Approach to Shoulder Elbow

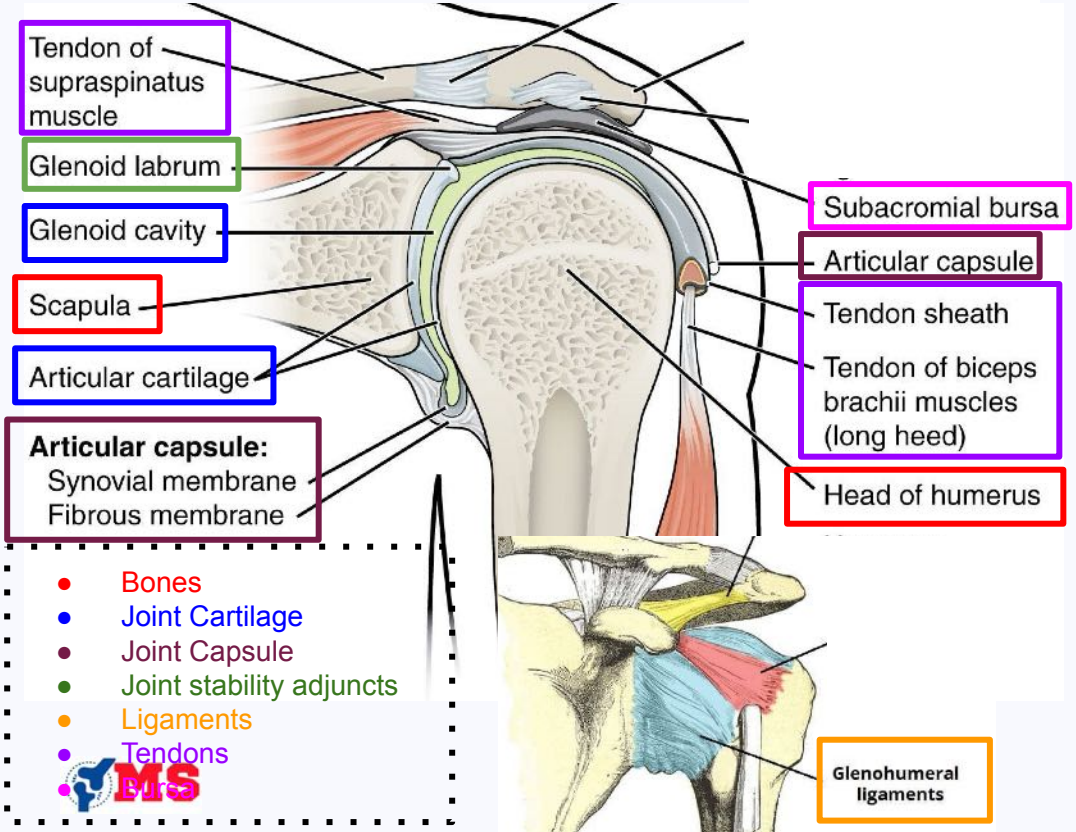
Mok Ying Ren

Approach to Shoulder Pain

Linking ***History*** to Anatomy

What can go wrong in the ***shoulder*** joint?

- Bones
- Joint Cartilage
- Joint Capsule
- Joint stability adjuncts
- Ligaments (connects bone to bone)
- Tendons (connects muscle to bone)
- Bursa



Slido.com #234 115

How can History guide us?

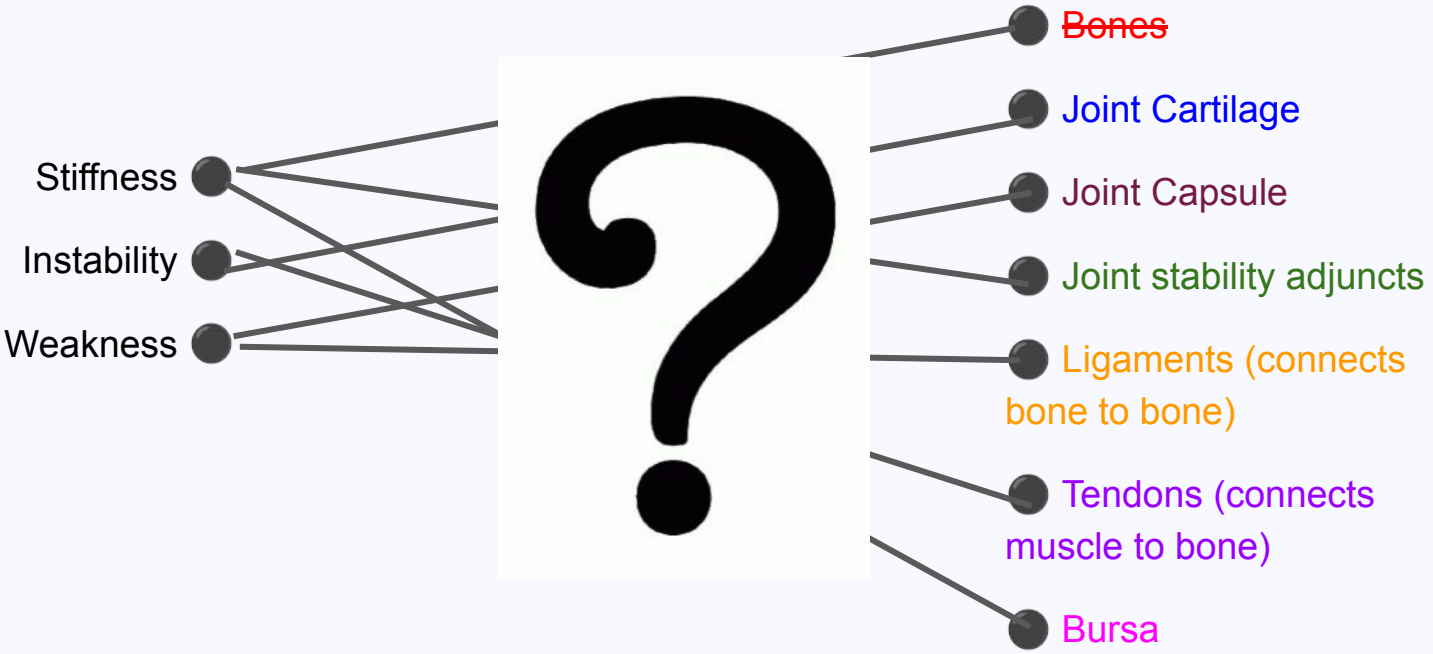
- **Pain** is a useful starting point for any history taking because any damaged structures should result in pain
- Once there is pain, we continue taking history with your SOCRATES acronym

- Associated Symptoms are most useful - How do we listen and ask about them?

Site	Anatomical correlation
Onset	Acute/ Insidious/ Acute on Chronic/ On and Off
Character	Subjective - Dull/ Sharp/ Pulling…
Radiation	TRO Spine cause
Associated Symptoms	**Shoulder Specific** - Stiffness, Weakness, Instability
Time/ Duration	Mechanical vs Inflammatory (Persistent with activity vs better with warm up) Chronicity - days vs years
Exacerbating	Mechanical vs Inflammatory (Activity vs rest)
Severity	VAS Score 0-10

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Diagnosis is matching Symptoms to Anatomy



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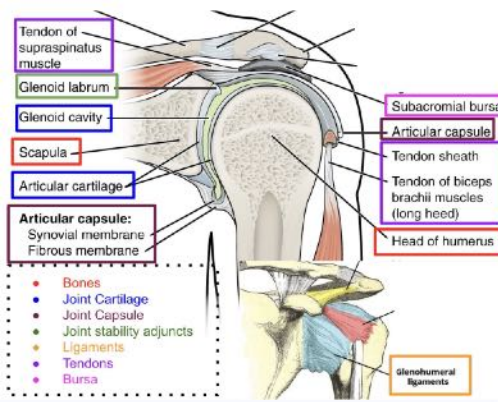
Connection between Symptoms and Anatomy

Stiffness

Instability

Weakness

- ~~Bones~~
- Joint Cartilage
- Joint Capsule
- Joint stability adjuncts
- Ligaments (connects bone to bone)
- Tendons (connects muscle to bone)
- Bursa [Pain only]



** All conditions can present with **Pain only** with no associated symptoms, if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

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How to Ask Associated Symptoms?

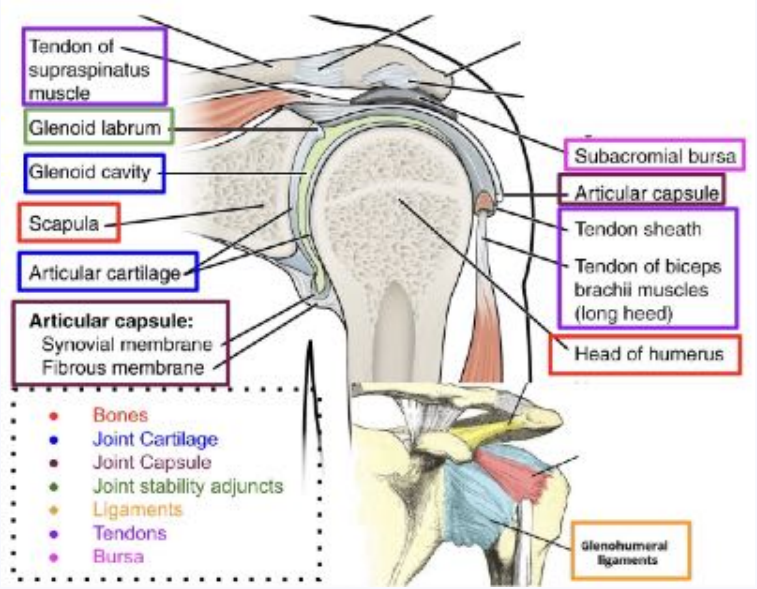
- Stiffness
  - Do you feel stiff?
  - Do you have any issues reaching for things? Undergarments?
- Weakness
  - Do you feel weak?
  - “Like no strength”?
- Instability
  - Do you feel your shoulder is loose?
  - Does it pop out?
  - Do you feel like it will dislocate/ pop out in certain positions?



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Summary of *Patterns* in the **Shoulder Joint (GHJ)**

	History - Ask for associated symptoms
Joint Cartilage	Stiffness +/- Pain
Joint Capsule	Stiffness +/- Pain
Adjuncts + Ligaments	Instability +/- Pain
Tendons - Tear	Weakness +/- Pain
Tendons - Inflammation	Pain only
Bursa	Pain only



** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

Approach to Shoulder Pain

Linking History and ***Physical Examination*** to Anatomy

Ortho Made Simple

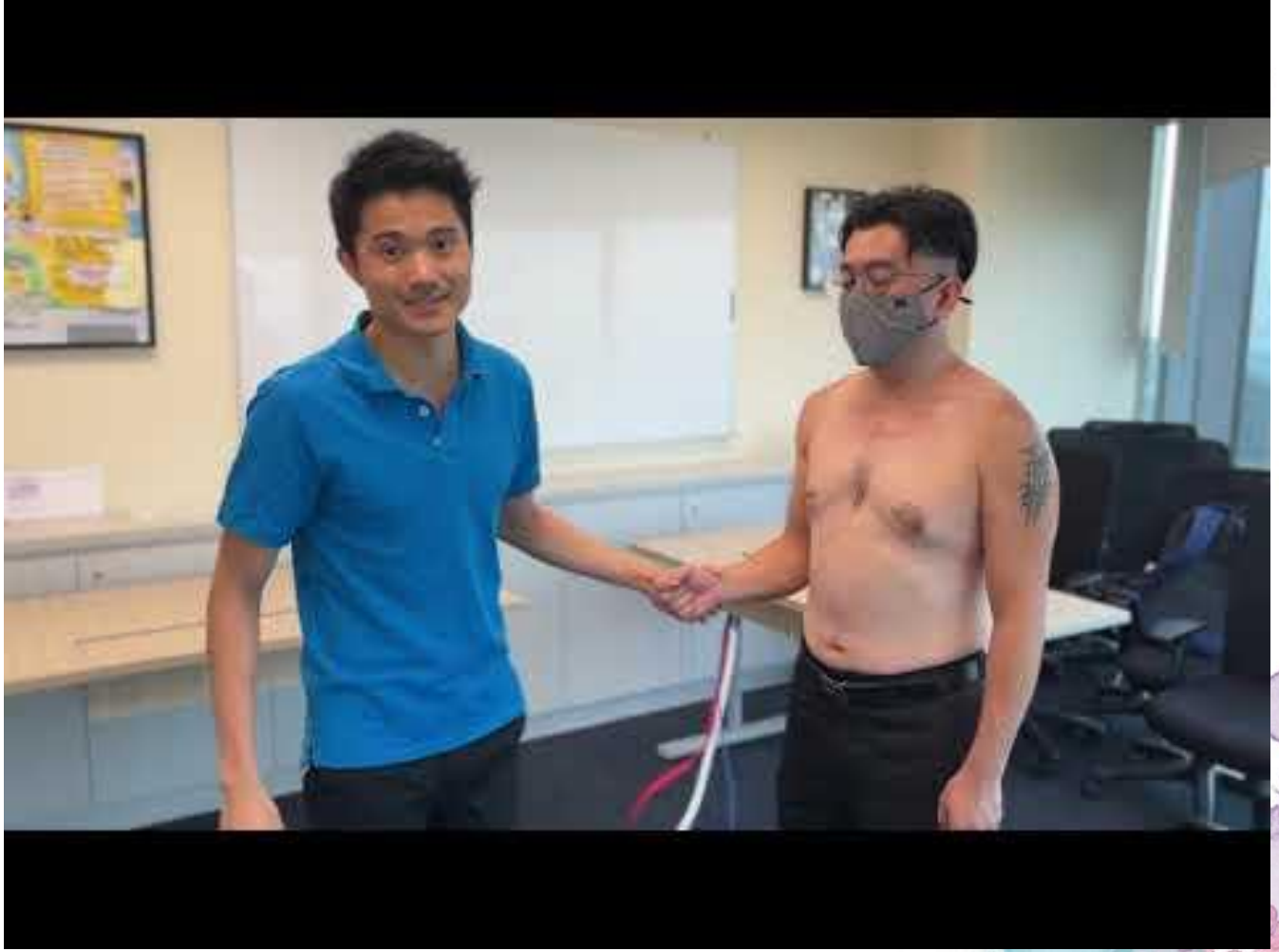
Examination of the Shoulder

Ortho Made Simple - Physical Exam of the Shoulder

1. Inspection	**2. Range of Motion**	**3. Palpate**	**4. Power**
	Looking for **STIFFNESS**	Looking for **SITE** of PAIN	Looking for **WEAKNESS**
Exacerbation of PAIN	**6. Neurovascular**	**7. Function (if asked)**	**8. Complete/ Offer**
5. Special Tests			
Looking for **INSTABILITY**			

1. Inspection

- Expose
- Walk around patient
- Look for scars, deformity, swellings, erythema, wasting



1. Inspection

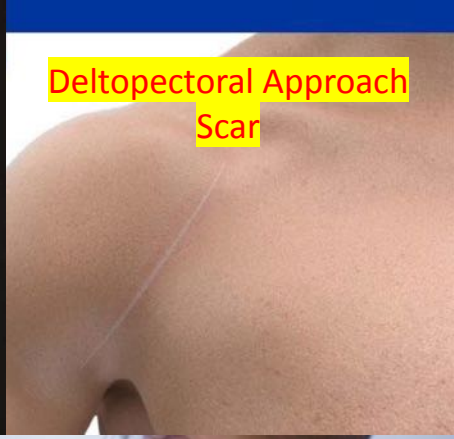
- Key is to EXPOSE fully and walk around the patient, looking everywhere
- Look for and mention some negatives:
  - Deformity
  - Scars
  - Wasting



Common Scars

- Clavicle fixation
- Deltopectoral approaches (Proximal humerus fracture ORIF, replacements)
- Deltoid split approaches (open RC repairs)
- Arthroscopy portals





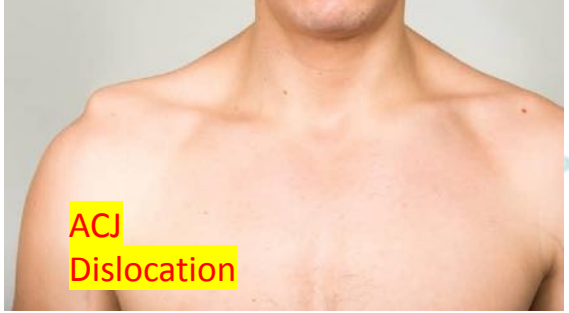




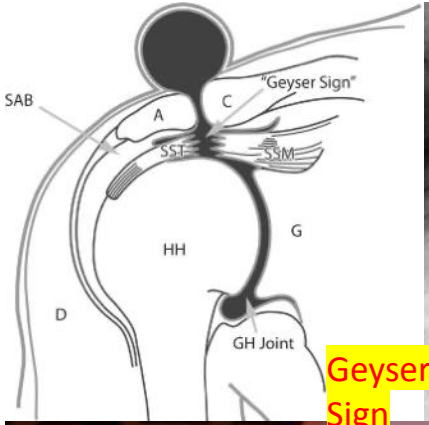


Chronic Deformities

- Acromioclavicular Joint Dislocation - resulting in asymmetry
- "Geyser Sign" - Massive Rotator Cuff tear with ACJ insufficiency
- Clavicle Malunion



ACJ Dislocation





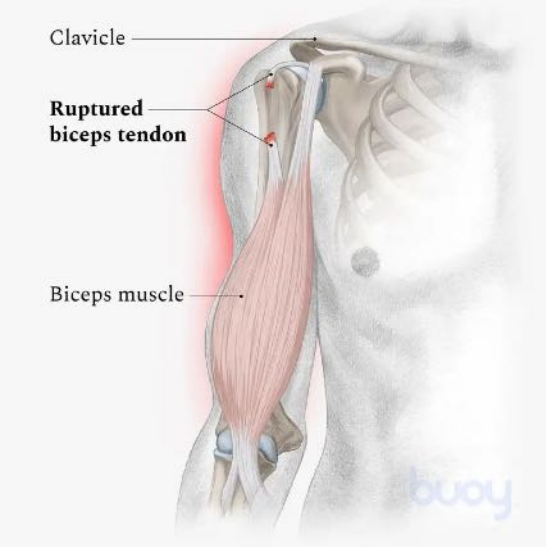
Geyser Sign



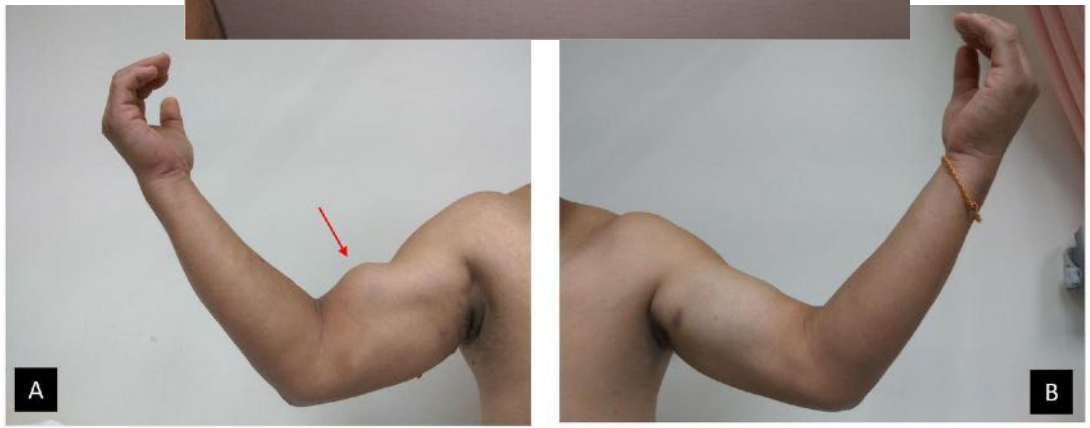
Clavicle Fracture/ Malunion

Popeye Sign

- Lump over the distal portion of the upper arm
- ***Long head*** biceps tendon rupture







2. Range of Motion

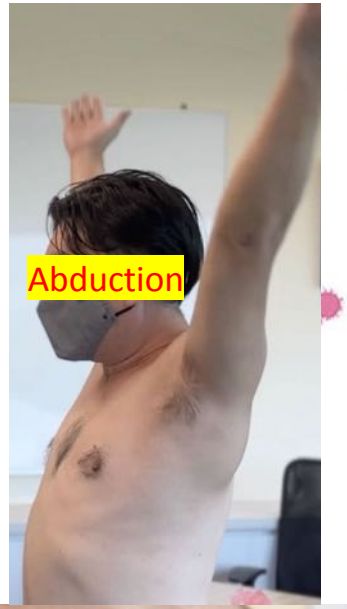
- "Follow me"
- Flexion
- Abduction
  - Repeat from back and comment "symmetrical movements of scapula" (Not required)
- External Rotation
- Internal Rotation
- *If AROM limited, check PROM*

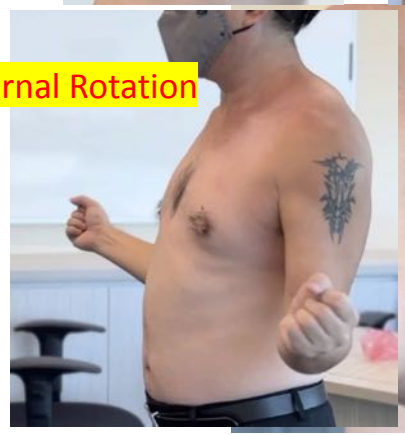


2. Range of Motion

- **Active** "Follow me"
  - Flexion
  - Abduction
    - Observe for ***painful arc***
  - External Rotation
  - Internal Rotation (level is by vertebrae level)
  - ***NO NEED EXTENSION***
- Check **Passive** only when active range is limited



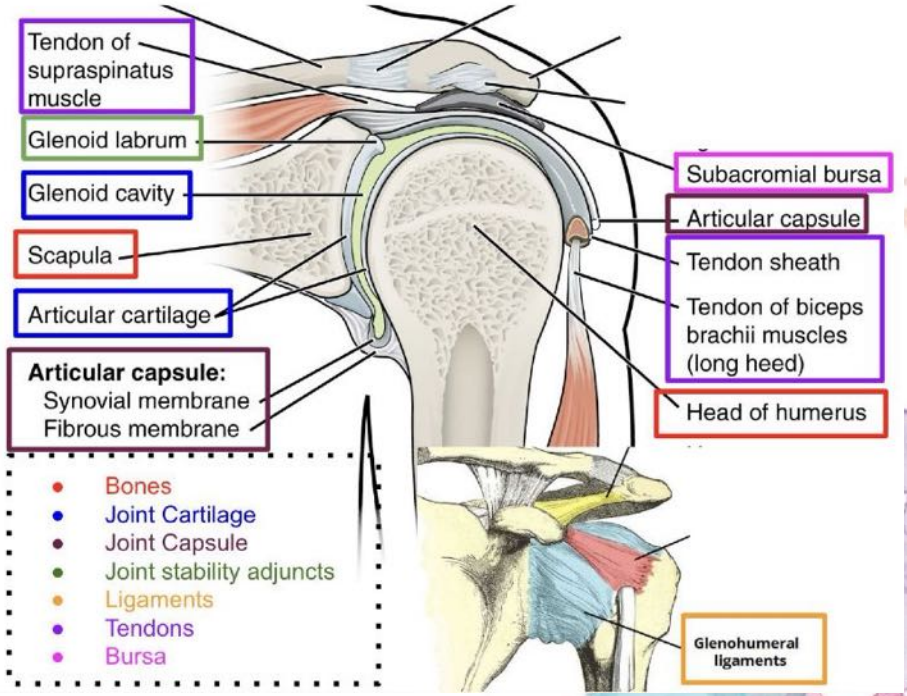






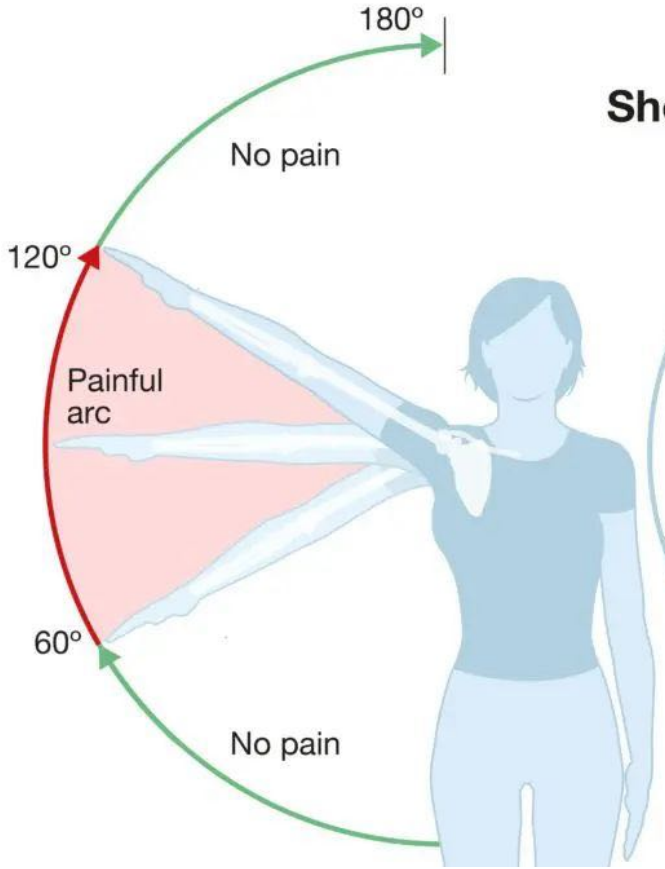
Active vs Passive ROM - 3 Scenarios

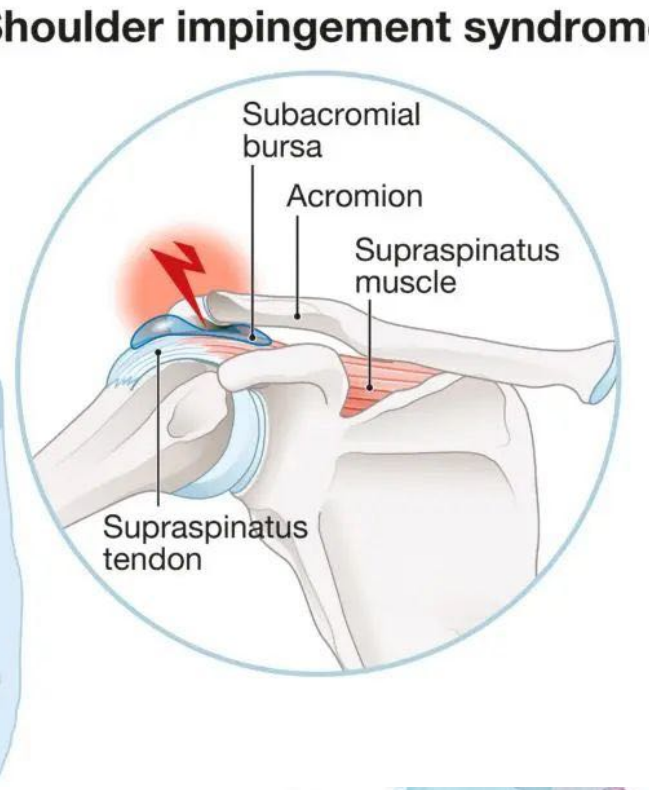
- Active is Full, Passive ***will be*** full
  - = Patient is at least above to move against gravity
  - Normal or mild weakness → Only power testing later will reveal mild weakness
  - AROM = PROM = Full = **Normal**
- When Active is limited, but Passive is full
  - = Issue of **Weakness**. i.e. the Arm is unable to go against gravity (Can try to elicit **drop arm sign**) → Confirm with power testing
  - ≠ **Stiffness**
  - AROM < PROM = **Weakness**
- When Active is limited and Passive is also limited
  - = Issue of **Stiffness**. I.e. there is a mechanical block in either the capsule (frozen shoulder) or joint cartilage (arthritis)
  - AROM = PROM = Limited = **Stiffness**



Painful Arc

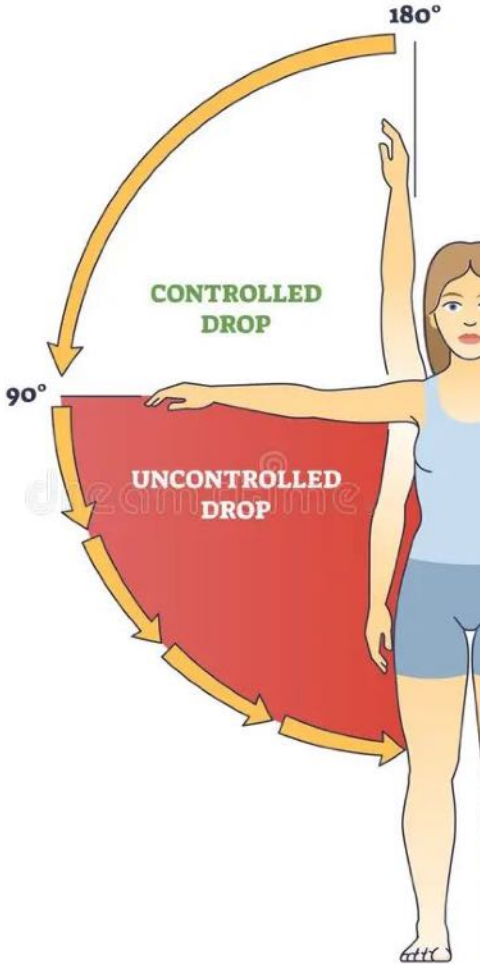
- Evaluated during ROM assessment when patient complains of pain in this arc



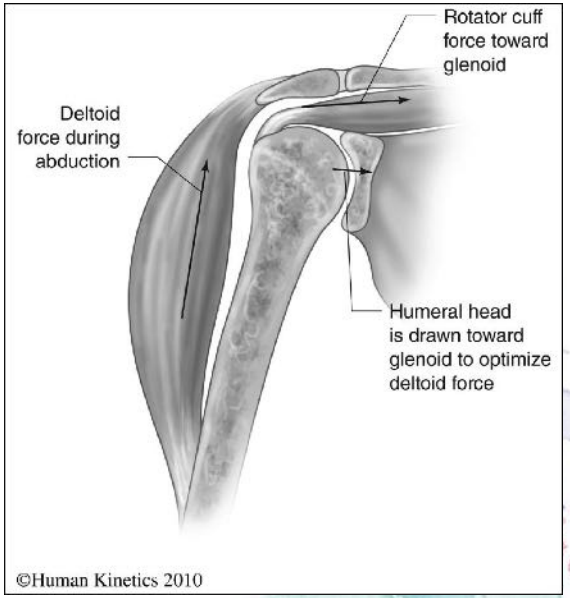


Drop Arm Sign

- Evaluated during ROM assessment when patient demonstrates uncontrolled drop of the arm
- Accepted Reasoning:
  - Above 90 degrees, the deltoid is primarily functioning to control the drop
  - Below 90 degrees, the action of the rotator cuff increases and thus, its deficiency results in an uncontrolled drop of the arm
  - (Woodward et al. 2000)

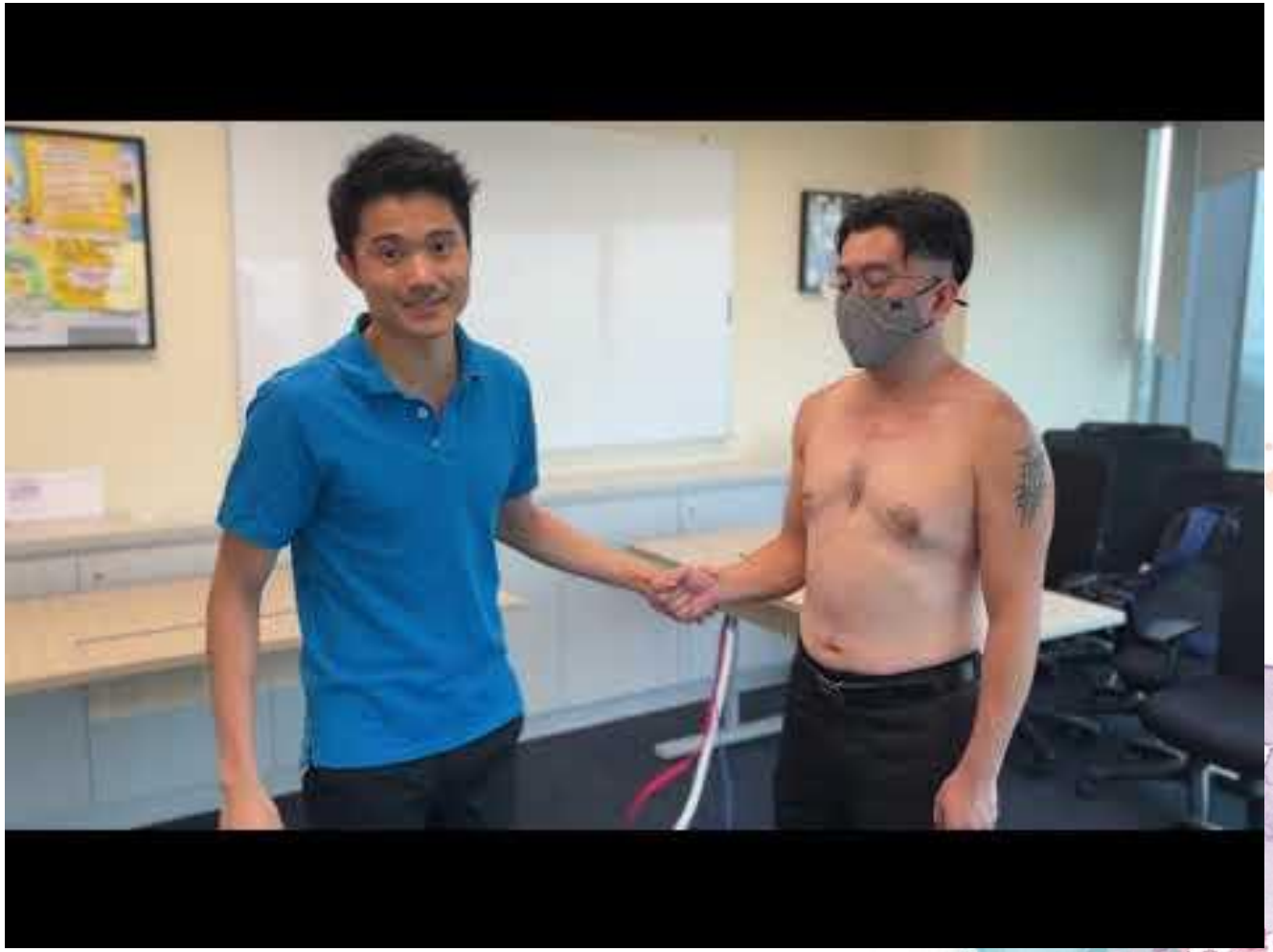






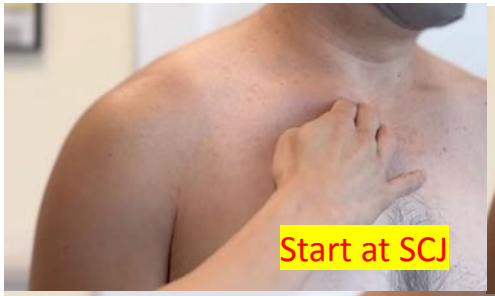
3. Palpate

- 4 Bony Prominences
  - Sternoclavicular Joint
  - Along Clavicle
  - Acromioclavicular Joint
  - Spine of Scapula
- 2 Soft tissue
  - Rotator Cuff Muscles
  - Biceps Tendon in groove



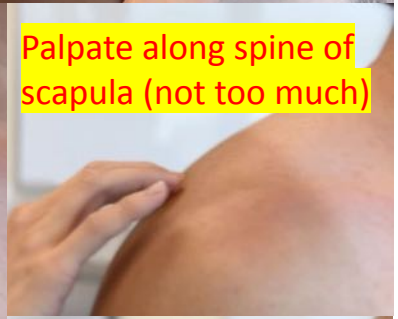
3. Palpation

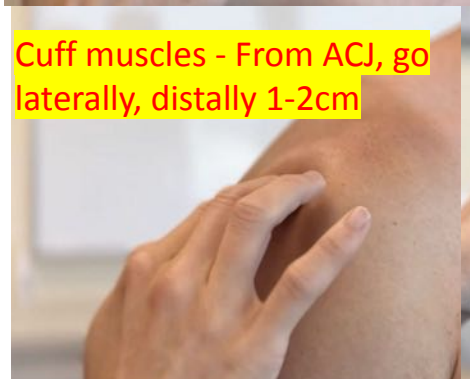
- 4 Bony Areas
  - Sternoclavicular joint
  - Along clavicle shaft
  - Acromioclavicular joint
  - Acromion ➔ Spine of Scapula (not too much)
- 2 Soft Tissue
  - Rotator Cuff - just below the acromion
  - Bicipital groove - just below the ACJ - accentuate by internally and externally rotating the arm













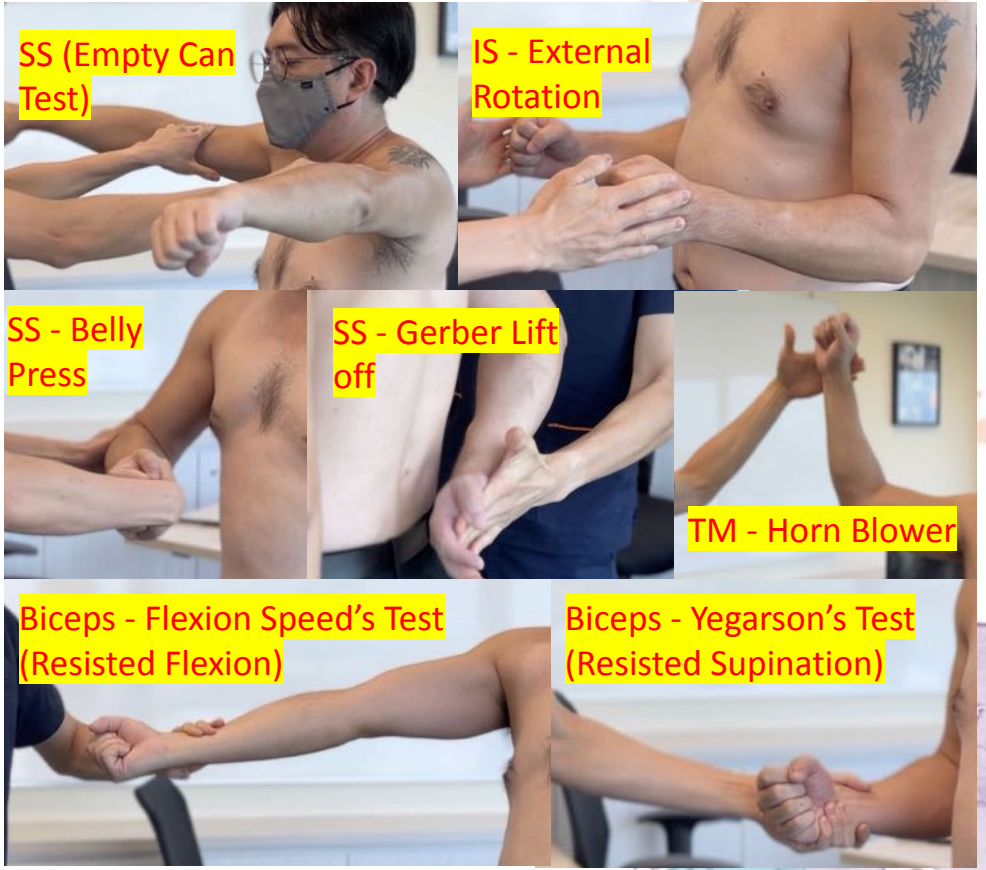
4. Power

- Rotator Cuff Muscles
  - Supraspinatus
  - Infraspinatus
  - Subscapularis
  - Teres Minor (not required)
- Biceps (double as special tests)
  - Speed's
  - Yergason's



4. Power

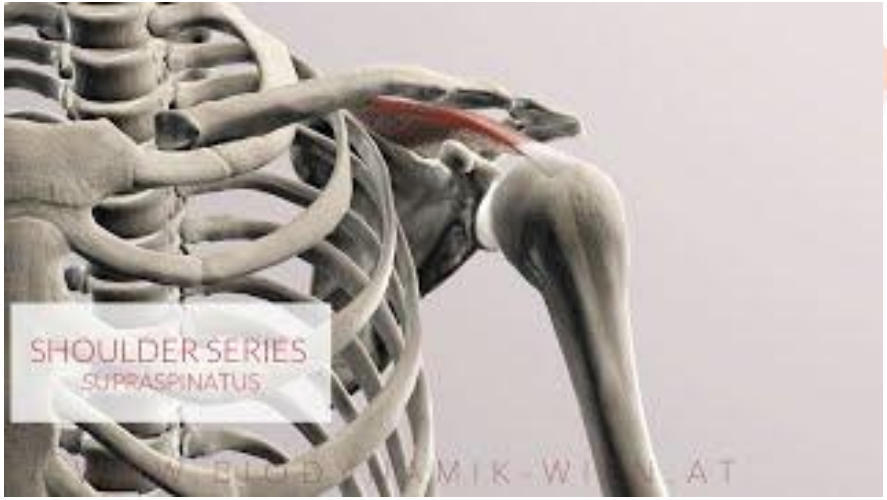
- Rotator Cuff Muscles
  - *Supraspinatus
  - *Infraspinatus - “tuck in your elbows”
  - Subscapularis (Belly Press)
  - Teres Minor (not required for undergrad)
- Biceps (double up as Biceps Special tests)
  - Supination Strength (Yegarson's Test)
  - Speed's test (transition into Special tests)

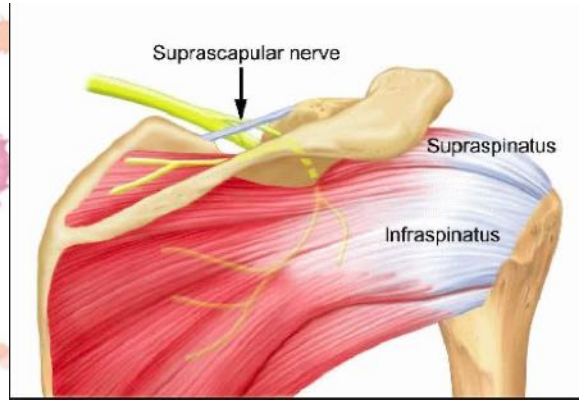


*Do both sides at ***same time*** to compare

Supraspinatus

- From Supraspinous Fossa
- Inserts into GT
- Nerve: Suprascapular Nerve
- Action: Abduct the humerus in the plane of the scapula
- Tip: Compare both sides at same time

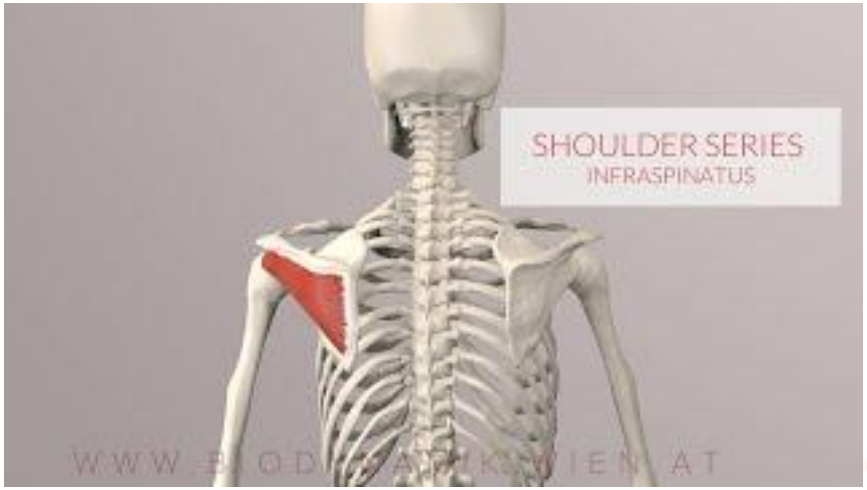


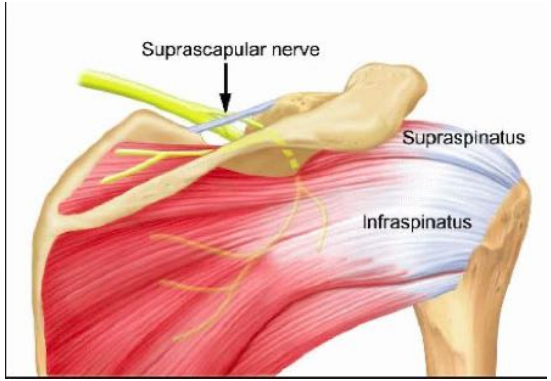




Infraspinatus

- From Infraspinous Fossa
- Inserts into GT
- Nerve: Suprascapular Nerve
- Action: Externally Rotate the arm
- Tip: Compare both sides at same time



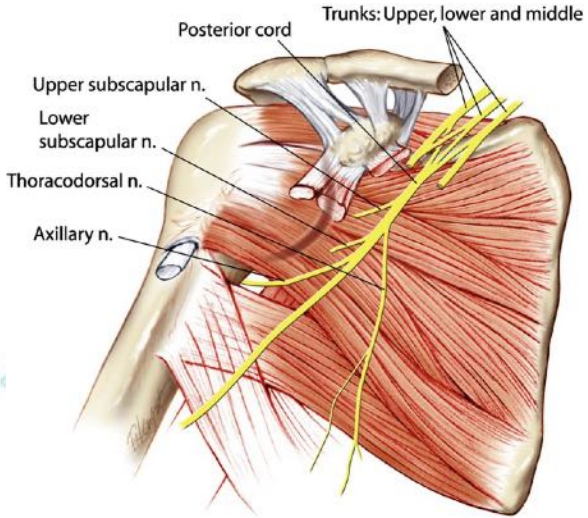




Subscapularis

- From Subscapular Fossa
- Inserts into LT
- Nerve: Subscapular Nerve
- Action: Internally Rotate the arm

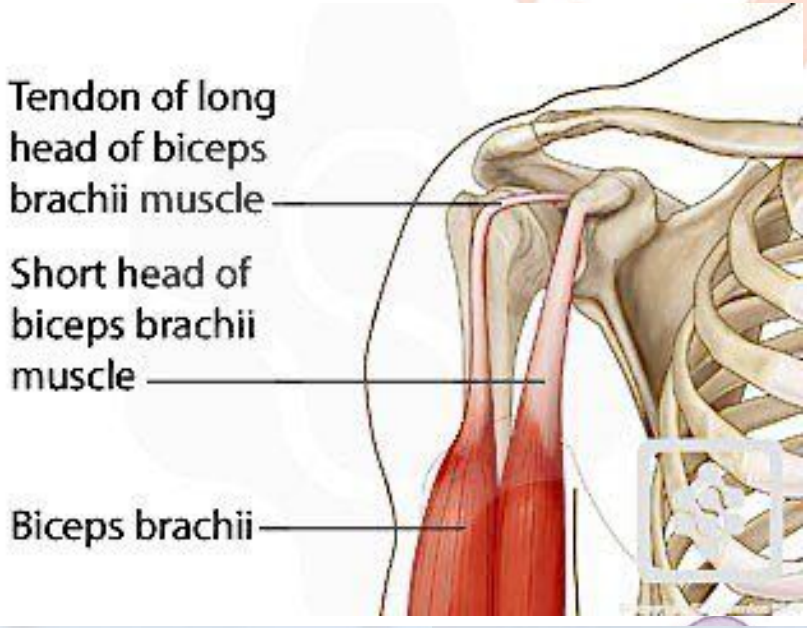








Biceps Tendon Special



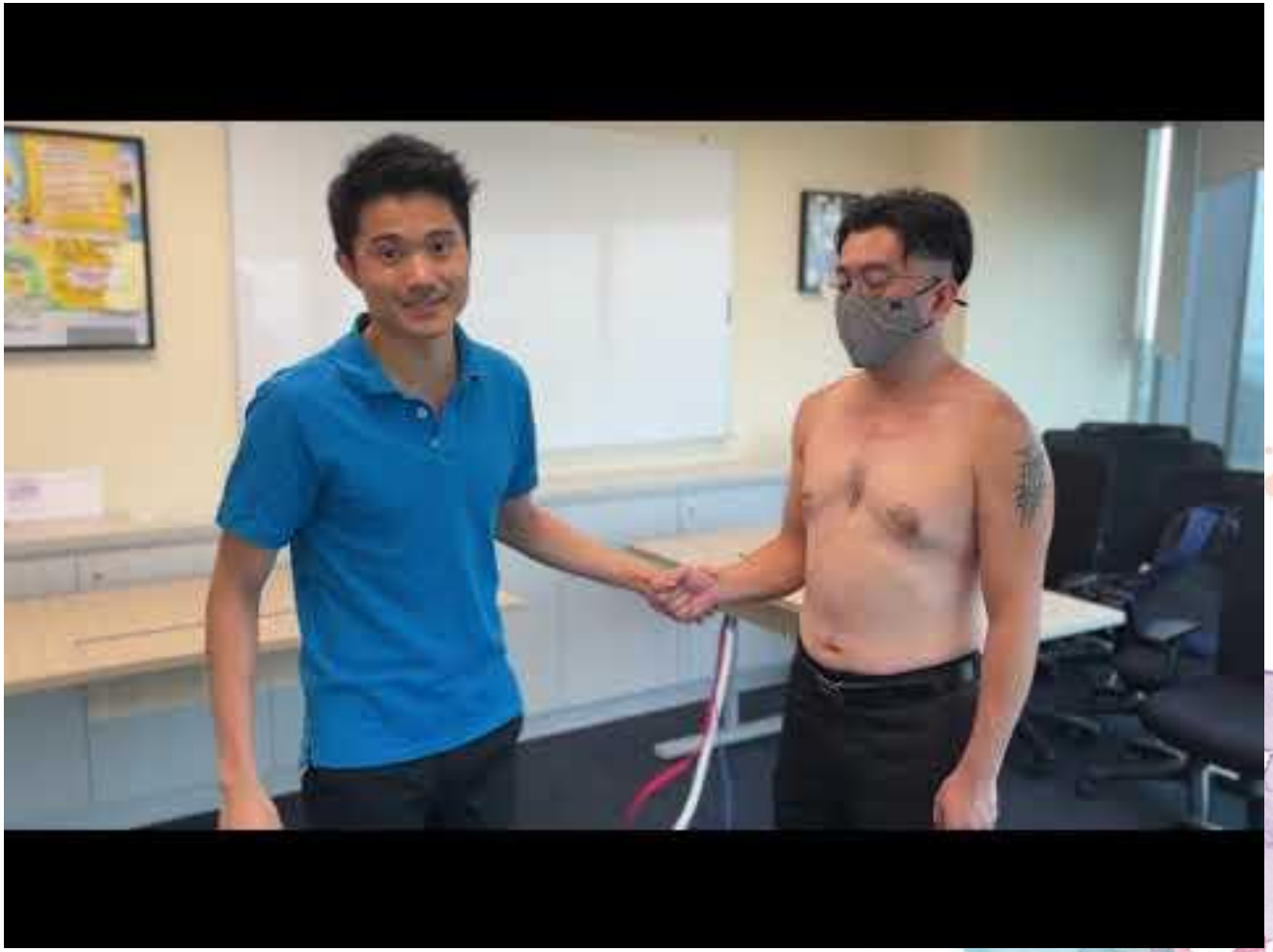
- Trying to irritate the long head of biceps tendon in the groove by
  - Supination against resistance at the elbow
  - Flexion against resistance at the shoulder





5. Special Tests

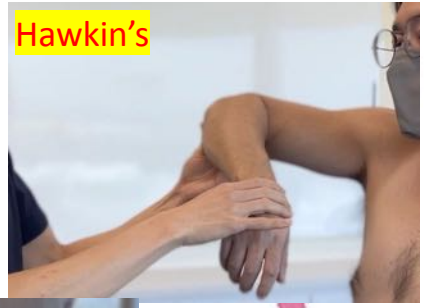
- Rotator Cuff Impingement
  - Neer's
  - Hawkin's
- Acromioclavicular Joint Pathology
  - Scarf's Test
- SLAP Tears (not required)
  - O'Brien's Test
- Instability
  - Sulcus
  - Anterior Apprehension
  - Beighton's



5. Special Tests

- Biceps Special Tests (done in Power transition)
- Rotator Cuff Impingement Tests
  - Neer's
  - Hawkin's
- ACJ Test - Scarf/ cross body adduction test
- Shoulder Instability Special Tests (sit on chair)
  - Sulcus sign
  - Apprehension Test
  - Posterior jerk test (Not required for undergrad)
- Beighton's Score



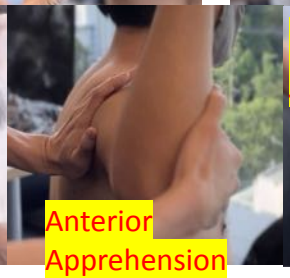








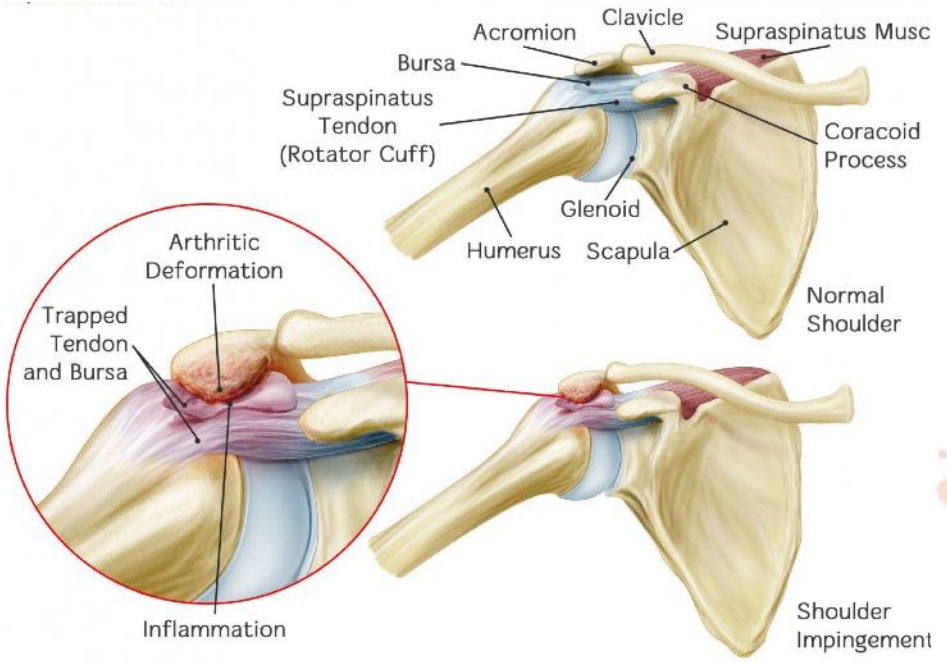






RC Impingement Tests

- Trying to “impinge” the rotator cuff under the acromion
- **Passive** Tests - “*relax and let me move your shoulder for you*”
  - Neer’s **“Sign”** = as demonstrated
  - Neer’s **“Test”** = Involves injecting LA. Resolvement of pain indicates a positive test. (Not done)
- **<u>Very</u> non specific** - painful in many conditions
  - If occurs in **isolation**, then it may indicate RC impingement/ Subacromial bursitis
  - If occurs **with other signs** e.g. stiffness, weakness, instability, it may be due to that underlying pathology



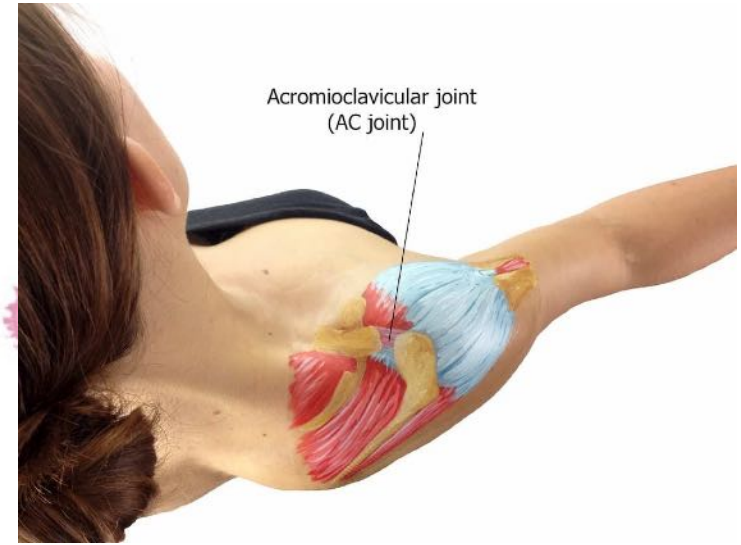


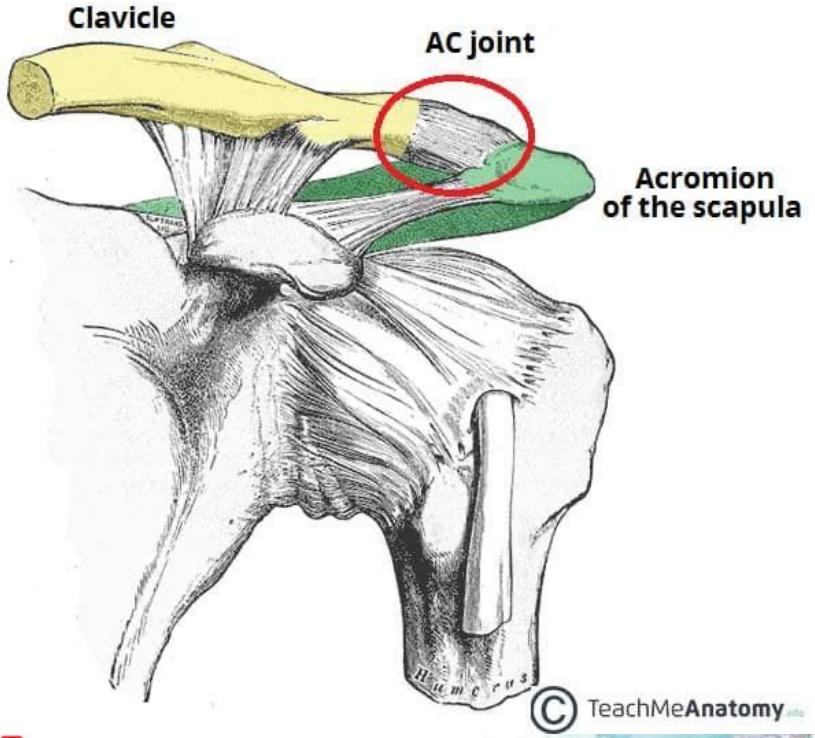


Scarf Test



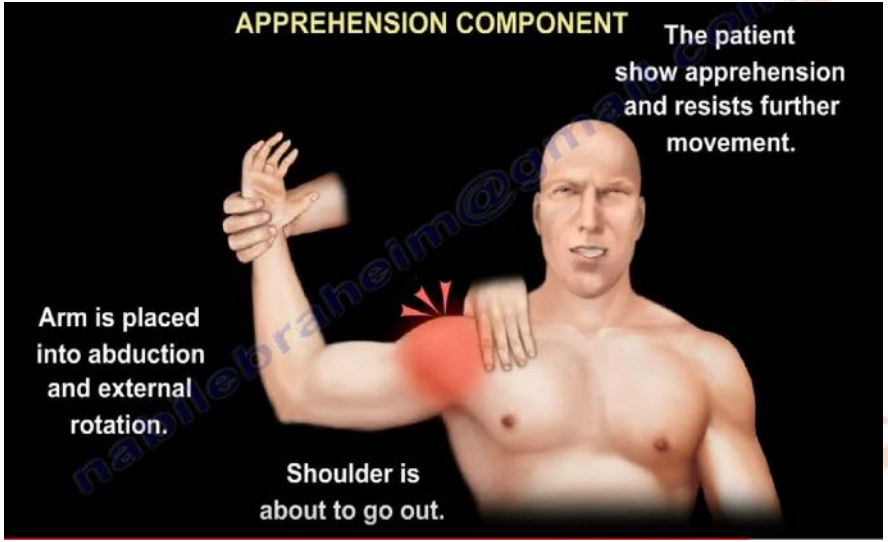
- Trying to irritate the Acromioclavicular Joint





Shoulder Instability Tests

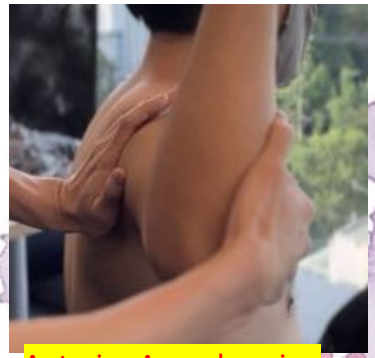
- Sulcus sign
  - Inferior subluxation of the humeral head
- Apprehension Test
  - Feel if patient tenses up











Beighton Score

- 4 pairs, 1 single
- Positive if
  - 5 or more in adults
  - 6 or more in children
  - ref. Ehler Danlos Society
- You can do this test in any condition that involves instability/ other ligament injuries e.g. ACL Tear

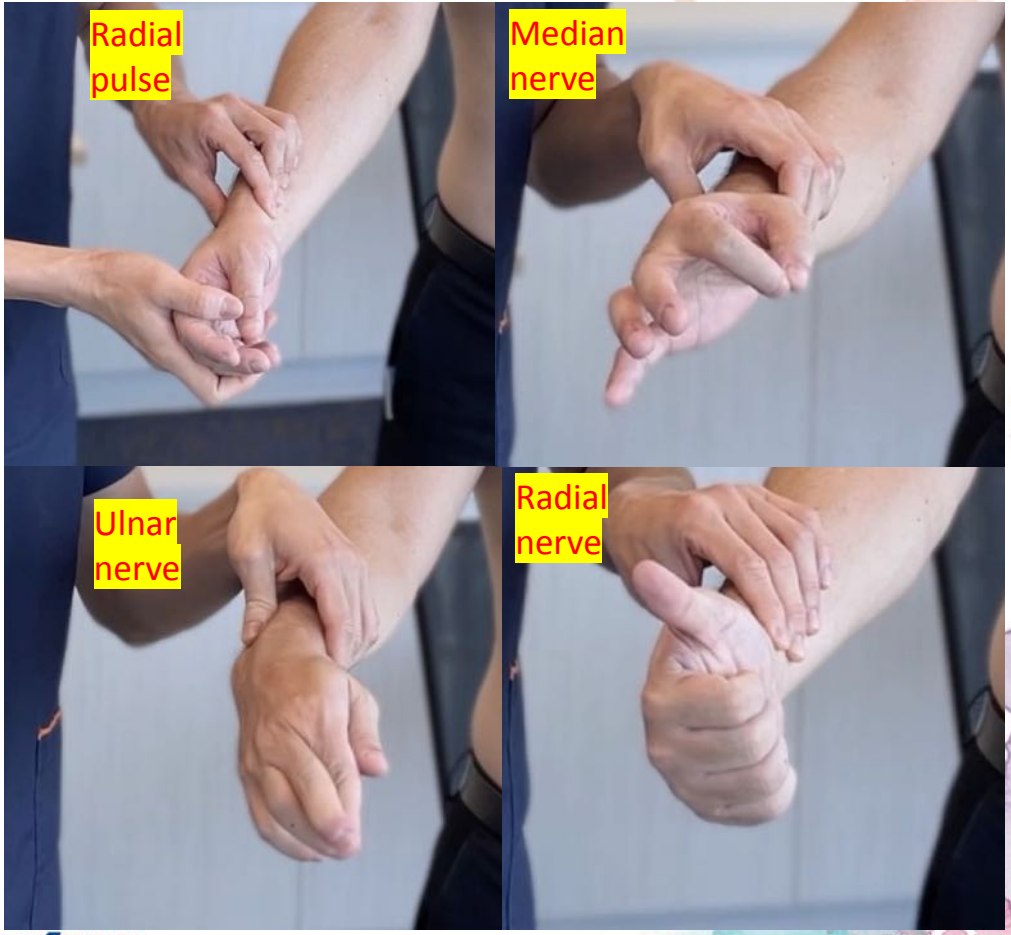




6. Neurovascular

6. Neurovascular

- Radial pulse
- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up



7. Function Screen
(not required unless asked)

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket







8. Complete/ Offer

8. Complete/ Offer

- Can offer to examine Cervical spine if shoulder pain
- If not, just offer to take history



Ortho Made Simple - Physical Exam of the Shoulder

Looking for **STIFFNESS**

Looking for **SITE** of PAIN

Looking for **WEAKNESS**

1. Inspection
- Expose
- Walk around patient
- Look for scars, deformity, swellings, erythema, wasting

2. Range of Motion
- ”Follow me”
- Flexion
- Abduction
  - Repeat from back and comment “symmetrical movements of scapula” (Not required)
- External Rotation
- Internal Rotation
- *If AROM limited, check PROM*

3. Palpate
- 4 Bony Prominences
  - Sternoclavicular Joint
  - Along Clavicle
  - Acromioclavicular Joint
  - Spine of Scapula
- 2 Soft tissue
  - Rotator Cuff Muscles
  - Biceps Tendon in groove

4. Power
- Rotator Cuff Muscles
  - Supraspinatus
  - Infraspinatus
  - Subscapularis
  - Teres Minor (not required)
- Biceps (double as special tests)
  - Speed’s
  - Yergason’s

5. Special Tests
- Rotator Cuff Impingement
  - Neer’s
  - Hawkin’s
- Acromioclavicular Joint Pathology
  - Scarf’s Test
- SLAP Tears (not required)
  - O’Brien’s Test
- Instability
  - Sulcus
  - Anterior Apprehension
  - Beighton’s

6. Neurovascular
- Radial pulse

Exacerbation of PAIN

Looking for **INSTABILITY**

7. Function (if asked)
- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer
- Can offer to examine Cervical spine if shoulder pain
- If not, just offer to take history



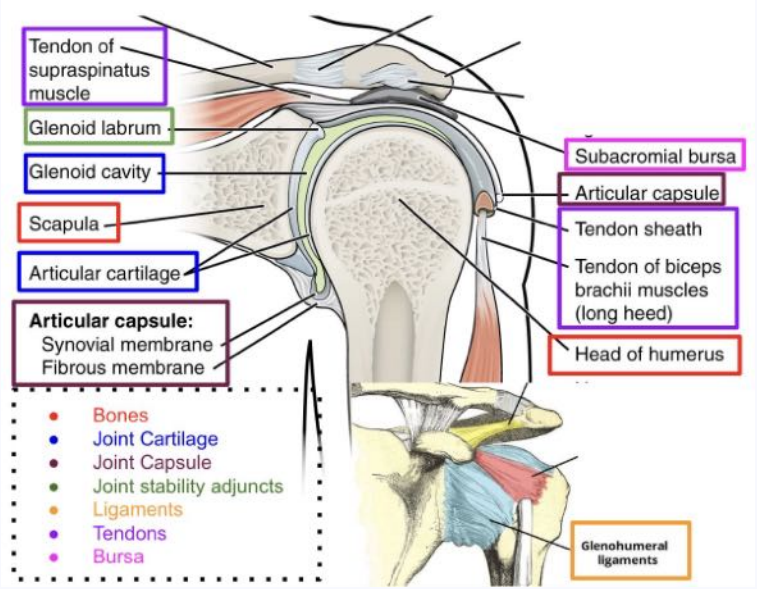
Shoulder Examination Run-Through



Slido.com #234 115

Summary of *Patterns* in the **Shoulder Joint (GHJ)**

	History - Ask for associated symptoms	**Physical Exam** - Examine for
Joint Cartilage	Stiffness +/- Pain	Stiffness
Joint Capsule***	Stiffness +/- Pain	Stiffness
Adjuncts + Ligaments	Instability +/- Pain	Instability
Tendons - Tear	Weakness +/- Pain	Weakness
Tendons - Inflammation	Pain only	Impingement Tests
Bursa	Pain only	Impingement Tests



** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

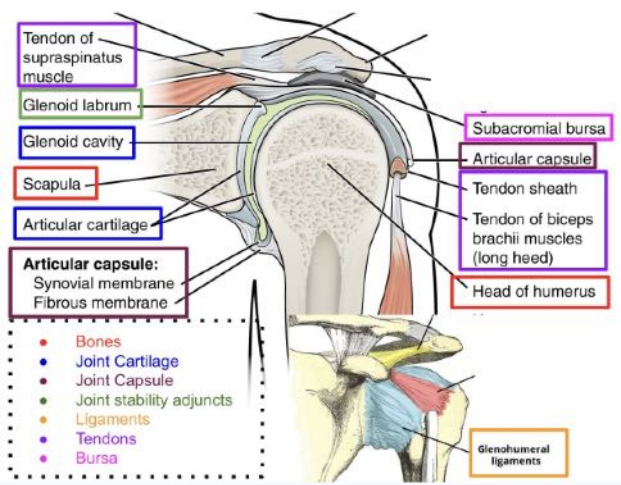
Approach to Shoulder Pain

Linking History and Physical Examination to ***Anatomical Pathological Diagnosis***

Slido.com #234 115

Summary of *Patterns* in the **Shoulder Joint (GHJ)**

	History - Ask for associated symptoms	**Physical Exam** - Examine for	**Provisional Diagnosis**
Joint Cartilage	Stiffness +/- Pain	Stiffness	Arthritis
Joint Capsule***	Stiffness +/- Pain	Stiffness	Frozen Shoulder
Adjuncts + Ligaments	Instability +/- Pain	Instability	Shoulder Instability
Tendons - Tear	Weak +/- Pain	Weakness	Rotator Cuff Tear
Tendons - Inflammation	Pain only	Impingement Tests	Rotator Cuff Tendonitis/ Impingement
Bursa	Pain only	Impingement Tests	Subacromial Bursitis

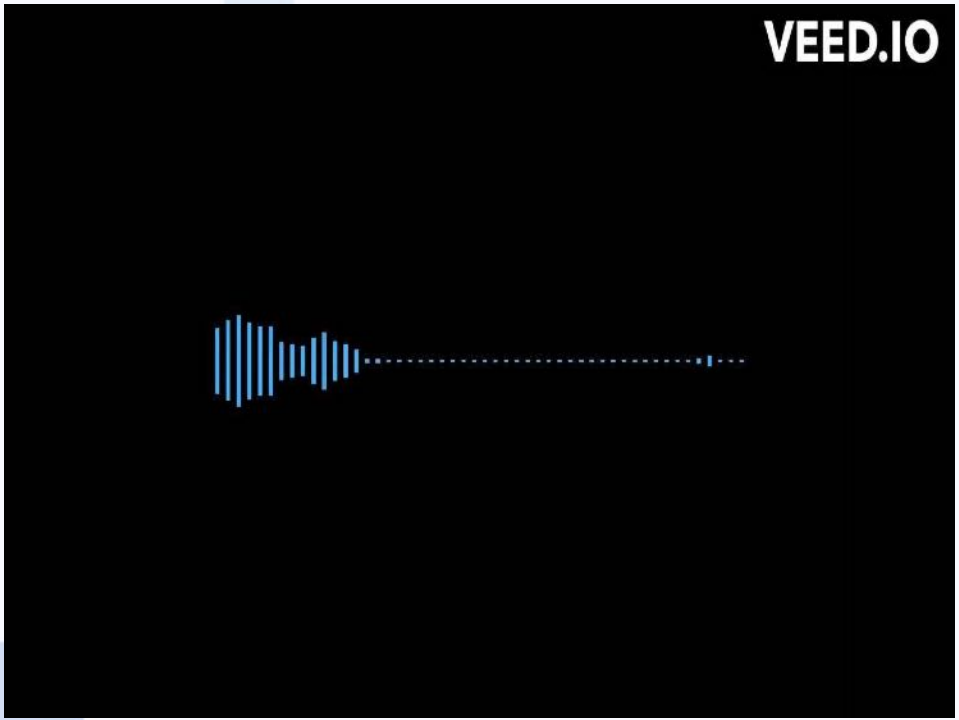


** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

Slido.com #234 115

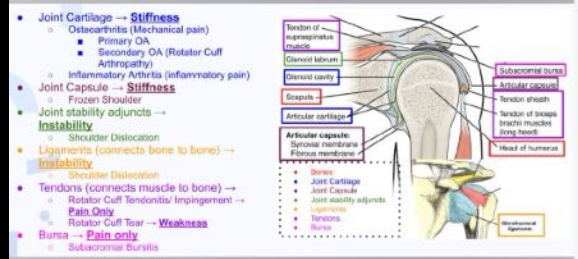
Patient A’s History



Questions in Slido

- Q1. What is the predominant symptom in the history?
- Q2. What is your provisional diagnosis from the history?

Slido - History Taking



What are the predominant symtoms that the history has elicited?

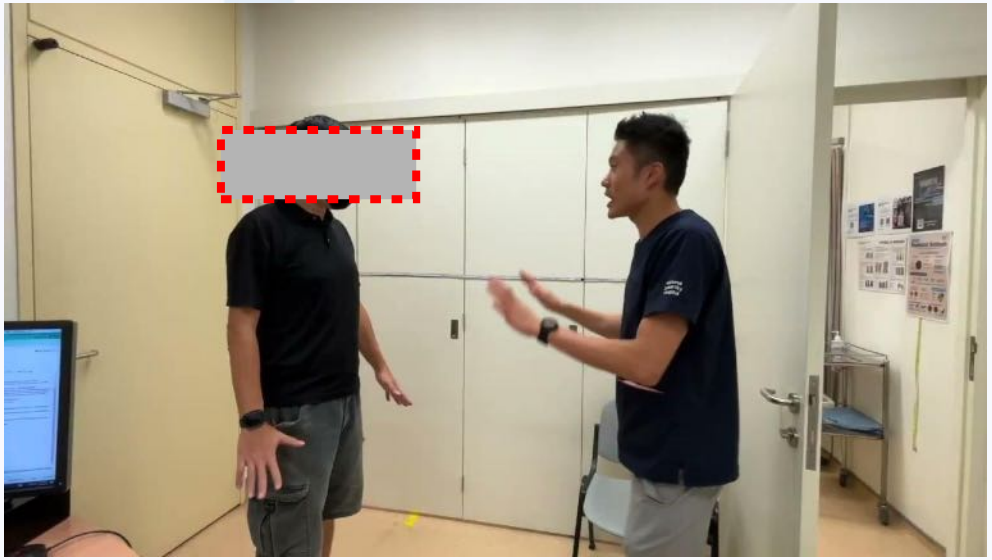
- Pain
- Stiffness
- Weakness
- Instability
- Locking

With the above constellation of symptoms, which is the provisional diagnosis?

- Joint Cartilage - Arthritis
- Capsule - Frozen Shoulder
- Stabilizers - Shoulder Instability
- Tendons/ Muscle - Rotator Cuff Tear
- Bursa/ Tendon - Bursitis/ Tendonitis

Slido.com #234 115

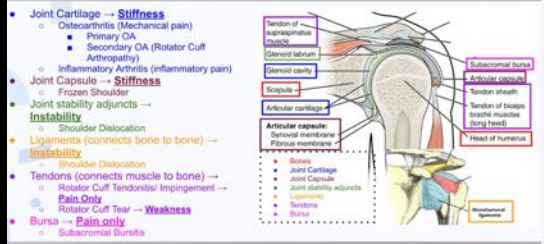
Patient A's Physical Examination



Questions in Slido

- What is the predominant sign elicited in the physical examination?
- What is your provisional diagnosis (es) from the history and PE?

Slido - Physical Exam



What are the predominant Signs that the physical exam has elicited?

- Pain
- Stiffness
- Weakness
- Instability
- Impingement

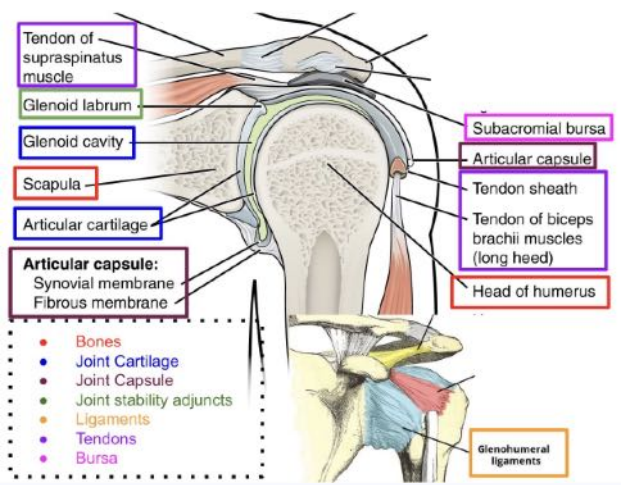
With the above constellation of signs and symptoms in the History and Physical Exam, which is/ are the provisional diagnoses? *

- Joint Cartilage - Arthritis
- Capsule - Frozen Shoulder
- Stabilizers - Shoulder Instability
- Tendons/ Muscle - Rotator Cuff Tear
- Bursa/ Tendon - Bursitis/ Tendonitis

Slido.com #234 115

Summary of *Patterns* in the **Shoulder Joint (GHJ)**

	History - Ask for associated symptoms	**Physical Exam** - Examine for	**Provisional Diagnosis**
Joint Cartilage	Stiffness +/- Pain	Stiffness	Arthritis
Joint Capsule***	Stiffness +/- Pain	Stiffness	Frozen Shoulder
Adjuncts + Ligaments	Instability +/- Pain	Instability	Shoulder Instability
Tendons - Tear	Weak +/- Pain	Weakness	Rotator Cuff Tear
Tendons - Inflammation	Pain only	Impingement Tests	Rotator Cuff Tendonitis/ Impingement
Bursa	Pain only	Impingement Tests	Subacromial Bursitis



How to differentiate the 2?

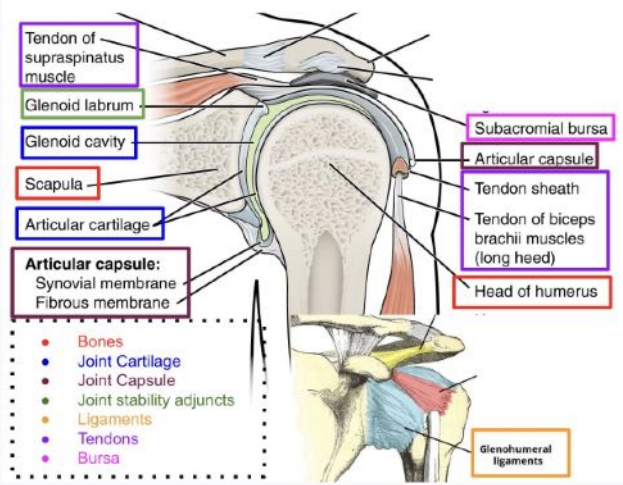
** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

Slido.com #234 115

Summary of *Patterns* in the **Shoulder Joint (GHJ)**

	History - Ask for associated symptoms	**Physical Exam** - Examine for	**Provisional Diagnosis**
Joint Cartilage	Stiffness +/- Pain	Stiffness	Arthritis (OA or Rotator Cuff Arthropathy)
Joint Capsule***	Stiffness +/- Pain	Stiffness	Frozen Shoulder
Adjuncts + Ligaments	Instability +/- Pain	Instability	Shoulder Instability
Tendons - Tear	Weak +/- Pain	Weakness	Rotator Cuff Tear
Tendons - Inflammation	Pain only	Impingement Tests	Rotator Cuff Tendonitis/ Impingement
Bursa	Pain only	Impingement Tests	Subacromial Bursitis



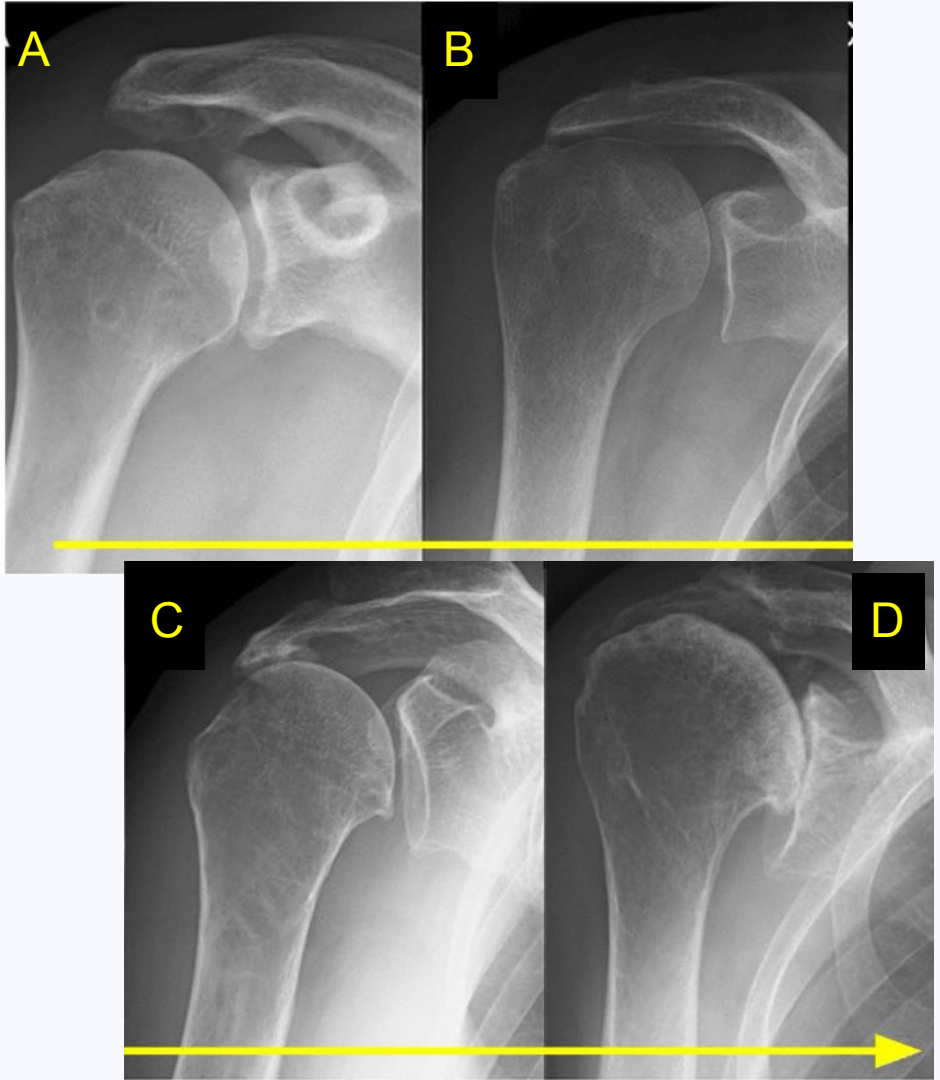
** All conditions can present with Pain only with no associated symptoms if the

How to differentiate the 2 from Physical Examination?

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Shoulder Arthritis

- **Primary** Osteoarthritis ***(Stiff + Strong)***
  - By definition no risk factors; natural wear
- **Secondary** Osteoarthritis
  - Post traumatic Osteoarthritis - previous injury with or without fractures ***(Stiff + Strong)***
    - Intra-articular fractures → Joint surface no longer smooth → increased cartilage wear → Secondary arthritis
    - Can also occur without intra-articular fractures
  - **Rotator Cuff Arthropathy** ***(Stiff + Weak)***
    - Normal patient with normal XR **(A)** → ***Massive*** rotator cuff tear → Superiorly subluxed humeral head **(B)** → Abnormal biomechanics thereafter → Increased wear and tear **(C)** → Rotator Cuff Arthropathy develops **(D)**

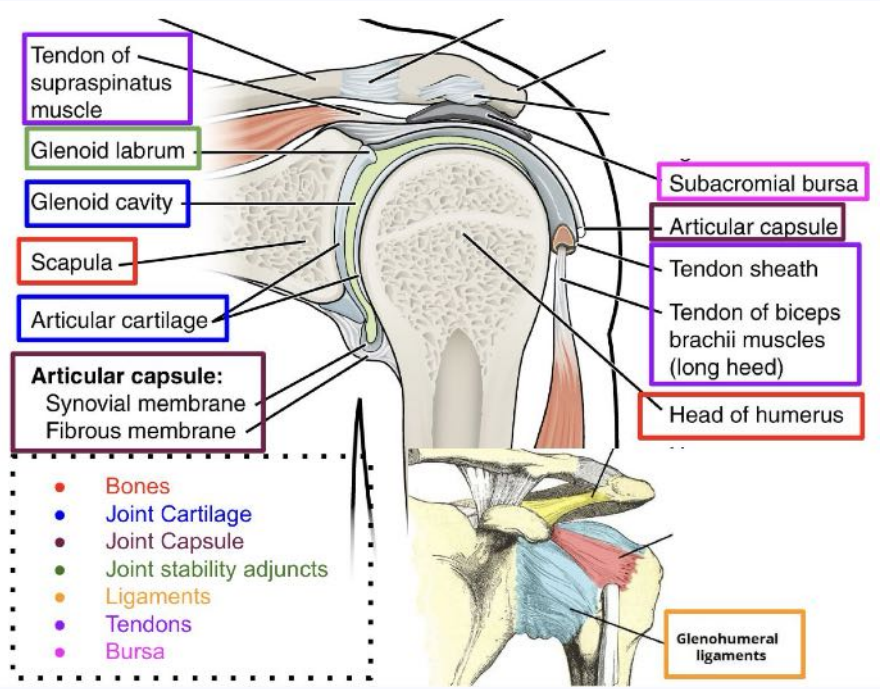


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Patterns in the **Shoulder Joint (GHJ)**

- ***Stiff & Strong*** = Frozen Shoulder or Osteoarthritis
- ***Stiff & Weak*** = Rotator Cuff Arthropathy
- ***Weak only*** = RC Tear
- ***Impingement only*** = RC Tendonitis/ Bursitis
- ***Loose*** = Shoulder instability

**Pain messes up everything



Ortho Made Simple - Shoulder PE

Updated Sept 2024
mokyingren.sg

1. Inspection

- Expose Patient ***(Must offer)***
- **Walk around patient**
  - Front - be deliberate to look for asymmetry
  - Sides
  - Back - for wasting of Rotator cuff muscles
- In general, look for scars, deformity, swellings, erythema, wasting

2. Range of Motion

- Stand in front of the patient and ask patient to follow you. **Compare both sides**
  - Flexion
  - Abduction
  - External Rotation - tuck elbows in
  - Internal Rotation - using thumb to compare level
- **If any AROM limited, check PROM**

* No need to check extension

3. Palpate

- 4 Bony Prominences
  - Sternoclavicular Joint
  - Along Clavicle
  - Acromioclavicular Joint
  - Spine of Scapula
- 2 Soft tissue
  - Rotator Cuff Muscles (~ 1 cm distal to acromion)
  - Biceps Tendon in groove (optional)

* Palpate only the affected side unless asked to compare

4. Power

- Rotator Cuff Muscles. **[Compare both sides]**
  - Supraspinatus - Empty can test (flex shoulder to 90, in plane of scapula)
  - Infraspinatus - External rotation against resistance
  - Subscapularis - Belly Press (check one side at a time)
  - Teres Minor - Hornblower ***[Post grad]***
- Biceps (double as special tests while look for pain in bicipital groove) **[Do affected side only]**
  - Speed's
  - Yergason's

5. Special Tests

[Do affected side only unless asked to compare]

- Rotator Cuff Impingement
  - Neer's
  - Hawkin's
- Acromioclavicular Joint Pathology
  - Scarf's Test
- SLAP Tears ***[Post Grad]***
  - O'Brien's Test
- Instability Tests ***[For young patients with no positive exam findings so far, consider shoulder instability as a likely diagnosis.]***
  - Sulcus
  - Anterior Apprehension
  - Beighton's (> 5 is +ve in adults)

6. Neurovascular

- Radial pulse

- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer

- Can offer to examine Cervical spine if shoulder pain
- If not, just offer to take history

Quick Interpretation after History and PE

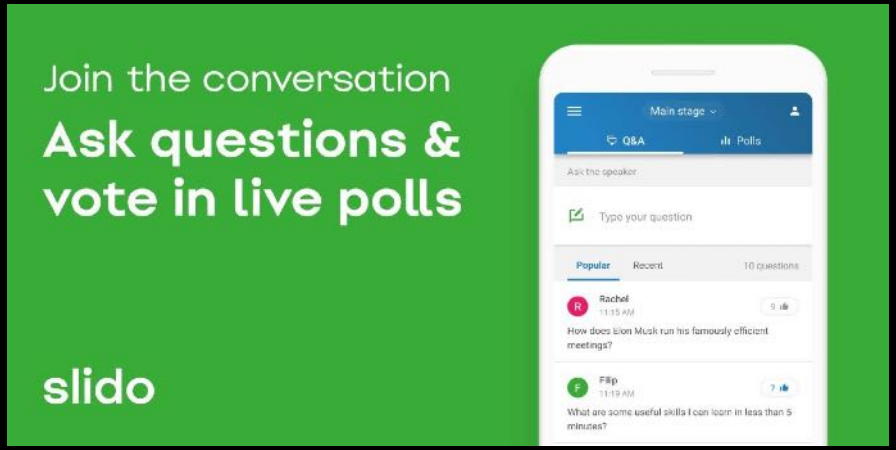
- ***Stiff & Strong*** = Frozen Shoulder or 1° Arthritis
- ***Stiff & Weak*** = RC Arthropathy (2° Arthritis)
- ***Weak only*** = RC Tear
- ***Impingement + only*** = RC Tendonitis/ Bursitis
- **Scarf's test + only** = ACJ Pathology
- ***Loose*** = Shoulder instability

****Pain messes up everything**

Quiz Time!

- **Live Audience** – Submit your answer on SLIDO to enhance your learning through immediate feedback.

- **Recording Audience** – Refer to the slides for the exact questions and options.

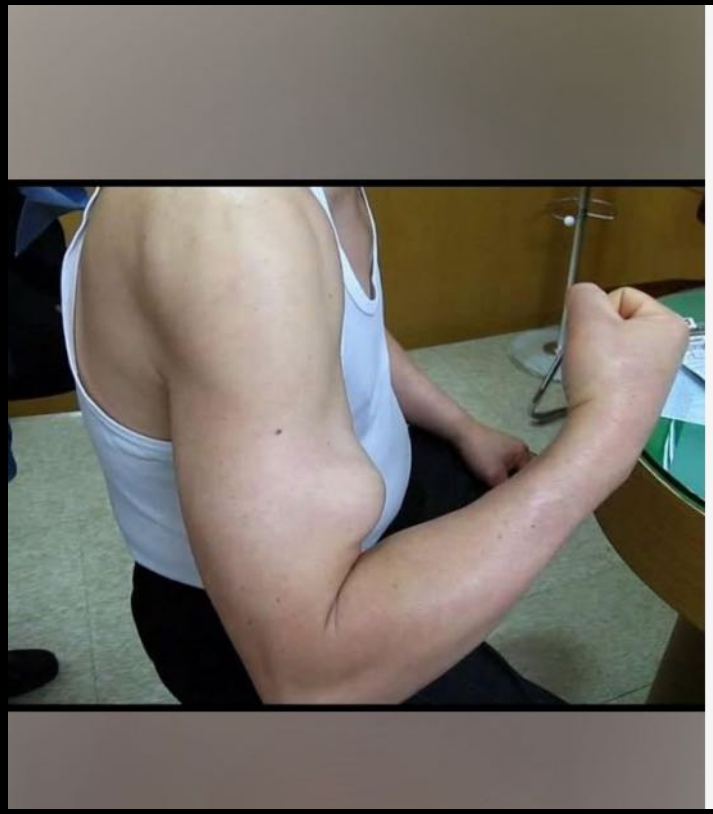


Approach to SE Quiz Q1

15 **Which of the following is the correct nerve-to-muscle pair?**

- Supraspinatus - Axillary Nerve
- Teres Minor - Thoracodorsal Nerve
- Infraspinatus - Suprascapular nerve
- Subscapularis - Pectoralis nerve

Approach to SE Quiz Q2



17

What is this deformity called?

- Squaring of Shoulder
- Popeye Sign
- Muscle Wasting
- Geyser Sign

Approach to SE Quiz Q3

⏱ 16 **Spot Diagnosis: 60year old Female had a fall and developed weakness in the right shoulder.**

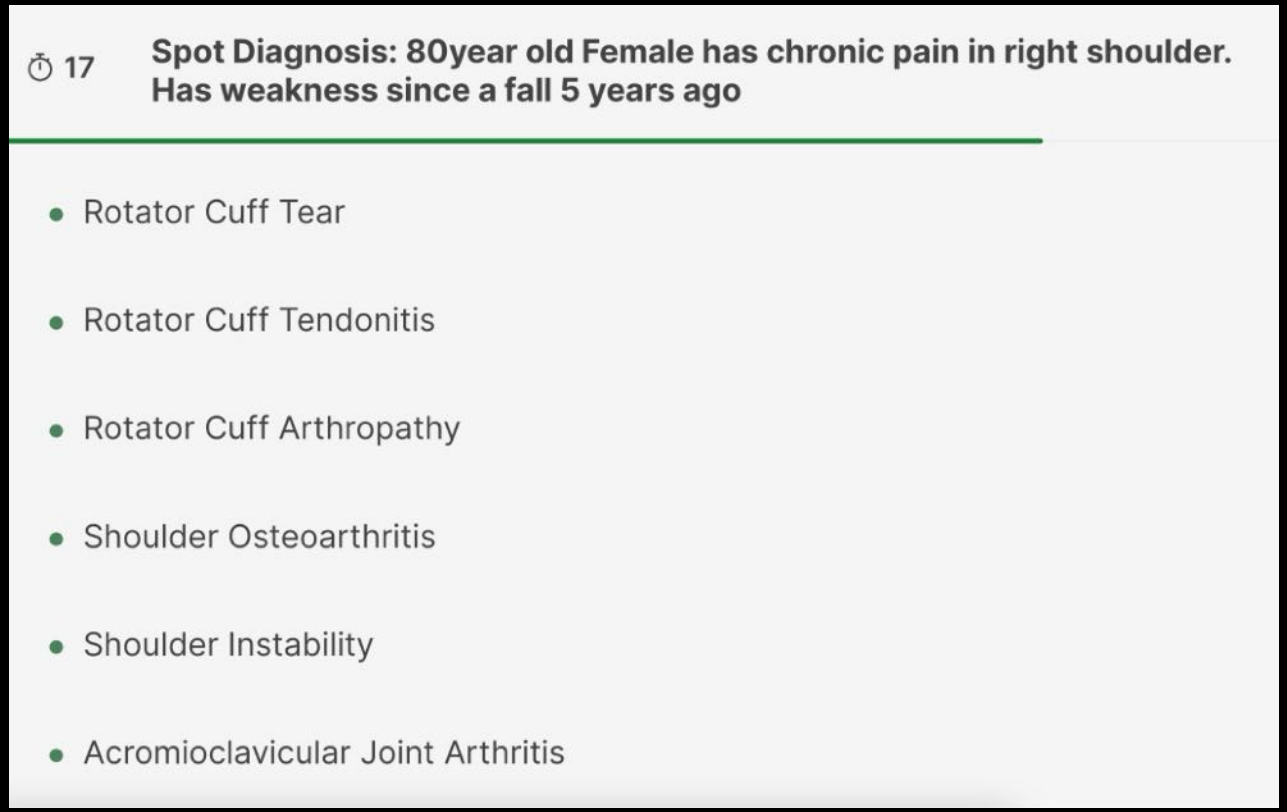
- Rotator Cuff Tear
- Rotator Cuff Tendonitis
- Rotator Cuff Arthropathy
- Shoulder Osteoarthritis
- Shoulder Instability
- Acromioclavicular Joint Arthritis

Approach to SE Quiz Q4

⏱ 18 **Spot Diagnosis: 23M had recurrent episodes in right shoulder while bouldering, requiring visits to the hospital to help with pain.**

- Rotator Cuff Tear
- Rotator Cuff Tendonitis
- Rotator Cuff Arthropathy
- Shoulder Osteoarthritis
- Shoulder Instability
- Acromioclavicular Joint Arthritis

Approach to SE Quiz Q5



Approach to SE Quiz Q6

17 **Spot Diagnosis: 45 year old male, chronic right shoulder pain with pain on overhead activities. No weakness.**

- Rotator Cuff Tear
- Rotator Cuff Tendonitis
- Rotator Cuff Arthropathy
- Shoulder Osteoarthritis
- Shoulder Instability
- Acromioclavicular Joint Arthritis

Approach to SE Quiz Q7

⏱ 17 **Spot Diagnosis: 50M with stiffness in right shoulder. Had an proximal humerus fracture when he was 25 which was fixed.**

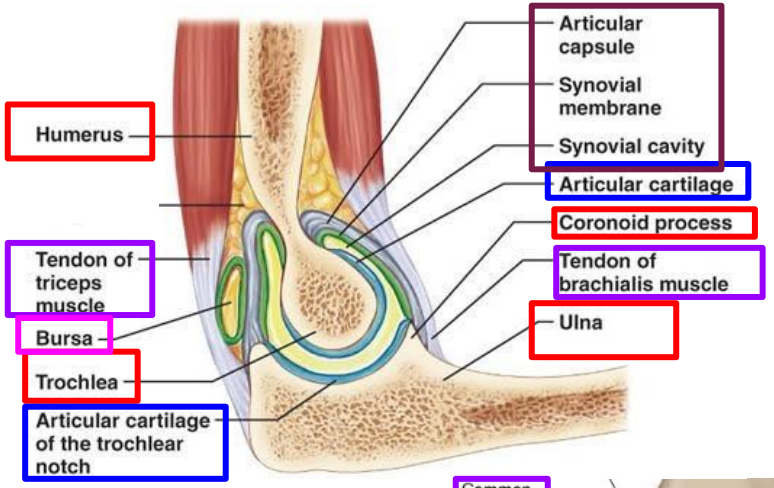
- Rotator Cuff Tear
- Rotator Cuff Tendonitis
- Rotator Cuff Arthropathy
- Shoulder Osteoarthritis
- Shoulder Instability
- Acromioclavicular Joint Arthritis

Approach to Elbow Pain

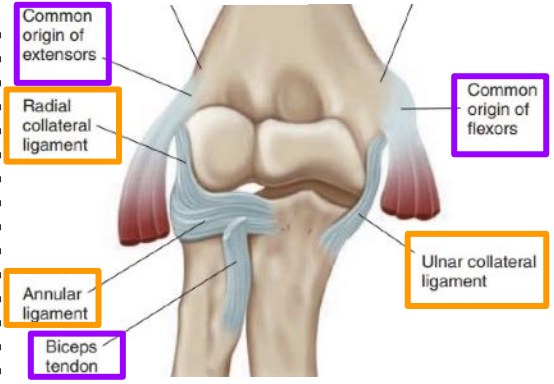
Linking ***History*** to Anatomy

What can go wrong in the ***elbow*** joint?

- Bones
- Joint Cartilage
- Joint Capsule
- Joint stability adjuncts
- Ligaments (connects bone to bone)
- Tendons (connects muscle to bone)
- Bursa



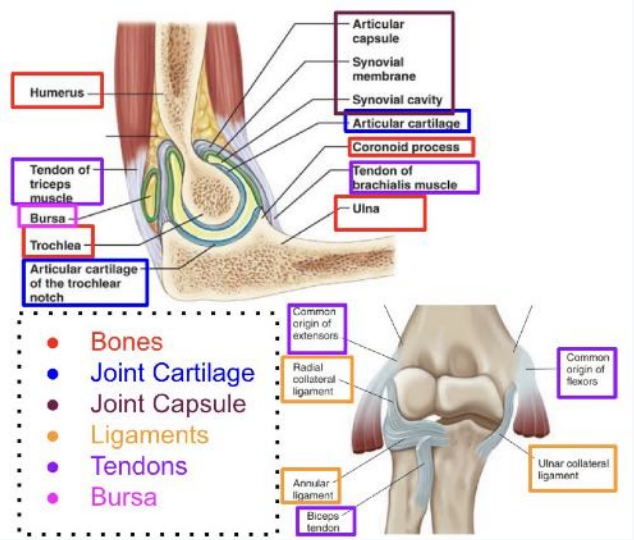
- Bones
- Joint Cartilage
- Joint Capsule
- Joint stability adjuncts
- Ligaments
- Tendons
- Bursa



Slido.com #234 115

Summary of *Patterns* in the **Elbow Joint**

	History - Ask for associated symptoms
Joint Cartilage	Stiffness +/- Pain
Joint Capsule	Stiffness +/- Pain
~~Adjuncts +~~ Ligaments	Instability +/- Pain
Tendons - Tear	Weak +/- Pain
Tendons - Inflammation	Pain only
Bursa	Pain only



** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

Approach to Elbow Pain

Linking ***History*** and ***Physical Examination*** to Anatomy

Slido.com #234 115

Ortho Made Simple - Elbow PE

1. Inspection

- Expose Patient ***(Must offer)***
- Begin with patient's arms straight with palms facing you
- Look for cubitus varus/ valgus
- Bring hands up to sky - look for cubital tunnel release scars

2. Range of Motion

- Start with arms horizontal, parallel to the ground.
  - Flexion
  - Extension
- Tuck in elbows, Give 2 pens (or use thumbs)
  - Pronation
  - Supination
- ***If any AROM limited, check PROM***

3. Palpate

- Demonstrate isosceles triangle relationships of tip of olecranon, medial epicondyle (ME) and Lateral epicondyle (LE)
- Palpate medially
  - Medial Epicondyle pain for Golfer's Elbow
  - Ulnar nerve for subluxation (flex and extend elbow with finger over ME to feel for subluxation)
- Palpate laterally
  - Lateral Epicondyle pain for Tennis Elbow
  - Radial head - pronate/ supinate elbow to feel radial head rotating

4. Power

- 4 Muscle groups
  - Flexion (biceps, brachialis)
  - Extension (triceps)
  - Pronation (pronator teres, quadratus)
  - Supination (biceps, supinator)

5. Special Tests (Targeted)

****Most important to master***

- **Tennis Elbow tests**
  - Passive Wrist Flexion (Mill's)
  - Resisted Wrist Dorsiflexion (Cozen's)
  - Resisted Middle Finger Extension (Maudsley)
- **Golfer Elbow**
  - Passive Wrist extension
  - Resisted Wrist Flexion
- Distal biceps rupture - hook test
- Instability tests ***[Post Grad]***

6. Neurovascular

- Radial pulse
- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer

- Just offer to take history

Slido.com #234 115

Confirm History with PE!

1. Inspection	2. Range of Motion	3. Palpate	4. Power
• Expose • Arms straight with palms facing you • Look for cubitus varus/ valgus • Bring hands up to sky - look for cubital tunnel release scars	Looking for **STIFFNESS**	Looking for **SITE** of PAIN • LE pain for Tennis • Radial head	Looking for **WEAKNESS**
SPECIAL TESTS	**6. Neurovascular** • Radial pulse • Median nerve - OK sign • Ulnar nerve - criss cross fingers • Radial nerve - thumbs up	**7. Function (if asked)** • Touch Hair • Touch Mouth • Touch back pocket	**8. Complete/ Offer** • Just offer to take history
Exacerbation of PAIN			
Looking for **INSTABILITY**			

YMS

1. Inspection

- Expose
- Arms straight with palms facing you
- Look for cubitus varus/ valgus
- Bring hands up to sky - look for cubital tunnel release scars



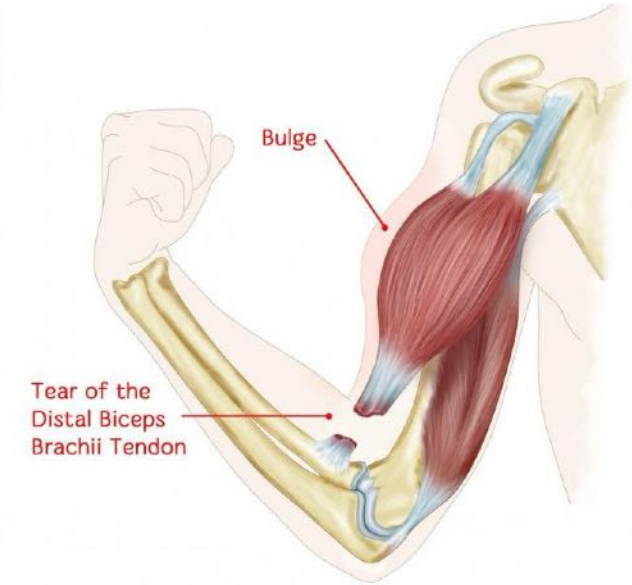
1. Inspection

- Deformity
- Scars
- Wasting

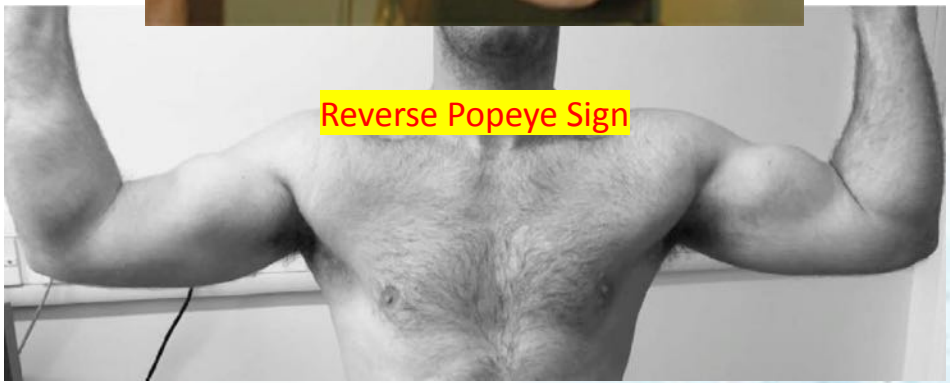


Reverse Popeye Sign

- Distal biceps tendon rupture







2. Range of Motion

- Start with arms horizontal
  - Flexion
  - Extension
- Tuck in elbows, Give 2 pens
  - Pronation
  - Supination

- Check PROM when AROM limited

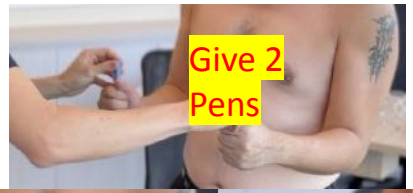


2. Range Of Motion

- Put arms in horizontal plane
  - Check Flexion/ Extension
- Bring Elbows tucked to side
  - Provide 2 pens
  - Check pronation - “turn out”
  - Check supination - “turn in”







- Same Principles - Check Active and KIV Passive ROM
  - AROM = PROM = Full = **Normal**
  - AROM < PROM = **Weakness**
  - AROM = PROM = Limited = **Stiffness**





3. Palpate

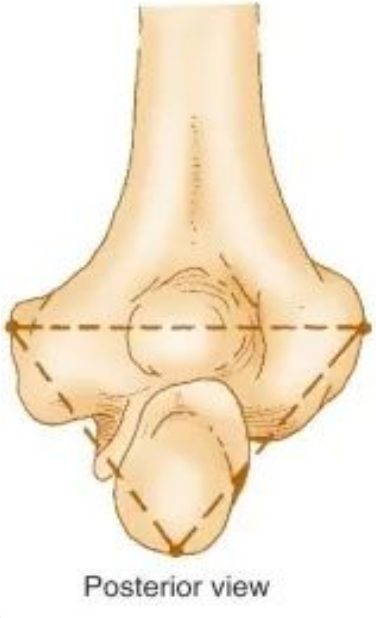
- Demonstrate isosceles triangle relationships of tip of olecranon, medial epicondyle (ME) and Lateral epicondyle (LE)
- Palpate medially
  - ME pain for Golfer's
  - Ulnar nerve for subluxation
- Palpate laterally
  - LE pain for Tennis
  - Radial head



3. Palpation - Triangle



- Hand moves into patient with 3 fingers -
  - Thumb and middle finger on the epicondyles
  - Index finger on the olecranon
  - Say “2 epicondyles and olecranon forms an isosceles triangle”
- Medial Epicondyle, Lateral Epicondyle, Tip of olecranon forms an isosceles triangle
  - Disruption may suggest previous malunion of fractures



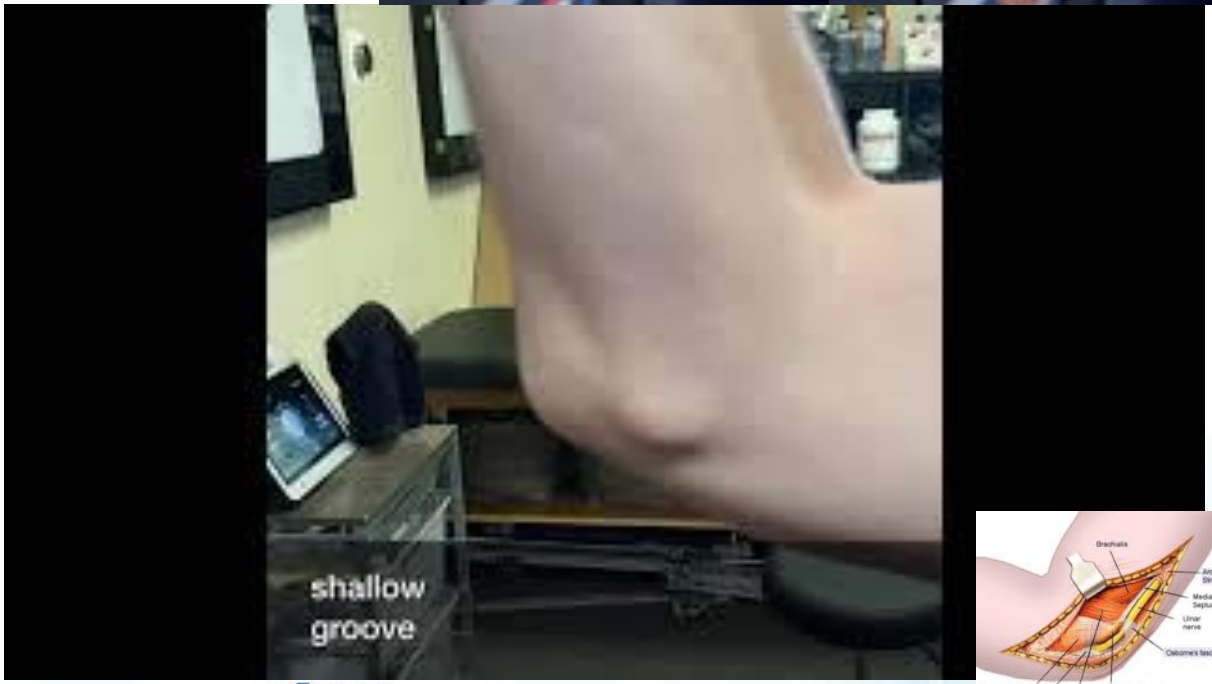


Medial Elbow Palpation





- Medial epicondyle tenderness (Golfer's elbow)
- Palpate ulnar nerve in groove.
- Locate medial epicondyle again and place finger over it
- Flex and extend the elbow, feeling for a tubular structure sliding across it



Lateral Elbow Palpation



- Lateral epicondyle tenderness (tennis elbow)
- Radial head tenderness, Rotate arm to confirm you are palpating the radial head



4. Power

- 4 movements
  - Flexion
  - Extension
  - Pronation
  - Supination



4. Power

- 4 Movements
  - Flexion strength
  - Supination strength
  - Pronation strength - Pronator Teres
  - Extension strength - Triceps
- At this point, you should pick up any biceps pathology e.g. popeye or reverse popeye signs









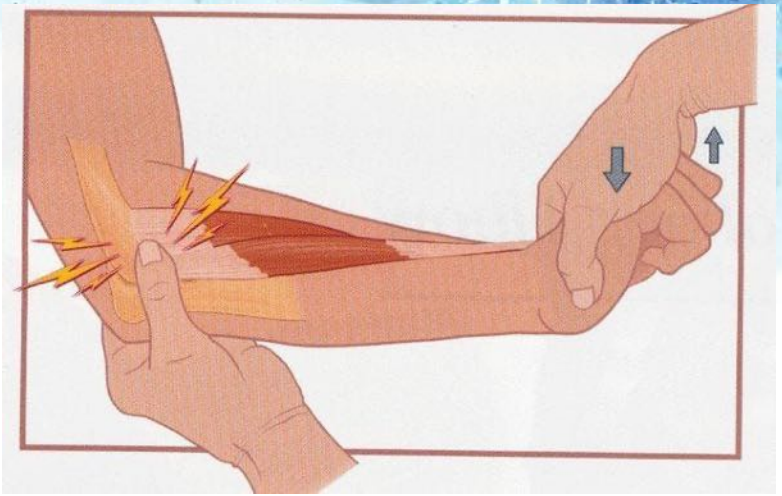
5. Special Tests (Targeted)

- Tennis Elbow tests
  - Passive wrist flexion
  - Cozen
  - Maudsley
- Golfer Elbow
  - Passive Wrist extension
  - Flexion against resistance
- Distal biceps rupture - hook test
- Instability tests (not required)



Tennis Elbow Tests (Lateral)

- Logic = Pathology in the forearm EXTENSOR tendon attachment → Tests aim to stress EXTENSOR mechanism
    - **Cozen's** = Extension against resistance
    - **Maudsley** = Extension of middle finger against resistance
    - Passive wrist flexion (to stress extensor muscle attachment)

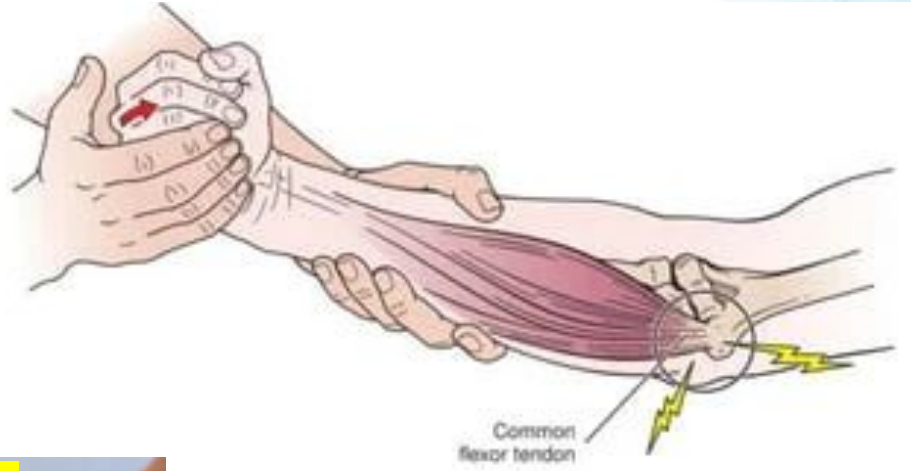






Golfer Elbow Tests (Medial)

- Logic = Pathology in the forearm FLEXOR tendon attachment → Tests aim to stress FLEXOR mechanism
  - Flexion against resistance
  - Passive wrist extension (to stress flexor muscle attachment)



Golfer Elbow

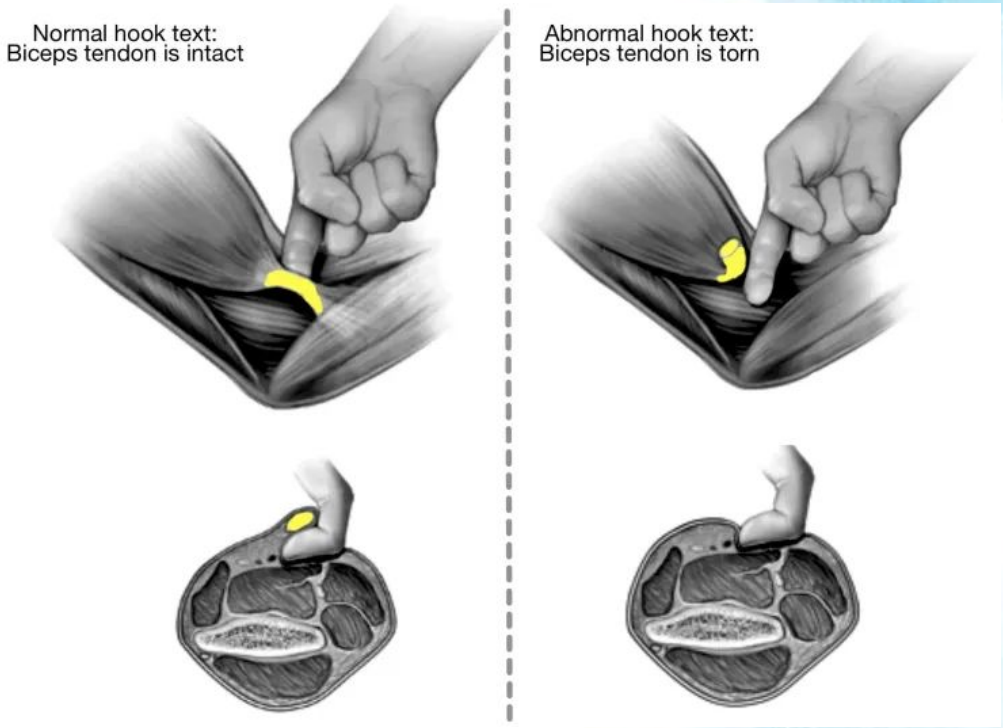




Hook Test

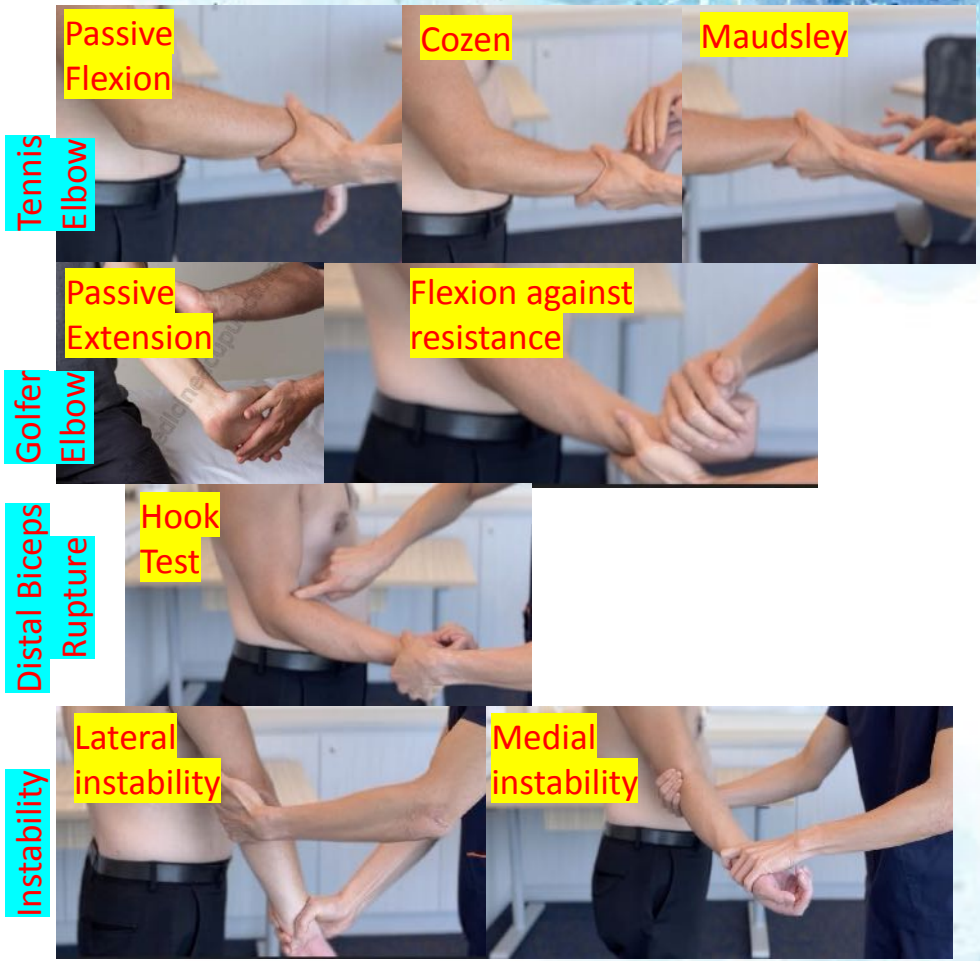
- Attempting to hook the biceps tendon from lateral to medial





5. Special Tests

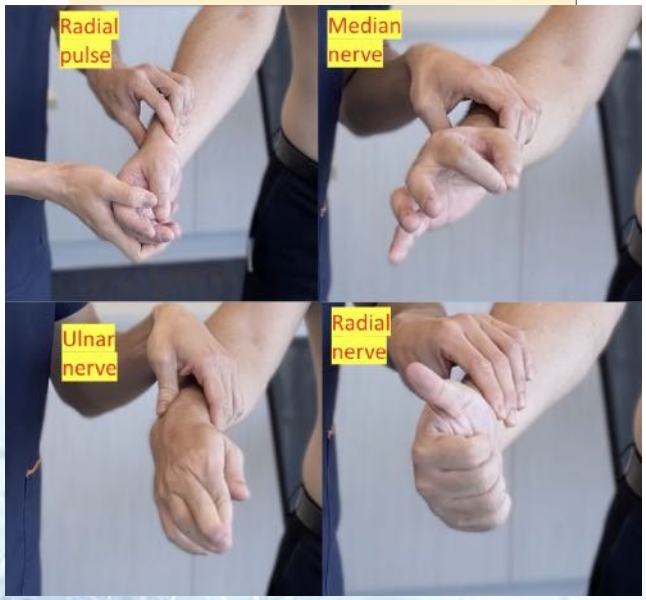
- Tennis Elbow Tests (do if LE tender)
  - Passive wrist Flexion
  - Cozen's test (Wrist Extension against resistance)
  - Maudsley's test (Middle finger extension against resistance)
- Golfer Elbow Tests (do if ME tender)
  - Passive wrist extension
  - Flexion against resistance
- Hook test (do if so far no positive findings as hard to pick up)
- Instability tests (No need for undergrad)



Steps 6, 7, 8

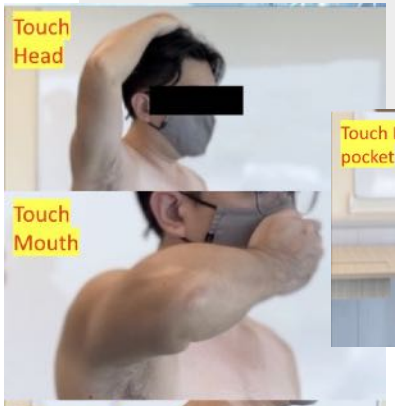
6. Neurovascular

- Radial pulse
- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up



7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket





8. Complete/ Offer

- Can offer to examine Cervical spine if shoulder pain
- If not, just offer to take history



Ortho Made S

Looking for **STIFFNESS**

Looking for **SITE** of PAIN

Looking for **WEAKNESS**

1. Inspection

- Expose
- Arms straight with palms facing you
- Look for cubitus varus/ valgus
- Bring hands up to sky - look for cubital tunnel release scars

2. Range of Motion

- Start with arms horizontal
  - Flexion
  - Extension
- Tuck in elbows, Give 2 pens
  - Pronation
  - Supination
- Check PROM when AROM limited

3. Palpate

- Demonstrate isosceles triangle relationships of tip of olecranon, medial epicondyle (ME) and Lateral epicondyle (LE)
- Palpate medially
  - ME pain for Golfer's
  - Ulnar nerve for subluxation
- Palpate laterally
  - LE pain for Tennis
  - Radial head

4. Power

- 4 movements
  - Flexion
  - Extension
  - Pronation
  - Supination

5. Special Tests (Targeted)

- Tennis Elbow tests
  - Passive wrist flexion
  - Cozen
  - Maudsley
- Golfer Elbow
  - Passive Wrist extension
  - Flexion against resistance
- Distal biceps rupture - hook test
- Instability tests (not required)

6. Neurovascular

- Radial pulse
- Median nerve - OK sign

Exacerbation of PAIN

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer

- Just offer to take history

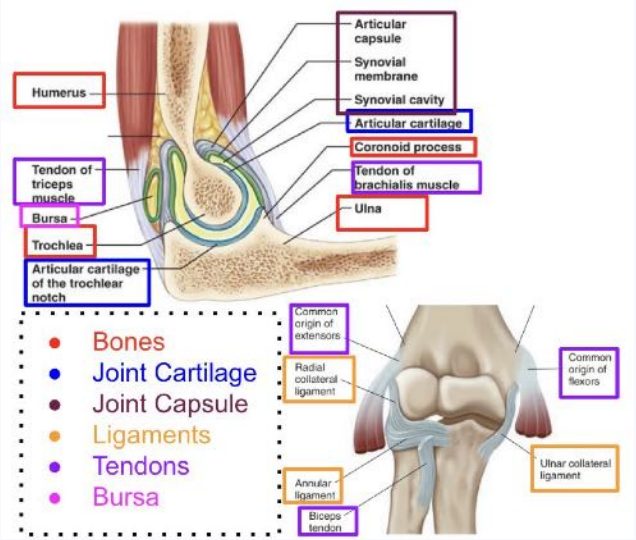
Elbow Examination Run-Through (Tennis Elbow)



Slido.com #234 115

Summary of *Patterns* in the **Elbow Joint**

	History - Ask for associated symptoms	**Physical Exam** - Examine for
Joint Cartilage	Stiffness +/- Pain	Stiffness
Joint Capsule	Stiffness +/- Pain	Stiffness
~~Adjuncts +~~ Ligaments	Instability +/- Pain	Instability
Tendons - Tear	Weak +/- Pain	Weakness
Tendons - Inflammation	Pain only	Specific Tests
Bursa	Pain only	Features of Inflammation



** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in “stiffness” and “weakness” and “instability”

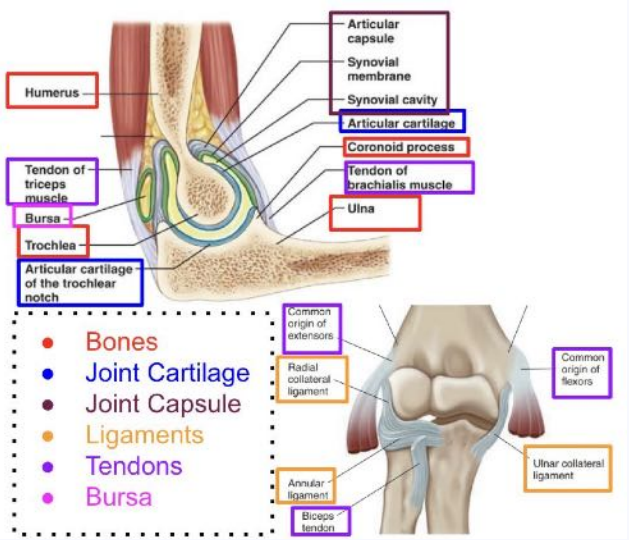
Approach to Elbow Pain

Linking History and Physical Examination to ***Anatomical Pathological Diagnosis***

Slido.com #234 115

Summary of *Patterns* in the **Elbow Joint**

	History - Ask for associated symptoms	**Physical Exam** - Examine for	**Provisional Diagnosis**
Joint Cartilage	Stiffness +/- Pain	Stiffness	Arthritis (1°or 2°)
Joint Capsule	Stiffness +/- Pain	Stiffness	~~Frozen~~ (Stiffness from Immobilization)
~~Adjuncts +~~ Ligaments	Instability +/- Pain	Instability	Elbow Instability
Tendons - Tear	Weak +/- Pain	Weakness	Tendon Tear
Tendons - Inflammation	Pain only	Specific Tests	Lateral - Tennis Elbow Medial - Golfer's Elbow Pos. - Triceps Tendonitis
Bursa	Pain only	Features of Inflammation	Olecranon Bursitis



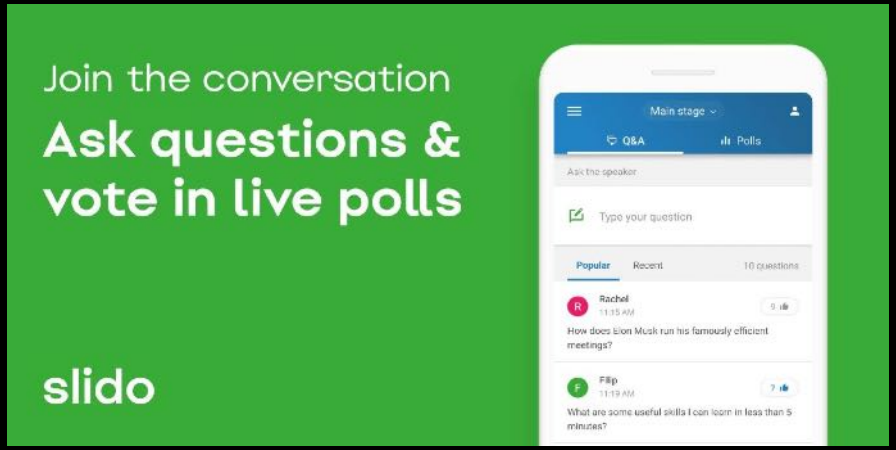
** All conditions can present with Pain only with no associated symptoms if the issue is mild.

** Pain can result in "stiffness" and "weakness" and "instability"

Quiz Time!

- **Live Audience** – Submit your answer on SLIDO to enhance your learning through immediate feedback.

- **Recording Audience** – Refer to the slides for the exact questions and options.



Approach to SE Quiz Q8

18 **Patient has lateral elbow pain. Which test will you do to confirm your diagnosis?**

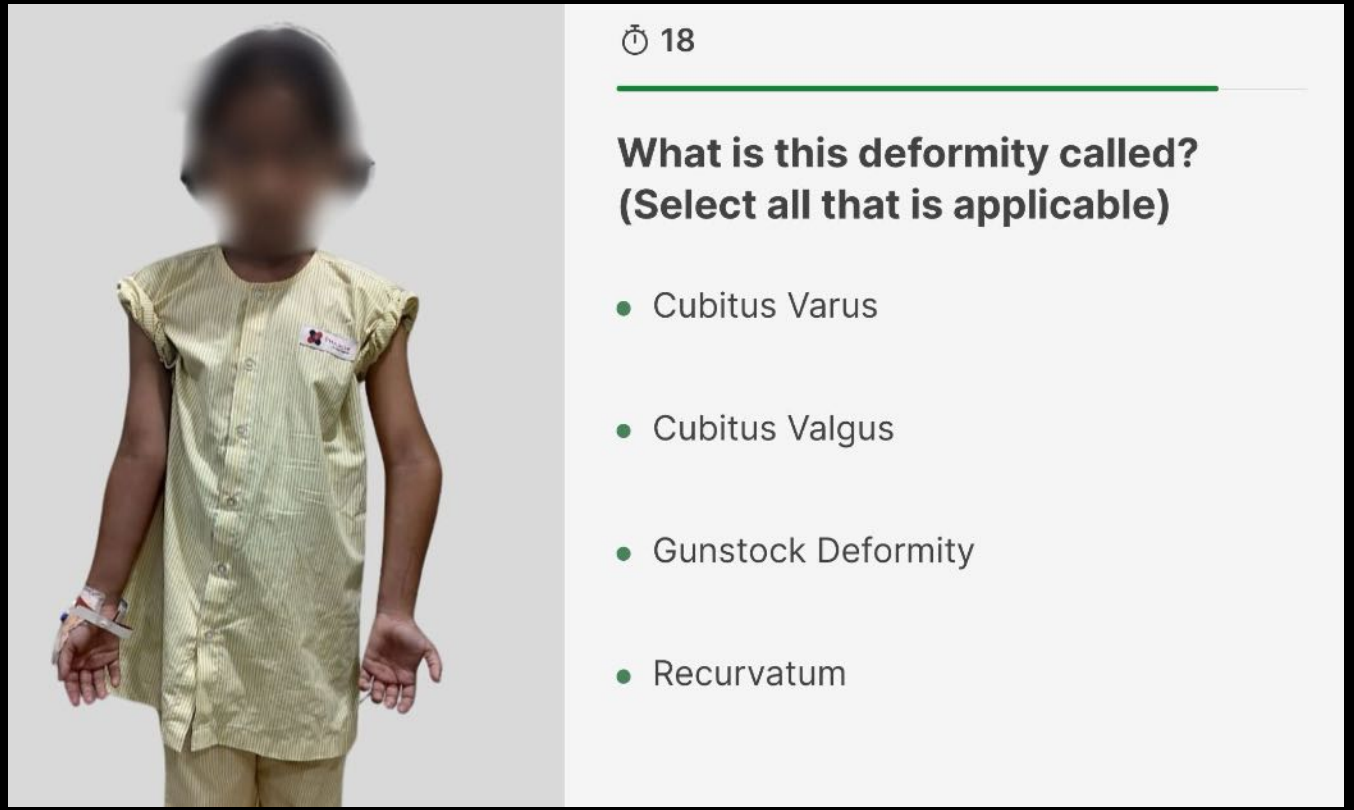
- Tinel's Test
- Cozen's Test
- Durkan's Test
- Wilson's Test

Approach to SE Quiz Q9

17 **Patient has medial elbow pain. Which of the following tendons attaches to this region?**

- Extensor carpri radialis brevis
- Brachialis
- Flexor Digitorium Superficialis
- Supinator

Approach to SE Quiz Q10



18

What is this deformity called? (Select all that is applicable)

- Cubitus Varus
- Cubitus Valgus
- Gunstock Deformity
- Recurvatum

Summary

- Pain + Associated symptoms (stiffness, weakness, instability, locking) helps us to arrive at the diagnosis
- Physical Examination serves to confirm the history taken

1 Stabilize	2 History	3 Physical Exam	4 Initial Invx
5 Acute/ Initial Mx	6 Advanced Imaging	7 Definitive Mx	8 Post Op Review

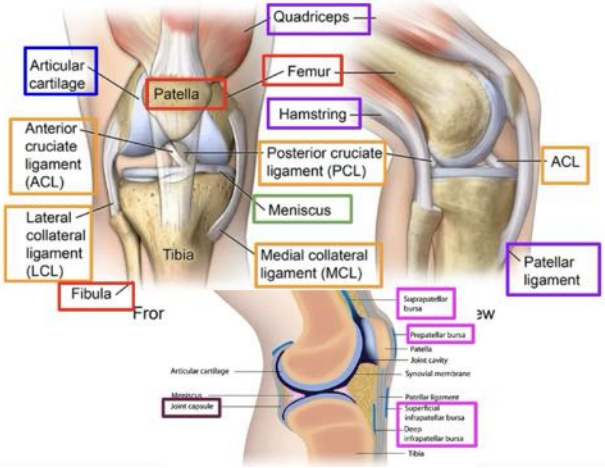


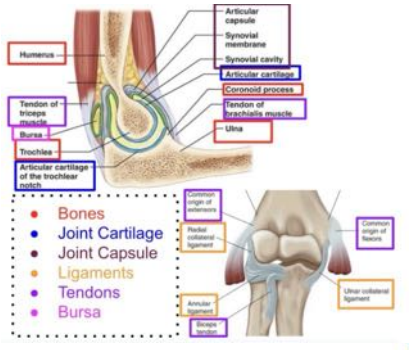
What should you do next?

- Shape your thought process into an anatomical manner as you take history and do physical examinations from the various joints - Knee, Hip, Foot, Ankle, Spine so that you can **reason your diagnosis**
- Refine which associated symptoms are more prominent and important for each anatomical region

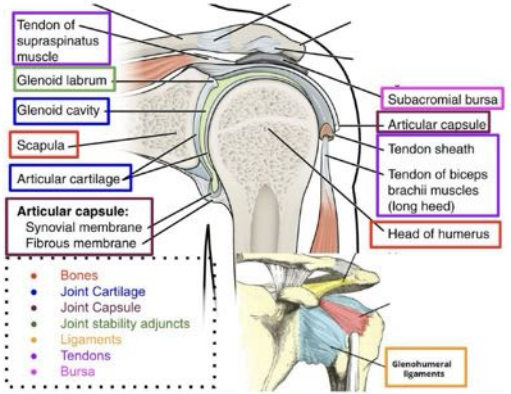
- Bones → Acute Pain after trauma/ Deformity…
- Joint Cartilage → Stiffness
- Joint Capsule → Stiffness
- Joint stability adjuncts → Pain only/ Instability
- Ligaments (connects bone to bone) → Pain only/ Instability
- Tendons (connects muscle to bone) → Pain only/ Weakness
- Bursa → Pain only

- Why "pain only → Associated symptoms" for adjuncts, ligaments and tendons?
  - Spectrum of mild inflammation to complete tear!



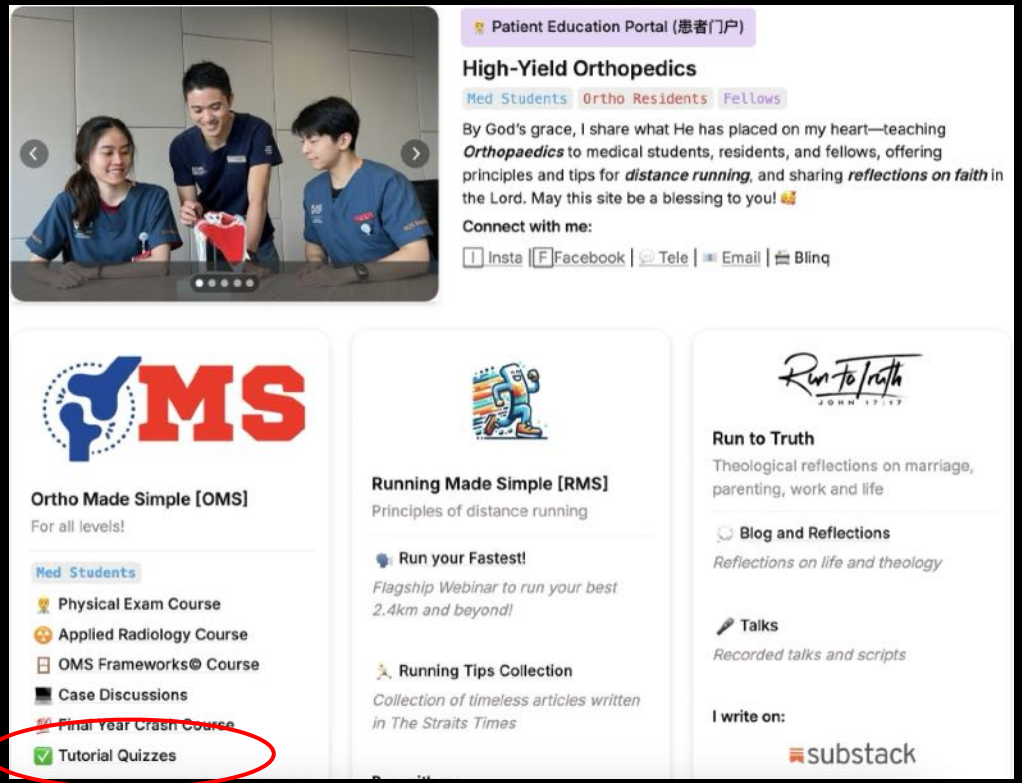


- Joint Cartilage → Stiffness
  - Osteoarthritis (Mechanical pain) 1
    - Primary OA
    - Secondary OA (Rotator Cuff Arthropathy)
  - Inflammatory Arthritis (inflammatory pain)
- Joint Capsule → Stiffness
  - Frozen Shoulder 2
- Joint stability adjuncts → Instability
  - Shoulder Dislocation 3
- Ligaments (connects bone to bone) → Instability
  - Shoulder Dislocation
- Tendons (connects muscle to bone) → Pain only/ Weakness
  - Rotator Cuff Tendonitis/ Impingement 4
  - Rotator Cuff Tear 5
- Bursa → Pain only
  - Subacromial Bursitis 6



Maximising our Time!

- Post lecture Quizzes available on website mokyingren.sg!



Same Format for Other PE

- Revise Physical Examination skills - watch and practise on one another again and again.
- Refine your own sequence/ technique

