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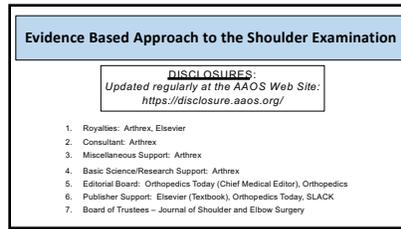
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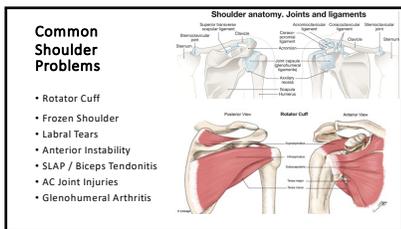
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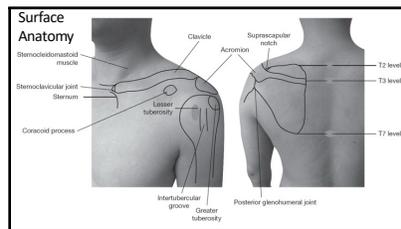
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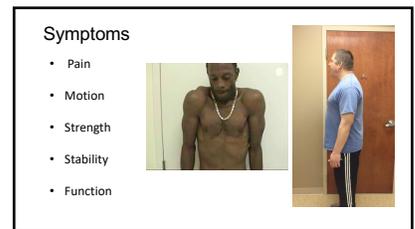
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### Physical Exam

- Observation & inspection
- Palpation
- Range of motion
- Strength testing
- Special tests

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### Observation

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### Observation

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### Scapular Winging/ Dyskinesia

- Serratus Anterior
- Long Thoracic Nerve Palsy

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### Serratus Anterior

Patrice Thiriet  
Jean-Michel Girard  
Anatomy 3D Université Lyon  
Realisation : Olivier Kastello  
patrice.thiriet@univ-lyon1.fr

Serratus anterior:  
flat muscle  
pressed against the posterior  
wall lateral chest wall  
consists of 5-6 fibrous

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### Brachial Plexus Anatomy

**Long Thoracic Nerve**

Begins at ROOT level before the Brachial Plexus begins

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### Scapular Exam

- Establish presence / absence of dyskinesia
- Effects of corrective maneuvers
- Assess causative factors

Clinical Observation:

Postion – medial border  
Motion – dyskinesia patterns:  
1 – Inferior medial  
2 – medial  
3 – Superior medial  
Test: 3-5 reps, flexion, 3.5 lb weight

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### Scapular Dyskinesia - 1

- Dyskinesia as an impairment of optimal scapular / arm function
- Potential to affect scapular roles in shoulder/arm function
- Static position, dynamic motion
- Muscle strength, joint mobility
- Dyskinetic shoulders – 43% increased risk of subsequent injury
- Hickey et al BISM 2017
- Dyskinetic shoulder fail earlier under the same exposure, load
- Evaluation in asymptomatic athletes

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**SICK Scapula**

Current Concepts

The Disabled Throwing Shoulder: Spectrum of Pathology  
Part III: The SICK Scapula, Scapular Dyskinesis, the Kinetic Chain, and Rehabilitation

Stephen S. Bankart, M.D., Craig D. Morgan, M.D., and W. Ben Kibler, M.D.

- Scapula Malposition
- Inferior Medial Border Prominence
- Coracoid Pain and Malposition
- dyskinesis of Scapular Movement



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**Dyskinesis / Labral Injury**

- Dyskinesis – 94% clinical labral injuries
- Risk factor in “cascade to injury”
- Protracted scapula
- Labral / rotator cuff compression
- Labral shear with arm rotation
- “Internal impingement”



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**Scapular Dyskinesis – 2 (Medial Border)**

- Associated with symptomatic shoulders
- Cause?, effect – part of altered anatomy, physiology, mechanics
- Evaluate, treat as indicated



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**Scapula Assistance Test**

Corrective Maneuvers:

Scapular Assistance Test (SAT)  
Assist scapula upward rotation/posterior tilt  
(+) – relief of external impingement  
OK  
Kibler et al AJSM 1998  
Rabin et al, JOSPT, 2006



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**Scapular Winging**



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**Scapula Winging**



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**AC Joint Injuries**

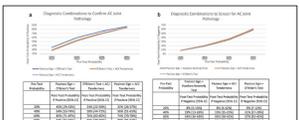


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**A concise evidence-based physical examination for diagnosis of acromioclavicular joint pathology: a systematic review**

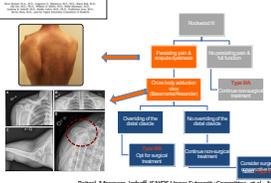
Richard A. Kemp, T. S. Sanger, Robert F. Fitzpatrick, M. Andrew Collins, T. Benjamin Robinson, J. Peter Robinson, T. J. Robinson, A. Collins

PMID: 28232228 | DOI: 10.1007/s00132-016-1430-0



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**Flowchart for Scapular Dyskinesis**



Bellizzi, Mazzuca, Inghaff, SANCIS Upper Extremity Committee, et al., Arthroscopy 2014

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### Palpation

- AC tenderness
- Biceps groove tenderness
- Greater tuberosity tenderness
- Posterior GH tenderness (arthritis)
- "Fluid sign"



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### Range of Motion

**Four Motions:**

- FE scapular plane
- ER @ neutral
- ER @ 90 degrees ABD
- IR @ 90 degrees ABD (or behind the back)



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### Forward Elevation

- Supine position
- Stabilizes the scapula



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### External Rotation

- Adduction
- Abduction



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### Internal Rotation

- T1 - Superior angle
- T3 - Scapular spine
- T7 - Inferior angle



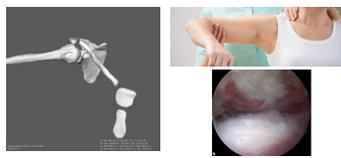
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### Internal Rotation - Abduction



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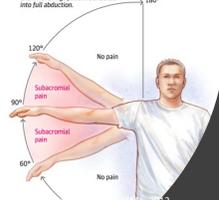
### Impingement



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### Painful Arc Test

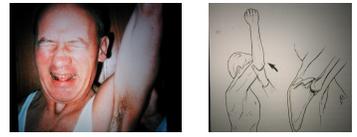
Examiner brings patient's shoulder into full abduction.



- Pain between 60-120 degrees of abduction

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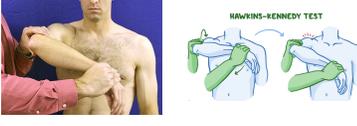
### Neer Impingement Sign



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### Hawkin's-Kennedy Test

Pain with flexion to 90 degrees and internal rotation



The diagram shows a person's arm flexed to 90 degrees and internally rotated. The text indicates that pain during this maneuver is a sign of internal impingement.

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### Impingement Injection Test

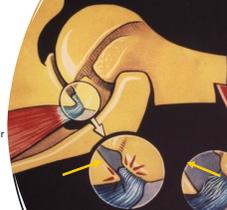


• Positive if impingement sign is negative after injection

The photos show a clinician performing an injection into the shoulder joint to test for impingement.

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### Internal Impingement



- Posterior Shoulder Pain
- Relieved By Relocation Maneuver

The diagram illustrates the anatomical structures involved in internal impingement, showing the relationship between the rotator cuff tendons and the glenoid labrum.

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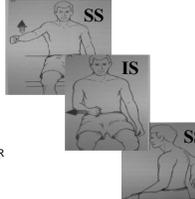
### Internal Impingement



An arthroscopic view of the shoulder joint showing internal impingement between the rotator cuff tendons and the glenoid labrum.

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### Cuff Exam Basics



- Supraspinatus (SS)
  - Initiates abduction & flexion
  - Need deltoid and sufficient depression for abduction
- Infraspinatus (IS) - Primary  $\downarrow$  ER
- Subscapularis (SSc) - Primary  $\downarrow$  IR
- Teres minor - Primary  $\downarrow$  ER

The diagrams illustrate the primary actions of the rotator cuff muscles: SS for abduction and flexion, IS for external rotation, SSc for internal rotation, and Teres minor for external rotation.

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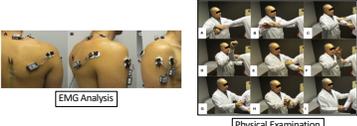
### Jobe (Empty Can) Test



The diagram shows the Jobe (Empty Can) Test, where the arm is abducted to 90 degrees and internally rotated, with the thumb pointing down. This position isolates the supraspinatus muscle.

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### EMG Analysis vs Physical Examination



Comparison of EMG analysis and physical examination for supraspinatus activity. The EMG analysis shows more consistent results across different positions.

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### EMG Analysis vs Physical Examination



Bar graphs comparing EMG analysis and physical examination for supraspinatus activity. The EMG analysis shows significantly higher and more consistent activity across various positions.

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### External Rotation



- Infraspinatus
- Posterior Deltoid
- Teres Minor

The photos show external rotation of the shoulder, highlighting the involvement of the infraspinatus, posterior deltoid, and teres minor muscles.

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**External Rotation Lag Sign**

- Confirm full-thickness rotator cuff tear
- 94% Specificity
- 7.2 Positive Likelihood Ratio

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**Infraspinatus**

- Infraspinatus represent 60% of the strength in ER in normal conditions (without hypertrophy of the TM)
- If infraspinatus is intact, useless to try to test the weak teres minor!
- Test your infraspinatus in ER at 20° of abd

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**External Rotation in Abduction Lag Sign "Hornblower"**

Teres Minor (+ Infraspinatus)

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**Internal Rotation**

- Subscapularis
- Pectoralis Major
- Latissimus Dorsi
- Teres Major

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**Subscapularis**

**Lift off Test**

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**Subscapularis**

**Belly Press Test (Gerber)**      **Bear Hug Test (Burkhart)**

*The bear-hug test: a novel sensitive test for diagnosing a subscapularis tear*  
Barth, J.C., Burkhart, S.S., De Beer, J.F., Arthroscopy 2006 Oct

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**Diagnostic value of four clinical tests for the evaluation of subscapularis integrity**

Jong PR Yoon, MD\*, Seok Won Chung, MD†, Seon Hoon Kim, MD, PhD†, Joo Han Oh, MD, PhD†\*\*

**Conclusion**  
A positive lift-off test was highly specific for the detection of a full-thickness subscapularis tear and to reflect severe fatty degeneration.  
The 4 clinical tests are useful for estimating subscapularis status and function in busy outpatient clinics.

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**Latissimus (Teres Major) Tear**

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**Pectoralis Major Tear**

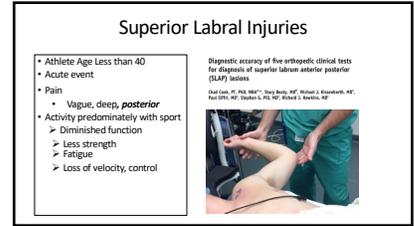
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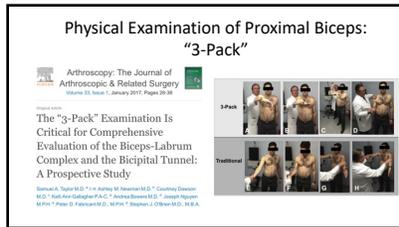
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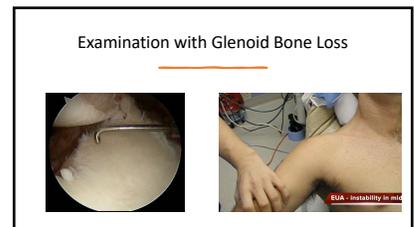
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**Jerk Test:  
Posterior Instability**

- Positive test: reproduces pain or discomfort
- Sitting position, axial directed force with arm flexed, adducted, IR. Bring arm into extension to reduce subluxed humeral head



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**Sulcus sign:  
Multidirectional  
(Inferior)  
Instability**




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**Differential Diagnosis**

1. Instability
2. AC arthritis or osteolysis
3. Calcific tendinitis
4. Adhesive capsulitis
5. Coracoid impingement
6. Cervical spine
7. Suprascapular nerve palsy
8. Parsonage-Turner syndrome
9. Rotator Cuff Tear
10. Arthritis



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**Physical Examination Overview**

- Observation
- Palpation
- Motion
- Painful Arc: Pain between 60° and 120°
- Neer/Hawkins Impingement
- Lag signs
- AC tenderness/Cross-Body Adduction
- Biceps tenderness, Speed/Vergason
- Instability Testing




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**Thank you!**



**Chicago**

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**Thank you!**

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