**Elbow Mobility Deficits**

*ICD-9-CM code:* 812.40 Ulnohumeral Capsulitis

*ICF codes:* Activities and Participation codes: **d4300** Lifting, **d4452** Reaching
Body Structure code: **s73001** Elbow joint
Body Functions code: **b7101** Mobility of a several joints

*Common Historical Findings:*
  - Trauma (e.g., fracture)
  - Stiffness following immobilization and healing
  - Pain at end ranges of flexion and/or extension

*Common Impairment Findings* - Related to the Reported Activity Limitation or Participation Restriction:
  - Limited elbow flexion and/or extension ROM (usually more limited in flexion)
  - Pain at end ranges
  - Limited ulnohumeral accessory motions

*Physical Examination Procedures:*

Elbow Accessory Movement Test  
Ulnar Distraction

Elbow Accessory Movement Test  
Ulnar Distraction

*Performance Cues:*
  - Stabilize humerus at humeral shaft; or at lateral epicondyle
  - Distract ulna from humerus using finger pads; or use hypothenar and thenar eminence  
    with a flexed wrist
Elbow Mobility Deficits: Description, Etiology, Stages, and Intervention Strategies
The below description is consistent with descriptions of clinical patterns associated with the vernacular term “Ulnohumeral Capsulitis”

Description: Pain and stiffness in the elbow. The pain is most noticeable at the end ranges of flexion or extension movements, such as carrying a heavy object with the arm hanging or while attempting to dress, groom, or eat.

Etiology: Inflammation of the ulnohumeral capsule leads to increased fibrinogenesis of the collagen tissue that forms the capsule – eventually leading to capsular adhesions if the capsule is immobilized, such as following a trauma (e.g., fracture) and subsequent casting and/or splinting.

Acute Stage / Severe Condition: Physical Examination Findings (Key Impairments)
ICF Body Functions code: b7101.3 SEVERE impairment of mobility of several joints

- Limited elbow flexion and extension ROM – usually flexion limitation of motion is greater than the extension motion limitation
- Pain at end ranges of active and passive movements
- Limited ulnohumeral accessory motions
- Restricted myofascia – especially the one-joint elbow flexors and extensors (brachialis and short head of the triceps)
- Pain with palpation of the ulnohumeral joint

Sub Acute Stage / Moderate Condition: Physical Examinations Findings (Key Impairments)
ICF Body Functions code: b7101.2 MODERATE impairment of mobility of several joints

As above, except:

- Resisted tests reveal strength deficits – especially if the elbow has been immobilized for an extended period of time

Settled Stage / Mild Condition Physical Examinations Findings (Key Impairments)
ICF Body Functions code: b7101.1 MILD impairment of mobility of several joints

As above, except:

- Mild pain at end ranges of flexion and/or extension
Intervention Approaches / Strategies

Acute Stage / Severe Condition

Goals: Reduce pain with elbow flexion and extension
       Increase elbow range of motion
       Increase elbow function

   • Physical Agents
     Ice packs
     Ultrasound

   • Therapeutic Exercises
     Gentle passive range of motion stretching

   • Re-injury Prevention Instruction
     Rest/relaxation to reduce pain

Sub Acute Stage / Moderate Condition

Goals: Improve flexibility of the involved extremity
       Improve strength of the involved extremity

   • Approaches / Strategies listed above

   • Manual Therapy
     Soft tissue mobilization to the restricted myofascia – (e.g., the brachialis myofascia)
     Joint mobilization to the restricted ulnohumeral accessory movements – including mobilization with movement

   • Therapeutic Exercises
     Gentle, prolonged PROM and AROM stretching
     Initiate strengthening program to the tolerance of the patient

   • External Devices (Taping/Splinting/Orthotics)
     Apply preventive brace in elbow if reinjury a potential fear.

Settled Stage / Mild Condition

Goals: Restore normal flexibility of the involved extremity
       Restore normal strength of the involved extremity
       Improve tolerance with participating in function activities of involved extremity
Intervention for High Performance / High Demand Functioning in Workers or Athletes

Goal: As above
Return to optimum level of patient function

Selected References


Nielsen KK, Olsen BS, No stabilizing effect of the elbow joint capsule; *Acta Orthop Scand* 1999; 70 (1):6-8

Impairment: Limited and Painful Elbow Flexion

Elbow Flexion MWM

Cues: Position patient sitting on the edge of a raised treatment table
Stabilize the lateral side of the distal humerus with one hand
Laterally glide the ulna (and radius) using the thenar eminence or 2nd metacarpal head of the other hand
Use a pad to limit ulnar nerve discomfort
Sustain the lateral glide as the patient actively flexes his/her elbow
Alter the amplitude and direction of the lateral glide to achieve painfree active flexion
If indicated, the patient can use his/her uninvolved hand to apply passive overpressure at the end range of available active flexion

The following reference provides additional information regarding this procedure:
Impairment: Limited Elbow Extension or Flexion
Limited Ulnar Distraction (at the humeroulnar joint)

Cues: Stabilize the humerus via thenar eminence pressure on the lateral epicondyle – use distal thigh to help stabilize the forearm
Contact the ulna with the volar surface of a flexed wrist and provide the ulnar distraction
Counter the distraction with equal and opposite pressure on the lateral epicondyle
To improve extension - apply the distraction near the end of available extension ROM
To improve flexion - apply the distraction near the end of available flexion ROM
Generate the stabilizing and mobilizing forces using trunk rotation
Impairment: Limited and Painful Elbow Extension

Cues: Position patient lying supine
Stabilize the humerus
Laterally glide the ulna using a belt
Sustain the lateral glide while the patient actively extends his/her elbow
Make sure that the belt is long enough to allow for the therapist’s forearms to provide a stabilization/lateral glide force at nearly perpendicular to the humerus and ulna
Due to the elbow’s “carrying angle”, the direction of lateral glide will likely need to be altered as the elbow extends
Provide passive overpressure, if indicated, at the end of available active extension

The following reference provides additional information regarding this procedure:
ICD-9-CM code: 813.00  Proximal Radioulnar Capsulitis

ICF codes: Activities and Participation codes: d4453 Turning or twisting the hands or arms
Body Structure code: s73001 Elbow joint
Body Functions code: b7101 Mobility of a several joints

Common Historical Findings:
- Trauma (e.g., contusion, dislocation)
- Stiffness following immobilization, and healing
- Pain at end range of supination and/or pronation

Common Impairment Findings - Related to the Reported Activity Limitation or Participation Restrictions:
- Limited forearm supination and/or pronation
- Pain at end range(s) of limited motion(s)
- Limited radioulnar accessory movements

Physical Examination Procedures:

![Radioulnar Accessory Movement Test](image1)
Radioulnar Accessory Movement Test
Radial Posterior Glide

![Radial Anterior Glide](image2)
Radial Anterior Glide

Performance Cues:
- Stabilize ulna, mobilize radius
- Modify the procedures to adapt to the patient who has co-occurring elbow extension ROM deficits
- Determine amount of accessory motion and symptom response - compare with uninvolved side

![Radioulnar Accessory Movement Test](image3)
Radioulnar Accessory Movement Test
Radial Distraction

Performance Cues:
- Stabilize humerus - which stabilizes ulna via the olecranon fossa - pull radius, in line with the shaft of the radius - away from the humerus
Use a “golfers” grip on the radius
This procedure also assesses accessory movement at the radiohumeral joint
Determine availability of motion and symptom response - compare with uninvolved side
Elbow Mobility Deficits: Description, Etiology, Stages, and Intervention Strategies
The below description is consistent with descriptions of clinical patterns associated with the vernacular term “Radiohumeral Capsulitis”

Description: Pain at end range of forearm supination and/or pronation that limits function.

Etiology: Trauma (e.g., contusion, dislocation ) and the resultant inflammation, immobilization, and tissue healing commonly lead to elbow and forearm stiffness

Acute Stage / Severe Condition: Physical Examinations Findings (Key Impairments)

ICF Body Functions code: b7101.3 SEVERE impairment of mobility of several joints

- Swelling around the proximal radioulnar joint may be present
- Limited forearm supination and/or pronation active and passive mobility
- Pain at end range of limited motion
- Limited radioulnar accessory movements
- Tenderness to palpation of the proximal radioulnar joint

Sub Acute Stage / Moderate Condition: Physical Examinations Findings (Key Impairments)

ICF Body Functions code: b7101.2 MODERATE impairment of mobility of several joints

As above, except:

- Resisted testing reveals weakness of the forearm supinators and pronators

Settled Stage / Mild Condition Physical Examinations Findings (Key Impairments)

ICF Body Functions code: b7101.1 MILD impairment of mobility of several joints

As above, except:

- Mild pain at end range of with overpressure of supination and/or pronation motions
Intervention Approaches / Strategies

**Acute Stage / Severe Condition**

Goals: Alleviate pain in forearm supination and pronation  
Decreased swelling  
Increased range of motion and functional ability

- Physical Agents  
  Cool packs  
  Iontophoresis  
  Ultrasound

- Manual Therapy  
  Joint mobilization of the proximal radioulnar joint (radial posterior and anterior glides)

- Therapeutic Exercises  
  Gentle (painfree) supination and pronation mobility/stretching exercises

**Sub Acute Stage / Moderate Condition**

Goals: Achieve normal range of motion  
Restore normal strength and extensibility of involved extremity

- Manual Therapy  
  Progress intensity of the joint mobilization procedures – including mobilizations with movements  
  Soft tissue mobilization to myofascial restrictions of the elbow and forearm region

- Therapeutic Exercises  
  Progress intensity of stretching procedures  
  Provide strengthening exercises for weak elbow and forearm muscles

**Settled Stage / Mild Condition**

Goal: Return to unlimited performance of functional activities of involved extremity

- Approaches / Strategies listed above

- Therapeutic Exercises  
  Progress stretching and strengthening exercises
Intervention for High Performance / High Demand Functioning in Workers or Athletes

Goals: Return to optimal performance of desired activities

- Approaches / Strategies listed above

- Therapeutic Exercises
  Progress stretching and strengthening exercises – including exercises/activities that challenge the patient with work related or sport specific demands regarding strength, flexibility, and endurance.

Selected References


Impairment: Limited and/or Painful Forearm Pronation

Cues: Stabilize the distal radius
  Anteriorly or posteriorly glide the distal ulna (which ever is painless)
  Sustain the glide while the patient actively pronates his/her wrist
  Alter the amplitude and direction of the glide to achieve painfree active pronation
  Apply overpressure, if indicated, at the end of active pronation

The following reference provides additional information regarding this procedure:
Brian Mulligan MNZSP, DipMT: Manual Therapy, p. 84-84, 1995
Impairment: Limited Forearm Pronation
Limited Radial Posterior Glide (at the superior radioulnar joint)

Cues: With the patient supine, stabilize (and pad) the ulna against the table
      Glide the radius posteriorly
      Use folded towels as a bolster at the wrist if the patient also has limited elbow extension

The following reference provides additional information regarding this procedure:
Impairment: Limited Forearm Supination
Limited Radial Anterior Glide (at the superior radioulnar joint)

Radial Anterior Glide

Cues: Position the patient prone with the involved forearm just off the edge of the table
Stabilize (and pad) the humerus and ulna against the edge of the table
Glide the proximal radius anteriorly - using a dummy thumb over the region of the radial head and under a thenar eminence