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# **Anatomy**

## **Skeleton & Muscles**



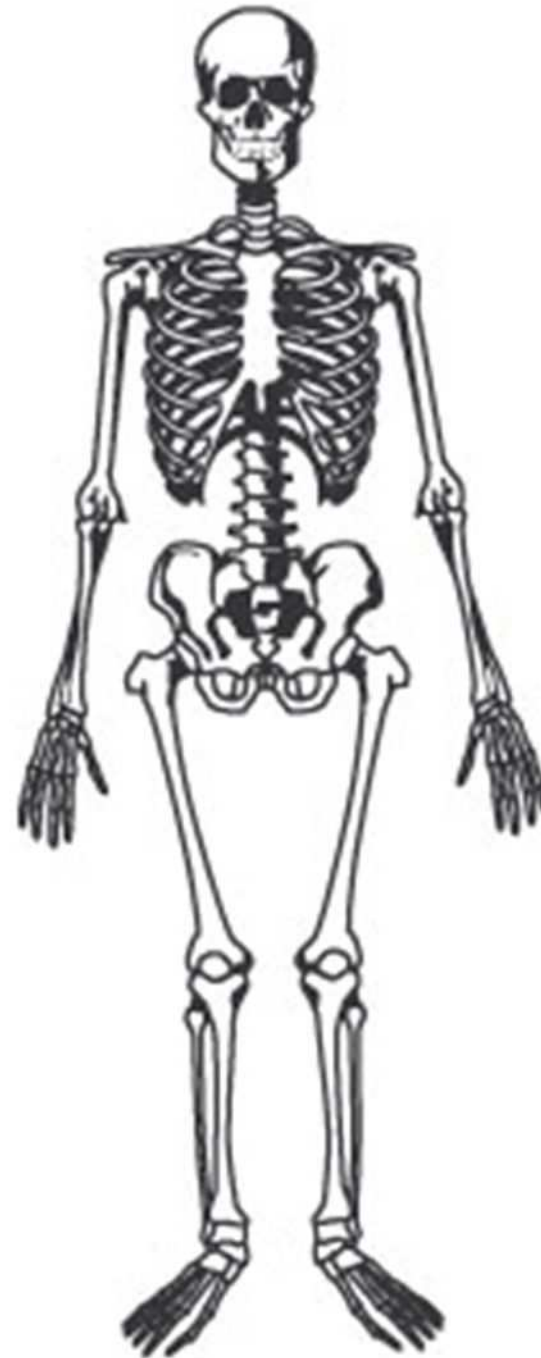
# Learning Objectives

- By the end of the session you will be able to:
  - Learn the names and locations of major bones of the skeleton
  - Learn the names and locations major muscles of the body
  - Understand joint movements
  - Prepare students for the upcoming exams



# Skeleton

- There are **206** bones in the adult body.
- Functions of the Skeleton:
  - Protect
  - Shape
  - Movement
  - Support
  - Blood Cell Production





# Skull (HEAD)

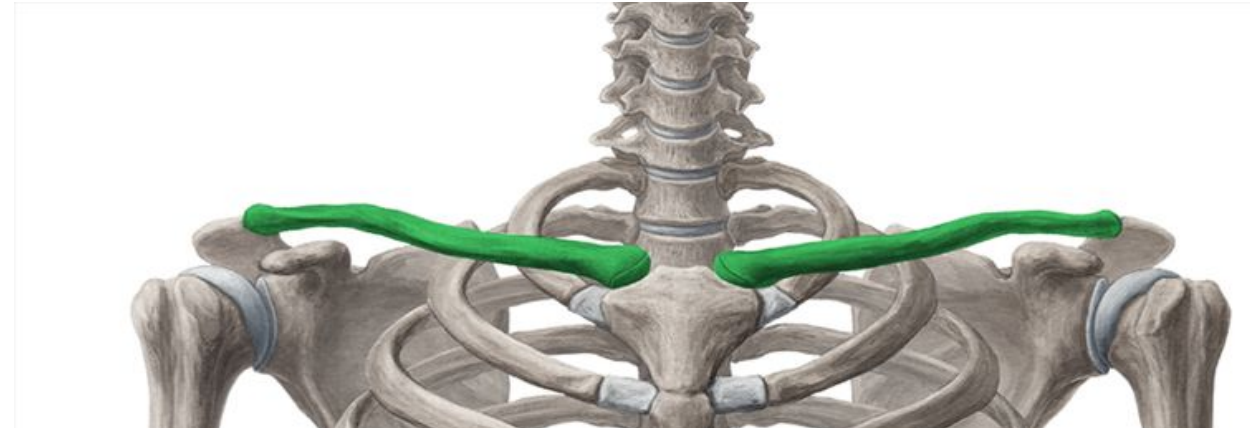
- 22 bones make up the human skull
- Function: The house and protect the **brain**.





# Clavicle

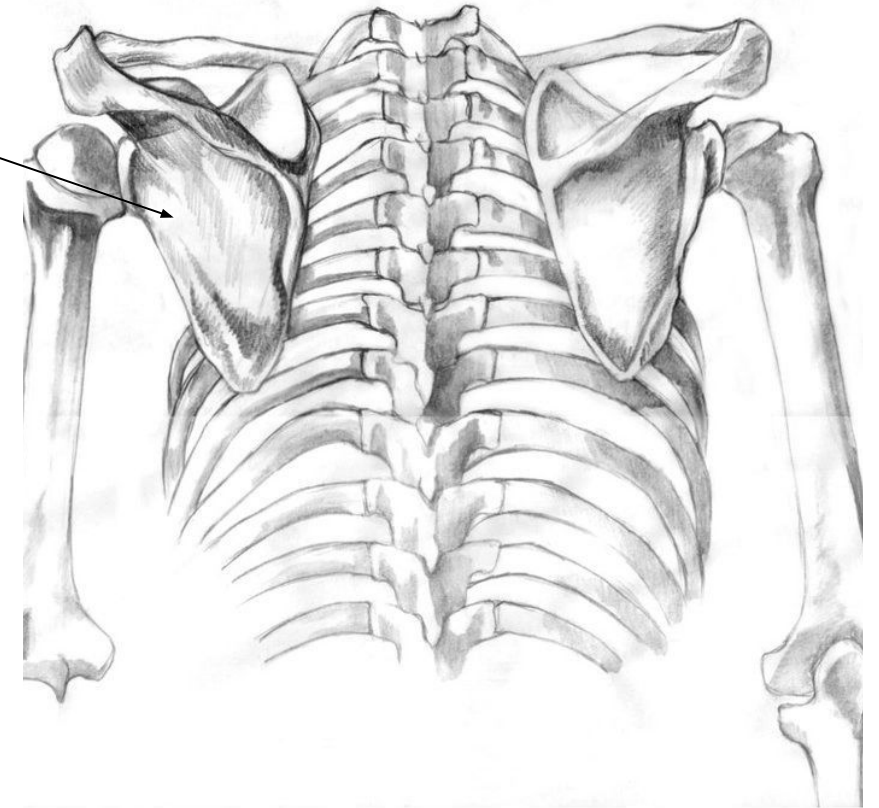
- Between the **Sternum** and shoulder.
- Commonly fractured: If you fall all impact will be on this bone + it has no muscular protection.





# Scapula (UPPER BACK)

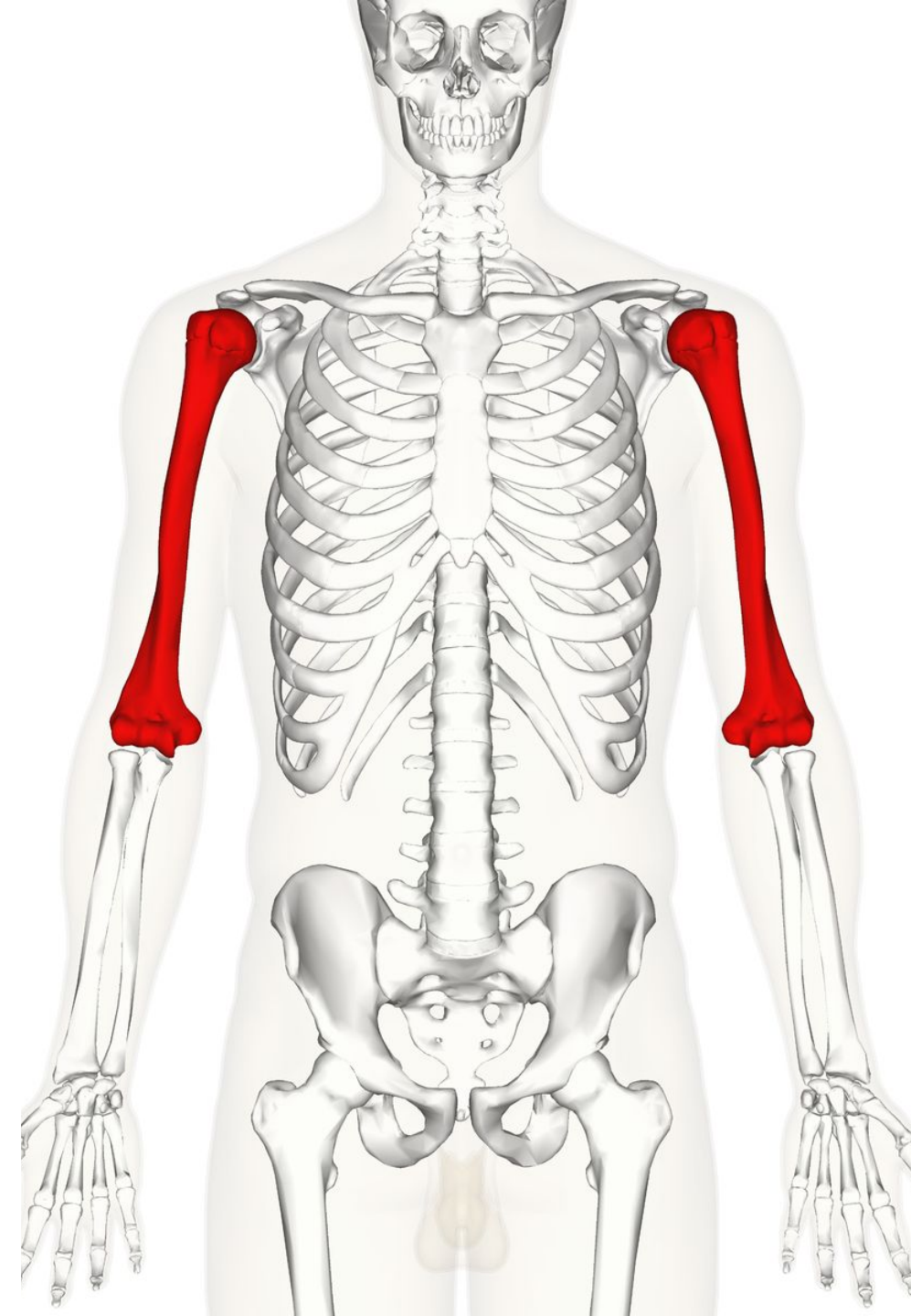
- The Shoulder Blade.
- Stabilises the arm and provides arm movement at the shoulder.
- **Scapula, clavicle and humerus** are connected through muscles, tendons and ligaments.





# Humerus

- The long bone of the upper arm.
- Located between the elbow and the shoulder.
- Humerus – Funny Bone – ‘Humorous’







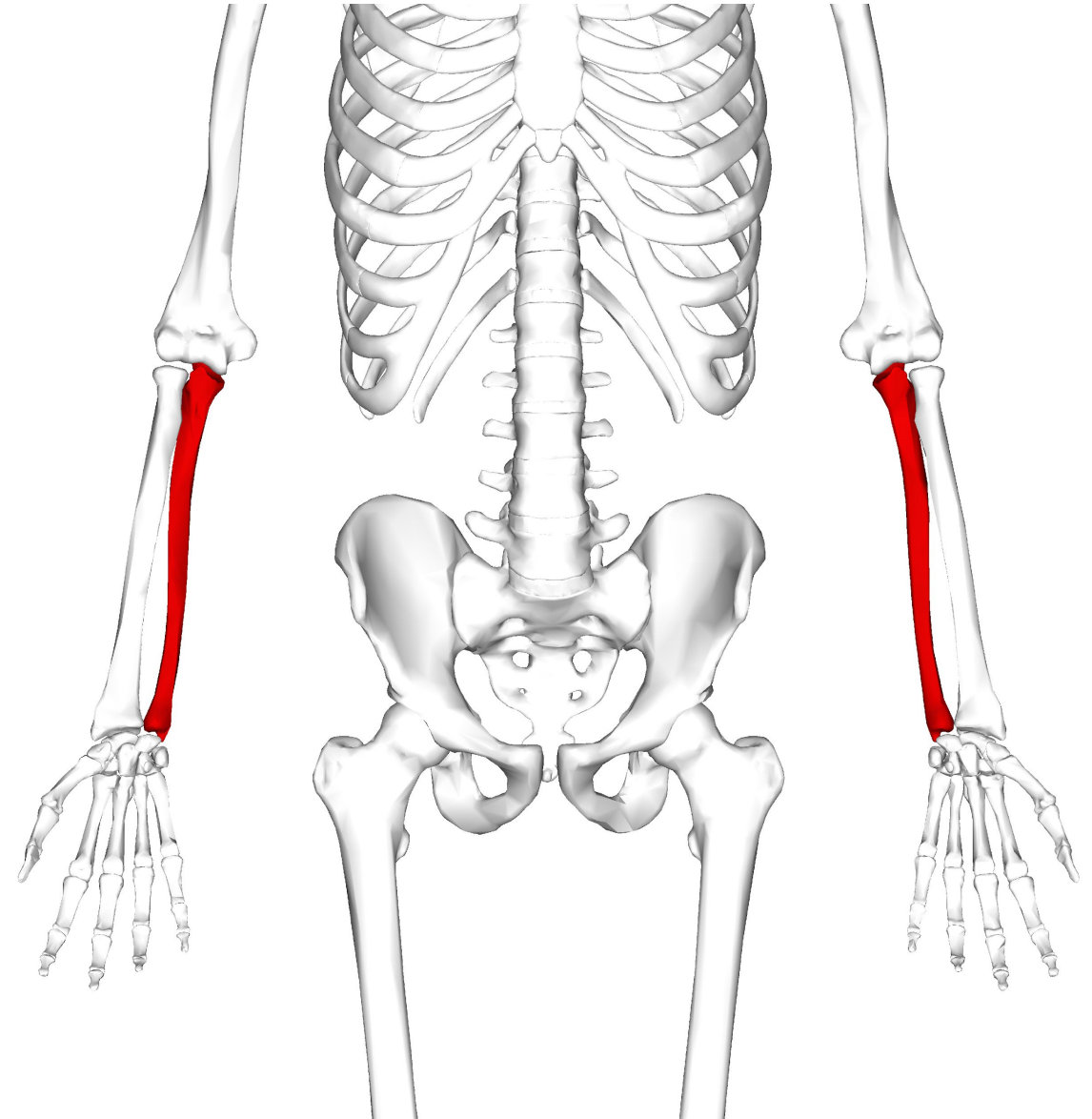
# Radius & Ulna

Radius:

- Outside of the Elbow to Thumb
- Designed for **impact**

Ulna (Red):

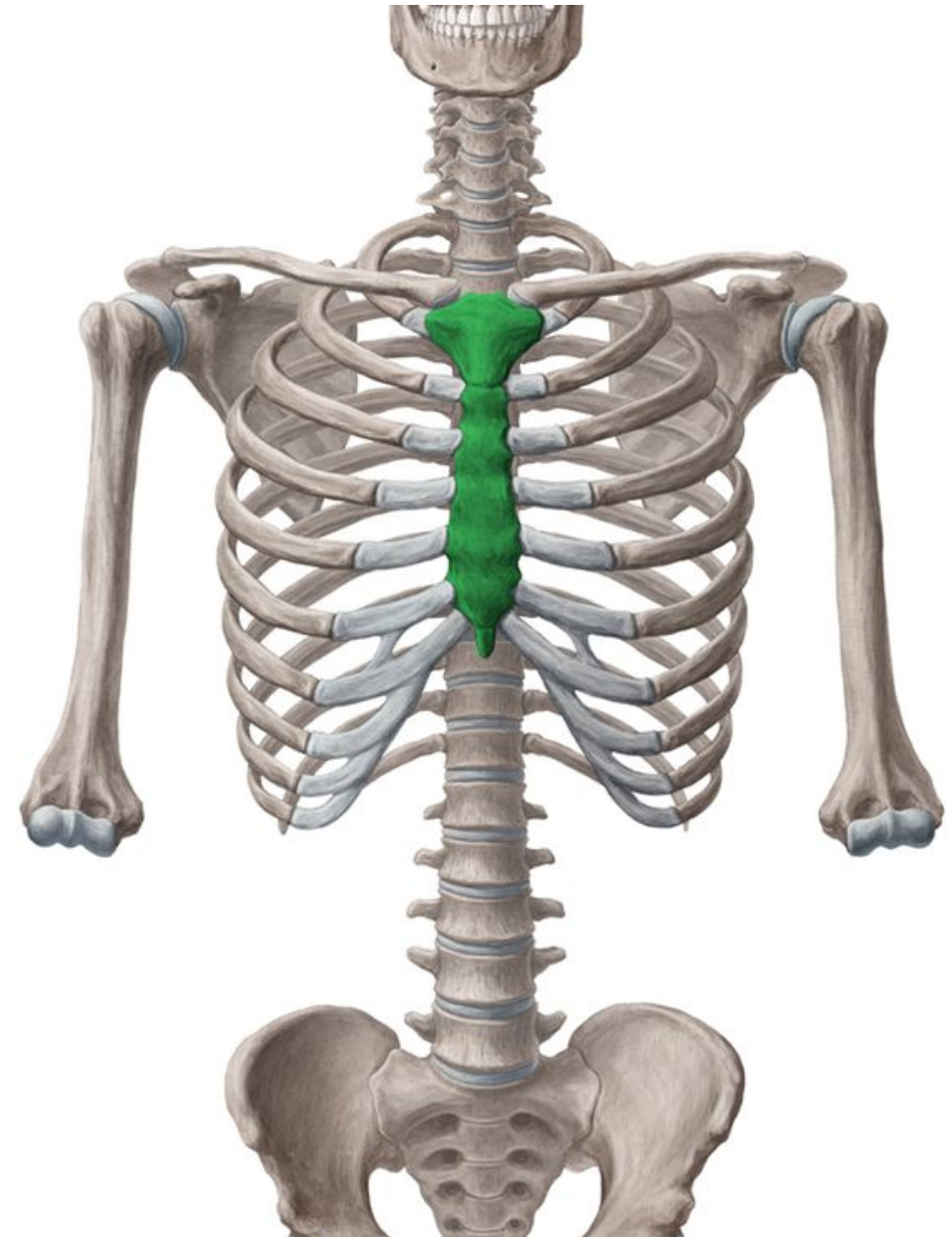
- “Underneath”, supports the little finger side





# Sternum

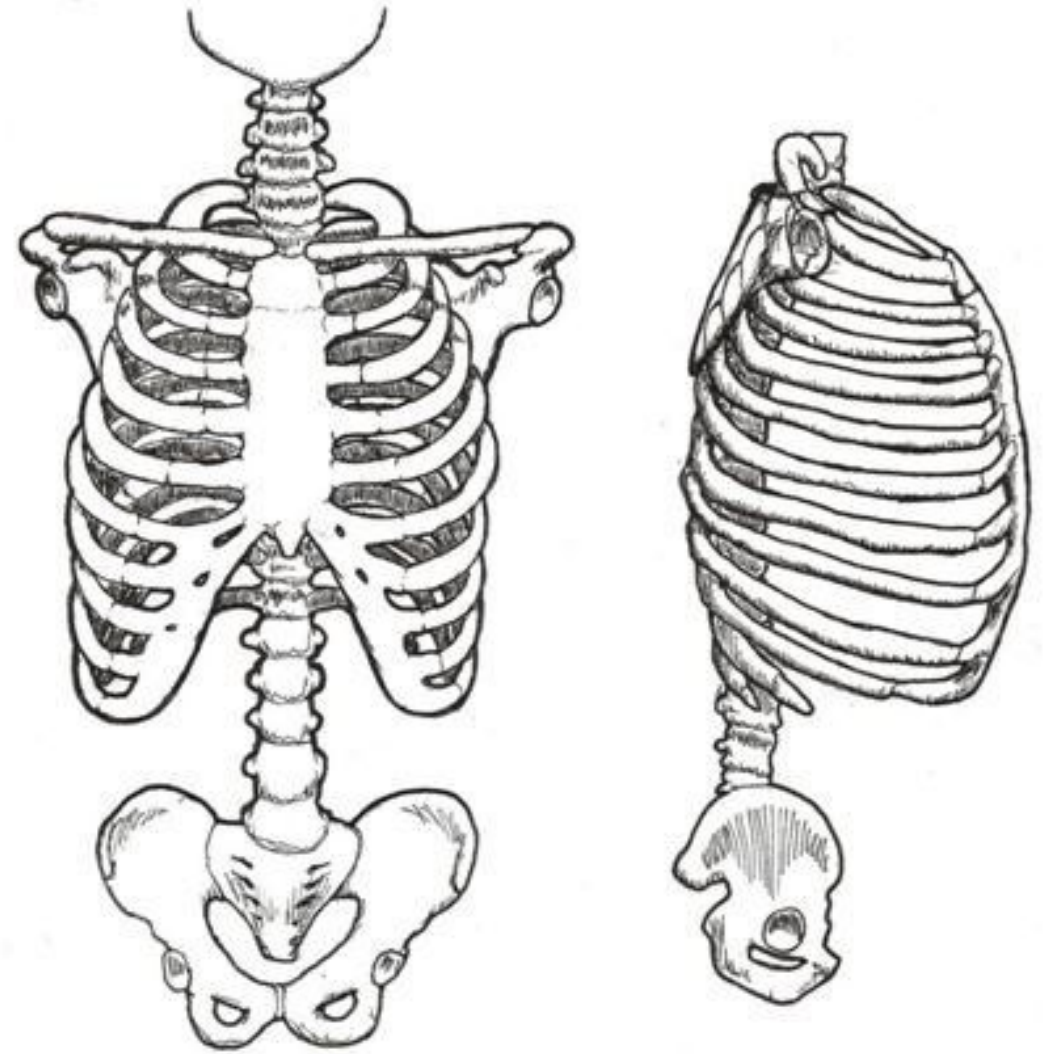
- The breastbone.
- Located in the center of the chest.
- It connects the ribs via cartilage, forming the front of the ribcage.
- Helps to protect the heart, lungs and major blood vessels from injury.





# Rib Cage

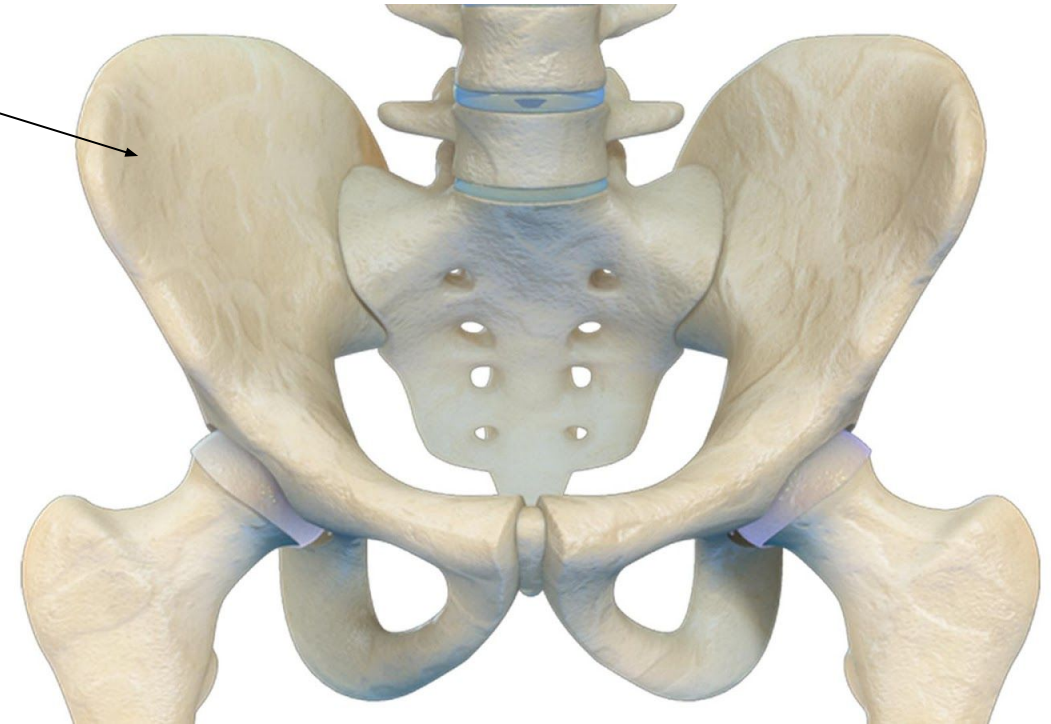
- The body frame formed by the ribs around the chest.
- Protects the body's vital organs.
- 24 ribs that attach to the thoracic vertebral column.
- Expands when we breath





# Pelvis

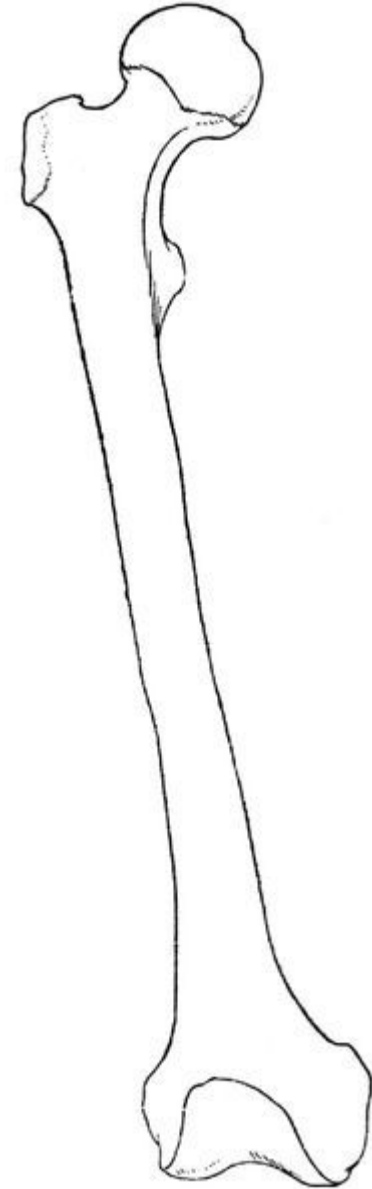
- **Largest** bone in the human body.
- Located between the abdomen and the thighs.
- Both Femurs attach into the pelvis.





# Femur (TOP OF LEG)

- The longest and strongest bone of the body.
- Located between the hip and the knee.
- Function: Weight bearing and produces both red and white blood cells.





# Patella

- The kneecap.
- Located between femur and tibia.
- Fact: babies do not have kneecaps at birth.





# Tibia & Fibula

Tibia:

- The “shin bone”
- 2<sup>nd</sup> longest bone in the body

Fibula:

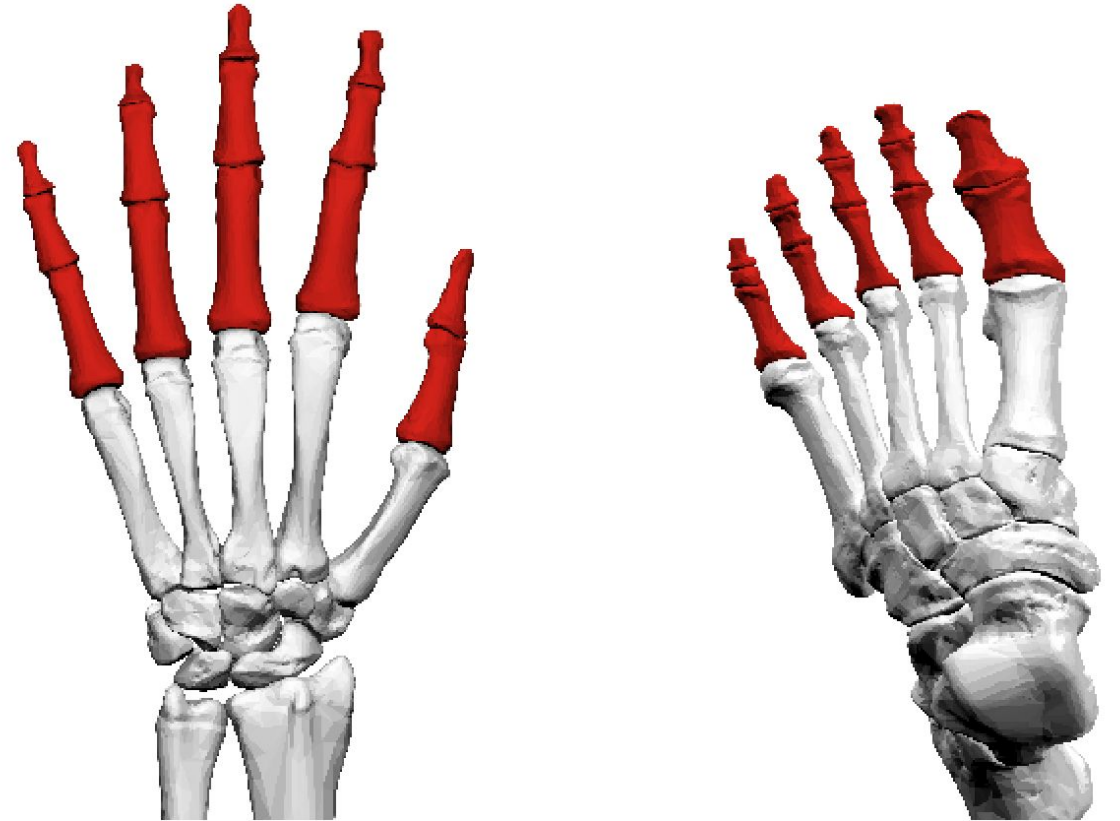
- Provides very little support
- Harvested for bone grafts





# Phalanges

- Fingers & Toes.
- 56 in the human body.
- Task: Where are the muscles that control the fingers?

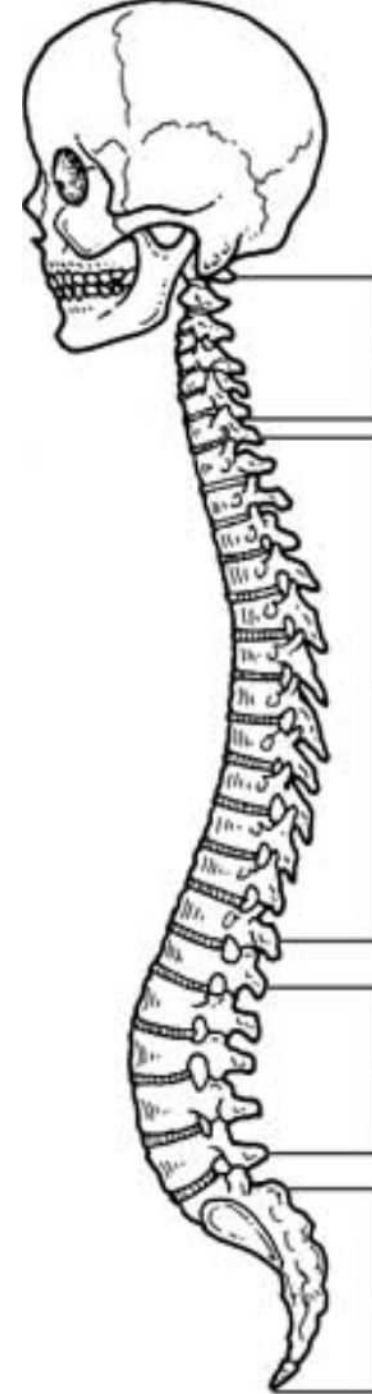






# Vertebral Column (MIDDLE OF BACK)

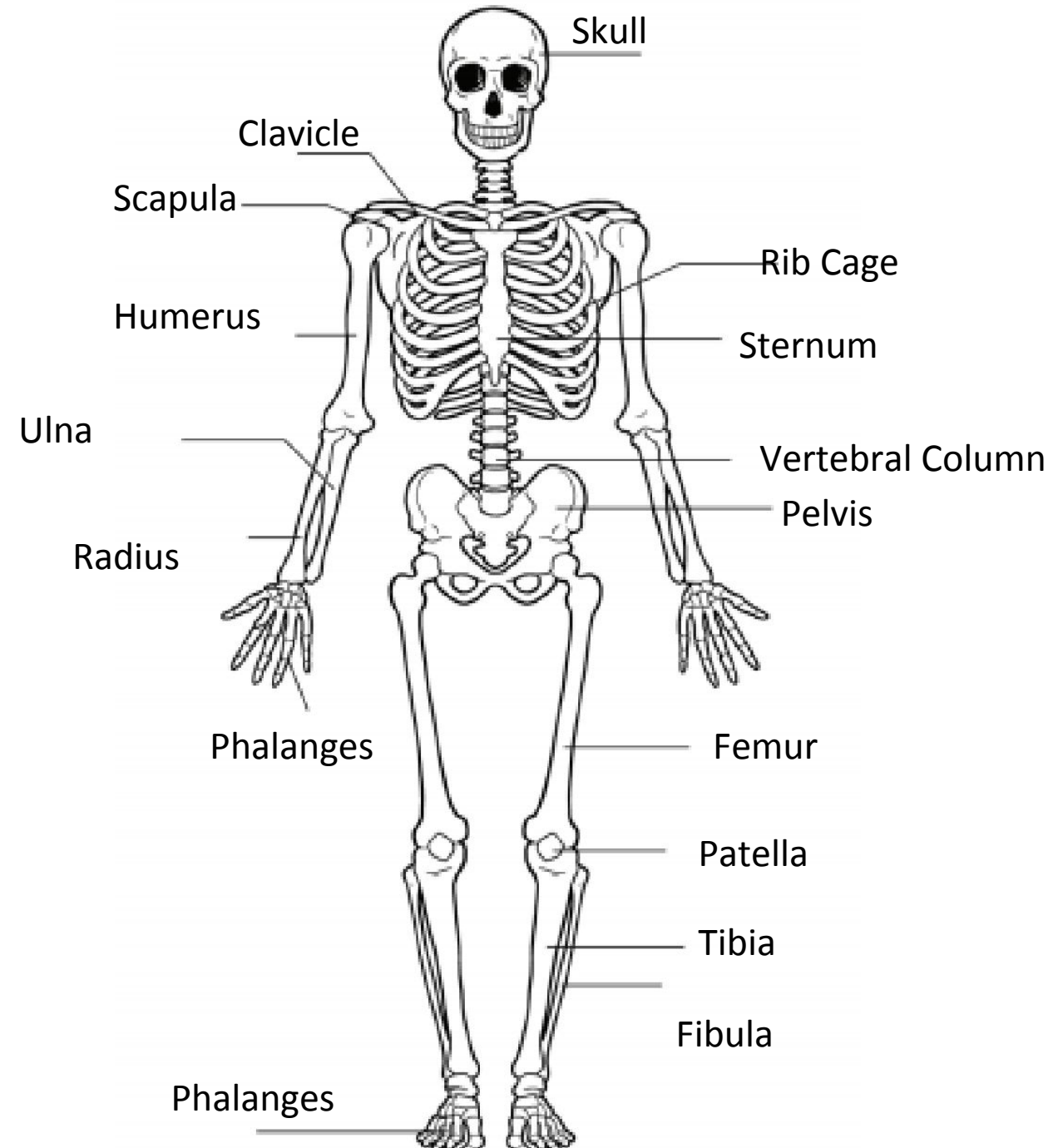
- **33** vertebrae
- **7** cervical, **12** thoracic, and **5** lumbar
- **5** Sacrum (fused)
- **4** coccyx (fused)
- **Protects** the spinal cord from injury.
- **Fact:** Astronauts come home taller. *Why?*





# Task

- As a group, can we label the skeleton?





# Joint Movement

- Joints are where two or more bones meet.
- Each type of joint can perform movements in various directions.
- Types of joint movement we will learn about:
  - Flexion
  - Extension
  - Abduction
  - Adduction



# Flexion

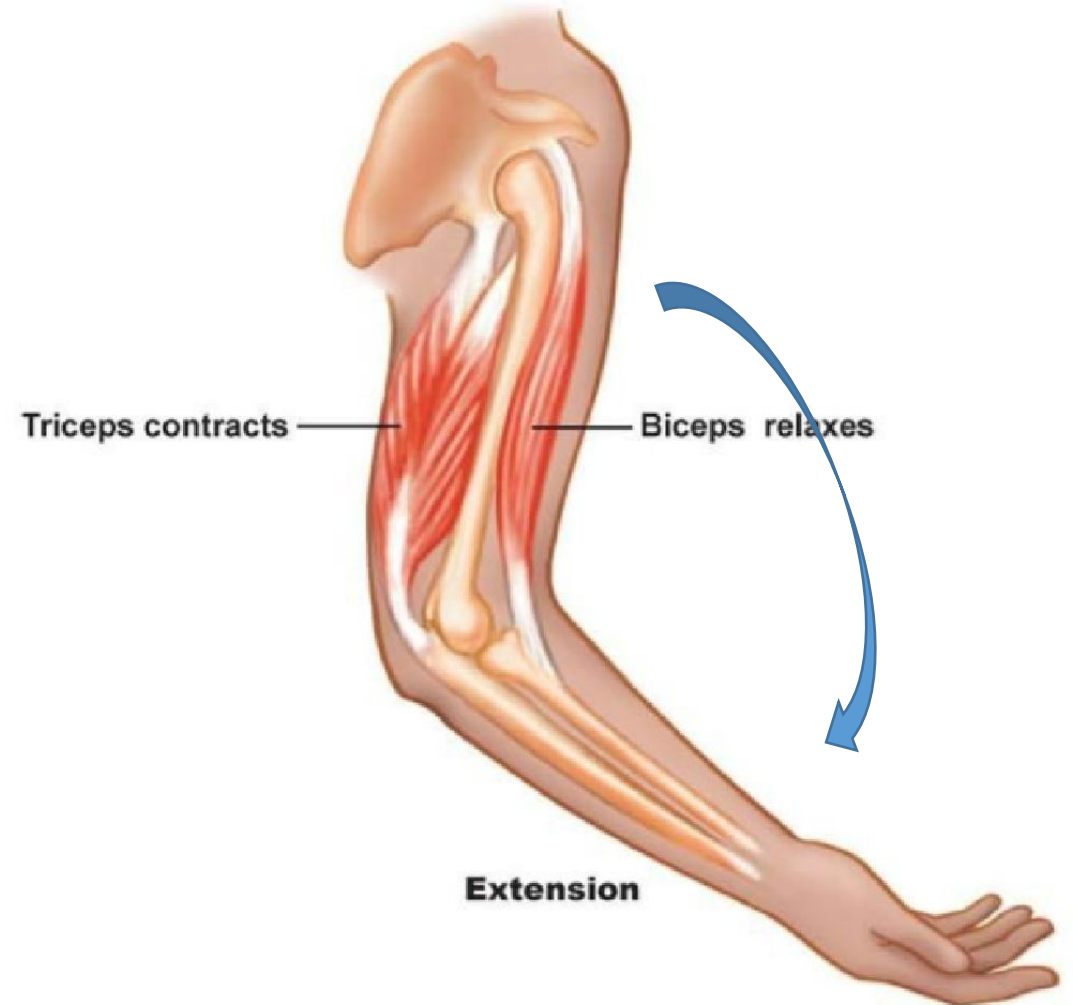
- **Decreasing** the angle at a joint.
- Think about **flexing** your bicep muscles.
- When is this used in sports?





# Extension

- **Increasing** the angle at a joint.
- When is this used in sports?





# Abduction

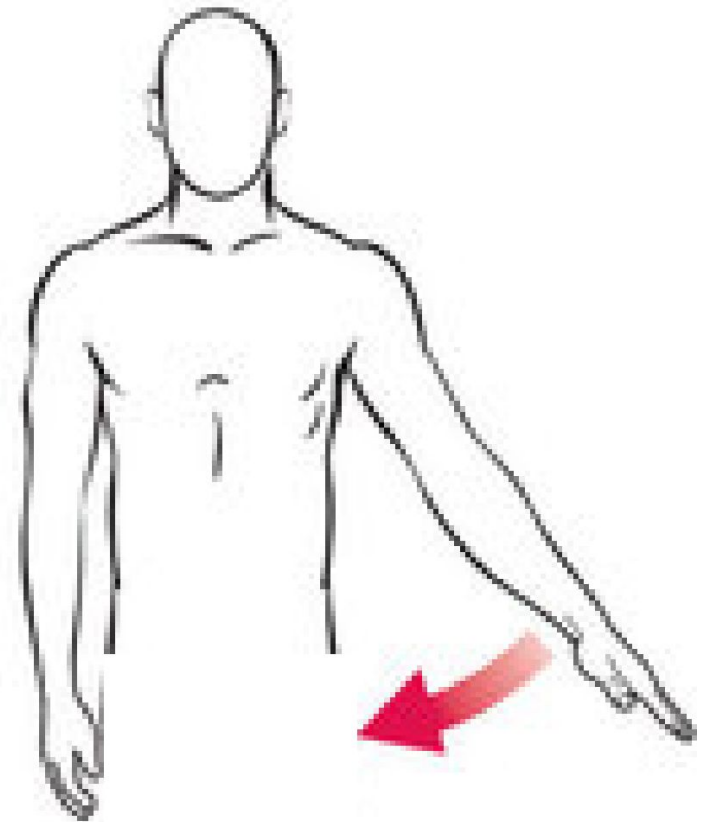
- Movement of limbs **away** from the midline of the body.
- Think: the word **abduct** means to “take way”
- Who can show the class Abduction?
- When is this used in sports?





# Adduction

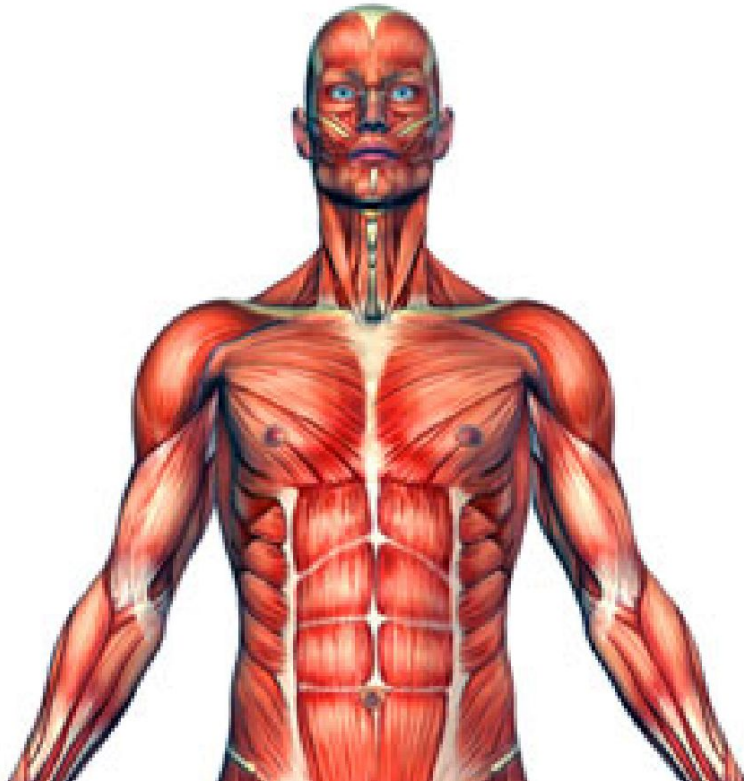
- Movement of limbs **towards** the midline of the body.
- Think about **ADDing** to the body, rather than taking away.
- Who can show the class Adduction?
- When is this used in sports?







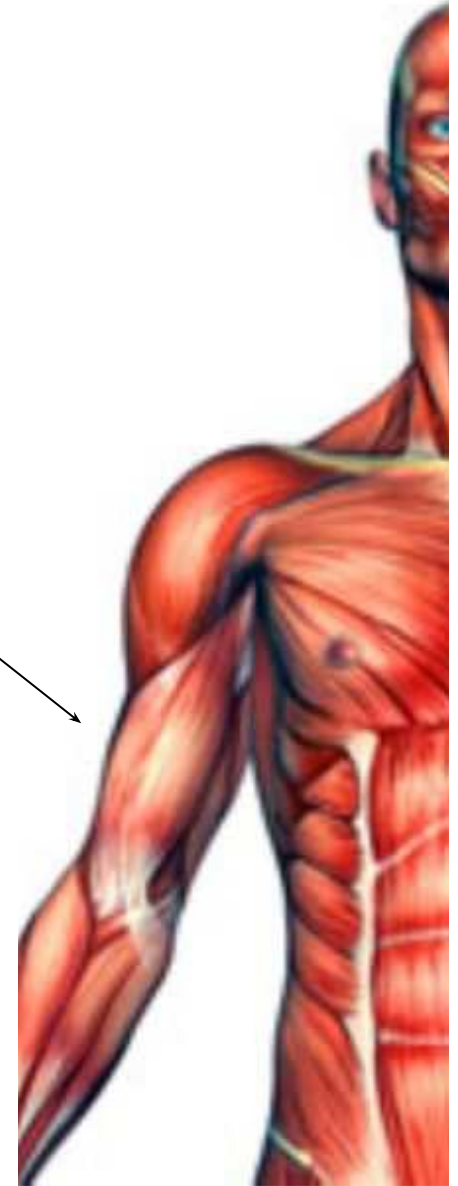
# Muscles





# Biceps

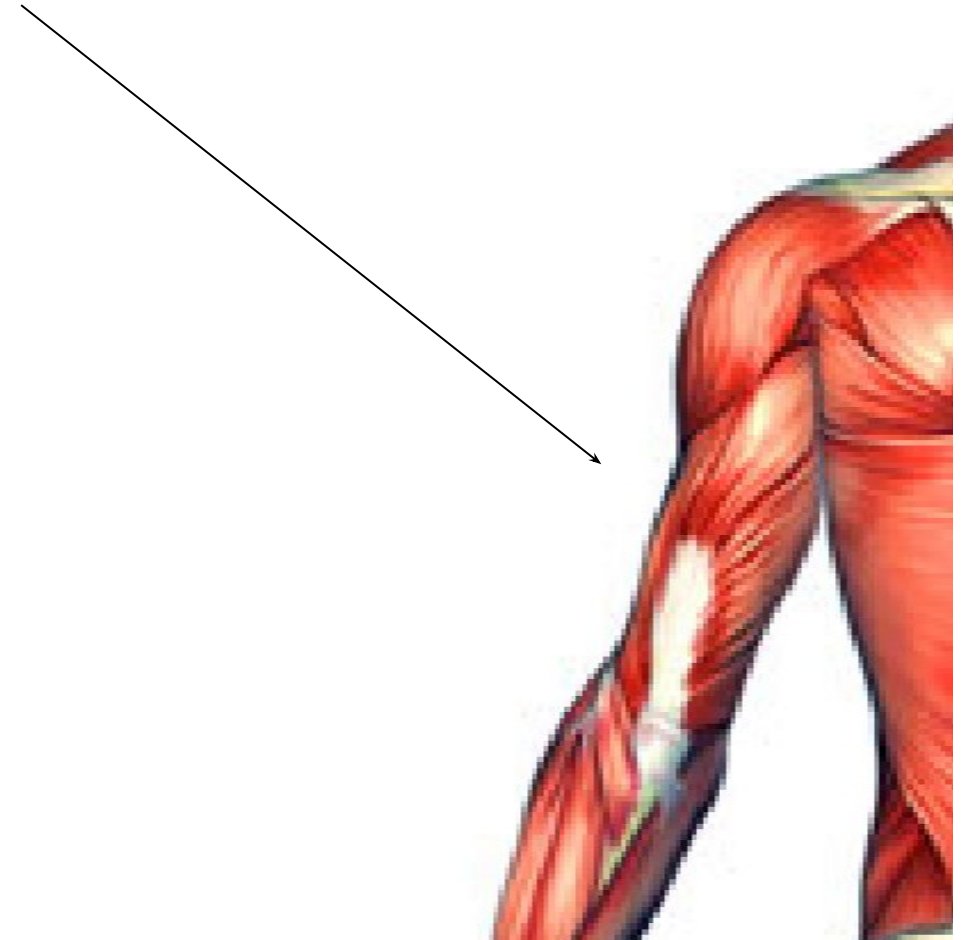
- Located at the front of the upper arm.





# Triceps

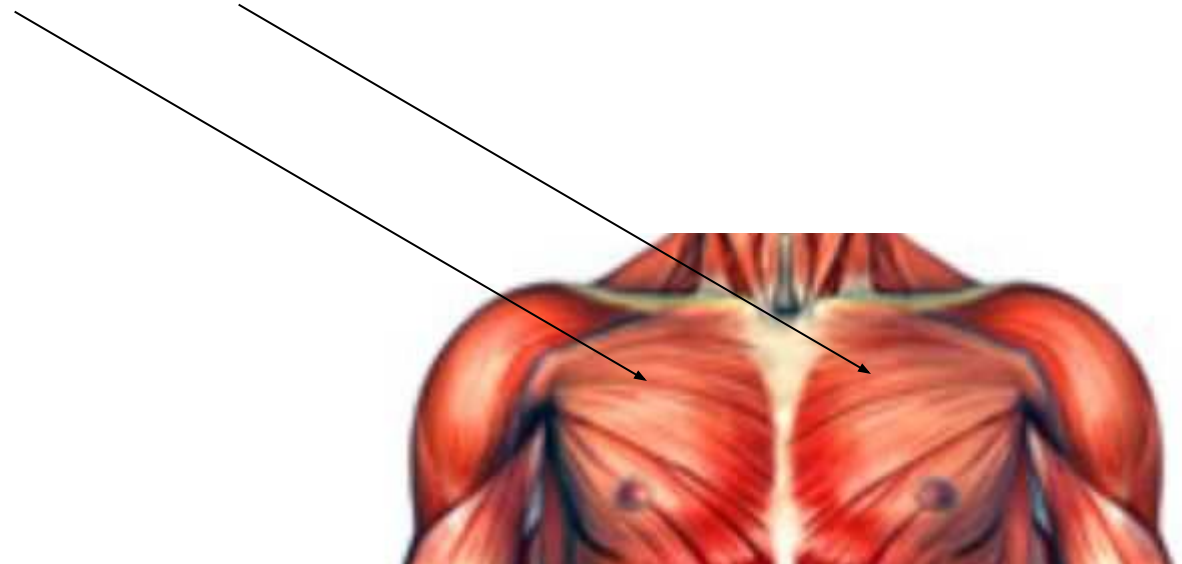
- Located at the back of the upper arm.





# Pectoral

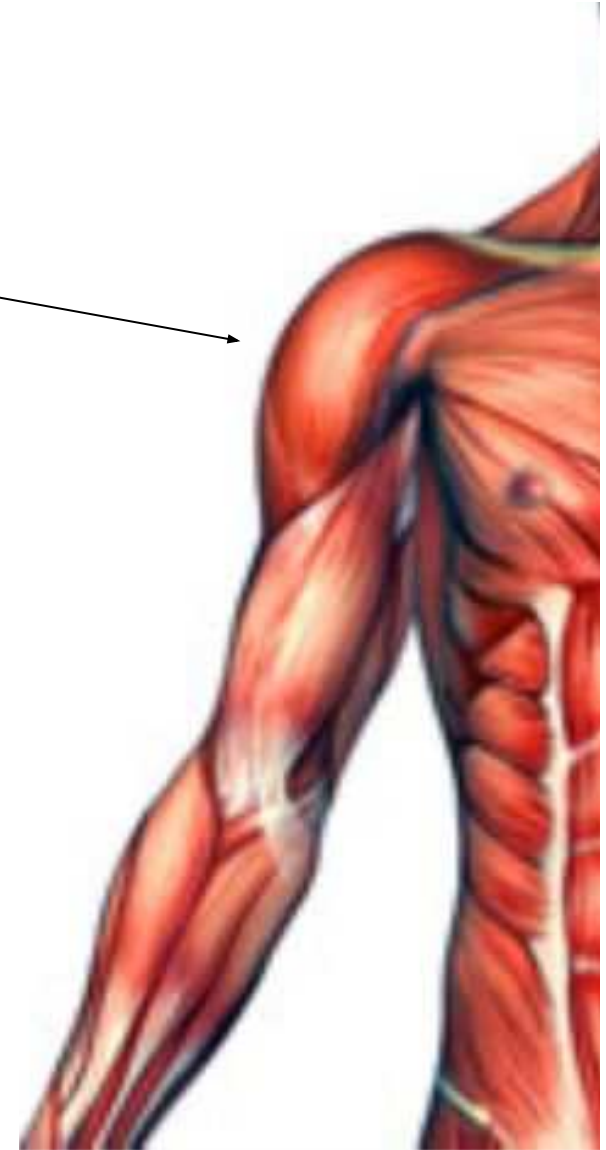
- Located at the front of the chest.





# Deltoids

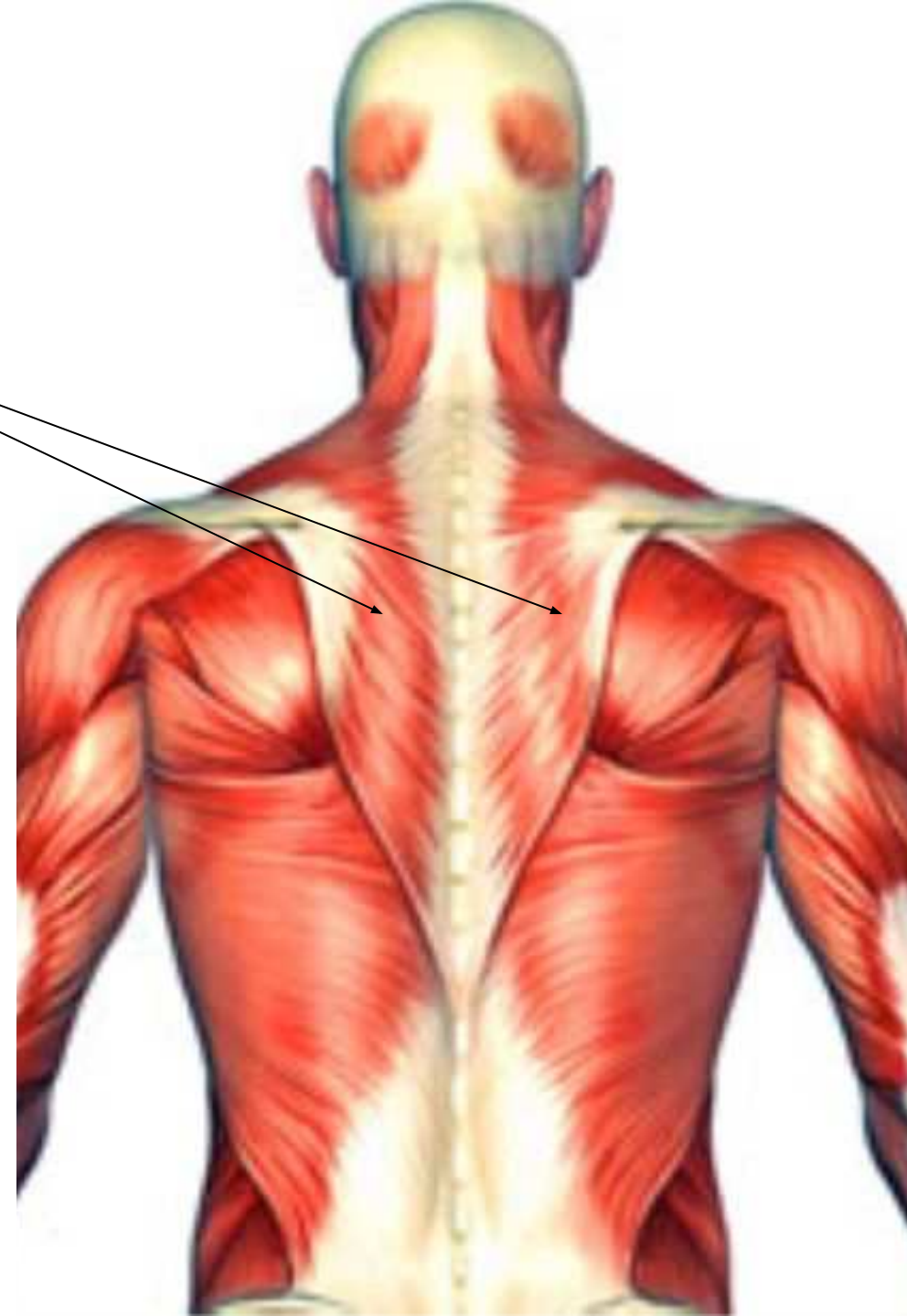
- Located at the shoulder and wraps around the front, side, top and back.





# Trapezius

- Located on the upper back and back of the neck.





# Latissimus Dorsi

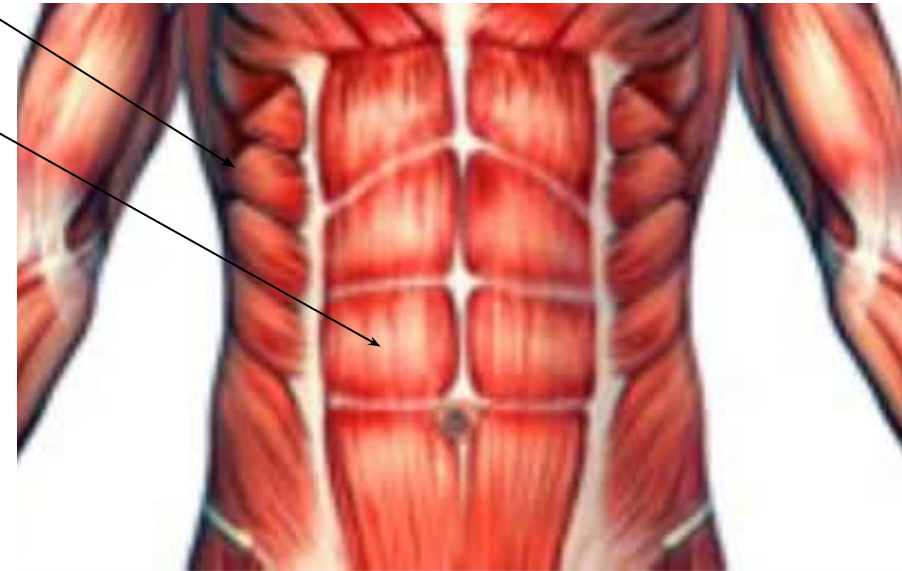
- Located at the back of the upper body,





# Abdominals & Obliques

- Located at the front and sides of the stomach.







# Quadriceps

- Located at the front of the upper leg.





# Hamstring

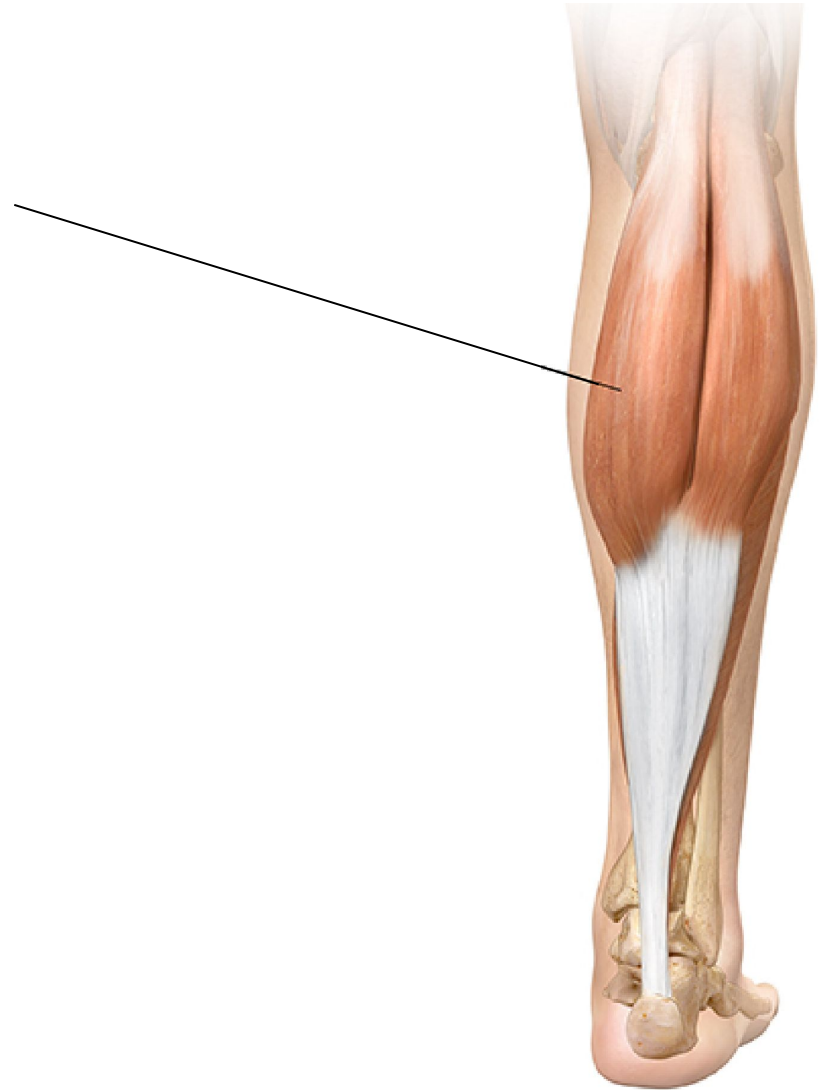
- Located at the back of the upper leg.





# Gastrocnemius (GAST-ROCK-KNEE-ME-US)

- Located at the back of the lower leg.





# Task

- In groups, you will be given the name of a part of the body.
- Prepare a fact file for this area, using labelled drawings, including:
  - Location on Body
  - Bones
  - Muscles
  - Joint Movements

As a group you will present your area of the body in as much detail as you can

*Use 1 piece of A4 paper per bone & muscle.*



# Task

- In groups of 3 & 4, use post-it notes to label each others bones, muscles & joint movement.
- Use all of the knowledge that you have learnt today.



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# Any Questions?