


## Shoulder Examination


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### Introduction



- Greater than 4 million people in the US seek medical care each year for shoulder problems
- Shoulder pain accounts for up to 5% physician visits/year
- Shoulder pain accounts for up to 13% of all disabling athletic injuries
- Most disorders result from overuse injuries to rotator cuff & soft tissues

Epidemiologic perspective on shoulder injuries. Clinics in Sports Medicine, 2(2):241-6, 1983 Jul.




### Background

- Traditionally diagnostics & therapeutics focused on rotator cuff dysfunction
  - Neer CS. Anterior acromioplasty for the chronic impingement syndrome: A preliminary report. Journal Bone & Joint Surgery 1972
  - Neer CS. Impingement lesions. Clinical Orthopedics 1983



### Role of the Scapula ?

- Potential role in pathogenesis of shoulder pain
- Role in rotator cuff dysfunction
- Both glenohumeral joint (GHJ) & scapulothoracic joint (STJ) motion contribute to shoulder elevation
- Ratio approximately 2:1 (GHJ:STJ) over entire arc of elevation
- Hypothesized that scapulothoracic dysfunction = adverse effects on shoulder muscle girdle function = predisposition to overuse injury
- Kinetic chain theory/role in musculoskeletal function & injury





### Scapular Protraction

- Forward rounding of the shoulders
- Shortening of pectoralis muscles

### Why does posture really matter ?

### The Influence of Scapular Retraction & Protraction on the Width of the Subacromial Space

- Measured width & configuration of subacromial space
- Examined shoulder in two positions
  - Protraction
  - Retraction
- Reductions of acromial angle & subacromial space opening width

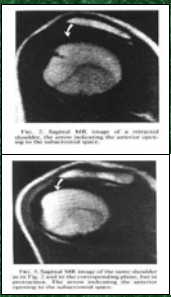



FIG. 1. Sagittal MRI image of a retracted shoulder. The space between the acromion and the head of the humerus is wide.



FIG. 2. Sagittal MRI image of the same shoulder as in Fig. 1, but in the protracted position. The space between the acromion and the head of the humerus is narrow.

Solem-Bertoff, et. al. Clinical Orthopedics and Related Research 1993



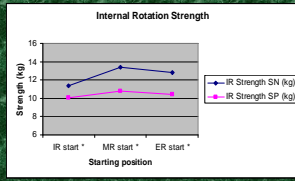

### Effect of Scapular Protraction on Isometric Shoulder Rotation Strength in Normal Subjects

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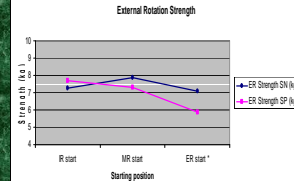

### Results

- Scapular protraction significantly reduced isometric internal rotation strength regardless of arm test position (IR, MR, ER).

### Results

- External rotation strength was position dependent.
  - ER strength was significantly reduced in the ER position
  - Non-significantly reduced in the MR or IR positions

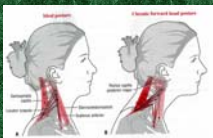





### Examination Overview

- Inspection
- Palpation
- Range of Motion
  - Arm
  - Scapula
- Strength
- Neurologic Testing
- Specific Tests

### Inspection

- Inspect from multiple angles
- Compare to opposite side
- Muscle Bulk/Mass
- Scapular Position
- Appearance of AC Joint

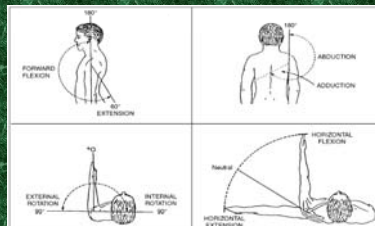




### Palpation

- Clavicle
- AC joint
- Bicipital Groove
- Subacromial space
- Scapula
  - Spine of scapula
  - Medial/Inferior border

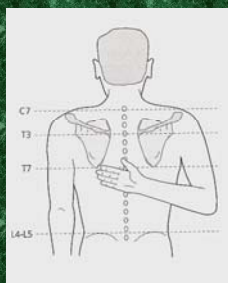
### Range of Motion

- Flexion (0-180)/Extension (0-60)
- Abduction (0-180)/Adduction (0-30)
- Internal (0-70)/External rotation (0-90)



### “Apley Scratch Test”

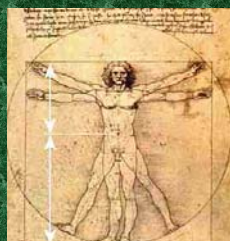
- Reach behind back in internal rotation
- Document level of spinous process reached



### Neuromuscular Examination

- Muscles
  - Deltoid – Axillary nerve C5
  - Biceps – Musculocutaneous nerve C5/C6
  - Triceps – Radial nerve C7 (C6)
  - Supraspinatus – suprascapular nerve C4,C5,C6
- Reflexes
  - Biceps – C5
  - Triceps – C7

### SPECIAL TESTS/PROVOCATIVE MANEUVERS



### Scarf Test

- AC Joint Test
- Passively adducting the arm across the body
- Approximate the elbow horizontally to the contralateral shoulder
- Positive Test = pain at AC joint



### Empty Can Test

- Eval the strength of the supraspinatus
- Arm at 90 degrees of abduction, internally rotated, and angled forward 30 degrees with thumb pointing to floor
- Test against resistance
- Sensitivity 79.3%, specificity 50% - Naredo et al



### Drop Arm Test

- To eval for a rotator cuff tear (supraspinatus)
- Passively abduct arm to 90 degrees
- Then ask pt to slowly lower arm to side
- Positive test = arm drops suddenly, or severe pain



### Speeds Test

- Flex shoulder, lift anteriorly
- Lift against resistance with elbow extended
- Positive test = pain in bicipital groove
- Sensitivity 90%, specificity 13.8% Bennett et al.



### Neer's Test

- Elevation of arm, next to or "Near" to the ear
- Brings humerus and supraspinatus under acromion causing impingement
- Positive = pain/impingement
- Sensitivity 88.7%, specificity 30% Calis et al.



### Hawkins Test

- Forward flexing the humerus to 90 degrees
- Forcibly internally rotate the shoulder
- Moves greater tuberosity under acromion causing impingement
- Positive = pain
- Sensitivity 92%, specificity 44%, MacDonald et al



### Shoulder Stability

- Static stability
  - Glenoid
  - Humeral head
  - Labrum
  - Capsule
  - Glenohumeral ligament
  - Coracoacromial ligament
- Dynamic stability
  - Rotator cuff muscles
  - Long head of biceps
  - Scapular stabilizers

### Apprehension Test

- Position patient supine
- Passively move shoulder into abduction and maximum external rotation
- Positive test = patient becomes apprehensive (fears shoulder dislocation anteriorly) and pain in shoulder



### Relocation Test

- First perform/repeat the apprehension test
- When patient feels apprehension/pain – apply posteriorly directed force to the humeral head

