

SHOULDER SPRAIN/STRAIN

ICD-9

- 716.91 Arthropathy, unspecified, shoulder region
- 718.81 Other joint derangement, not elsewhere classified, shoulder region
- 719.41 Pain in joint, shoulder region
- 726.1 Rotator cuff syndrome of shoulder and allied disorders
- 726.2 Other affections of shoulder region, not elsewhere classified
- 840 Sprains and strains of shoulder and upper arm
- 959.2 Other and unspecified injury to shoulder and upper arm

APTA Preferred Practice Pattern: 4B, 4D, 4E, 4F, 4G, 4H, 4J, 7A

EXAMINATION

History and Systems Review

- History of current condition
 - Location, nature, and behavior of symptoms
 - Aggravating/relieving factors
- Past history of current condition
 - Cervical/thoracic spine or upper extremity injury
 - Surgery
 - Direct intervention
- Other tests and measures
- Functional status and activity level (current/prior)
- Patient's functional goals/outcomes

Tests and Measures

Systems review per APTA's Guide to Physical Therapy Practice

- Muscle performance
 - Antalgic movement pattern with dressing activities
 - Functional use of upper extremity during gait
 - Scapulohumeral rhythm
 - Arms at side
 - Hands on hips
 - Arms elevated 90° anteriorly
 - Resisted
 - Glenohumeral
 - Scapular
 - Supraspinatus isolation ("empty can" position)
 - a. Shoulder is internally rotated, thumb pointed to floor
 - b. Abduct the arm to 90°, maintaining a position 30° anterior to the mid-frontal plane
- Pain
 - Measured on visual analog scale

- Posture
 - Forward head
 - Rounded shoulders
 - Flattening of the thoracic spine
 - Shoulder girdle asymmetry
 - Winging of the scapula
 - Clavicular position
 - Humeral head position
 - Muscular development/atrophy
 - Ability to actively achieve a more balanced postural position
- ROM
 - AROM
 - Flexion/elevation: Observe for inability to maintain depressed humeral head
 - Abduction
 - Internal rotation
 - External rotation
 - Extension
 - Overpressure
 - PROM
 - Glenohumeral
 - a. Anterior capsule: Superior/inferior, anterior/posterior
 - b. Posterior capsule: Superior/inferior, anterior/posterior
 - c. Inferior capsule: Upward, downward rotation, lateral
 - Acromioclavicular
 - Sternoclavicular
 - Scapulothoracic

- Special tests
 - Apprehension test: Patient supine, involved arm in abduction and external rotation, push anteriorly on posterior aspect of humeral head
 - Patient with recurrent dislocation will experience apprehension
 - Patient with anterior instability (subluxation) will experience pain, but not apprehension
 - Patient with normal shoulder will be asymptomatic
 - Relocation test: Administer test with posteriorly directed force on humeral head from apprehension test position
 - Patient with primary impingement will generally have no change in their pain
 - Patient with instability (subluxation) and secondary impingement will have pain relief and will tolerate maximal external rotation with the humeral head maintained in a reduced position
 - Clunk test: Patient supine, move arm into full flexion and caudal glide, then perform circumduction motion. Positive if clunk, pain, or pseudolocking occurs. Implicates labral tear.
 - Neer's test: Patient seated or supine, place patient's arm in full flexion with no internal or external rotation, then apply flexion overpressure. Pain implicates supraspinatus and long head of biceps
 - Crossover test: Patient is seated or supine, move patient's arm into full horizontal adduction and apply overpressure. Implications:
 - Subscapularis, supraspinatus, and long head of biceps if pain is anterior
 - Acromioclavicular joint if pain is superior
 - Infraspinatus, teres minor, posterior capsule of pain is posterior
 - Drop test: Patient is seated, passively abduct patient's arm to 90°. Patient is asked to hold arm stationary while examiner administers pressure inferiorly on lateral arm. If arm drops, test implicates rotator cuff rupture.
 - Sulcus sign
 - Patient is seated, arm relaxed at side. Apply inferior distraction. Excessive translation of humeral head with sulcus inferior to acromion is positive test and implicates multidirectional instability.
 - Patient is seated, arm abducted to 90° and resting on examiner's shoulder. Apply caudally directed force. Excessive translation of humeral head with sulcus at acromion is positive test and implicates multidirectional instability
 - Labral Test
 - Compression Rotation Test: Patient supine, glenohumeral joint manually compressed through the long axis of the humerus while humerus is passively rotated through internal and external rotation in an attempt to trap the labrum
 - Pronated Load Test: Patient supine, the glenohumeral joint is abducted to 90° and externally rotated, forearm pronated. When maximum external rotation is achieved, the patient is instructed to perform isometric biceps contraction.
 - Upper limb tension tests (ULTTs)
 - ULTT 1 (median nerve dominant)
 - a. Patient supine, depress shoulder, abduct to approximately 110°, supinate forearm, extend elbow, wrist, and fingers
 - b. Side bend head/neck both toward and away
 - c. Assess normal vs. abnormal response (see Butler, 1991)
 - ULTT 2 (radial nerve dominant)
 - a. Patient supine, depress shoulder, shoulder abducted and internally rotated, pronate forearm, extend elbow, and flex the wrist
 - b. Side bend head/neck both toward and away
 - c. Assess normal vs. abnormal response (see Butler, 1991)
 - ULTT 3 (ulnar nerve dominant)
 - a. Patient supine, extend wrist, supinate forearm, fully flex elbow, depress and abduct shoulder
 - b. Side bend head/neck both toward and away
 - c. Assess normal vs. abnormal response (see Butler, 1991)

A positive response to any of the special tests may lead the clinician to the specific guideline for the implicated structure.

Establish Plan of Care

- Based on history, tests, and measures

GOALS/OUTCOMES

- ROM
 - Shoulder ROM: 90% of AMA guides or equal to the uninjured extremity

	<i>Normal</i>	<i>90%</i>
Flexion	180°	160°
Extension	50°	45°
Abduction	180°	160°
External rotation	90°	80°
Internal rotation	90°	80°
 - Functional cervical ROM or a minimum of 80% of AMA guides:

	<i>Normal</i>	<i>80%</i>
Flexion	60°	50°
Extension	75°	60°
Rotation	80°	65°
Side bend	45°	35°
- Pain: 2/10 following activity, 0/10 at rest
- Strength: Equal to uninjured side or 4/5 on manual muscle test for shoulder girdle musculature
- Functional activities
 - Able to reach into back pocket or fasten undergarments
 - Able to comb hair
 - Able to reach into cupboard or lift overhead
 - Perform work/ADL tasks (weight and repetition specific)
- Return to functional status and activity level (current/prior) for ADLs and vocational, recreational, and sports activities as identified by patient
- Independence in a progressive home exercise program emphasizing function

INTERVENTION

NUMBER OF VISITS: 6–16

Coordination, Communication, and Documentation

- Provision of services between admission and discharge that facilitate cost-effective and efficient integration or reintegration to home, community, or work
- Documentation of therapeutic intervention is required for each episode of care and serves as the basic foundation for communication
- Coordination and additional communication will depend on the patient's impairment and home/work/

community/leisure situation and requirements. Such services may include:

- Case management
- Coordination of care and collaboration with those integral to the patient's rehabilitation program
- Coordination and monitoring of the delivery of available resources
- Referrals to other health-care professionals
- Identification of resources, support groups, or advocacy services
- Provision of educational or training information
- Technical assistance

Patient Instruction

Basic Anatomy and Biomechanics

- Musculature, ligaments, and joint structure in relation to shoulder motion
- Mechanism of supraspinatus in relation to depression of humeral head to avoid impingement
- Pertinent Gray's Anatomy (Gray. 1995. 621–622, 627–632, 839–842)

Handouts

- Specific home program
- Proper body mechanics for lifting, carrying, pushing, and pulling
- Commercially available products, such as:
 - Krames Communications (100 Grundy Lane, San Bruno, CA 94066):
 - *Shoulder Owner's Manual*
 - *Rotator Cuff Injuries*

Functional Considerations

- Optimal positions of rest
- Body mechanics to avoid unnecessary stress on shoulder complex
- Avoidance of activities that cause exacerbation of symptoms

Direct Interventions

Acute Phase: 2–4 Visits

- Therapeutic exercise and home program
 - PROM
 - Codman's
 - Pulley
 - Wand

- Pain-free AROM
- High-repetition and low-resistance with purpose of promoting vascularization of healing tissues
 - Internal/external rotation
 - Supraspinatus isolation (“empty can” position)
 - a. Shoulder is internally rotated, thumb pointed to floor
 - b. Abduct the arm to 90°, maintaining a position 30° anterior to the mid-frontal plane
 - Scapular retraction/depression
 - Upper body ergometry
- Postural correction exercises
- Neuromuscular/balance/proprioceptive reeducation
 - Pain-free modified plantargrade position for elbow propping
 - Bodyblade®
- Cardiovascular conditioning
 - Walking program
 - Lower-extremity cycling
- Manual therapy techniques
 - Soft-tissue techniques
 - Soft-tissue mobilization
 - Myofascial release/stretching
 - Ischemic compression to trigger-points
 - Friction massage
 - Joint mobilization
 - Grades I–II to inhibit pain and guarding
 - Grades III–V to hypomobilities of the glenohumeral, sternoclavicular, acromioclavicular, or cervical/thoracic spine
 - ROM
 - Within pain-free range specific to rotator cuff musculature
 - Shoulder girdle
 - Pectorals
 - Cervical/thoracic musculature
- Physical agents and mechanical modalities
 - Cryotherapy/thermal modalities
 - Athermal, deep thermal modalities
- Goals/outcomes
 - Pain: 4/10 following activity, 2/10 or less at rest
 - Pain-free ROM: 50% of AMA guides
 - Flexion: 90°
 - Extension: 25°
 - Abduction: 90°
 - Internal rotation: 45°
 - External rotation: 45°
 - Increased duration of uninterrupted sleep (set specific goal based on number of interrupted hours of sleep at initial evaluation)

Subacute Phase: 4–12 Visits

- Therapeutic exercise and home program
 - Progressive strengthening (isometric, pulley, resistive bands, free-weight)
 - Exercises should not elicit painful response
 - Use resistive bands, surgical tubing for internal/external rotation, elbow flexed at 90°
 - Isometrics in planes not tolerating banded resistance
 - Internal rotation lying on involved side
 - External rotation lying on uninvolved side
 - Supraspinatus isolation (“empty can” position)
 - Shoulder extension
 - a. Prone with arm hanging off table or forward bent at waist in standing
 - b. Extend arm to side of trunk (0°)
 - Flexibility/posture correction
 - Neuromuscular/balance/proprioceptive reeducation
 - Quadruped multidirectional rocking
 - Three-point rocking
 - Push-ups
 - Push-ups off therapeutic ball
 - Bodyblade®
 - Progression into vocational/sport-specific activity
- Manual therapy techniques
 - Joint mobilization
 - Grades III–IV to persistent hypomobilities of the glenohumeral, sternoclavicular, acromioclavicular, and scapulothoracic regions
 - Grades III–V to cervical/thoracic spine
 - Continue effective soft-tissue techniques
- Physical agents and mechanical modalities
 - Continue effective modalities as in acute phase with increased emphasis on use as needed at home

- Goals/outcomes
 - Shoulder ROM: 90% of AMA guides or equal to the uninvolved extremity
 - Flexion: 160°
 - Extension: 45°
 - External rotation: 80°
 - Internal rotation: 80°
 - Abduction: 160°
 - Pain: 2/10 following activity, 0/10 at rest
 - Strength: Equal to uninvolved side or 4/5 on manual muscle test
 - Functional activities
 - Able to reach into back pocket or fasten undergarments
 - Able to comb hair
 - Able to reach into cupboard or lift overhead
 - Perform work/ADL tasks (weight and repetition specific)

Functional Carryover

- Importance of maintaining proper posture of the cervical/thoracic spine to optimize glenohumeral positioning
- Ergonomic modification to work and home environments
- Avoidance of activities that increase pain
- Pain-free sleeping positions
- Proper lifting/throwing mechanics emphasizing the use of lower extremities and trunk to generate and attenuate force at the shoulder

DISCHARGE PLANNING AND PATIENT RESPONSIBILITY

Criteria for Discharge

- All rehabilitation goals/outcomes achieved with possible exception of return to pain-free function for vocational or sports activities
- The therapist determines that further progression and attainment of all rehabilitation goals/outcomes will be achieved with patient's continued efforts/compliance with home program outside the clinical environment
- If continuing pain and instability prevents patient progression, consider orthopedic consultation

Circumstances Requiring Additional Visits

- Cervical pathology or radiating signs/symptoms
- Inability to progress because current vocational demands are exacerbating symptoms
- Special occupational needs that require extensive strengthening
- Multiple injury sites
- Presence of ligamentous laxity

Home Program

- Motor performance
- Flexibility
- Advanced functional diagonals with stretch/shortening, strengthening, or speed training exercise program related to functional needs
- Cardiovascular conditioning

Monitoring

- Follow-up contact by patient to report progress or exacerbation of symptoms

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