SKELETON AND BONES

HUMAN ANATOMY

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- **Title:** "Comprehensive and Detailed Analysis of Upper Limb Bones"
- **Subtitle:** "Clavicle, Scapula, Humerus, Radius, Ulna, Carpal Bones, and Their Interrelations"
- **Image:** Fully labeled image of the upper limb bones from shoulder to wrist.

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- **Introduction to the Upper Limb**
- **Content:**
  - The upper limb consists of 30 bones organized into the shoulder, arm, forearm, and hand.
  - The interaction between these bones allows for fine motor control, strength, and endurance in tasks ranging from writing to lifting heavy objects.
- We will break down each bone's structure, function, mechanical role, and the joints they form to understand their biomechanical significanc

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- **: Clavicle (Collarbone)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Medial End (Sternal End):** Articulates with the manubrium of the sternum to form the sternoclavicular joint.
    - **Lateral End (Acromial End):** Articulates with the acromion of the scapula to form the acromioclavicular joint.
    - **Conoid Tubercle:** On the inferior surface, provides attachment for the conoid ligament.
    - **Trapezoid Line:** Located on the inferior surface, it provides attachment for the trapezoid ligament.

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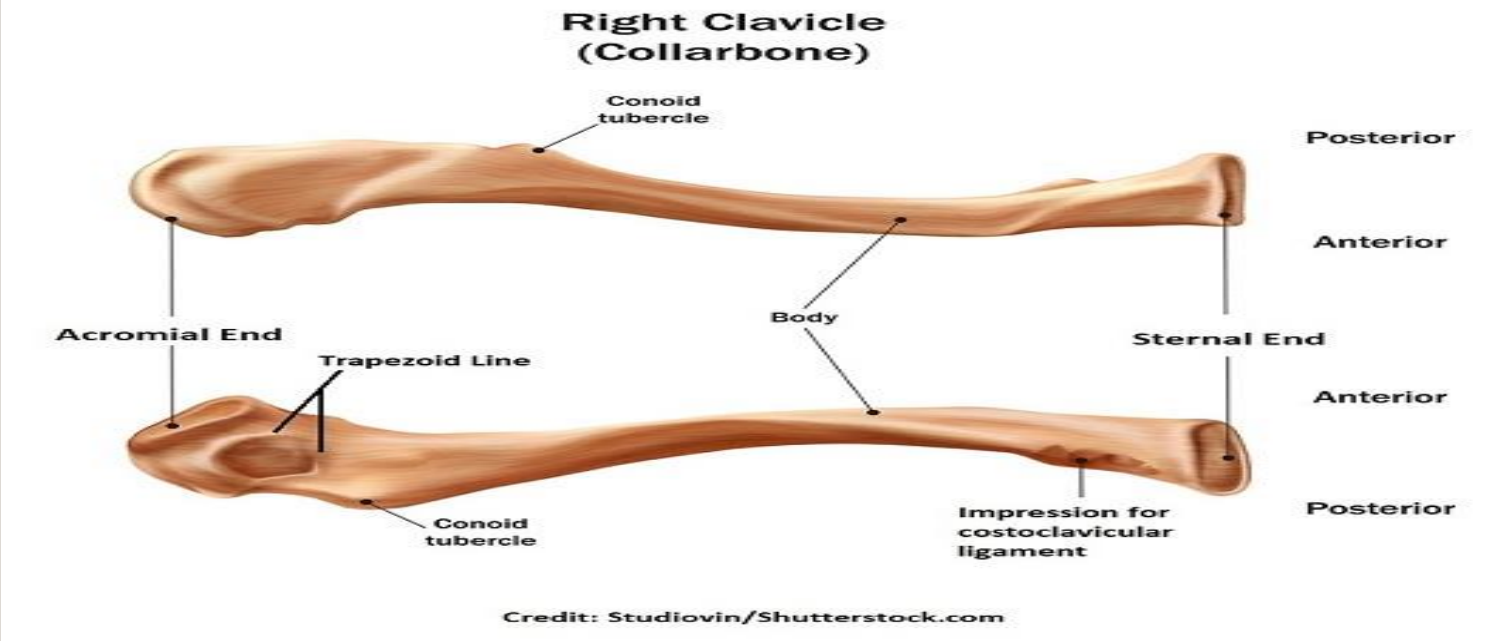

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- **Bony Landmarks:**
  - **Anterior Border (Medial Edge):** The anterior border of the clavicle is more prominent and can be palpated easily.
  - **Posterior Border (Lateral Edge):** More rounded and less prominent compared to the anterior edge, providing space for muscle attachment.
- **Image:** Diagram showing clavicle with labeled anterior and posterior borders.

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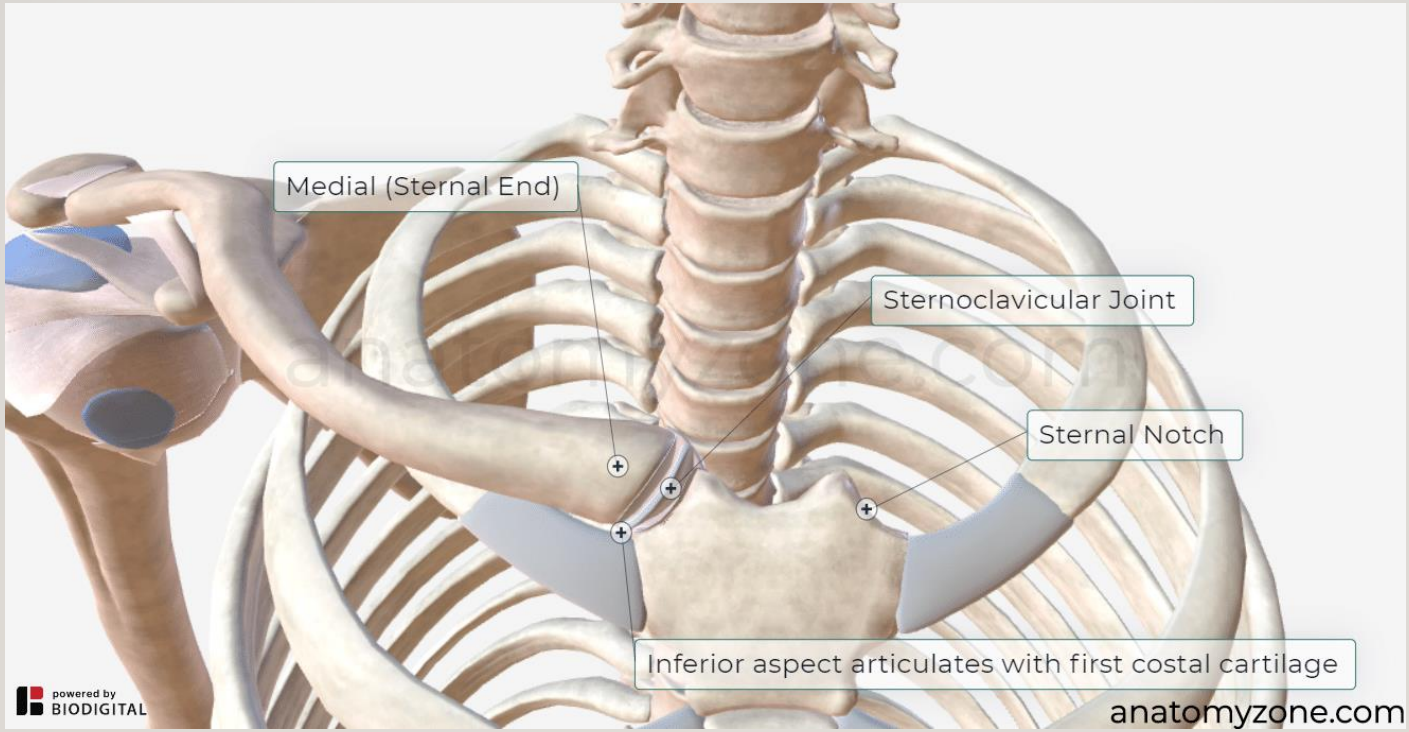

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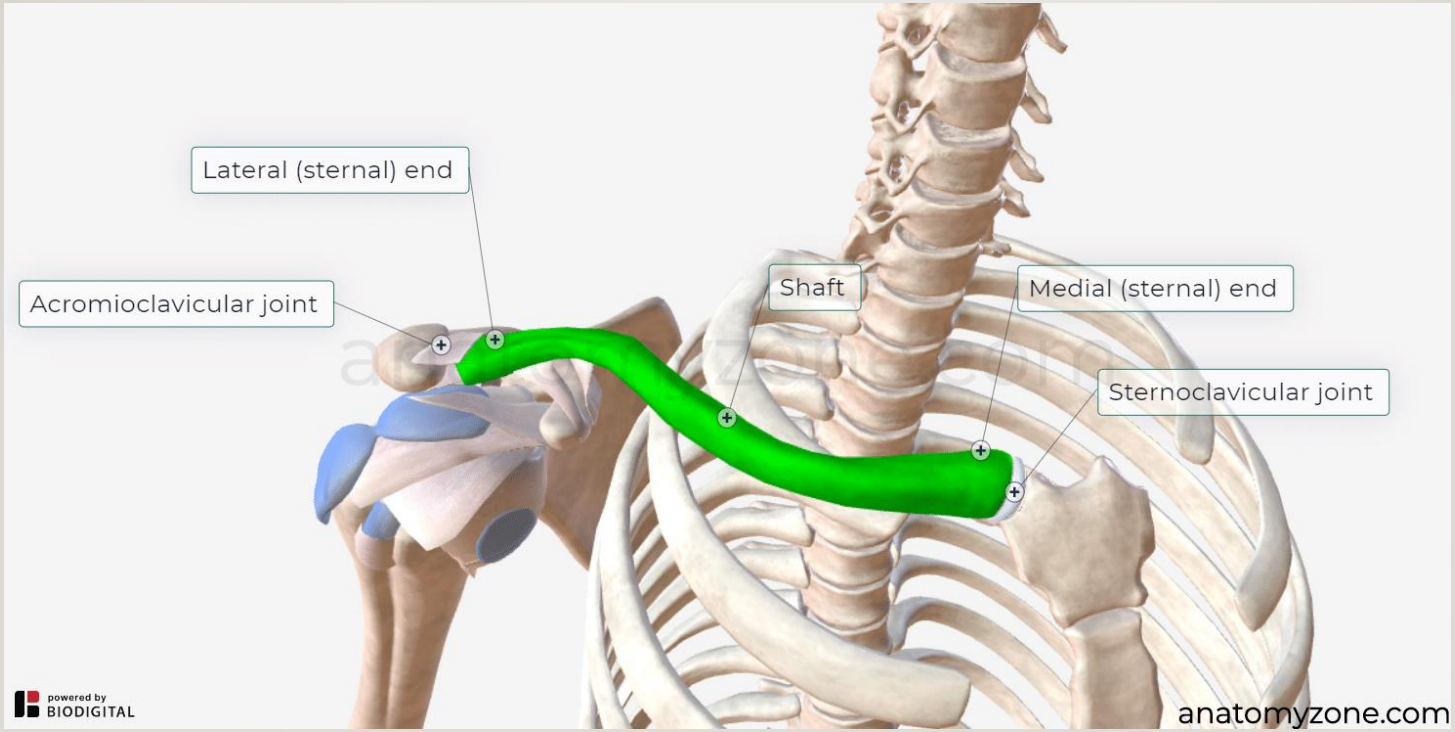

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- **Scapula (Shoulder Blade)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Spine of the Scapula:** A prominent ridge running across the posterior surface, dividing the supraspinous and infraspinatus fossae.
    - **Acromion Process:** Lateral extension that articulates with the clavicle.
    - **Coracoid Process:** A hook-like projection that serves as a site for muscle attachments.
    - **Glenoid Cavity:** The shallow, concave surface for the articulation with the humerus.
    - **Subscapular Fossa:** A large smooth area on the anterior surface for muscle attachment.
    - **Suprascapular Notch:** A small notch near the superior border for the passage of the suprascapular nerve.

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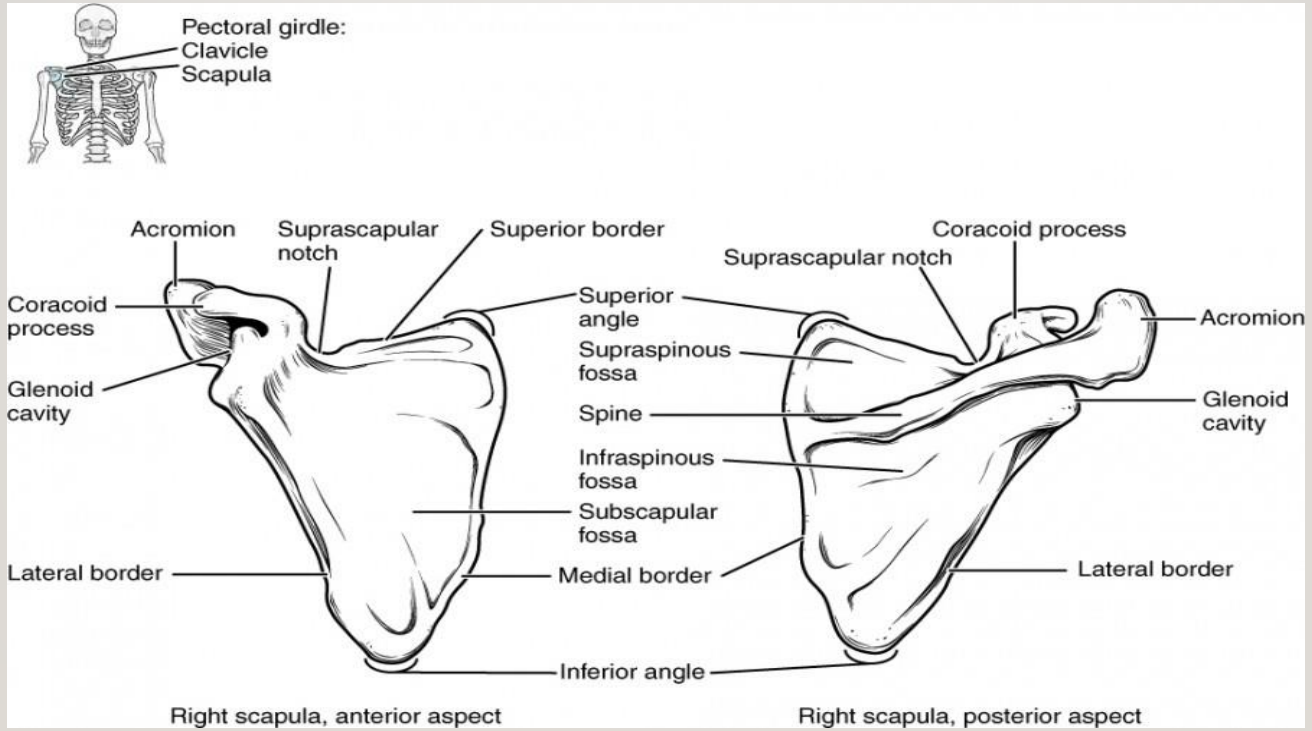

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- **Bony Landmarks:**
  - **Anterior Border (Medial Edge):** The inner edge of the scapula that faces the ribs, less prominent but important in muscle attachment.
  - **Posterior Border (Lateral Edge):** The edge running from the acromion to the inferior angle, can be palpated.
  - **Superior Border:** The upper edge of the scapula, where the suprascapular notch is located.
  - **Inferior Angle:** The lower point of the scapula, which can be palpated.
- **Image:** Diagram showing the scapula with labeled anterior and posterior borders, superior and inferior angles.

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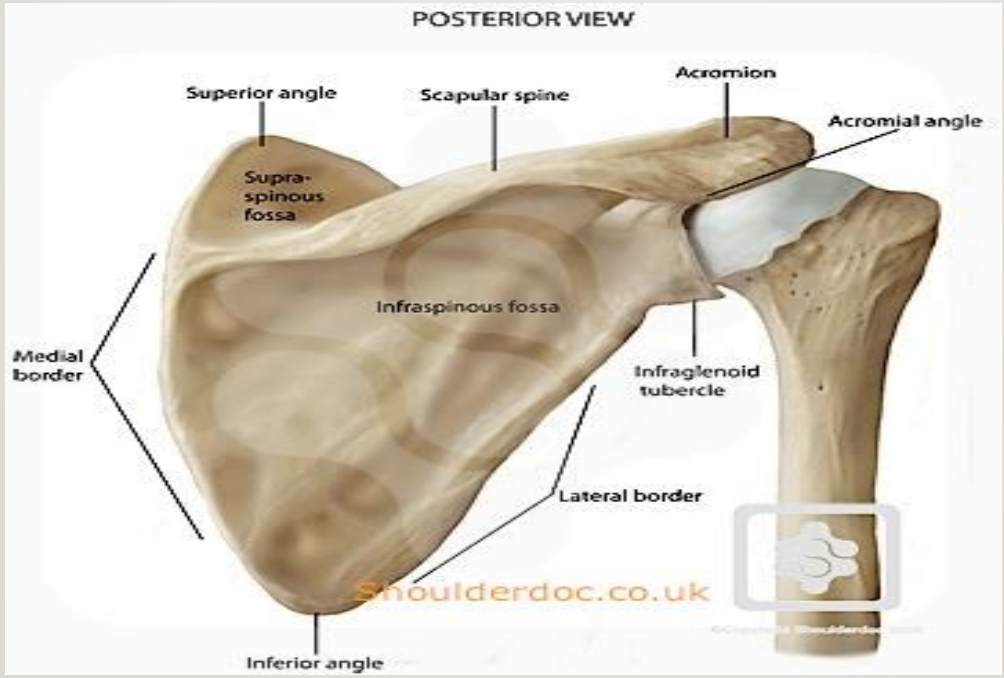

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- **Humerus (Upper Arm Bone)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Head of the Humerus:** Articulates with the glenoid cavity of the scapula.
    - **Greater Tuberosity:** A bony prominence on the lateral side for muscle attachment.
    - **Lesser Tuberosity:** Located anteriorly for the attachment of muscles such as subscapularis.
    - **Intertubercular Sulcus (Bicipital Groove):** Between the greater and lesser tuberosities.
    - **Deltoid Tuberosity:** A roughened area for deltoid muscle attachment.
    - **Trochlea and Capitulum:** Articular surfaces for the ulna and radius, respectively.
    - **Medial and Lateral Epicondyles:** Sites for muscle attachment and ligaments.

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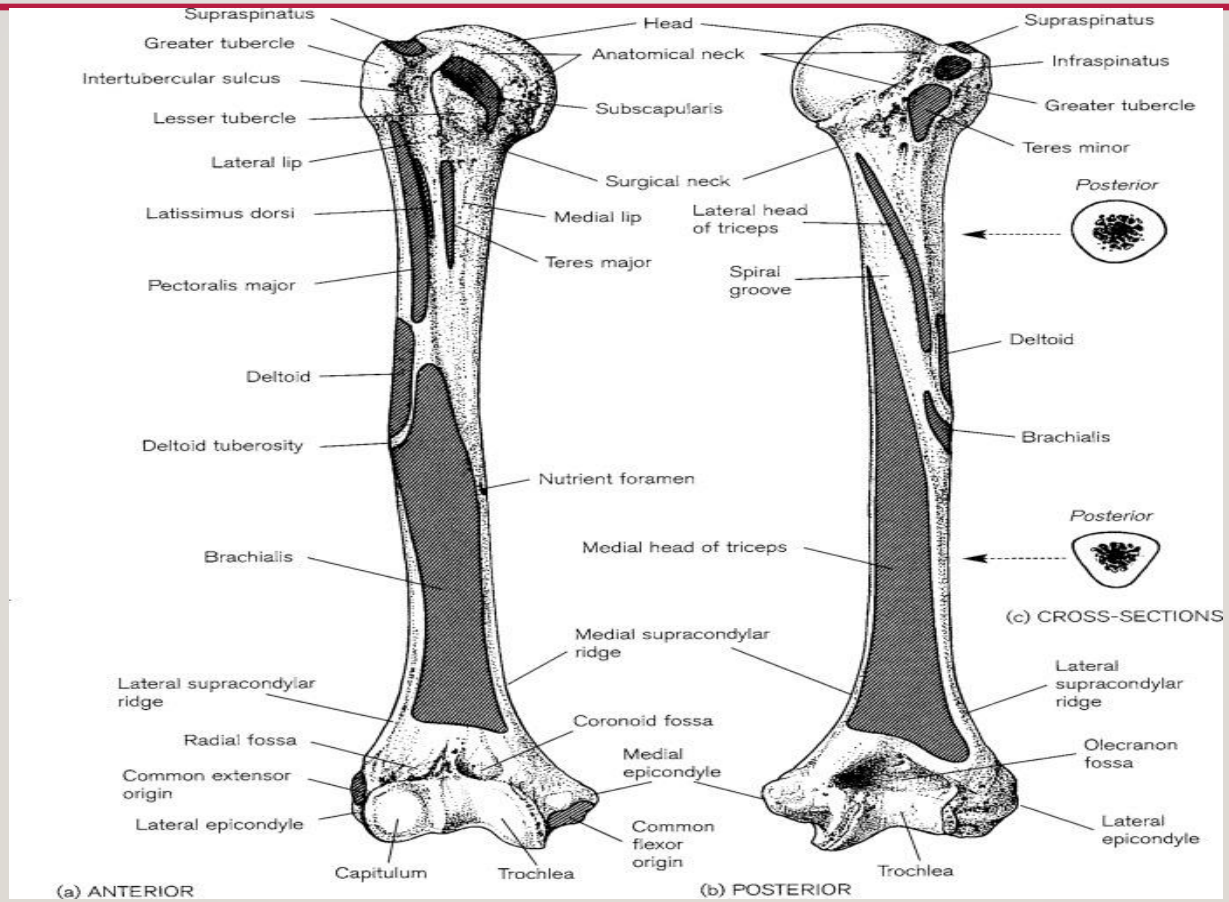

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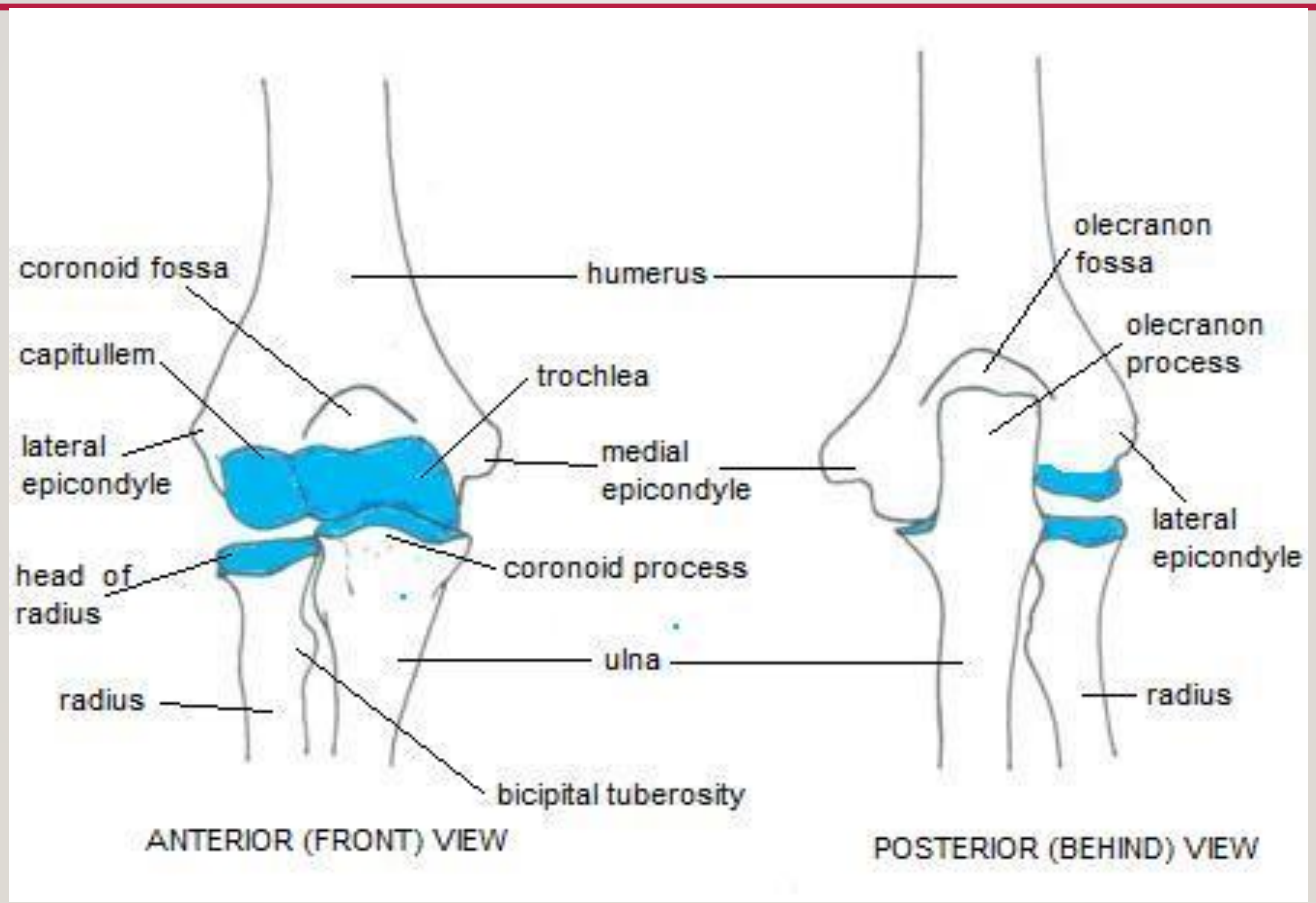

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- **Bony Landmarks:**
  - **Anterior Border:** The smooth, rounded surface at the front of the shaft of the humerus.
  - **Posterior Border:** This is less prominent, but noticeable especially at the level of the olecranon fossa.
  - **Lateral Border:** The side of the humerus where the greater tuberosity is located.
  - **Medial Border:** The side where the lesser tuberosity is found.
- **Image:** Labeled diagram of the humerus with anterior and posterior borders, lateral and medial sides.

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- **: Radius (Lateral Forearm Bone)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Proximal End (Head of the Radius):** Articulates with the capitulum of the humerus and radial notch of the ulna.
    - **Radial Tuberosity:** Provides attachment for the biceps brachii tendon.
    - **Styloid Process:** Found at the distal end of the radius, it provides attachment for wrist ligaments.

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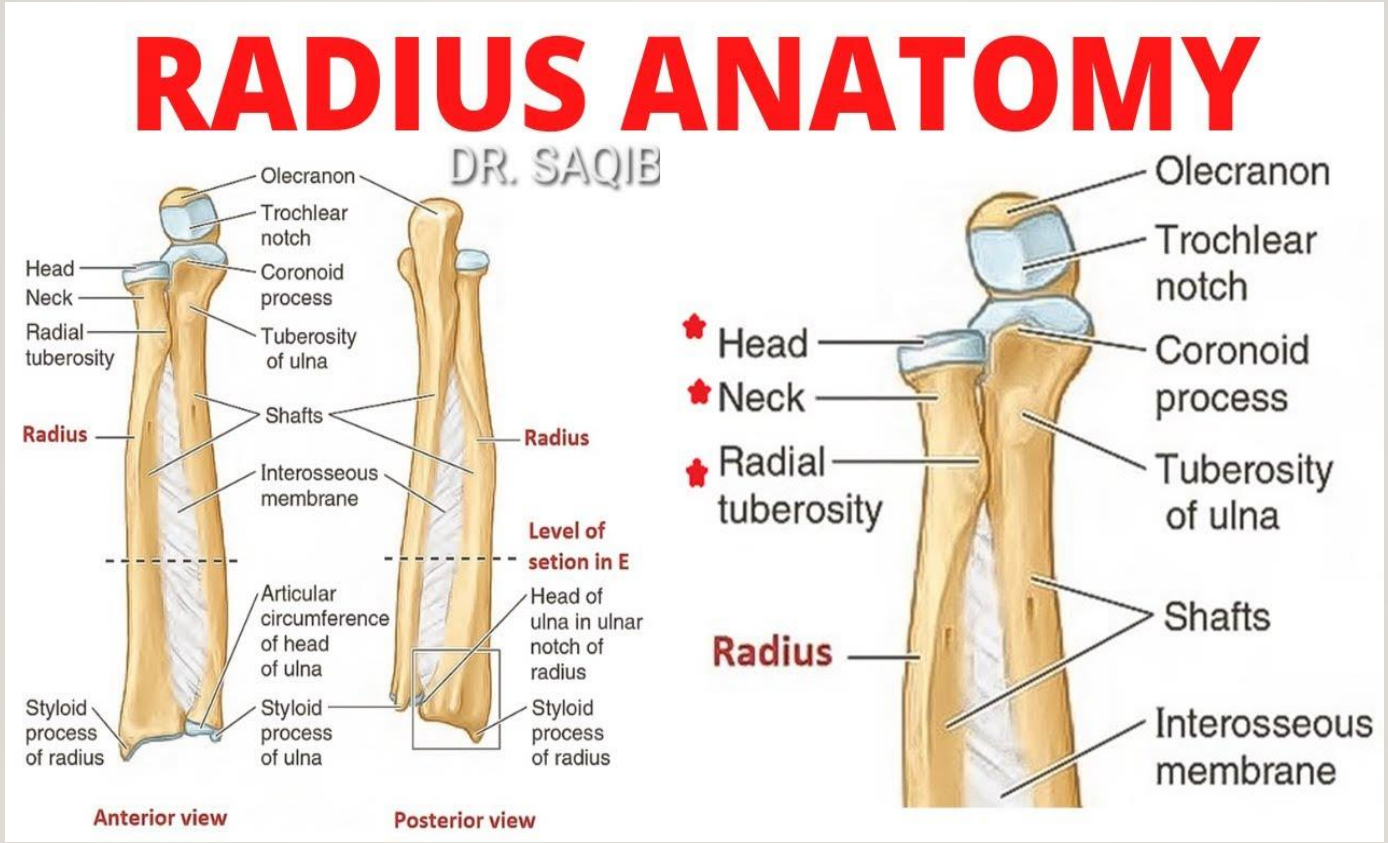

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- **Bony Landmarks:**
  - **Anterior Border:** The front edge of the radius, which is prominent in the upper part of the bone.
  - **Posterior Border:** Located on the back of the radius, less pronounced but still important in distinguishing the bone's shape.
  - **Lateral Border:** This is located on the outside, the side closest to the thumb when in the anatomical position.
- **Medial Border:** Located closer to the ulna at the wrist joint.
- **Image:** Diagram showing the radius with labeled borders, focusing on anterior, posterior, lateral, and medial sides.

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- **Ulna (Medial Forearm Bone)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Olecranon Process:** The point of the elbow that serves as a lever arm for the triceps brachii.
    - **Trochlear Notch:** A deep concavity that articulates with the humerus.
- **Styloid Process:** A bony projection at the distal end of the ulna

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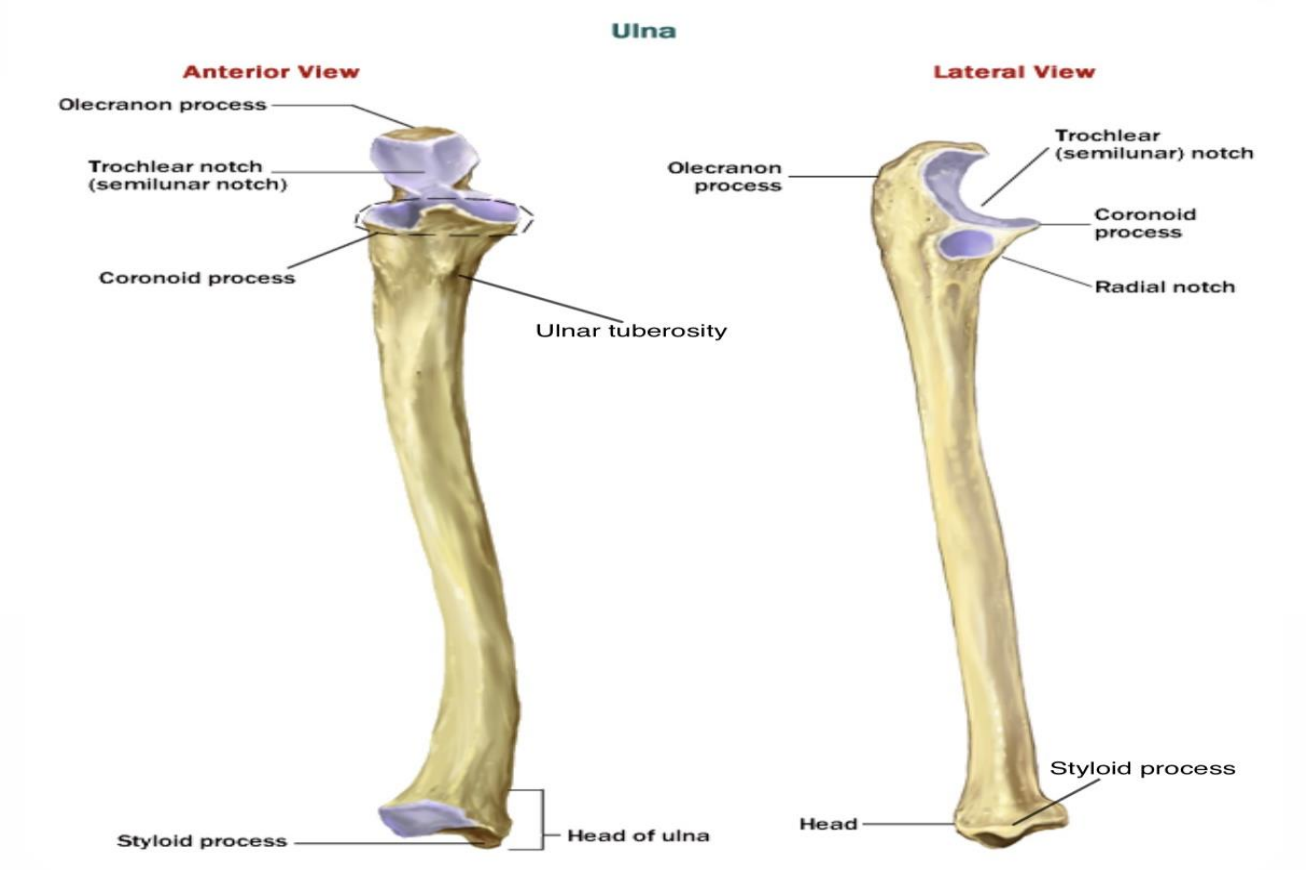

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- **Bony Landmarks:**
  - **Anterior Border:** A smooth surface that runs along the front of the ulna, providing space for muscle attachment.
  - **Posterior Border:** This is a sharp edge on the back of the ulna, and can be felt easily in the forearm.
  - **Medial Border:** The inner side of the ulna, where the bone is closest to the body in the anatomical position.
  - **Lateral Border:** The outer border of the ulna, running parallel to the radius.
- **Image:** Diagram of the ulna with labeled anterior, posterior, lateral, and medial borders.

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- **Carpal Bones (Wrist Bones)**
- **Detailed Description:**
  - **Anatomical Features:**
    - **Proximal Row:** Scaphoid, Lunate, Triquetrum, Pisiform.
    - **Distal Row:** Trapezium, Trapezoid, Capitate, Hamate.
- **Carpal Tunnel:** Formed by the carpal bones and flexor retinaculum, through which the median nerve passes

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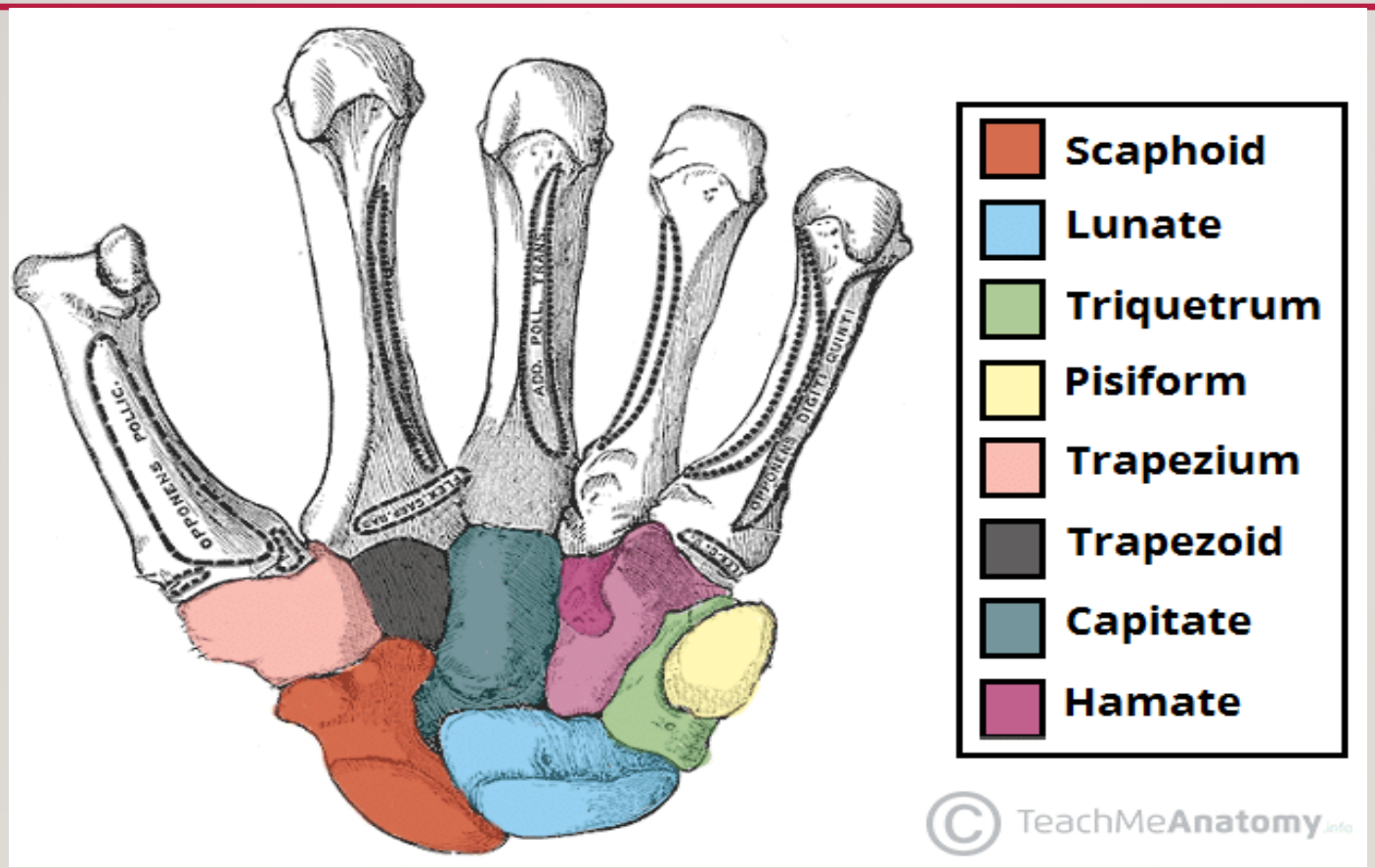

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- **Bony Landmarks:**
  - **Scaphoid:** Found in the anatomical snuffbox, the lateral side of the wrist, where the scaphoid bone can be palpated.
  - **Pisiform:** A small round bone found on the medial side of the wrist that can be palpated.
  - **Hamate:** Distinguished by its hook-like projection (hamulus), palpable on the ulnar side of the wrist.
  - **Styloid Process of the Radius and Ulna:** These can be palpated at the distal ends of the radius and ulna.
- **Image:** Diagram of the carpal bones with labeled bony landmarks such as the scaphoid, pisiform, and hamate

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- **Conclusion**
- **Summary:**
  - The upper limb bones, including their bony landmarks and borders, contribute significantly to the complex movements and function of the human arm and hand.
  - These landmarks are critical for muscle attachment, joint stability, and understanding the biomechanics of the upper limb.
- **Key Takeaways:**
  - The detailed understanding of bony borders and landmarks enhances clinical diagnosis, palpation techniques, and the understanding of upper limb anatomy in motion.