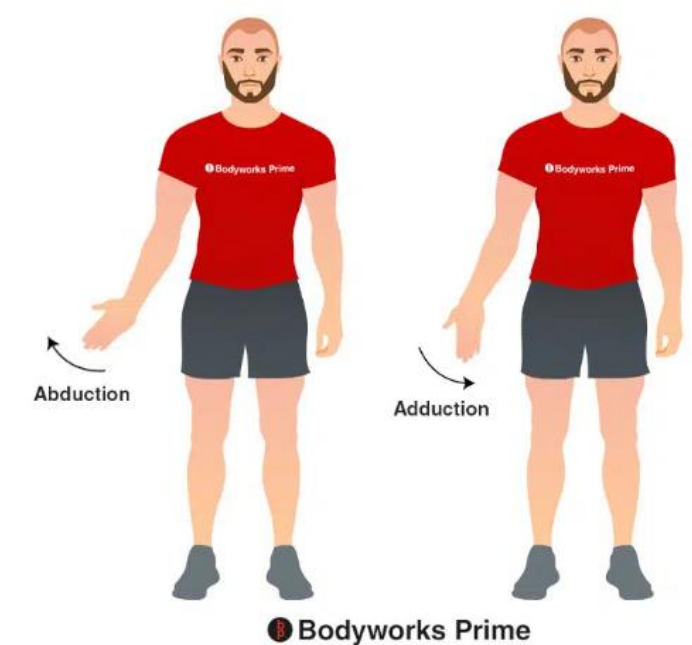
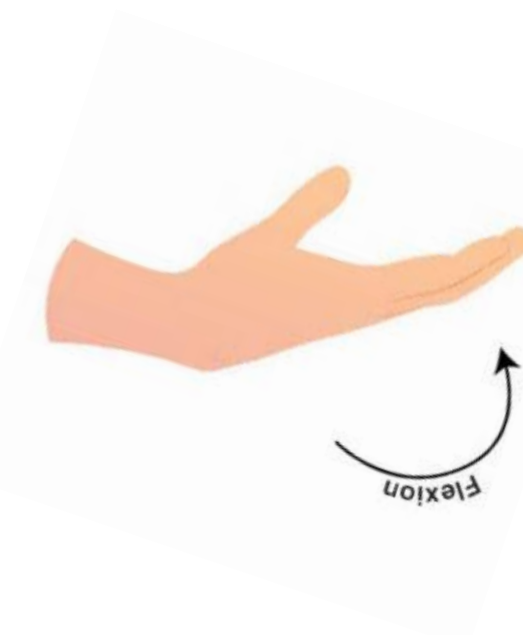
<b>Origin</b>	<ul style="list-style-type: none"> <li>• Three heads – Long head: infraglenoid tubercle of scapula             <ul style="list-style-type: none"> <li>– Lateral head: posterior surface of shaft of humerus</li> <li>– Medial head: posterior surface of shaft of humerus</li> </ul> </li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>• Olecranon process of ulna</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>• Extension of the forearm</li> </ul>



## ❖ Muscles Acting on the Wrist Joint

### Flexor Group (Anterior Compartment of the forearm)

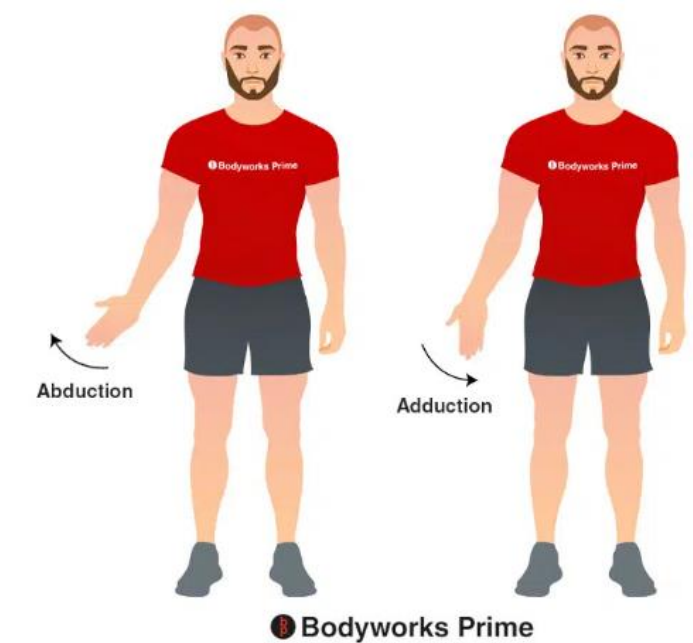
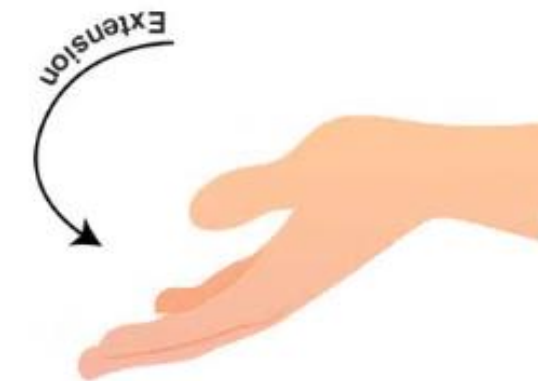
<b>Common Origin</b>	<ul style="list-style-type: none"> <li>• Medial epicondyle of humerus (common flexor tendon)</li> </ul>
<b>General Insertion</b>	<ul style="list-style-type: none"> <li>• Bones of the hand anteriorly</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>• Flexion of the wrist</li> <li>• Assistance in wrist adduction and abduction.</li> </ul>



## ❖ Muscles Acting on the Wrist Joint

### Extensor Group (Posterior Compartment of the forearm)

<b>Common Origin</b>	<ul style="list-style-type: none"> <li>Lateral epicondyle of humerus (common extensor tendon)</li> </ul>
<b>General Insertion</b>	<ul style="list-style-type: none"> <li>Bones of the hand posteriorly</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Extension of the wrist</li> <li>Assistance in wrist adduction and abduction.</li> </ul>



## ❖ Muscles Acting on the Radioulnar Joints - Pronation Muscles

### 1. Pronator teres

#### Origin

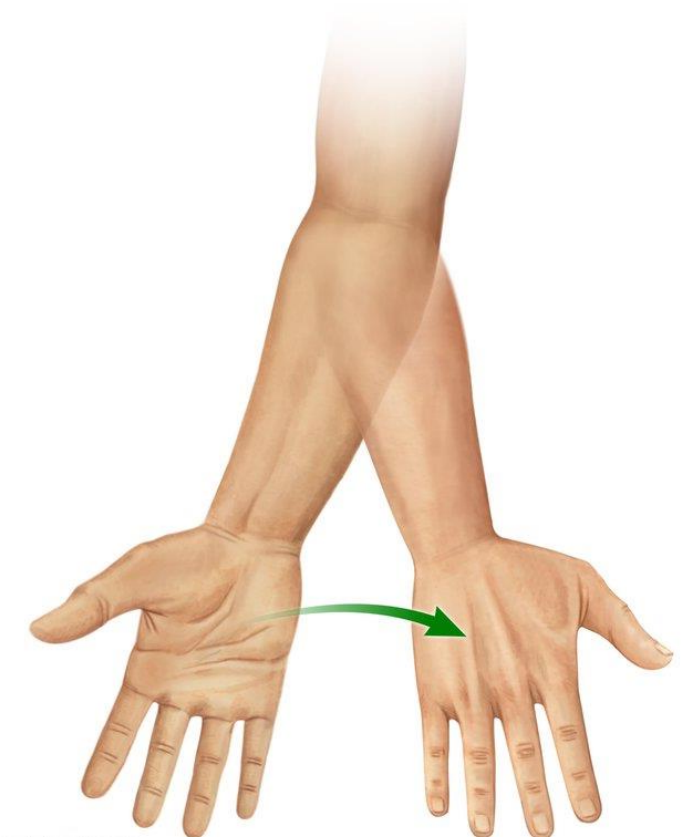
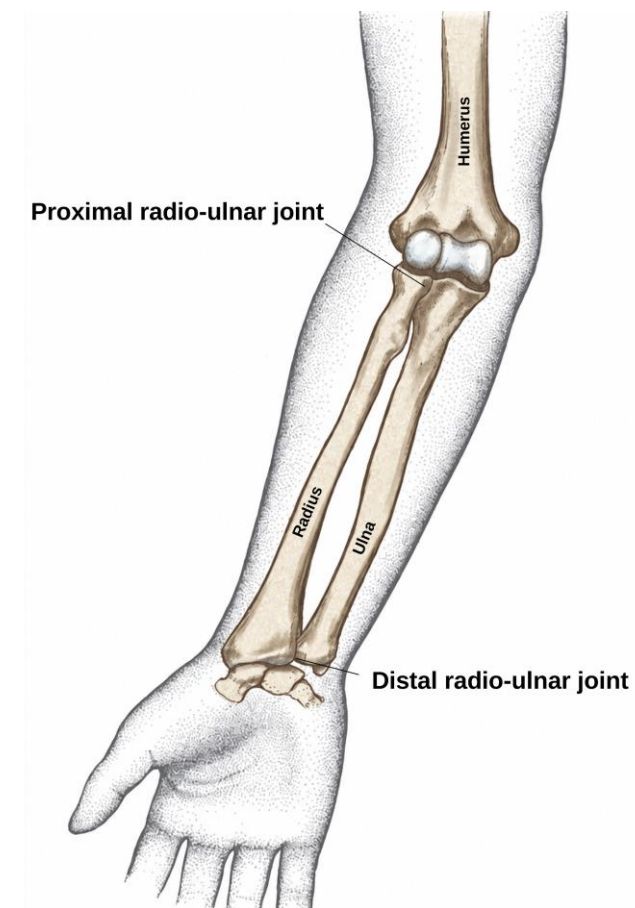
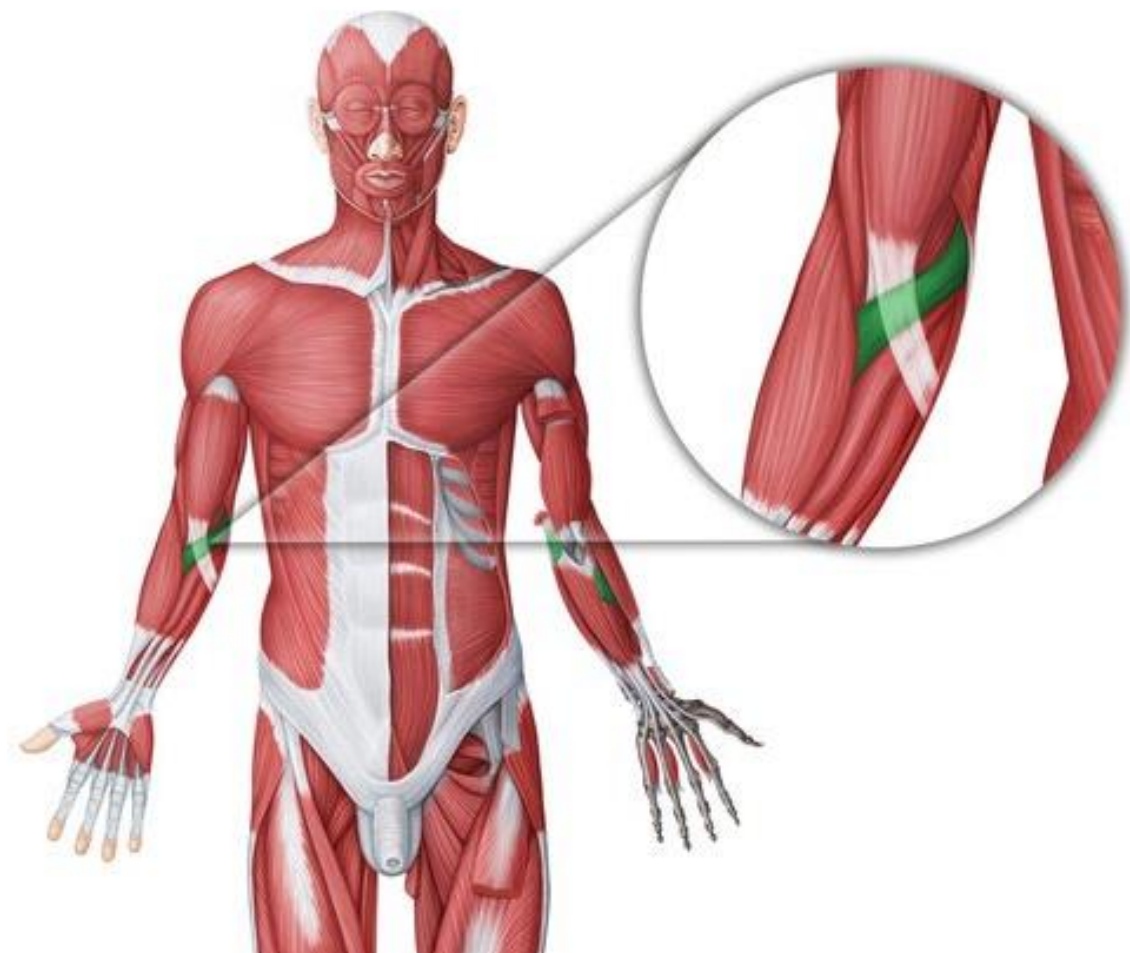
- Humeral head: medial epicondyle of humerus
- Ulnar head: coronoid process of ulna

#### Insertion

- Lateral aspect of shaft of radius

#### Action

- Pronation of the forearm at the radioulnar joint.



## ❖ Muscles Acting on the Radioulnar Joints - Pronation Muscles

### 2. Pronator quadratus

#### Origin

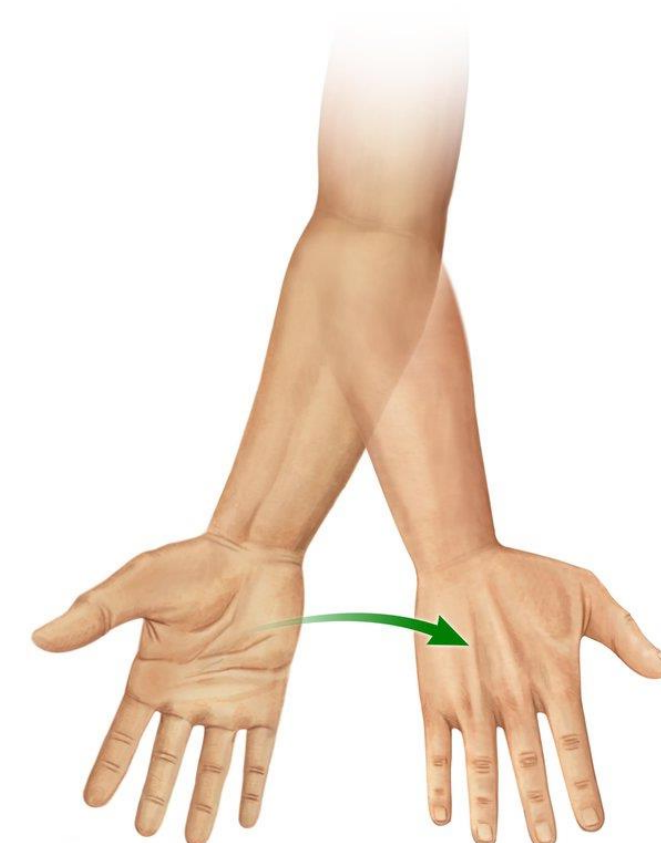
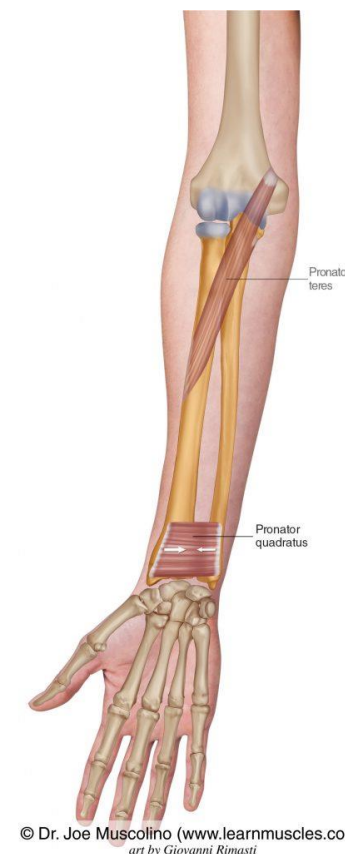
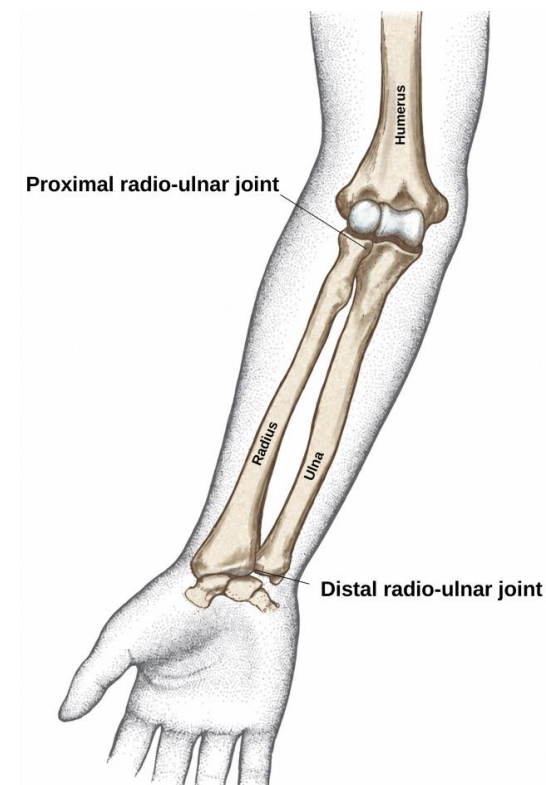
- Distal anterior surface of ulna

#### Insertion

- Distal anterior surface of radius

#### Action

- Pronation of the forearm at the radioulnar joint.



**❖ Muscles Acting on the Radioulnar Joints - Supination Muscle****1. Supinator Muscle****Origin**

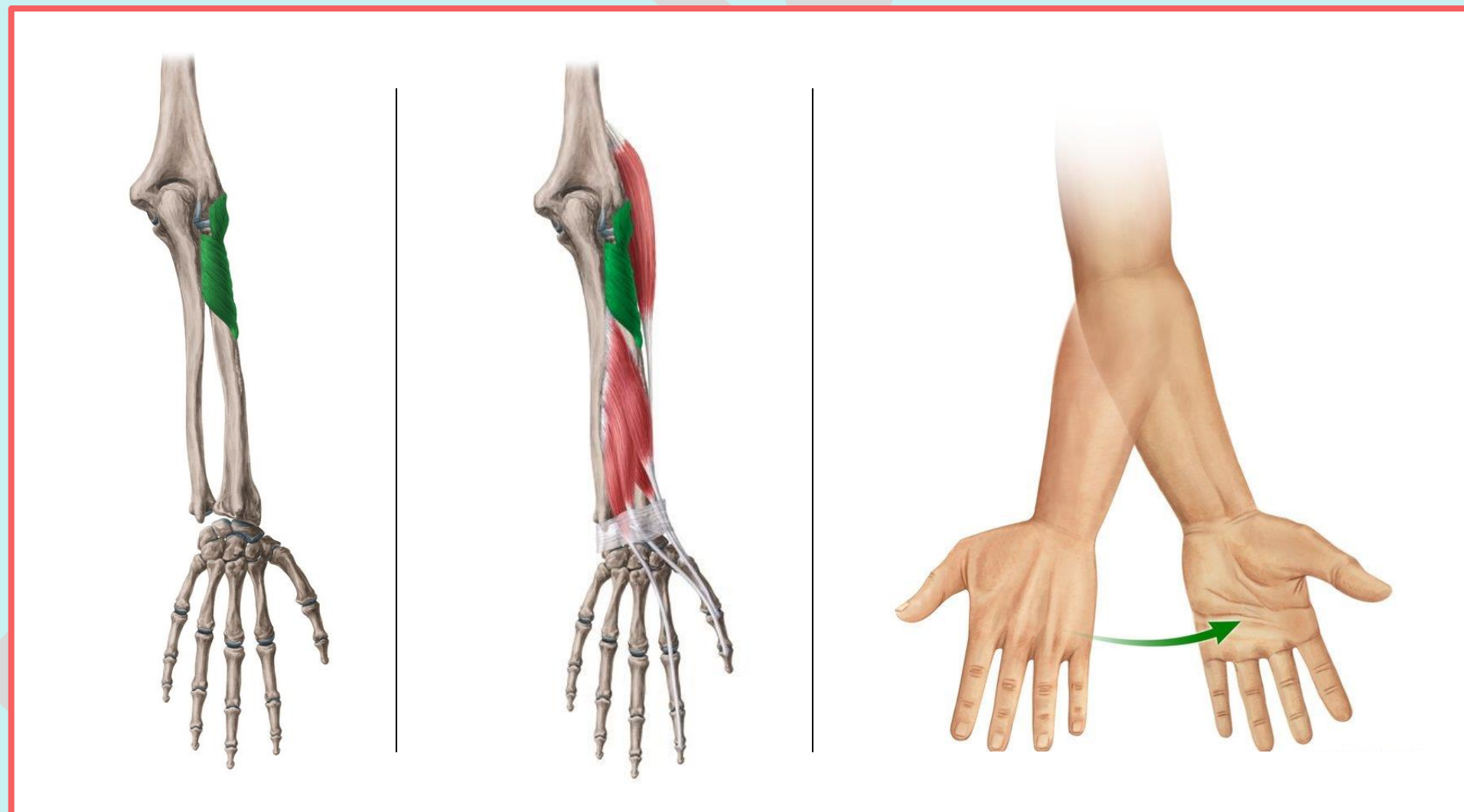
- Lateral epicondyle of humerus

**Insertion**

- Neck and shaft of radius

**Action**

- Supination of forearm



## ❖ Muscles Acting on the Hip Joint

### 1. Iliopsoas (Iliacus muscle and Psoas muscle)

#### Origin

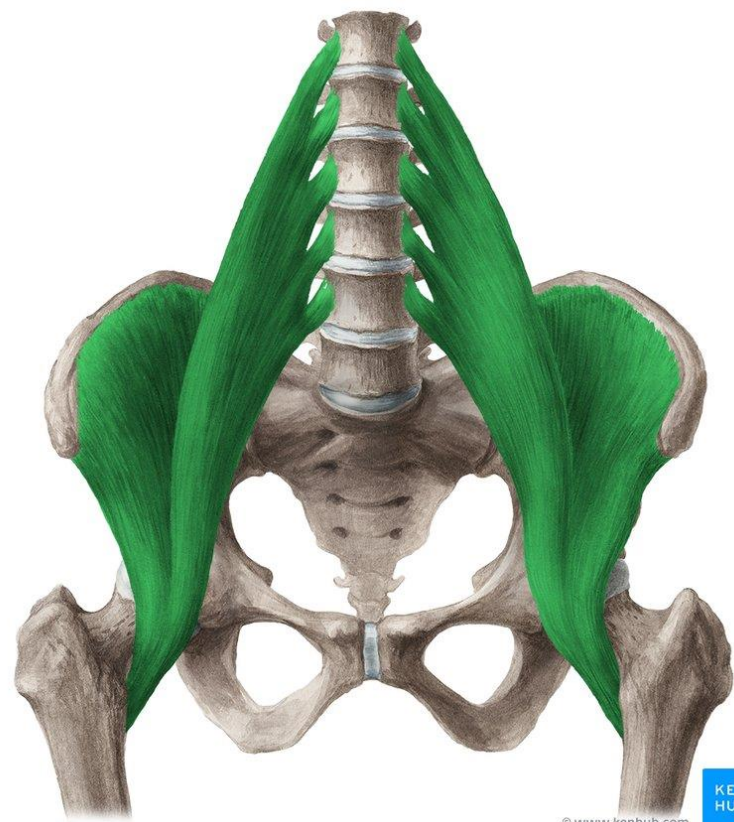
- Iliacus: iliac fossa of hip bone
- Psoas: T12 and L1 to L5 vertebrae

#### Insertion

- Lesser trochanter of femur

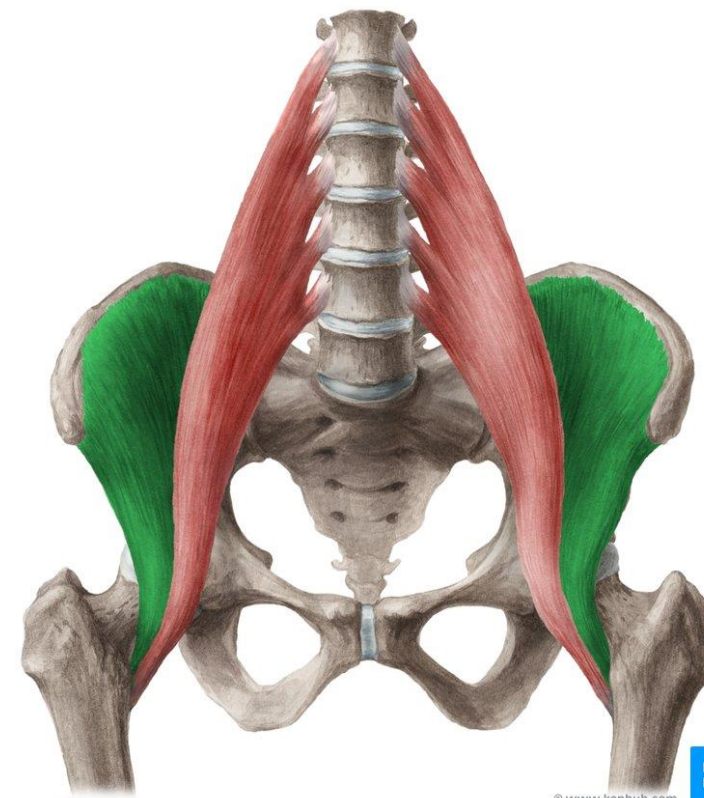
#### Action

- Flexion of the thigh at the hip joint



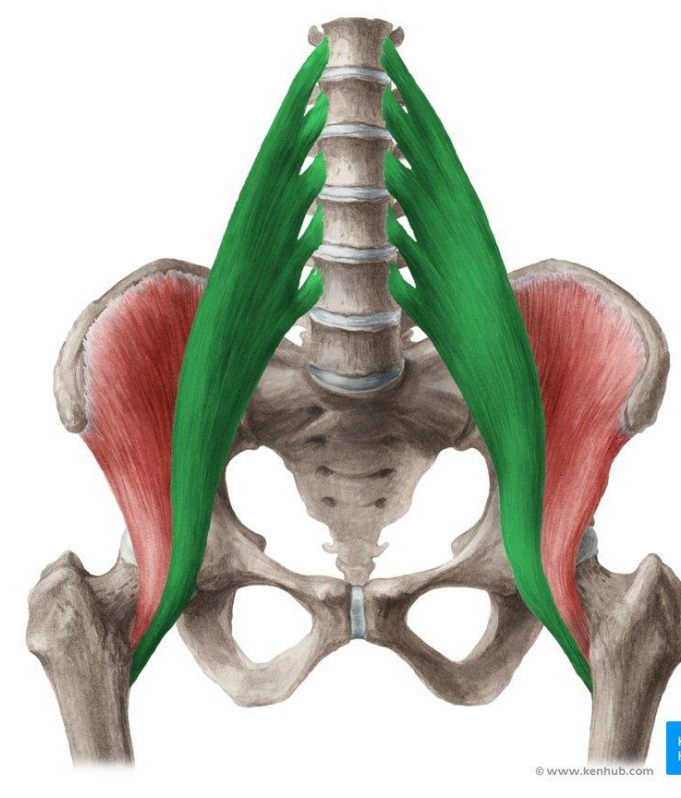
© www.kenhub.com

KEN HUB



© www.kenhub.com

KEN HUB



© www.kenhub.com

KEN HUB



## ❖ Muscles Acting on the Hip Joint

### 2. Gluteus maximus

#### Origin

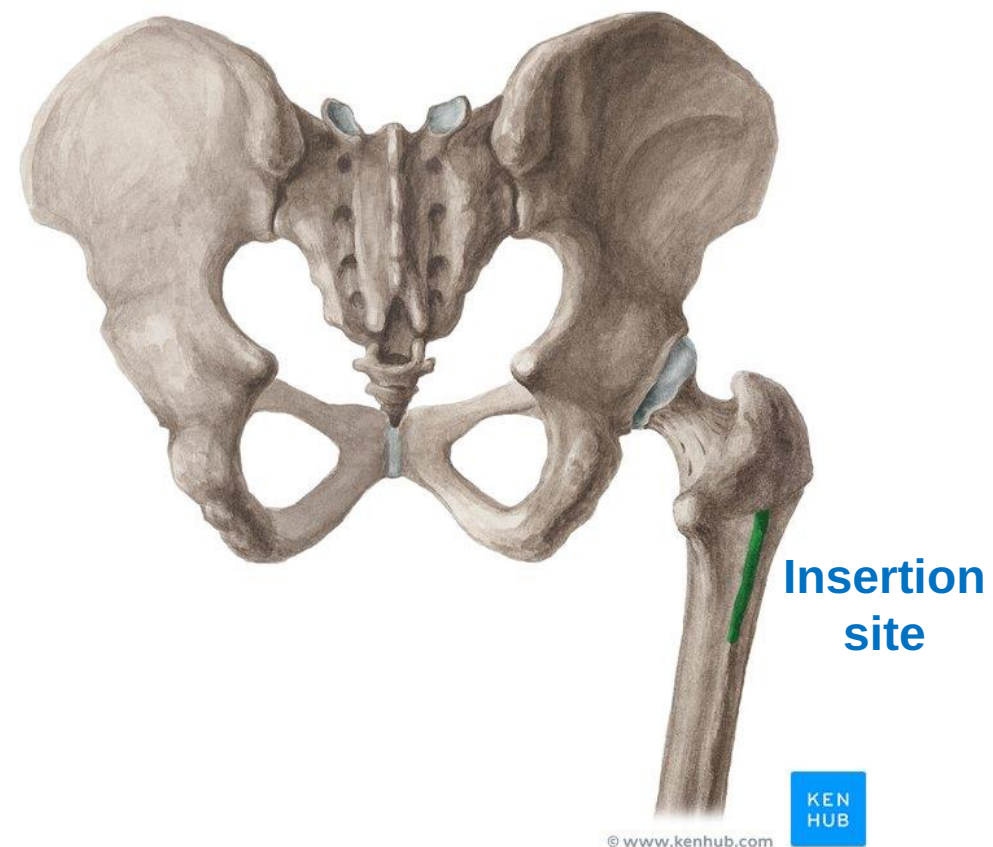
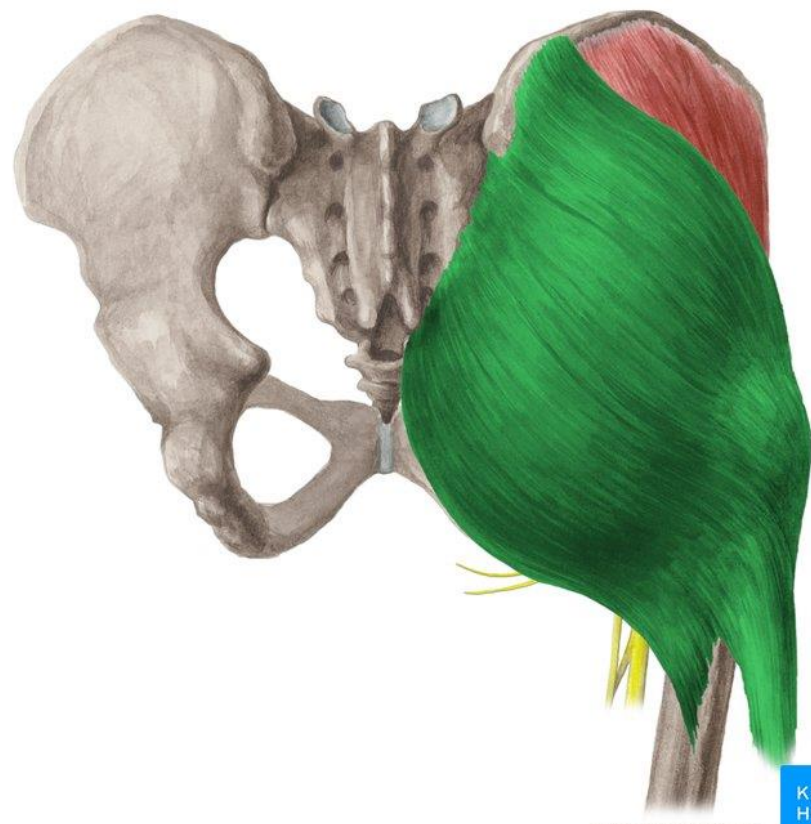
- Outer surface of ilium, sacrum, and coccyx

#### Insertion

- Gluteal tuberosity of femur

#### Action

- Extension of the thigh at the hip joint



### Hip Extension



## ❖ Muscles Acting on the Hip Joint

### 2. Gluteus medius

#### Origin

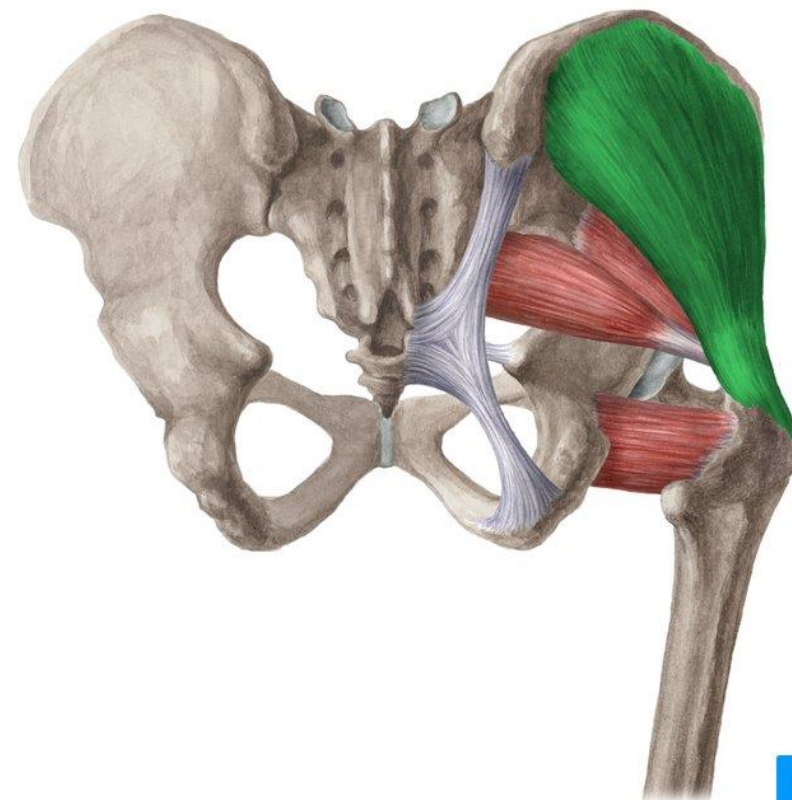
- Outer surface of ilium

#### Insertion

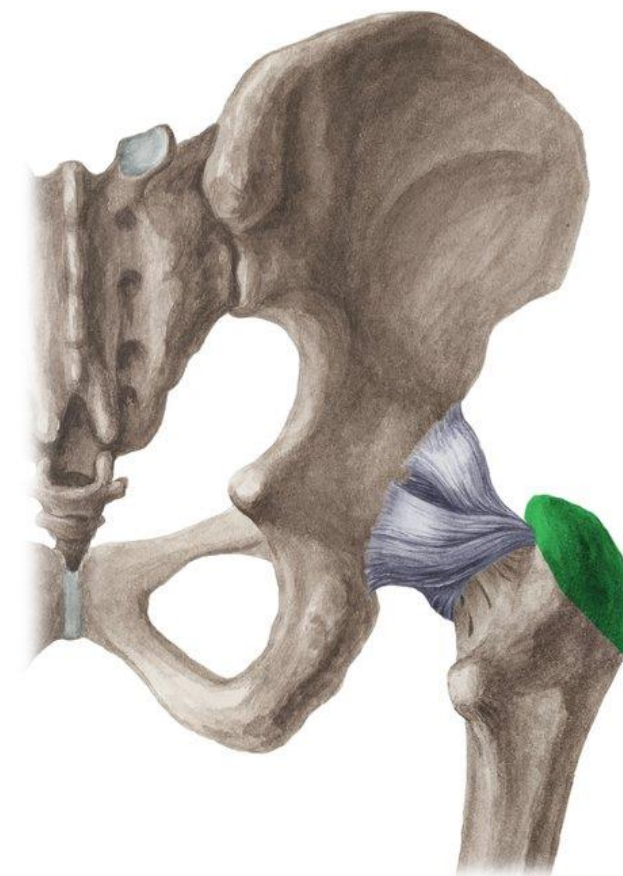
- Lateral surface of greater trochanter of femur.

#### Action

- Abduction of the thigh



© www.kenhub.com



© www.kenhub.com



### Hip Abduction



Bodyworks Prime

www.bodyworksprime.com

## ❖ Muscles Acting on the Hip Joint

### 3. Gluteus minimus

#### Origin

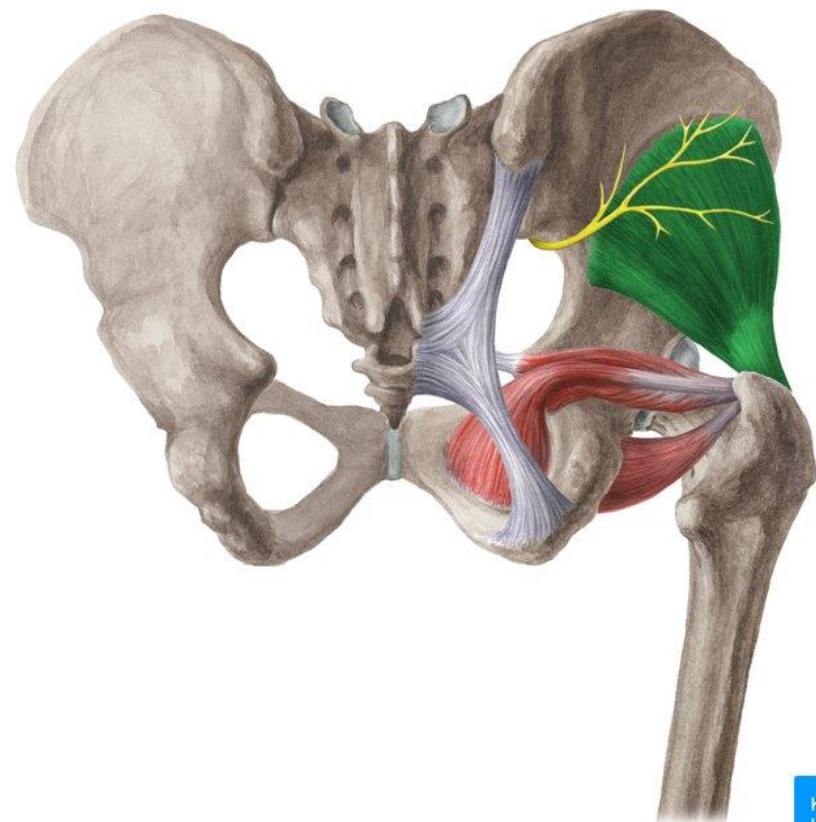
- Outer surface of ilium

#### Insertion

- Anterior surface of greater trochanter of femur.

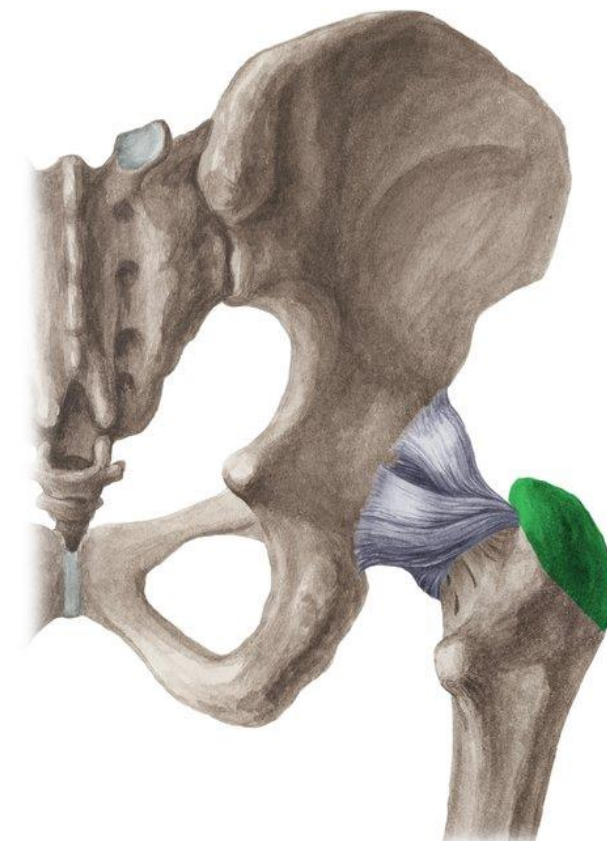
#### Action

- Abduction of the thigh



© www.kenhub.com

KEN  
HUB



Insertion  
site

© www.kenhub.com

KEN  
HUB

### Hip Abduction



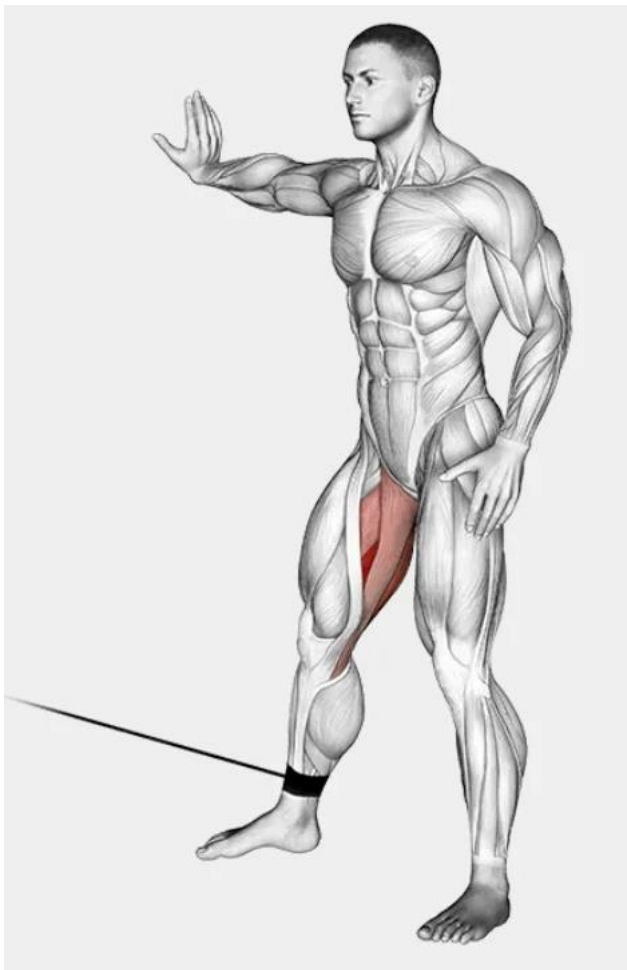
Bodyworks Prime

www.bodyworksprime.com

## ❖ Muscles Acting on the Hip Joint

### 4. Adductor muscles of the thigh:

<b>Origin</b>	<ul style="list-style-type: none"> <li>• Pubis and ischium</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>• Posterior surface of shaft of femur (linea aspera)</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>• Adduction of the thigh</li> </ul>



## ❖ Muscles Acting on the knee Joint

### 1. Quadriceps femoris

#### Origin

- Four heads: one from ilium (AIIIS) and three from proximal end of the femur

#### Insertion

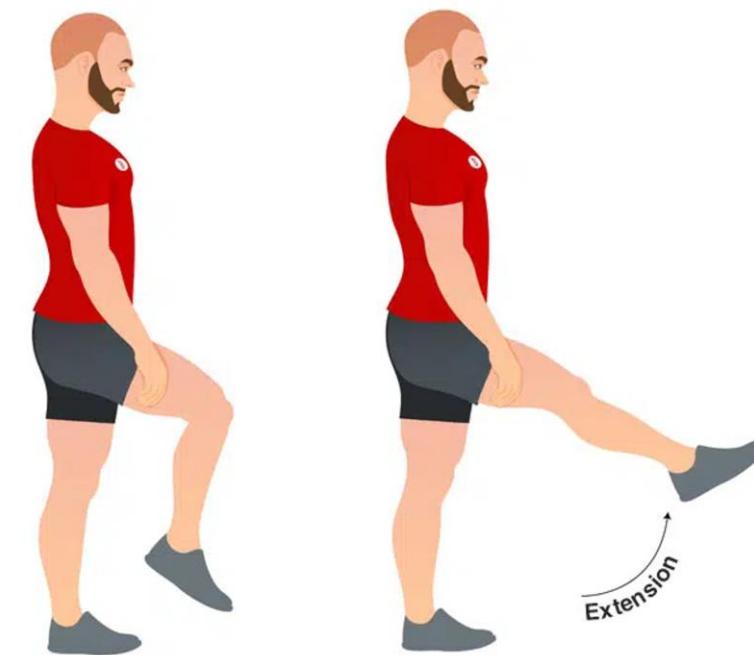
- Patella then via ligamentum patellae into Tibial tuberosity

#### Action

- Extension of the leg at the knee joint



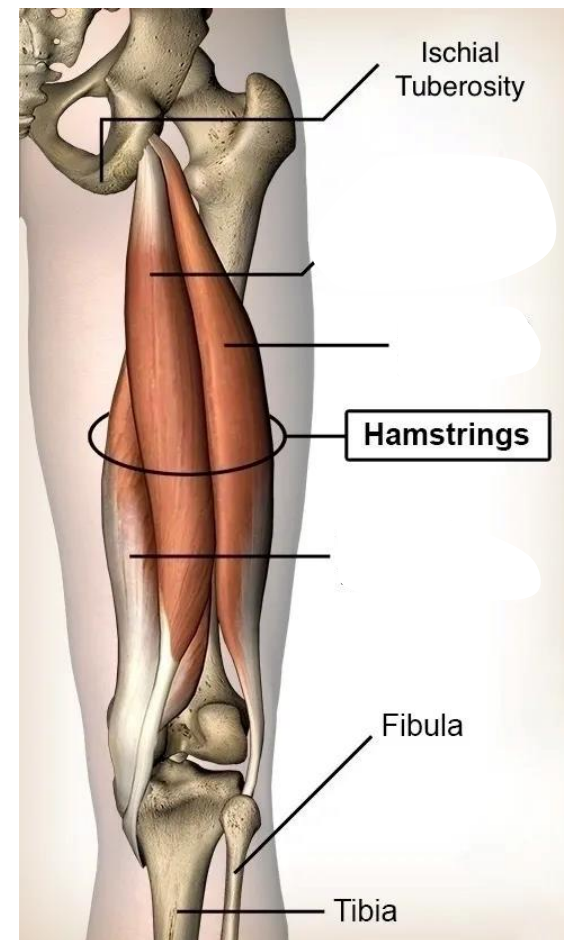
### Knee Extension



## ❖ Muscles Acting on the knee Joint

### 2. Hamstrings muscles (3 muscles)

<b>Origin</b>	<ul style="list-style-type: none"> <li>Ischial tuberosity of the hip bone</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>Proximal end of tibia and fibula</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Flexion of the leg at the knee joint</li> </ul>

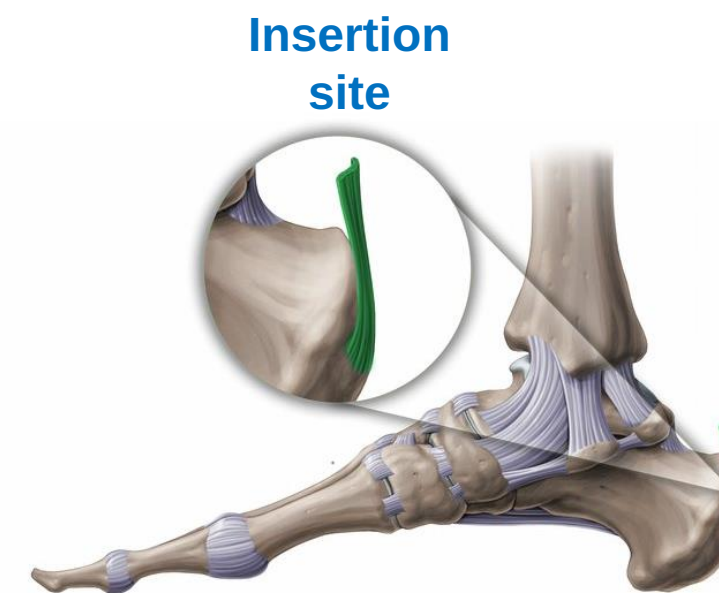


## ❖ Muscles Acting on the Ankle Joint

### Plantarflexors Muscles (Posterior Compartment of the leg)

#### 1. Gastrocnemius

<b>Origin</b>	<ul style="list-style-type: none"> <li>Posterior surface of distal femur (medial and lateral condyles)</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>Calcaneus via the Achilles tendon</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Plantarflexion of the foot at the ankle joint</li> </ul>

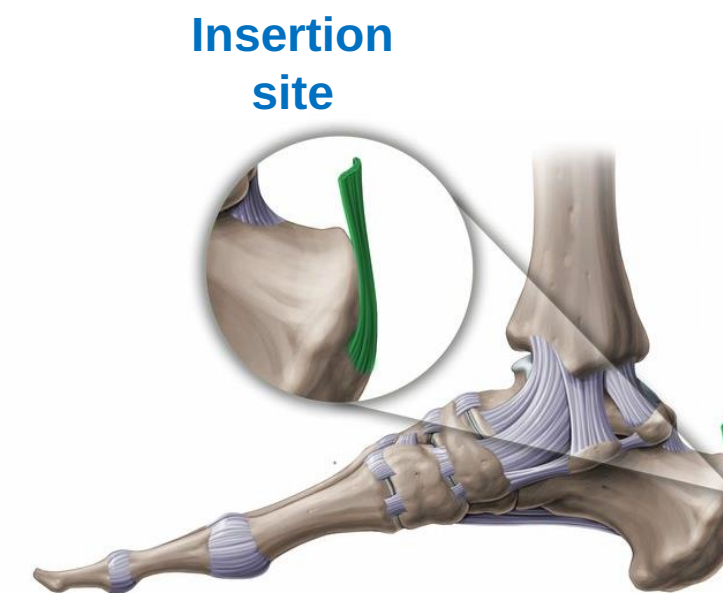


## ❖ Muscles Acting on the Ankle Joint

### Plantarflexors Muscles (Posterior Compartment of the leg)

#### 2. Soleus

<b>Origin</b>	<ul style="list-style-type: none"> <li>Posterior surfaces of tibia and fibula</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>Calcaneus via the Achilles tendon</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Plantarflexion of the foot at the ankle joint</li> </ul>

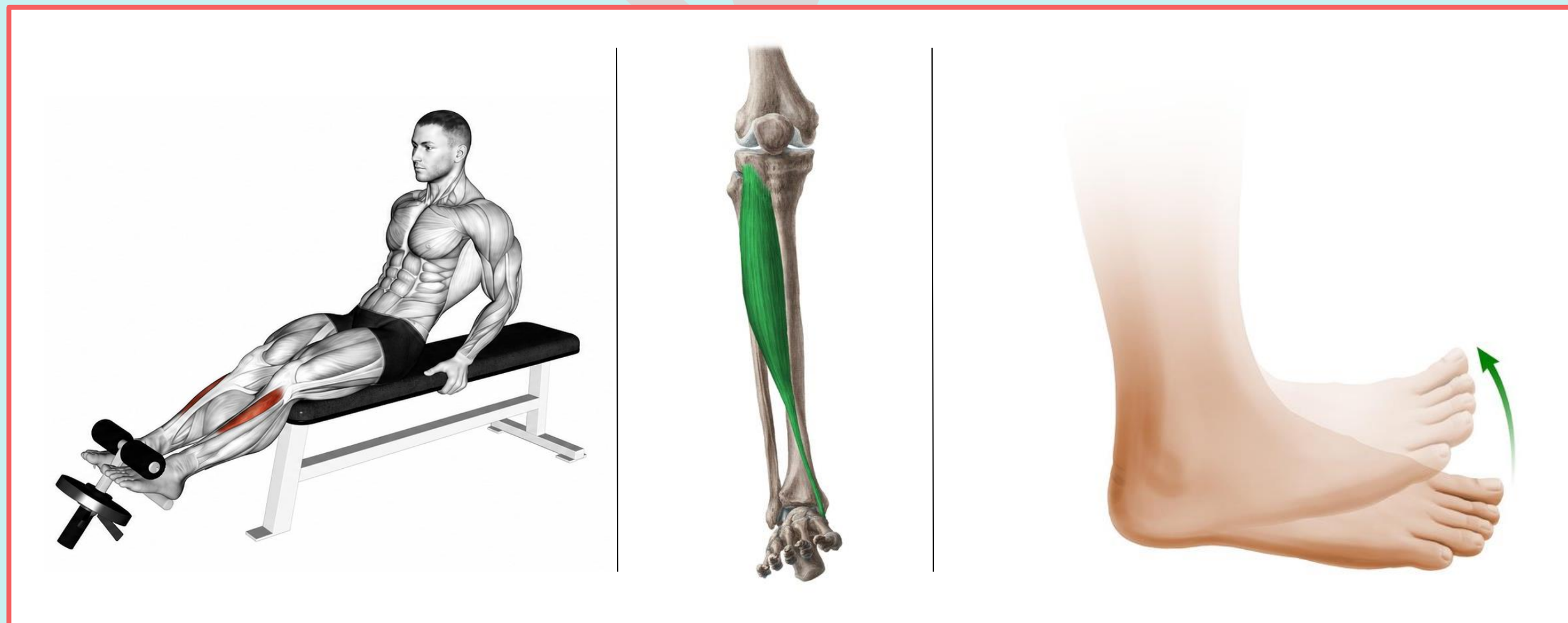


## ❖ Muscles Acting on the Ankle Joint

### Dorsiflexors Muscles (Anterior Compartment of the leg)

#### 1. Tibialis anterior

<b>Origin</b>	<ul style="list-style-type: none"> <li>Lateral condyle and superior anterior surface of tibia</li> </ul>
<b>Insertion</b>	<ul style="list-style-type: none"> <li>Foot bones</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>Dorsiflexion of the foot at the ankle joint.</li> </ul>



## ❖ Clinical Notes

### ➤ **Intramuscular Injection (IM)**

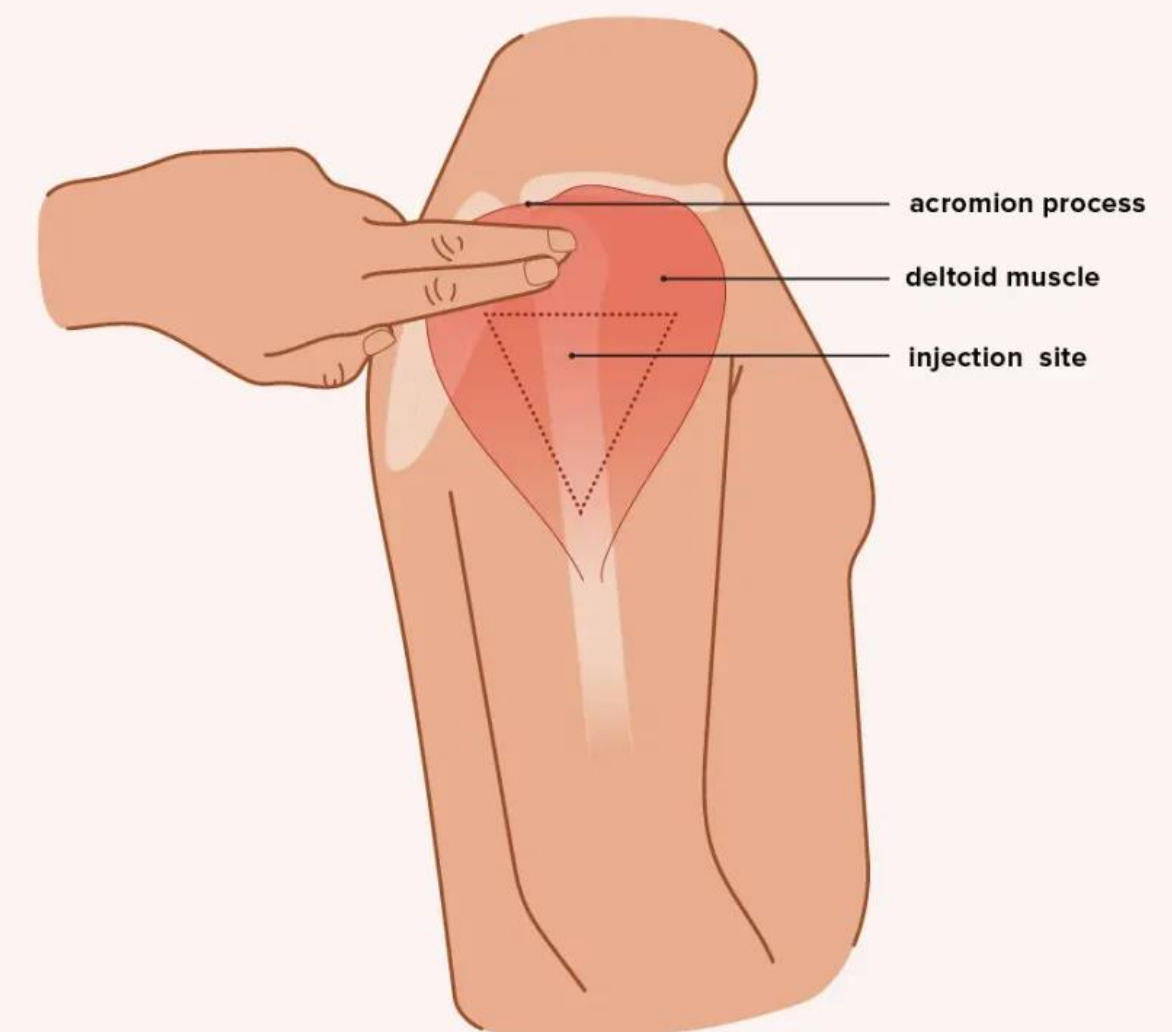
- IM injections deliver medications deep into muscle tissue, allowing for steady absorption.
- Proper site selection, and appropriate needle length are essential to minimize complications such as nerve injury, or hematoma formation.

- **Safe sites:**

#### 1. Deltoid Muscle:

- The injection is administered in the thickest central portion of the deltoid, approximately 2.5–5 cm below the acromion process.
- This site is commonly used for vaccinations and small-volume medications ( $\leq 2$  mL) due to its accessibility and good absorption rate.

Deltoid muscle of the arm



## ❖ Clinical Notes

### ➤ Intramuscular Injection (IM)

- **Safe sites:**

- **2. Gluteal Region:**

- The injection is given in the upper outer quadrant of the buttock.
- To locate this area, the buttock is visually divided into four quadrants by drawing an imaginary horizontal line through the highest point of the gluteal cleft and a vertical line through the midpoint of the buttock.
- The upper outer quadrant is selected because it provides a large muscle mass suitable for larger-volume injections and reduces the risk of injury to the sciatic nerve and major blood vessels.

