ACROMIOCLAVICULAR JOINT

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INTRODUCTION

- Joint consists of the articulation between the **lateral end of the clavicle and a small facet on the acromion of the scapula**.
- Facet of acromion/ clavicle – variable(flat/concave-convex/ vice versa)
- **Plane synovial joint** with 3 rotational and 3 translators degrees of freedom.
- Primary function is to allow the scapula to rotate in 3 dimensions during arm movement.
- Allow transmission of forces from the Upper extremity to the clavicle.

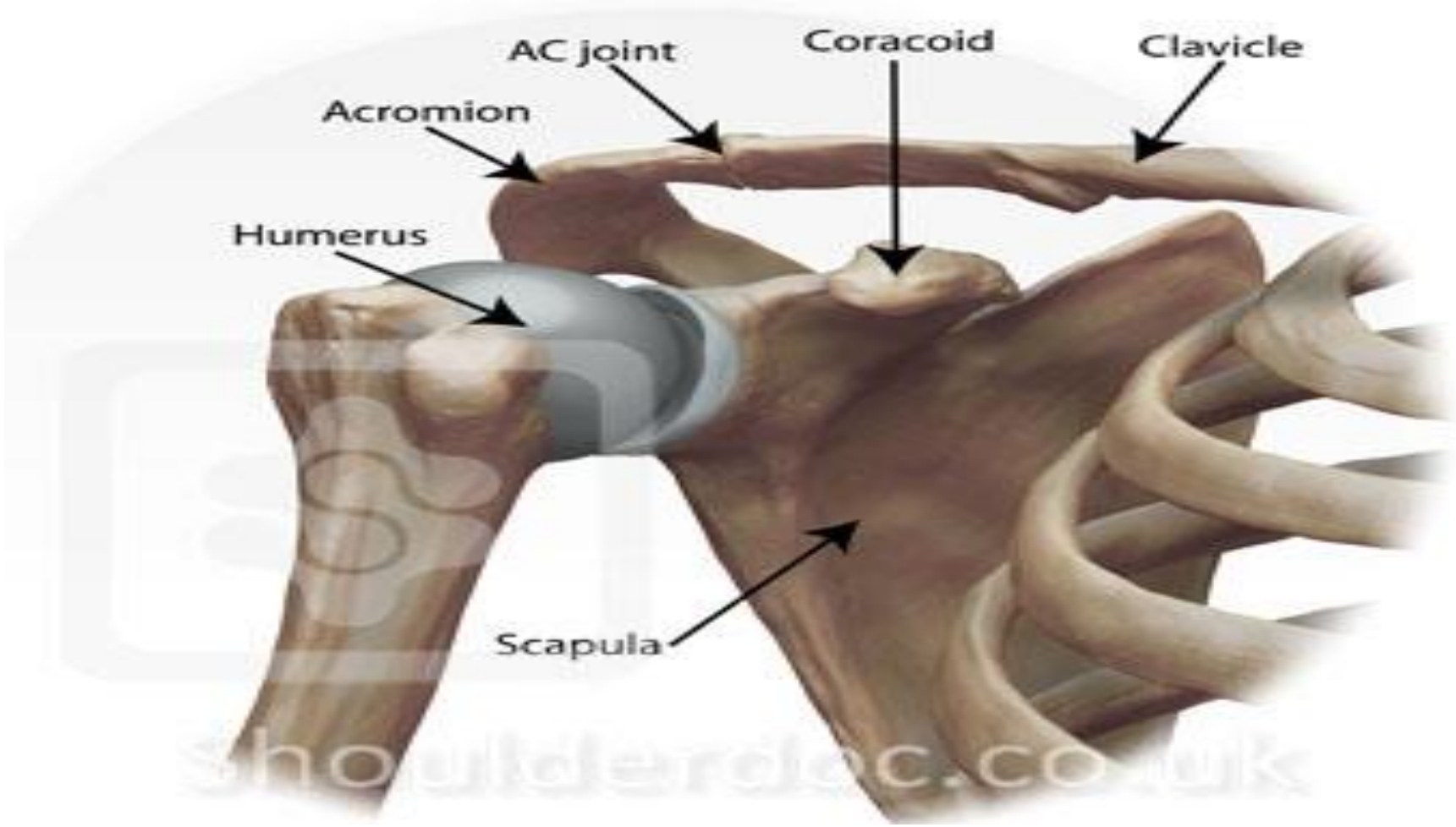


Fig courtesy of Lennard Funk, http://www.shoulderdoc.co.uk :

ANATOMY

1. DISC

Joint disc is variable in size between individuals and between sides of same individual.

- Disc is meniscoid which is fibrocartilaginous remnant.

2. CAPSULE

Capsule is **weak** .

- so it maintain the joint integrity with the help of acromioclavicular ligments.

3. LIGAMENTS

Superior and inferior acromio clavicular ligaments.

- Superior acromio clavicular ligament is the main ligament, limiting movement caused by anterior and posterior forces applied to the distal clavicle.

- Fibers of superior ac ligament is reinforced by aponeurotic fibers of trapezoid and deltoid muscles.

Corococlavicular ligament

Conoid portion

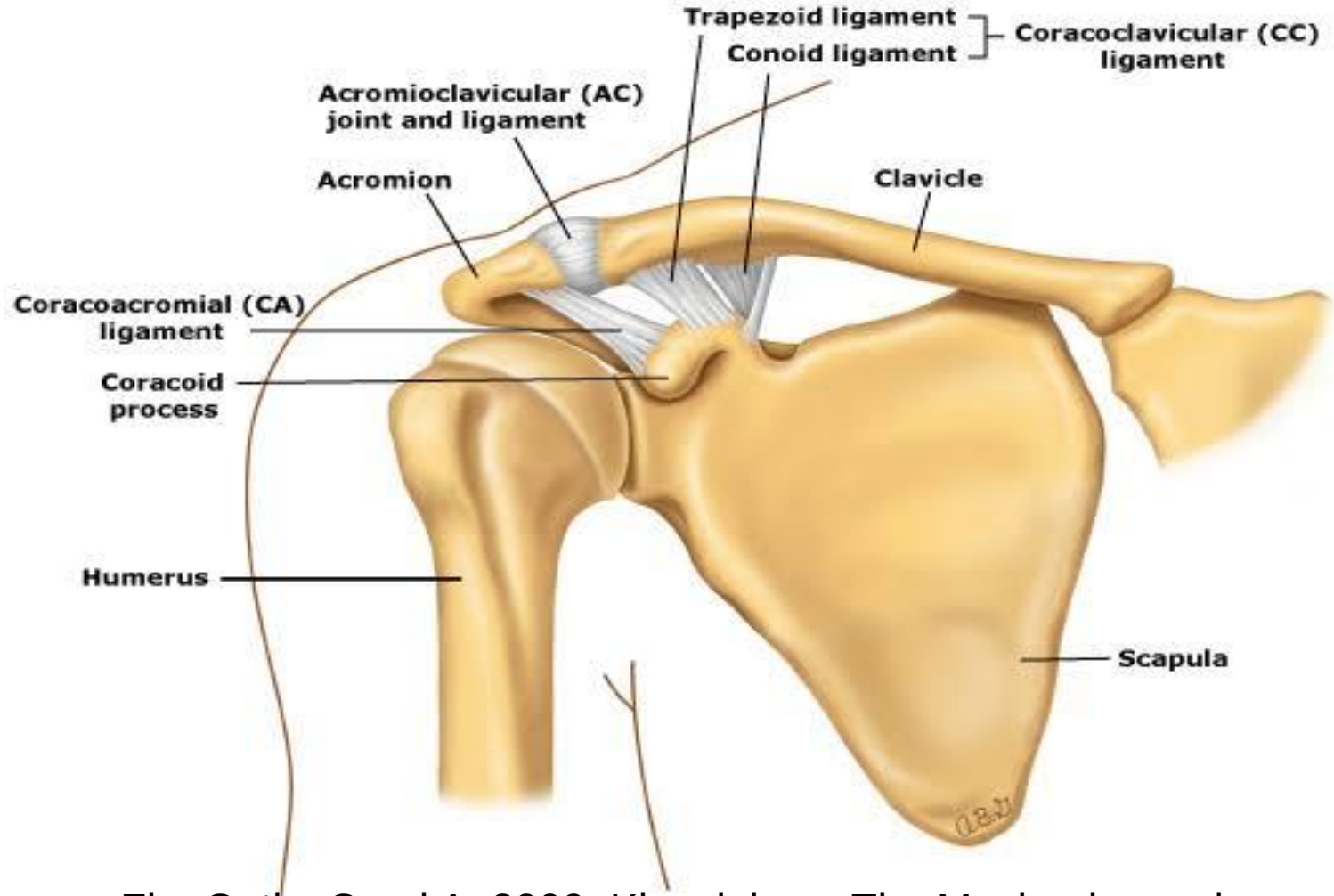
- **Medial and slightly posterior to trapezoid.**
- **Triangular in shape**
- **Vertically oriented**
- **Provides primary restraint to translators motion caused by superior directed forces applied to distal clavicle.**

Trapezoid portion

- **Quadrilateral in shape**
- **Lateral portion**
- **Horizontally oriented**
- **Restraint to posterior directed forces applied to distal clavicle.**

Functions:

- Limit upward rotation of scapula at AC joint.
- When medially directed forces on the humerus are transferred to the glenoid fossa of the scapula**, medial displacement of the scapula is prevented by the corococlavicular ligament**.
- Provide protection for the subacromial bursae and supraspinatus tendon.



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ACROMIOCLAVICULAR MOTIONS

1. **Internal and external rotation**

- Plane- plane of scapula , Axis- vertical axis.
- Internal Rotation- bring the glenoid fossa anteromedially.

  External Rotation- bring the glenoid fossa posterolaterally.
- These motions maintain contact of the scapula with the thorax
- Maintain congruency with the humeral head.
- ROM=20-30°(during arm motions)
- IR occurs during protraction
- ER- retraction

2. Anterior and posterior tilting

- Plane- plane of scapula, Axis- coronal axis
- **Anterior tilting-** acromion tilting forward, inferior angle tilting backward.

Posterior tilting- rotates the acromion backward,inferior angle forward.

- Maintain contact of the scapula with the rib cage and orient the glenoid fossa.
- ROM= 20°
- Anterior tipping occurs during elevation
- Posterior tipping -depression

3. Upward and Downward rotation

- Plane – perpendicular to the plane of scapula,Axis- A-P axis.
- Upward Rotation- tilts the glenoid fossa upward

  Downward Rotation- tilts the glenoid fossa downward.
- These motions are limited by corococlavicular ligaments.
- ROM= 30°
- UR: elevating arm

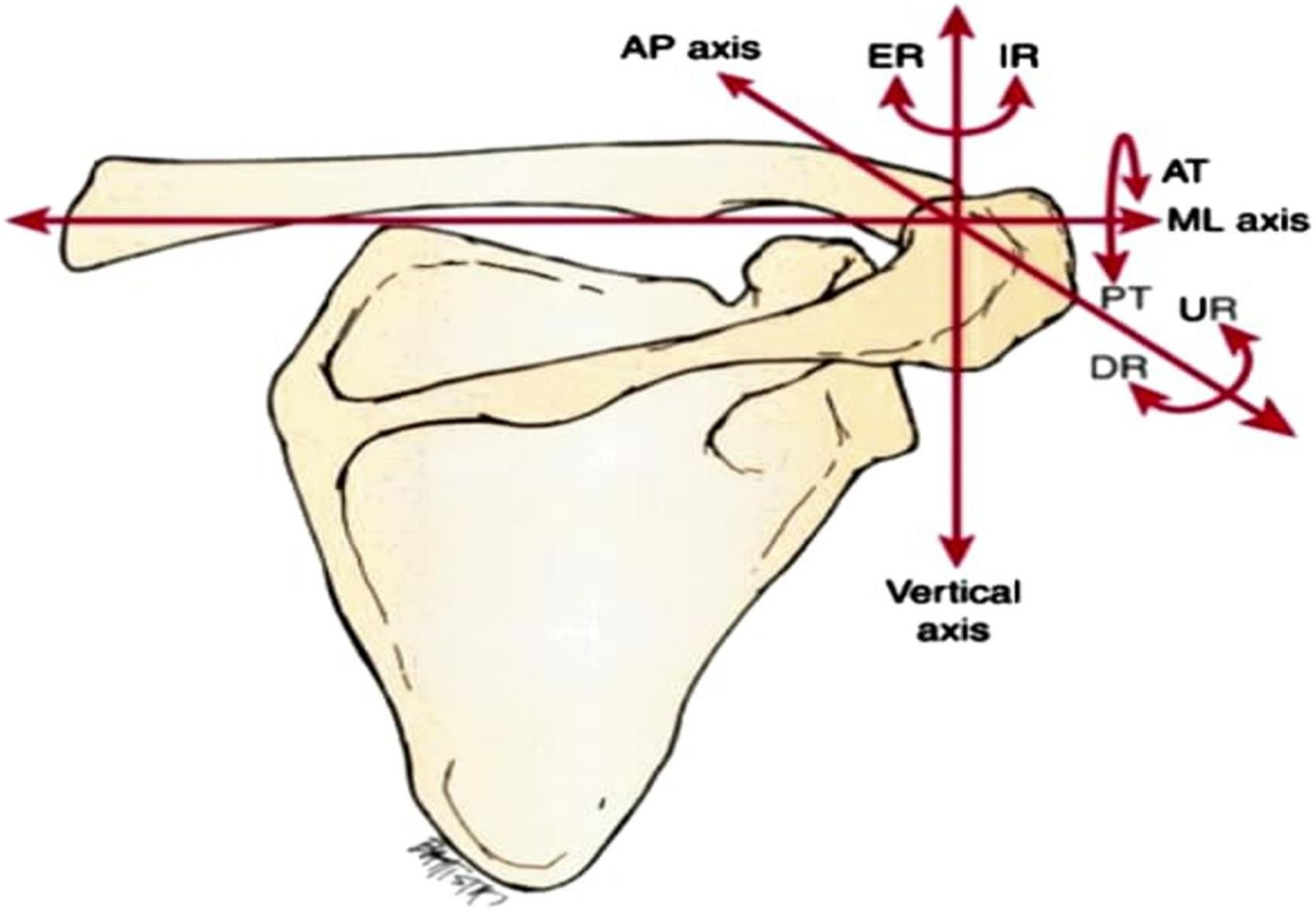

Fig no:4 Oatis, Carol A. 2009. Kinesiology: The Mechanics and Pathomechanics of Human Movemet. Baltimore: Lippincott Williams& Wilkins

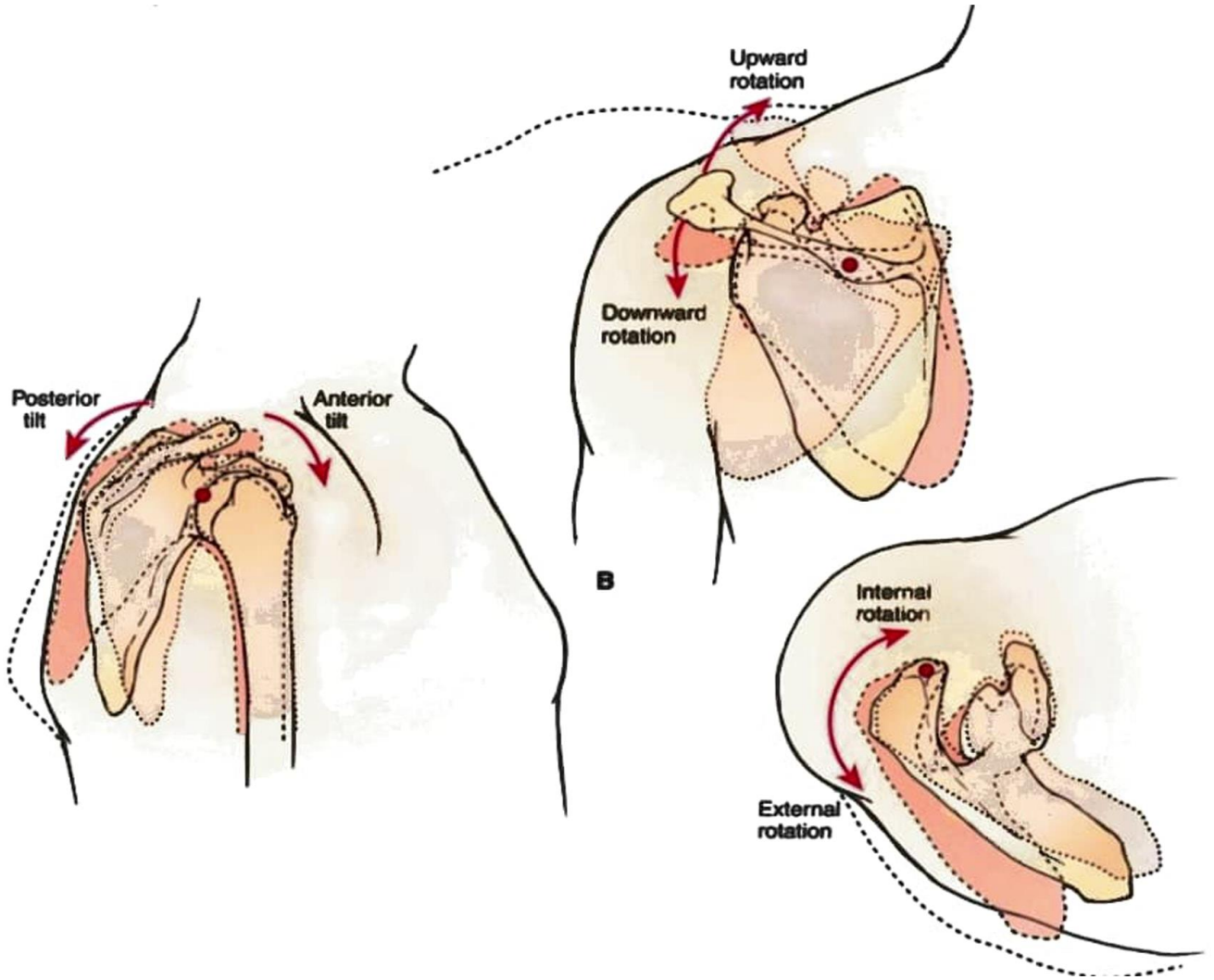

Fig no: 5 Oatis, Carol A. 2009. Kinesiology: The Mechanics and Pathomechanics of Human Movemet. Baltimore: Lippincott Williams& Wilkins

Pathomechanics

1. Trauma

- Acromio clavicular joint is susceptible to trauma through contact sports or accidents.
- Mechanism of injury- Fall on the shoulder with the arm adducted.
- Result of high inferior forces on the acromion, trauma results in AC joint disruption ranging from sprains and subluxations and dislocations.

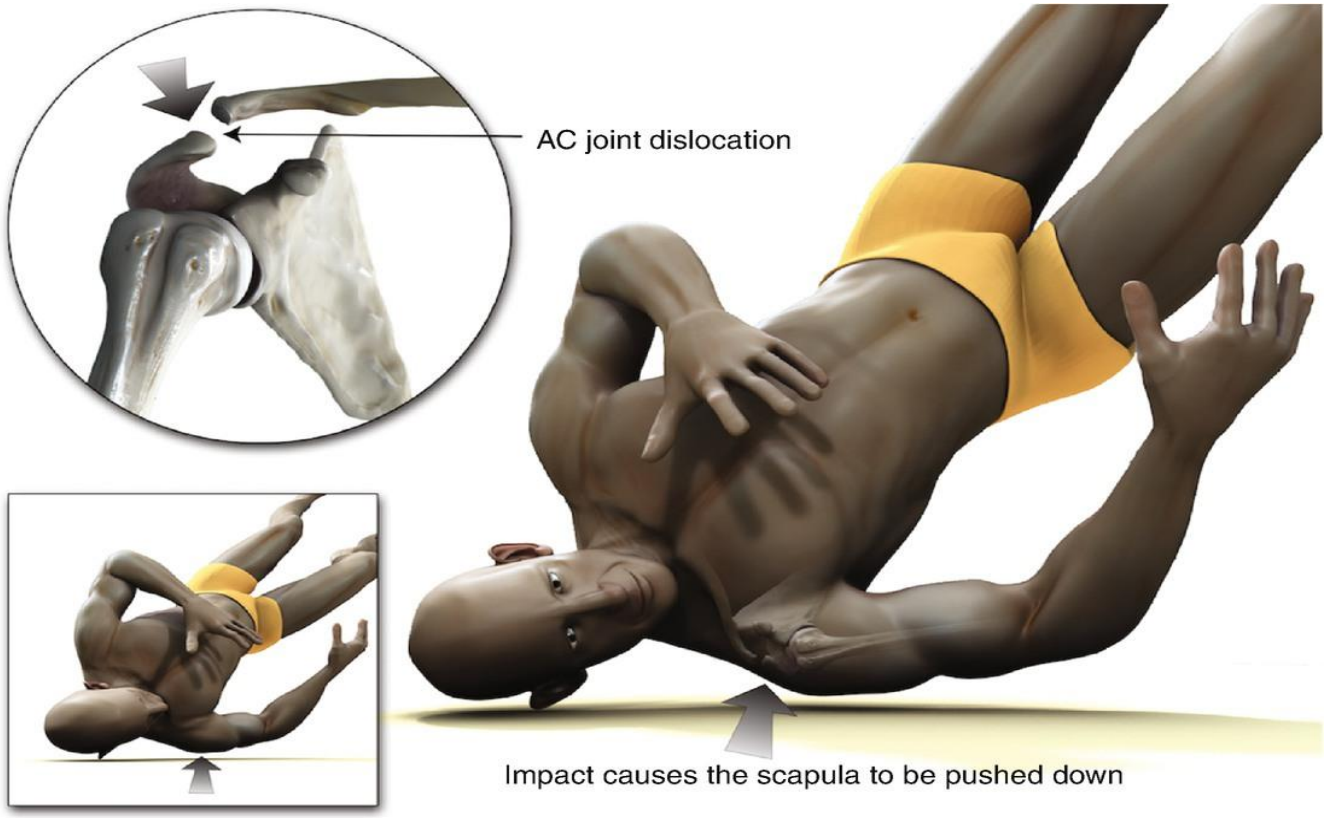

Fig no:6 (courtesy of Lennard Funk, http://www.shoulderdoc.co.uk)

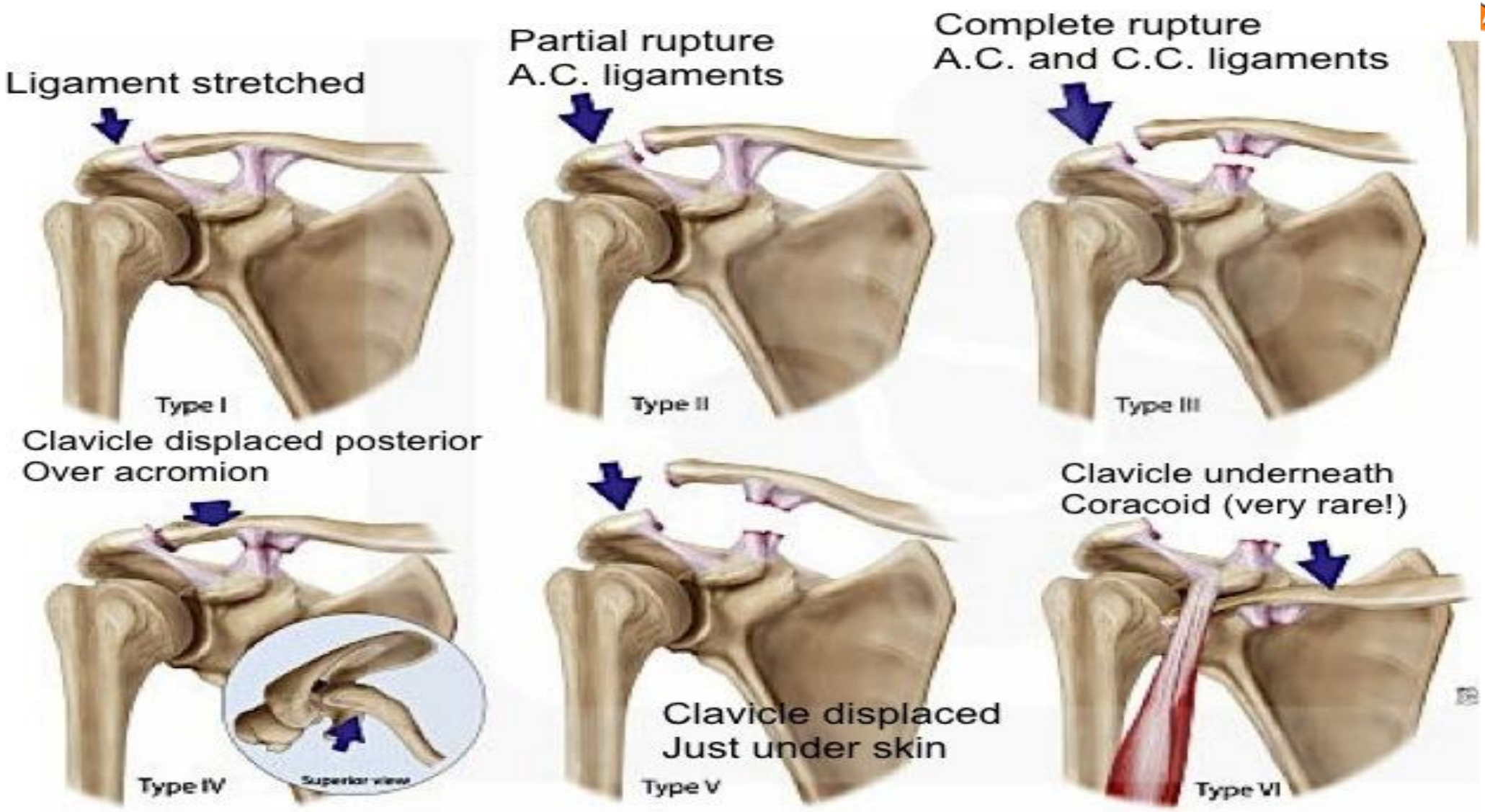

Fig no:7 Rockwood classification of acromioclavicular joint injuries (courtesy of Lennard Funk, http://www.shoulderdoc.co.uk)

2.Degenerative changes

- It is due to small and incongruent articular surfaces that result in high forces per unit area.

OSTEOARTHRITIS

- AC joint is common site of osteo arthritis particularly in individuals who have a history of heavy labor or athletic activities.

THANKYOU