

**American College of Physicians - Internal Medicine Meeting 2024  
Boston, MA**

**Diagnosis-Driven Physical Examination of the Shoulder**

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## Shoulder Physical Exam

Observation	
Bony abnormality	
Muscle abnormality	

Palpation ABC's	
<b>A</b> cromioclavicular joint	
<b>B</b> iceps tendon	
<b>C</b> oracoid	
<b>S</b> ubacromial space	

ROM/Strength: SITS	
<b>Supraspinatus/Deltoid: Abduction scapular plane:</b>	
ROM Active	
ROM Passive	
Full tear: Drop Arm Test	
Motor: Empty Can	
<b>Infraspinatus/Teres Minor External Rotation (ER)</b>	
ROM Active	
ROM Passive	
Full tear: ER Lag	
Motor: Resisted ER	
<b>Subscapularis Internal Rotation (IR)</b>	
ROM Active (spinous level)	
ROM Passive	
Full tear: IR Lag	
Motor: Gerber lift off/Belly press	

Provocative Tests: BIAS	
<b>Biceps:</b>	
Yergason's (resisted supination)	
Speed's (resisted flexion)	
<b>Impingement:</b>	
Neer's	
Hawkins	
<b>Acromioclavicular</b>	
Scarf	
Cross arm	
<b>Stability</b>	
Apprehension/Relocation	
Load and Shift	
O'Brien	

## Descriptions of tests:

### SITS ROM/Strength

#### Supraspinatus/deltoid:

- ROM: Abduction: 0-180 degrees is normal. + painful arc in abduction may indicate subacromial or GH pathology
- Full tear test: Drop arm: From arms overhead, have patient lower arms slowly in adduction, thumbs down. If patient is unable to maintain strength against gravity below 90 degrees (arm "drops"), this may indicate acute full supraspinatus tear.
- Strength: Empty Can Test: Position the arm in 90 degrees forward flexion, 30 degrees abduction, thumbs down. Press firmly down on the forearms and ask the patient to resist.

#### Infraspinatus/TM:

- ROM: External Rotation (ER): Starting with elbows at sides, flexed to 90 degrees, then externally rotate outward. Normal ER ROM is at > 30 degrees, but depends on muscle bulk—asymmetry may indicate pathology.
- Full tear ER Lag Test: if ER is asymmetric, extend ER in passive rom as far as possible—if pt unable to hold position and 'lags' back to limited ER position, + ER lag test may indicate IR/TM tear.
- ER Strength: Have the patient start in neutral ER position (elbows at sides, flexed 90) and attempt external rotation against resistance.

#### Subscapularis:

- ROM: Internal Rotation (IR): Have the patient place one hand behind his back and reach as far superiorly as possible. Note the spinal level and compare both sides.
- Full tear IR Lag Test: if IR is asymmetric, extend IR in passive rom as far as possible up spine—if pt unable to hold position and 'lags' back to limited IR position, + IR lag test may indicate Subscapularis tear.
- IR Strength: Gerber liftoff test: Have the patient place one arm behind their lower back and try to push away from the body. Inability to perform the "lift off" represents subscapularis weakness from a tear or other injury.

## Provocative Tests

### Biceps:

- Yergason's test: With the patient's elbow flexed at 90 degrees, have pt supinate and flex forearm against resistance. + Pain AT BICEPS may indicate biceps tendonitis or subluxation of the long head tendon.
- Speed's test: Have patient hold shoulder at 60 degrees of forward flexion with arm supinated and elbow flexed at 20 degrees. Ask the patient to attempt forward flexion of the arm against your resistance. + Pain AT BICEPS may indicate biceps tendonitis.

### Impingement:

- Hawkins' test: In 90 degrees of forward flexion and 90 degrees of elbow flexion, passively internally rotate the arm. + Pain may indicate subacromial impingement syndrome.
- Neer's test: Raise patient's extended arm in passive forward flexion to an overhead position. + Pain may indicate subacromial impingement syndrome.

### Acromioclavicular tests:

- Scarf test: Patient actively moves arm in horizontal adduction—ie ask pt to put their hand on their other shoulder. + Pain at the AC joint may indicate acromioclavicular joint pathology.
- Cross arm test: With pt's arm at 90 degrees of forward flexion, have pt actively cross arm in horizontal adduction against your resistance. + Pain at the AC joint may indicate acromioclavicular joint pathology.

### Stability tests:

- Apprehension test: Perform with the patient supine or seated. Have the patient abduct to 90 degrees with the elbow flexed, hand pointing upward. Try to externally rotate the arm while gently pushing anteriorly on the humerus and watch for a reaction from the patient. Apprehension indicates a positive test for anterior instability.
- Relocation test: Perform following the apprehension test. Use the same positioning, but press posteriorly on the humerus instead. If the patient has anterior instability, this should cause a decrease in pain.
- Load and Shift: As the patient lies in a supine position with the shoulder relaxed, the examiner places both hands around the patient's upper arm and first the humeral head is "loaded," or pushed against the glenoid fossa, and then the humeral head is moved (shifted) anteriorly and posteriorly.
- O'Brien's test: Patient flexes their arm to 90° with the elbow fully extended and then adducts the arm 10-15° medial to sagittal plane. The arm is then maximally internally rotated (thumb down) and the patient resists the examiner's downward force. The procedure is repeated in supination (thumb up). Pain with thumb down that is relieved when thumb up is a positive test for labral pathology.

# DIAGNOSIS-DRIVEN PHYSICAL EXAMINATION OF THE SHOULDER

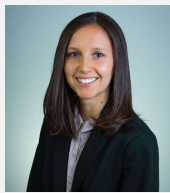
ACP Musculoskeletal Medicine Teaching Group  
ACP National Conference 2024

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## ACP SHOULDER EXAM CLINICAL SKILLS WORKSHOP FACULTY



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## OBJECTIVES

1. **Inspect/Observe** pertinent shoulder anatomy
2. **Palpate** key anatomical shoulder landmarks (ABC's)
3. Organize Rotator Cuff **Range of Motion/Strength** (SITS)
4. Organize Shoulder **Provocative Tests** (BIAS)
5. **Practice** shoulder exam and cases in small groups

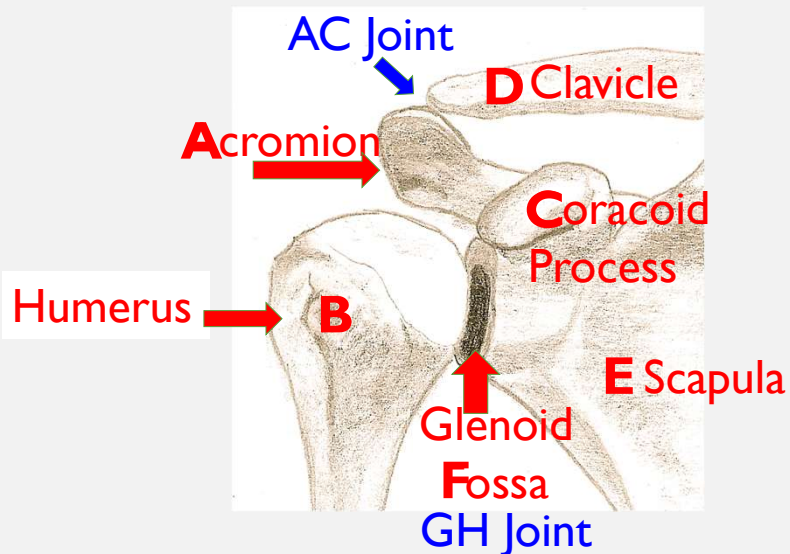
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## PRIMARY CARE SHOULDER EXAM

- Inspection
- Palpation: **ABC'S**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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## SHOULDER: BONES & JOINTS



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## PRIMARY CARE SHOULDER EXAM

- Inspection
- Palpation: **ABC'S**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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OBSERVATION: BONY DEFORMITIES  
PRIOR FRACTURE



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OBSERVATION: BONY DEFORMITIES  
AC JOINT SEPARATION



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OBSERVATION: MUSCLES  
BICEPS RUPTURE



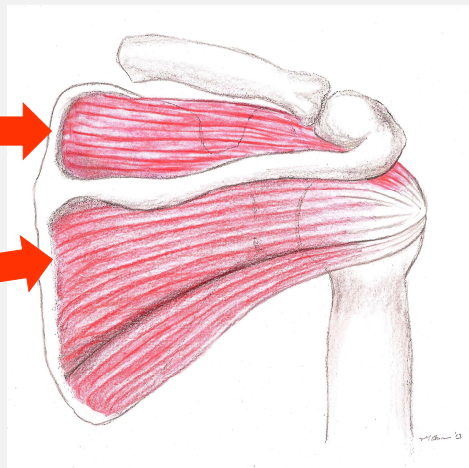
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POSTERIOR  
ROTATOR CUFF MUSCLES

Supraspinatus



Infraspinatus



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OBSERVATION: MUSCLES  
ROTATOR CUFF ATROPHY



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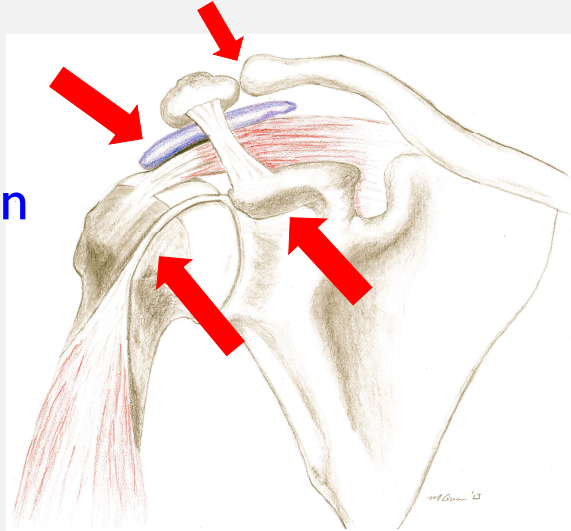
SHOULDER EXAM

- Inspection
- Palpation: **ABC'S**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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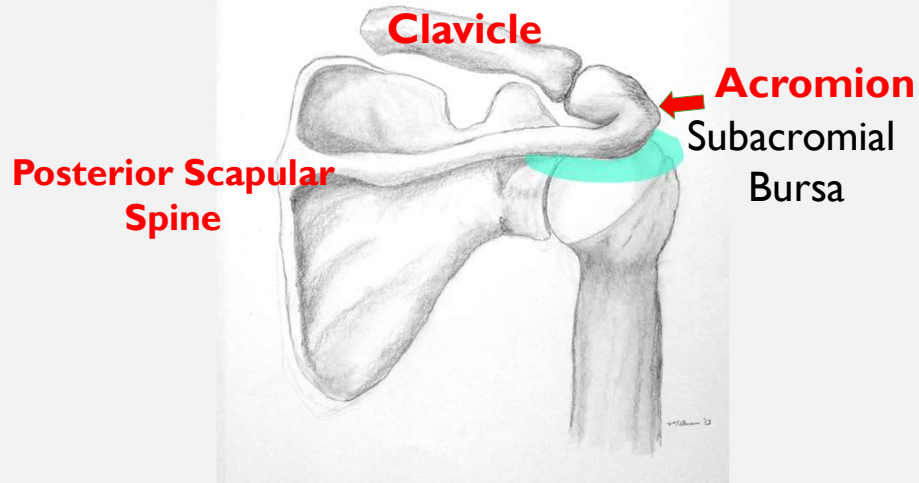
## PALPATION: **ABCS**

- **A**C joint
- **B**iceps Tendon
- **C**oracoid
- **S**ubacromial Space



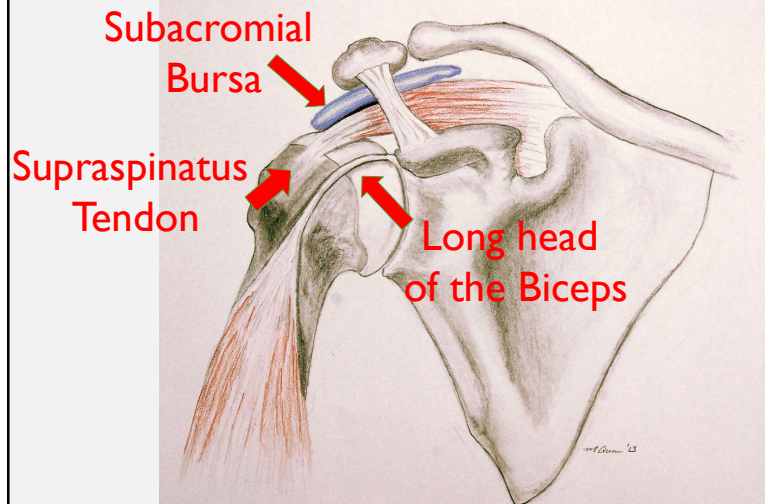
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## SHOULDER BONES: POSTERIOR BONES



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## SUBACROMIAL SPACE: CONTENTS



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## PALPATION: **ABCS**

- **A**C joint                      ➤ AC joint oa/separation
- **B**iceps Tendon              ➤ LH Biceps Tendonitis
- **C**oracoid                      ➤ Frozen Shoulder
- **S**ubacromial Space        ➤ SA Impingement

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## SHOULDER EXAM

- Inspection
- Palpation: **ABC's**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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## SHOULDER QUIZ 2: ROTATOR CUFF

Name 4 Rotator cuff muscles  
and their actions:

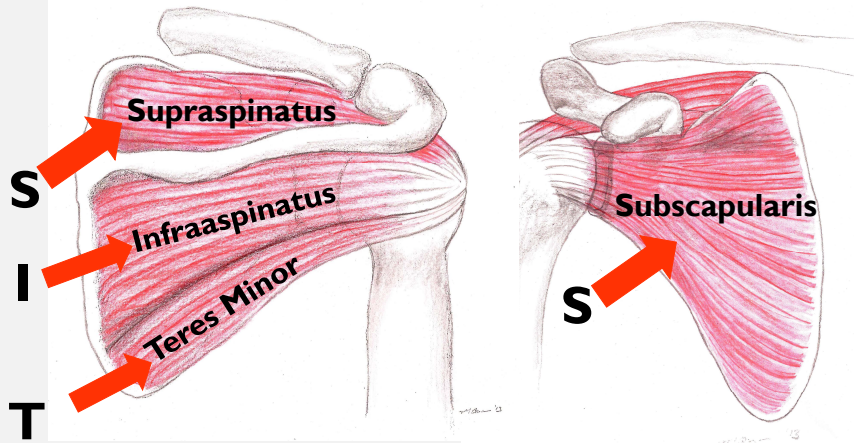
- **S** upraspinatus
- **I** nfraspinatus
- **T** eres Minor
- **S** ubscapularis

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ROTATOR CUFF MUSCLES: SITS

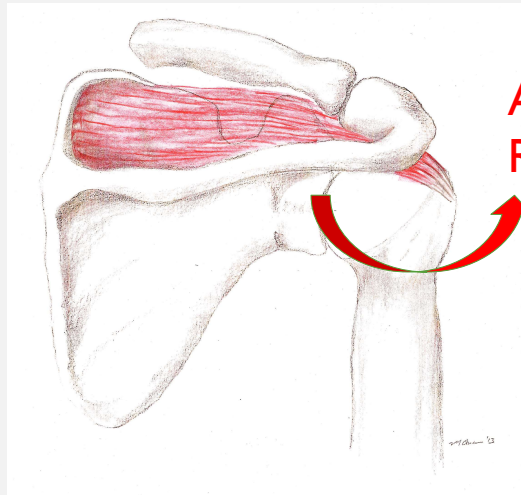
Posterior

Anterior



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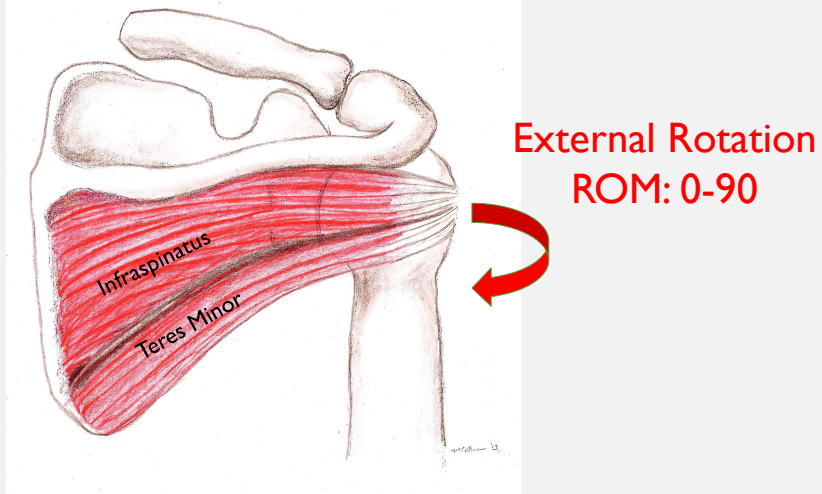
ROTATOR CUFF SITS:  
SUPRASPINATUS



Abduction  
Rom: 0-180

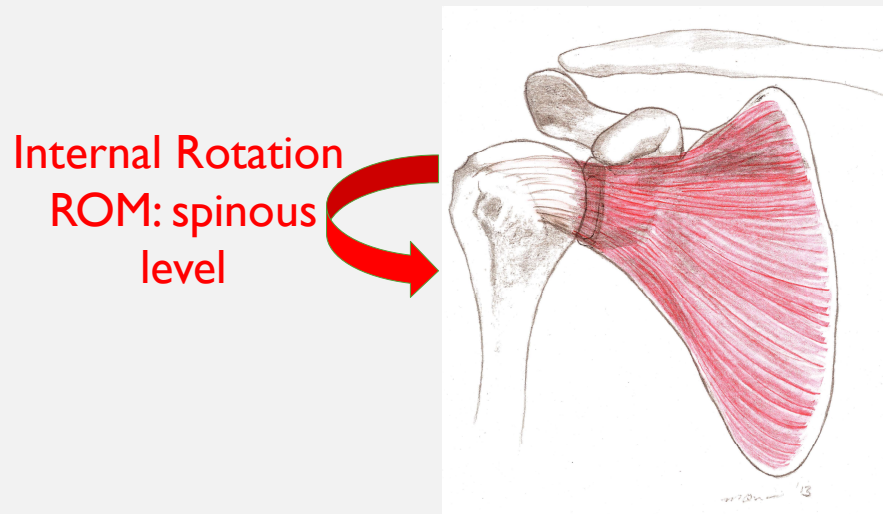
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**ROTATOR CUFF SITS:**  
**INFRASPINATUS/TERES MINOR**



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**ROTATOR CUFF SITS:**  
**SUBSCAPULARIS**



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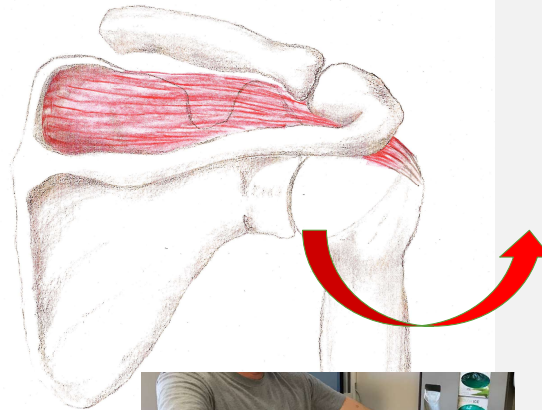
## SHOULDER EXAM TIP: ROM/STRENGTH BY SITS

SITS ROM	Full Tear Test	Strength Test:
SITS: Abd	Drop Arm	Empty Can
SITS: ER	ER Lag	Resisted ER
SITS IR	IR Lag	Lift Off/ Belly Press

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### SITS

- Muscle:**
- **Supraspinatus**
- Motion:**
- **Abduction**
- Full tear test:**
- **Drop Arm**
- Strength test:**
- **Empty Can**



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SITS

**Muscle:**

- **Infraspinatus/TM**

**Motion:**

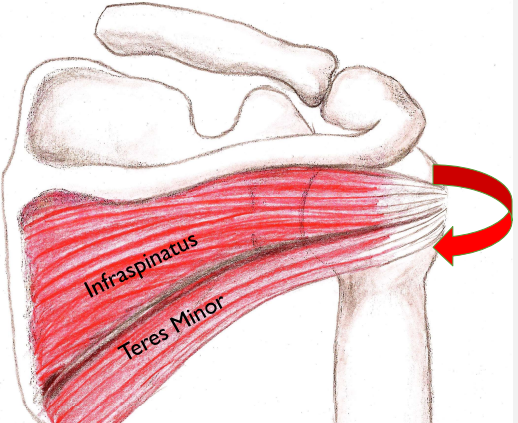
- **Ext Rotation**


**Full tear test:**

- **ER Lag**

**Strength test:**


- **Resisted ER**





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**IS/TM FULL TEAR TEST:  
EXT ROTATION LAG**



Provider pulls pt to extent of passive ER ROM...

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**SITS**

**Muscle:**

- **Subscapularis**

**Motion:**

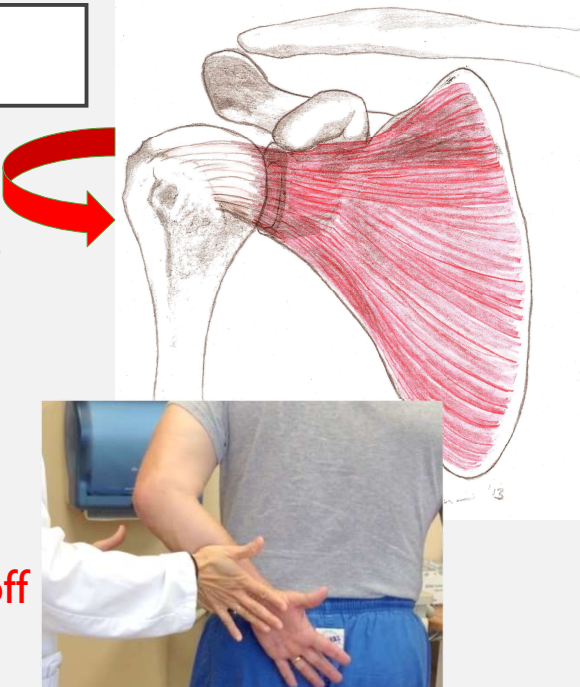
- **Int Rotation**

**Full tear test:**

- **IR Lag**

**Strength test:**

- **Gerber Lift off**
- **Belly Press**



The diagram shows the subscapularis muscle originating from the scapula and inserting into the greater tuberosity of the humerus. A red arrow indicates internal rotation. The photo shows a clinician performing the Gerber lift-off test on a patient's back.

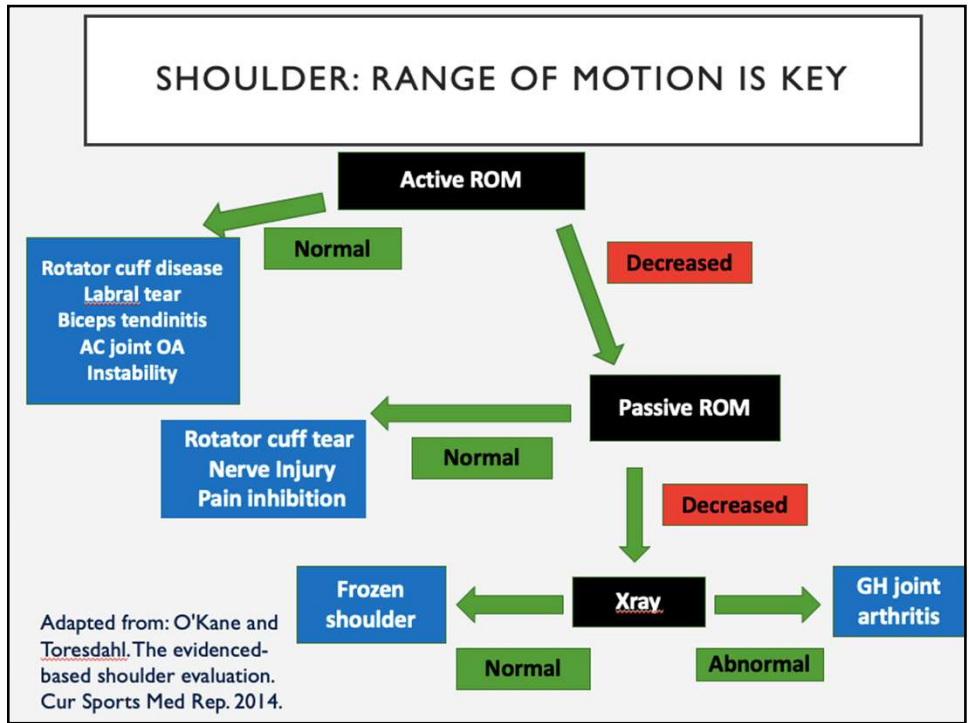
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**SHOULDER EXAM: ROM/STRENGTH**

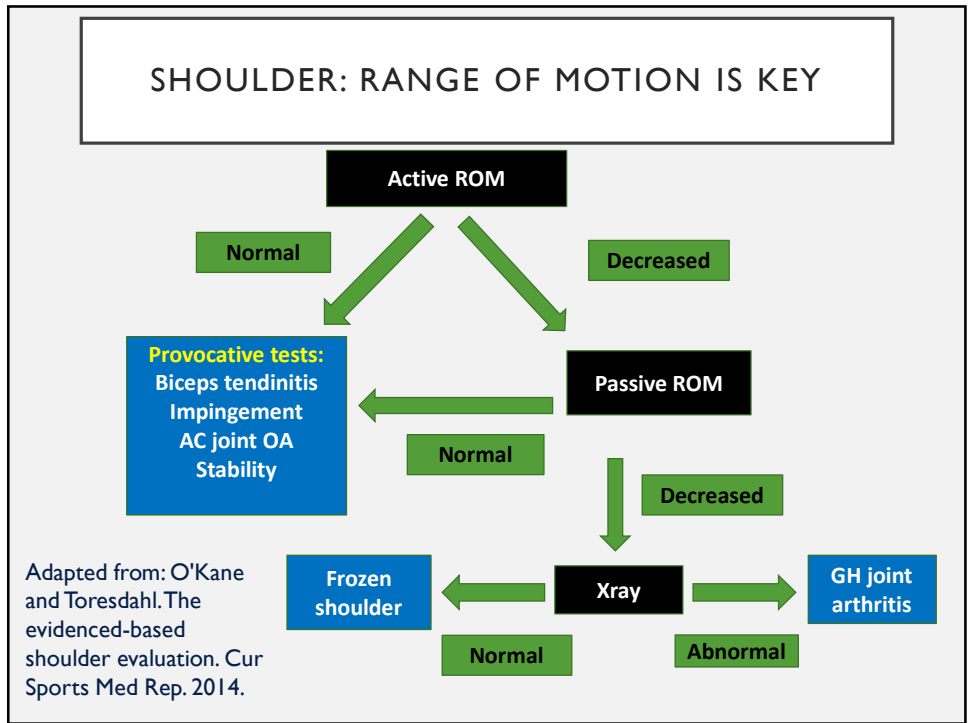
**SITS**

- **Supraspinatus**
  - ROM: Abduction Active/Passive (if limited)
  - Strength: Empty Can
  - Full tear test: Drop Arm
- **Infraspinatus/Teres Minor**
  - ROM: External Rotation Active/Passive (if limited)
  - Strength: ER Strength
  - Full tear test: ER Lag test
- **Subscapularis**
  - ROM: Internal Rotation Spinous process level Active/Passive (if limited)
  - Strength: Gerber lift off
  - Full tear test: IR Lag

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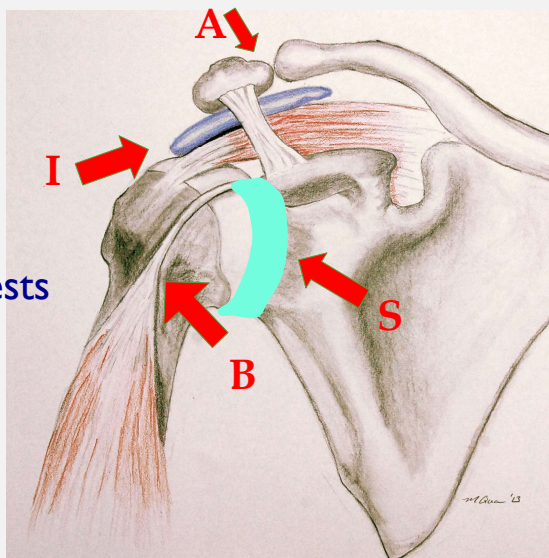
## SHOULDER EXAM

- Inspection
- Palpation: **ABC's**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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## SHOULDER PROVOCATIVE SIGNS: **BIAS**

- **Biceps Tests**
- **Impingement Tests**
- **Acromioclavicular Tests**
- **Stability Tests**



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## SHOULDER EXAM: PROVOCATIVE SIGNS: **BIAS**

- **Biceps tests**
  - Yergason's
  - Speed's
- **Impingement Tests:**
  - Neer's
  - Hawkin's
- **Acromioclavicular tests**
  - Scarf test
  - Cross arm
- **Stability Tests:**
  - Apprehension
  - Relocation
  - Load & Shift
  - Sulcus
  - O'Briens

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## **BIAS: BICEPS TESTS**

### Yergason's Test

- Resisted  
**SUPINATION**



### Speed's Test

- Resisted Biceps  
**FLEXION**

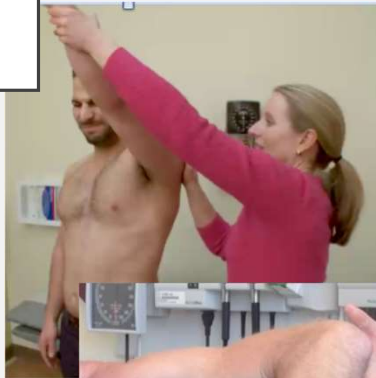


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**BIAS:**  
**IMPINGEMENT**

**Neer's Test**

- Elbow extended
- Internally rotated
- Forward flexion,



**Hawkin's Test**

- 90° forward flexion,
- elbow flexed,
- internal rotation



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**BIAS:**  
**AC JOINT TESTS**

**Scarf test**

- Active adduction



**Cross arm test**

- Resisted adduction



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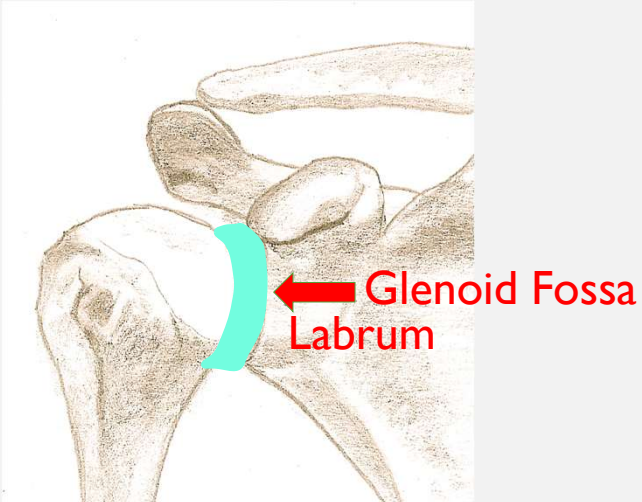
## BIAS: STABILITY

- Anterior
  - Apprehension/relocation
  - Load & Shift
- Posterior
  - Load & Shift
- Inferior
  - Sulcus sign
- Labrum
  - O'Brien's Test



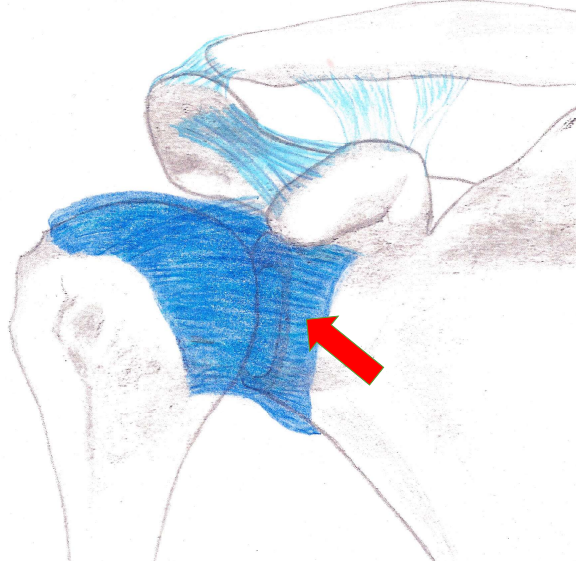
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## SHOULDER GLENOHUMERAL STABILIZERS: **LABRUM**



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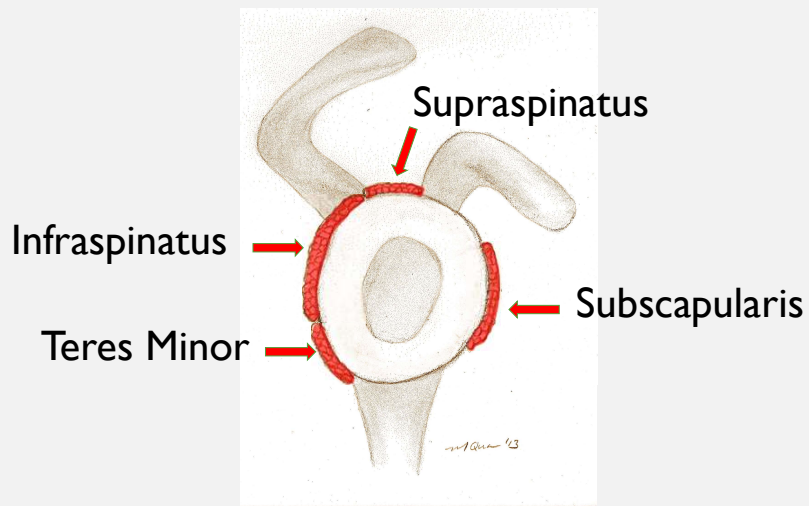
SHOULDER GLENOHUMERAL STABILIZERS:  
**CAPSULE**



- Prevents anterior, inferior and posterior displacement

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SHOULDER GLENOHUMERAL STABILIZERS:  
**ROTATOR CUFF: DYNAMIC STABILIZERS**



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## SHOULDER EXAM

- Inspection
- Palpation: **ABCS**
- Range of motion/Strength: **SITS**
- Provocative tests: **BIAS**

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## THE ESSENTIAL SHOULDER EXAM FOR INTERNISTS

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• <b>Inspection</b> – Bony abnormalities, muscle atrophy</li> <li>• <b>Palpation ABC's:</b> AC joint, Biceps tendon, Coracoid, Subacromial space</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>• <b>ROM/Strength: SITS</b> <ul style="list-style-type: none"> <li>• <b>Supraspinatus</b> <ul style="list-style-type: none"> <li>• Abduction</li> <li>• Drop Arm/Empty Can</li> </ul> </li> <li>• <b>Infraspinatus/Teres Minor</b> <ul style="list-style-type: none"> <li>• External Rotation</li> <li>• ER Lag test/ Resisted ER</li> </ul> </li> <li>• <b>Subscapularis</b> <ul style="list-style-type: none"> <li>• Internal Rotation Spinous process level</li> <li>• IR Lag/Gerber lift off</li> </ul> </li> </ul> </li> </ul> | <p><b>Provocative Tests: BIAS</b></p> <ul style="list-style-type: none"> <li><b>Biceps</b> <ul style="list-style-type: none"> <li>• Yergason's</li> <li>• Speeds</li> </ul> </li> <li><b>Impingement</b> <ul style="list-style-type: none"> <li>• Neer's</li> <li>• Hawkins</li> </ul> </li> <li><b>AC Joint</b> <ul style="list-style-type: none"> <li>• Scarf</li> <li>• Cross Arm</li> </ul> </li> <li><b>Stability</b>—Next layer</li> </ul> |

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All Shoulder Exam slides courtesy of Drs. Anna Quan and Kalli Hose, UCSD School of Medicine  
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Key Features of Top Shoulder Problems				
Diagnosis	History	Exam	Workup	Treatment
<b>Glenohumeral (GH) OA</b>	Older patient Insidious onset, <b>diffuse pain, limited ROM</b>	<b>Decreased AROM + PROM</b> Cuff testing: strength intact, minimal discomfort	Xray: loss of GH joint space, flat humeral head, osteophytes, sclerosis	Non-op including GH CSI Surgery referral when fails
<b>Adhesive Capsulitis</b>	Similar to GH OA, age 40-60, ♀ > ♂	<b>Same as GH OA</b>	<b>Normal xray</b>	Good results w/ non-op including GH CSI but may take 1-2 years
<b>RTC: suspected partial thickness tear/ tendinopathy/ subacromial bursitis</b>	<b>Pain w/ overhead reach, night pain,</b> radiation to elbow (but not beyond)	Full ROM (active may be limited by pain), + Neers and Hawkins, <b>pain with cuff testing but strength intact</b>	•Clinical dx •xray if trauma/concern for fx •MRI (xray prior) only if fails non-op measures	Non-operative rx: •activity mod •analgesics • PT • 1-2 subacromial corticosteroid injections (CSI)
<b>RTC: suspected full thickness tear</b>	As above + weakness	AROM may be limited by pain/weakness. Full PROM. Cuff testing w/ pain + <b>weakness</b>	•Xray + MRI for acute suspected FTT, or acute on chronic in young patient	Urgent surgery for acute traumatic FTT; expedited for acute on chronic

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Diagnosis	History	Exam	Workup	Treatment
<b>Biceps Tendonitis</b>	Ant/medial shoulder pain, <b>worse w/ elbow flexion/supination</b> (e.g. turning door knob)	TTP over long-head of biceps + Speeds, Yergasons	Clinical dx	<ul style="list-style-type: none"> <li>•Non-op, biceps tendon CSI</li> <li>•Surgery referral if fails</li> </ul>
<b>Labral Tear</b>	<b>Young, active patients</b> <b>clicking/catching</b>	+ O'Briens	<ul style="list-style-type: none"> <li>•Xray for trauma or r/o other causes</li> <li>•MRI vs MR arthrogram</li> </ul>	<ul style="list-style-type: none"> <li>•Non-op trial for most</li> <li>•&lt; 35, acute injury: surgery referral for SLAP repair</li> </ul>
<b>AC Joint OA/Sprain</b>	Hx shoulder injury; weight lifting (sprain). <b>Anterior shoulder pain</b>	TTP AC joint + Cross arm test	Xray shows AC OA or joint separation	<ul style="list-style-type: none"> <li>•Non-op</li> <li>•AC joint CSI</li> <li>•Surgery referral if fails</li> </ul>
<b>GH Instability</b>	<b>Young, active patients,</b> <b>dislocation, subluxation,</b> "dead/numb" feeling deltoid	+ Apprehension, relocation	Xray: Hill Sachs lesion	<ul style="list-style-type: none"> <li>•Non-op</li> <li>•Surgery referral if fails</li> </ul>

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