Shoulder Sprain/Strain

Summary Overview

International Statistical Classification of Diseases and Related Health Problems

ICD-10	ICD-10 Description
M12.9	Arthropathy, unspecified
M24.819	Other specific joint derangements of unspecified shoulder, not elsewhere classified
M25.519	Pain in unspecified shoulder
M75.10	Rotator cuff syndrome, unspecified shoulder
M75.30	Calcific tendinitis of unspecified shoulder
M75.40	Impingement syndrome of unspecified shoulder
M75.50	Bursitis of unspecified shoulder
M75.80	Other shoulder lesions, unspecified shoulder
S43.50	Sprain of unspecified acromioclavicular joint
S49.80	Sprain of other specified parts of unspecified shoulder girdle
S49.90	Sprain of unspecified parts of unspecified shoulder girdle

SAMPLE

International Classification of Functioning, Disability, and Health
Primary ICF Codes

Body Functions

b28016	Pain in joints
b7100	Mobility of a single joint

Body Structure

s7201	Joints of shoulder region
s7202	Muscles of shoulder
s7208	Structure of shoulder region, specified as tendon

Activities & Participation

d4452	Reaching
d5400	Putting on clothes

APTA Preferred Practice Pattern

4B, 4D, 4E, 4F, 4G, 4H, 4J, 7A

EXAMINATION

- History and Systems Review
- Tests and Measures
  Systems review per APTA's *Guide to Physical Therapist Practice*
  - Muscle performance
  - Pain
  - Posture
  - ROM
  - Special tests
  - Neurologic Screening
- Establish Plan of Care

GOALS/OUTCOMES

- ROM
- Pain: 2/10 following activity, 0/10 at rest
- Strength: Equal to uninvolved side or 4+/5 on manual muscle test for shoulder girdle musculature
- Functional activities
- 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

SAMPLE

INTERVENTION

Number of Visits: 6–12

- Patient Instruction
  - Basic Anatomy and Biomechanics
  - Handouts
  - Functional Considerations
- Direct Interventions
  - Acute Phase: 3-6 Visits
  - Subacute Phase: 3-6 Visits
- Functional Carryover

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 stretching/shortening, strengthening, or speed training exercise program related to functional needs
  - Cardiovascular conditioning
- Monitoring

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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
- Red Flag questions (i.e. pain at night, fever, chest/arm pain with exertion)
- Imaging studies

Procedure Codes (CPT): 95831, 95851, 97001, 97002, 97003, 97004, 97750

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Tests and Measures

Systems review per APTA's *Guide to Physical Therapist Practice*

- Muscle performance
  - Antalgic movement pattern with dressing activities
  - Functional use of upper extremity during gait
  - Scapulohumeral rhythm
    - Quality/quantity of upward rotation and posterior tipping
    - Smooth eccentric control upon return to start
  - 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
    - Supraspinatus Isolation (alternative)
      a. Elbow bent to 90°, arm abducted 90°, slight horizontal adduction, and slight external rotation; downward pressure by examiner
- Pain
  - Measured on visual analog scale
- Posture
  - Forward head
  - Rounded shoulders
  - Flattening of the thoracic spine
  - Shoulder girdle asymmetry
    - 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 and External rotation at 90° with comparison ratio to determine lack of posterior capsule extensibility (GIRD)
        - Extension
    - Overpressure
    - PROM
    - Muscle Length
        - Pectoralis major and minor
        - Short head of biceps/coracobracialis
        - Latissimus dorsi
    - Passive accessory mobility, linear mobility, and stress testing
        - 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
    - Rotator cuff tear/impingement
        - Rent Sign
        - Supine impingement test
        - Lift-off test
        - Internal rotation lag sign
        - External rotation lag sign
        - Drop test
        - Empty can/supraspinatus test
        - Crossover test
    - Impingement
        - Neer's test
        - Hawkins-Kennedy test
        - Painful arc test
    - Labral tear and instability
        - Biceps load test II
        - Crank test
        - Clunk test
        - Jerk test
        - Speed's test
        - Apprehension test

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    - Relocation test
    - Anterior release/Surprise test
    - Active compression test/O'Brien's test
    - Anterior slide test
    - Relocation test
    - Neer's test
    - Sulcus sign
    - Load and Shift
  - Labral test
    - Compression Rotation Test
    - Pronated Load Test
- Neurologic Screening
  - Monosynaptic Reflex
  - Dermatomes
  - Myotomes
  - C-Spine Compression/Distraction
  - Upper limb tension tests (ULTTs)
    - ULTT 1 (median nerve dominant)
      a. Patient supine, depress shoulder, abduct to approximately 110°, supinate forearm, and 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)

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Establish Plan of Care

- Based on history, tests, and measures

GOALS/OUTCOMES

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

	Normal	*90%*
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:

	Normal	*90%*
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 uninvolved 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

SAMPLE

INTERVENTION

Number of Visits: 6–12

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 healthcare 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 rotator cuff in relation to depression of humeral head to avoid impingement
- Review effects of proper posture and humeral head seating in glenoid fossa
- 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*

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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: 3–6 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 with elbow at side and arm in 30° abduction with isometric adduction force to increase subacromial space
    - Scapular retraction/depression
      a. Sidelying manually resisted scapular motions/PNF patterns
    - Upper-body ergometry
  - Postural correction exercises
  - Neuromuscular/balance/proprioceptive reeducation
    - Humeral head seating
    - 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 scapulothoracic, glenohumeral, sternoclavicular, acromioclavicular, or cervical/thoracic spine
    - ROM
        - Within pain-free range specific to rotator cuff musculature
        - Shoulder girdle including posterior capsule stretching
        - 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)

SAMPLE

Procedure Codes (CPT): 97010, 97014, 97016, 97026, 97032, 97033, 97035, 97110, 97112, 97113, 97124, 97140, 97150, 97530, 97535, 97537, 97760, 97799, A6250, A9273, A9300, E0190, G0283, MISCUNLISTED

Subacute Phase: 3–6 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° and arm in 30° abduction with isometric adduction force to increase subacromial space
        - Isometrics in planes not tolerating banded resistance
        - Internal rotation lying on involved side
        - External rotation lying on uninvolved side
        - Rotator cuff 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
        - Pectoralis minor/Latissimus dorsi stretching
        - Posterior capsule/"Sleeper stretch"
    - Neuromuscular/balance/proprioceptive reeducation
        - Quadruped multidirectional rocking
        - Three-point rocking
        - Push-up Plus
        - Push-up Plus off therapeutic ball
        - Bodyblade®
        - Rhythmic stabilization with arm at 90° and 120° in supine and sitting and 90° in scaption with open palm on ball at wall
    - Plyometric activities including: medicine ball toss at hip level with internal/external motion, kneeling 90° abduction and external rotation, and prone 90° abduction/90° elbow flexion
    - 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
    - Muscle energy techniques to glenohumeral joint horizontal abductors to improve posterior capsule extensibility
- 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 of scapular musculature and rotator cuff
    - 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)

SAMPLE

Procedure Codes (CPT): 97032, 97110, 97112, 97113, 97140, 97150, 97530, 97535, 97537, 97760, 97799, A6250, A9273, A9300, E0190, MISCUNLISTED

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

SAMPLE

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 stretching/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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