Clinical Examination of the Shoulder Joint Complex

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I. Introduction

A. Clinical Examination

   1. Vital to successful treatment of shoulder patients
   2. Must be thorough and systematic

      a. Rule out & rule in

   3. Main purpose is to establish underlying cause of symptoms
   4. Also determines where to start with patient

      a. Tolerance level ↔ aggressiveness of program

B. Components of clinical exam

   1. Subjective history
   2. Inspection / observation
   3. Clearing the cervical spine
   4. Active range of motion
   5. Passive range of motion
   6. Manual muscle testing
   7. Accessory motion assessment
   8. Laxity testing
   9. Special tests
   10. Palpation
   11. Neurovascular assessment
   12. Functional assessments
   13. Imaging studies / radiographs
II. Subjective Examination

A. Most important part of the clinical exam
B. Will direct the approach to the objective examination
C. History of symptoms

1. What brings you here today?
   a. Pain, weakness, instability, sensations, etc.

2. When did the symptoms begin?
   a. Acute traumatic incident
   b. Insidious onset

3. Where, when, & how?

4. What alleviates symptoms?

5. What reproduces symptoms?

6. Chief complaint
   a. Limitations in functional activities
   b. Limitations in work activities
   c. Limitations in recreational/athletic activities

   Looking for “pattern recognition” of symptoms

III. Observation

A. Symmetry
B. Posture

1. Head position
2. Shoulder position
3. Pectoralis position
4. Scapular position
5. Spine position

C. Atrophy of muscle tissue
D. Visible defects

1. Ecchymosis, edema, inflammation, deformities
IV. Clearing the cervical spine

A. Dermatomes, myotomes, reflexes

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>MOTOR</th>
<th>SENSORY</th>
<th>REFLEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>C5</td>
<td>Deltoid</td>
<td>Lateral deltoid</td>
<td>Biceps</td>
</tr>
<tr>
<td></td>
<td>Biceps (partial)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>Biceps</td>
<td>Thumb</td>
<td>Brachioradialis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biceps</td>
</tr>
<tr>
<td>C7</td>
<td>Triceps</td>
<td>Middle finger</td>
<td>Triceps</td>
</tr>
<tr>
<td></td>
<td>Wrist flexors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finger extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1 Intrinsic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ulnar border</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little finger</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medial side</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proximal arm</td>
<td>—</td>
</tr>
</tbody>
</table>

ECRL, extensor carpi radialis longus; ECRB, extensor carpi radialis brevis.

B. Active ROM (w/ overpressure), quadrant test, compression/distraction
A. Active range of motion

1. Ability to raise arm
2. Functional ER/IR
3. Assess several factors
   a. Painful arc
   b. Quality of motion
   c. Quantity of motion

4. Scapulohumeral rhythm
   a. 0-30° = setting phase; mostly GH movement
   b. 30-90° = 2.0-2.75:1 ratio of GH:ST movement
   c. 90-160° = 1:1 ratio of scapulohumeral movement

5. Scapula movement & winging

B. Passive range of motion

<table>
<thead>
<tr>
<th>Motion</th>
<th>AAOS</th>
<th>AMA</th>
<th>Boone JBJS 79</th>
<th>End Feel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>180</td>
<td>150</td>
<td>166.7</td>
<td>Firm</td>
</tr>
<tr>
<td>Extension</td>
<td>60</td>
<td>50</td>
<td>62.3</td>
<td></td>
</tr>
<tr>
<td>IR</td>
<td>70</td>
<td>90</td>
<td>68.8</td>
<td>Firm-hard</td>
</tr>
<tr>
<td>ER</td>
<td>90</td>
<td>90</td>
<td>103.7</td>
<td>Capsular</td>
</tr>
<tr>
<td>Abduction</td>
<td>180</td>
<td>180</td>
<td>184.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motion</th>
<th>10-20 years</th>
<th>20-40 years</th>
<th>40-54 years</th>
<th>60-85 years</th>
<th>61-93 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLX</td>
<td>167.4</td>
<td>165</td>
<td>165.1</td>
<td>160</td>
<td>165</td>
</tr>
<tr>
<td>EXT</td>
<td>64</td>
<td>58</td>
<td>56.1</td>
<td>38</td>
<td>-</td>
</tr>
<tr>
<td>IR</td>
<td>70.3</td>
<td>66.5</td>
<td>68.3</td>
<td>59</td>
<td>65</td>
</tr>
<tr>
<td>ER</td>
<td>106.3</td>
<td>101</td>
<td>97.5</td>
<td>76</td>
<td>80.6</td>
</tr>
<tr>
<td>ABD</td>
<td>185.1</td>
<td>182.7</td>
<td>182.6</td>
<td>155</td>
<td>157.9</td>
</tr>
</tbody>
</table>
C. PROM in the athletic population

<table>
<thead>
<tr>
<th>Motion</th>
<th>Baseball Players PROM (Wilk AJSM 02)</th>
<th>Baseball Players AROM (Ellenbecker MSSE 02)</th>
<th>Tennis Players AROM (Ellenbecker MSSE 02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>129.9</td>
<td>103.2</td>
<td>103.7</td>
</tr>
<tr>
<td>IR</td>
<td>62.6</td>
<td>42.4</td>
<td>45.4</td>
</tr>
</tbody>
</table>

D. Assess several factors during PROM

1. Quality & quantity of motion
2. Crepitus
3. End feel (overpressure)

VI. Neuromuscular system

A. Resisted manual muscle testing

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*Numbers in parentheses indicate a variable but not rare contribution.*
B. Rotator cuff integrity

1. Empty can test  
   *Jobe: AJSM ‘82*

2. Drop arm test

3. Lag Signs  
   *Hertel: JSES ‘96*  
   - *Supraspinatus*  
   - *Infraspintus/Supraspinatus*

4. Lift-off Sign & Belly Press
5. Internal impingement sign – *Meister: AJSM ’00*

C. Impingement

1. Impingement sign
   *Neer: Orthop Clin NA ’77*

2. Hawkins test
   *Hawkins: AJSM ’80*
D. Biceps provocation

1. Static Speed’s test

2. Dynamic Speed’s test

3. Yergason’s test

Yergason: JBJS ‘31

VII. Accessory Motion Assessment

A. Assess glenohumeral joint play

1. Inferior glide
2. Posterior glide
3. Anterior glide
4. Lateral glide
VIII. Laxity assessment

A. Grading of humeral head translation – What is normal?

<table>
<thead>
<tr>
<th>Grade</th>
<th>Diagrammatic</th>
<th>Clinical Feel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
<td>No translation</td>
</tr>
<tr>
<td>1</td>
<td>Mild</td>
<td>Humeral head moves slightly up face of glenoid (0-1 cm translation)</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Humeral head rides up glenoid to but not over the rim (1-2 cm translation)</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>Humeral head rides up and over the glenoid rim • Usually reduces when stress removed • May remain dislocated when stress removed (rare) (&gt;2 cm translation)</td>
</tr>
</tbody>
</table>

B. Seated position

1. Sulcus sign – inferior laxity - *Neer & Foster JBJS ‘80*

2. Load & shift – gross instability *Sillman & Hawkins CORR ‘93*

C. Supine Position - Anterior instability
1. Anterior drawer @ 45° - Wilk: JOSPT '97

2. Anterior drawer @ 90° - Wilk: JOSPT '97

3. Anterior fulcrum – Andrews ‘95

4. Andrew’s Lachman of the shoulder
Andrews ‘95
5. Relocation test

*Jobe Orthop Rev '89*

6. Apprehension test

D. Supine Position - Posterior instability

1. Posterior drawer @ 45° - *Wilk: JOSPT '97*

2. Posterior drawer @ 90° - *Wilk: JOSPT '97*

3. Posterior fulcrum

*Norwood: AJSM '84*
4. Push-pull test  
   *Matsen: ‘90*

VIII. SLAP tests

A. Speed’s tests

B. Grind test
   “Compression-Rotation”  
   *Snyder: Arthroscopy ‘90*

C. Clunk test / Crank Test  
   *Andrews: Inj. Baseball ‘85  
   Liu: AJSM ‘96*
E. Anterior slide
*Kibler: Arthroscopy ’95*

F. Active compression test – *O’Brien: AJSM ’98*

G. Biceps Load I & II – *Kim: AJSM ’99 & Arthroscopy ’01*

IX. Acromioclavicular joint

A. Spring sign

B. Shear test
*Davies: Phys Sports Med ‘81*

C. Horizontal adduction

D. O’Brien’s test
*O’Brien: AJSM ‘98*
X. Neurovascular

A. Neurological function

1. Upper limb tension test (ULTT) – Magee ’97

| Upper Limb Tension Tests Showing Order of Joint Positioning and Nerve Bias |
|---------------------------------------------------------------|-----------------|
| ULTT1                                            | ULTT2            | ULTT3              | ULTT4                     |
| Shoulder                                         | Depression and  | Depression and     | Depression and            |
|                                                  | abduction (110°) | abduction (10°)    | abduction (10°), hand to   |
| Elbow                                            | Extension       | Extension          | Flexion                   |
| Forearm                                          | Supination       | Supination         | Pronation                 |
| Wrist                                            | Extension       | Extension          | Supination                 |
| Fingers and thumb                                | Extension       | Extension          | Flexion and ulnar         |
| Shoulder                                         | —               | Lateral rotation   | deviation                 |
| Cervical spine                                   | Contralateral side flexion | Contralateral side flexion | Contralateral side flexion |
| Nerve bias                                       | Median nerve,   | Median nerve,      | Radial nerve              |
|                                                  | anterior         | musculocutaneous   | Ulnar nerve, C8 and T1    |
|                                                  | interosseous     | nerve, axillary    | nerve roots               |
|                                                  | nerve, C5, C6, C7|                   |                           |

2. Tinel's sign – Landi ’79

3. Dermatomes & Reflexes
C. Thoracic outlet

1. Roos (EAST) test – Generalized compression  
   *Roos: J Surg '76*

2. Adson maneuver – Compression between anterior & middle scalenes or between cervical rib and scalenes.  
   *Adson: Ann Surg '27*

3. Costoclavicular (Military) test – Compression between 1st rib & clavicle in costoclavicular space.  
   *Magee ‘97*

4. Allen test – Compression between pectoralis minor and ribs.  
   *Allen: AJ Med Sci '29*
XI. Palpation

A. Specific structures

1. Greater tuberosity – rotator cuff insertion
2. Biceps brachii (proximal)
3. Coracoid process
4. Subacromial bursa
5. Anterior deltoid
6. Infraspinatus – internal impingement location
7. Quadrilateral space
8. 1st rib
9. Acromioclavicular joint
10. Scapular mobility (crepitus, etc) during AROM

XII. Functional Assessment

A. Specific shoulder assessment forms

1. American Shoulder Elbow Surgeon Form
2. UCLA Shoulder Form
3. Jobe-Tobonie Athletic Shoulder Form
5. Mimori Scoring System

XIII. Summary

A. Key Points

1. Systemic approach to shoulder exam
2. Logical progression
3. Knowledge of anatomy & biomechanics
4. Establish chief complaints
5. Correlate clinical findings to history

Want to learn exactly how I evaluate and treat the shoulder?

My online program at ShoulderSeminar.com is a comprehensive program that will show you detailed videos of exact shoulder examination process. There are modules on shoulder exercises, dynamic stabilization drills, manual therapy, rotator cuff injuries, SLAP lesions, instability, and the stiff shoulder. This 8-week online program is approved for CEUs and will help you master the shoulder

[ShoulderSeminar.com](http://ShoulderSeminar.com)
References


