CHAPTER 2

Shoulder

Chapter Outline

INTRODUCTION

Discussion of the shoulder joint biomechanics and related manual therapy information including a case study.

TECHNIQUES

2A Shoulder General Manual Therapy Technique

2B Shoulder Flexion Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

2C Shoulder Extension Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

2D Shoulder Abduction Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

2E Shoulder Adduction Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

2F Shoulder Internal Rotation Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

2G Shoulder External Rotation Manual Therapy Techniques
- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

LEARNING OBJECTIVES

Upon completion of this chapter, the reader will be able to:
- Describe the anatomy and biomechanics of the joints of the shoulder complex
- Understand the state of the evidence for the use of manual therapy treatment techniques of the shoulder complex
- Perform the 8 types of techniques for each of the directions of joint motion restriction
- Delineate the basic steps for the application of each type of technique

Introduction

The shoulder complex is composed of the scapula, humerus, and clavicle, with a single osseous connection to the axial skeleton via the sternoclavicular joint. The shoulder complex has 4 articulations: the glenohumeral (GH), acromioclavicular (AC), sternoclavicular (SC), and scapulothoracic (ST) joints (FIGURE 2-1).[1]

These 4 articulations provide for significant mobility of the upper extremity, allowing for movement of the upper extremity through a wide range of motion in order to provide the mobility needed for the wide range of functional activities required of the upper extremity. Considering the single articulation connecting the upper extremity to the axial skeleton, stabilization of the shoulder complex is accomplished primarily though muscle activity. This concept of dynamic stabilization allows for meeting of the contrasting demands for mobility and stability. However, the complex arrangement and interplay of articular and contractile structures of the shoulder complex result in an increased risk for dysfunction.[2] In addition to the 4 articulations of the shoulder complex, movement of the upper thoracic spine also plays a role in the mechanics of overhead movement. Ipsilateral rotation and extension of the upper thoracic spine occur at the end of shoulder elevation; thus, examination of the upper thoracic region should be included in the evaluation of shoulder complex dysfunction.[3–6]

The **glenohumeral (GH) joint** is a synovial, multiaxial, ball-and-socket joint with 6 degrees of freedom. The GH joint is designed primarily for mobility and derives its structural stability primarily from the articular ligaments and muscles. The proximal segment of the GH joint is the glenoid fossa, and the distal segment is the humeral head. The articular joint surface of the humeral head is significantly larger than that of the glenoid fossa.[1,2,7] The congruity of the glenoid fossa with the humeral head is improved by the shape of the articular cartilage, which is thinner in the center, and the presence of the labrum. The labrum is attached to the peripheral margin of the glenoid fossa and deepens the fossa by approximately 50%. The orientation of the glenoid fossa is somewhat variable but most often is facing lateral, slightly upward, and anterior. The humeral head forms an angle with the shaft of 130 to 150 degrees in the frontal plane and is retroverted 30 degrees (see FIGURE 2-2).[2,7,8]

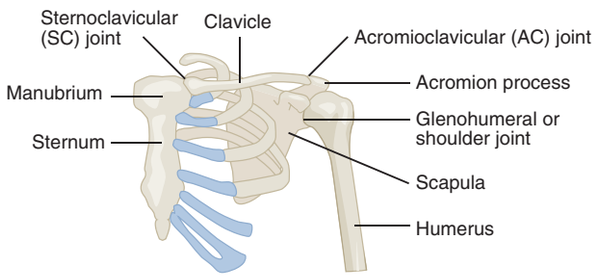

FIGURE 2-1 Anterior view of the shoulder girdle and the clavicle including the sternum, manubrium, sternoclavicular (SC) joint, clavicle, acromioclavicular (AC) joint, acromion process, humerus, glenohumeral or shoulder joint, and the scapula

The GH joint has a large joint capsule, allowing for significant mobility. The capsule is loose inferiorly and anteriorly and tight superiorly.[2] The joint capsule is reinforced by 3 glenohumeral ligaments and the coracohumeral ligament. The coracohumeral ligament is the most superior ligament and limits inferior translation and lateral rotation in the neutral joint position. The superior glenohumeral ligament attaches to the superior labrum and the upper humeral neck and also limits inferior translation and lateral rotation. These 2 ligaments span the space between the anterior border of the supraspinatus tendon and the superior border of the subscapularis tendon, forming the rotator cuff interval.[2,3] The medial glenohumeral ligament runs inferior to the superior GH ligament, from the anterosuperior labrum to the superior aspect of the lesser tubercle and proximal humerus. It provides anterior stability with shoulder abduction up to 60 degrees and external rotation. The inferior glenohumeral ligament complex consists of an anterior and posterior portion, with an inferior pouch in between these bands. This ligament complex forms a slinglike structure, providing for stability in the inferior direction with the arm in more than 45 degrees of abduction, whereas the anterior and posterior bands provide for stability in the anterior and posterior direction.[2,3,8] The **loose-packed position of the GH joint** is in 40 to 55 degrees of abduction and 30 degrees of horizontal adduction, whereas the **closed-packed position** is in full abduction

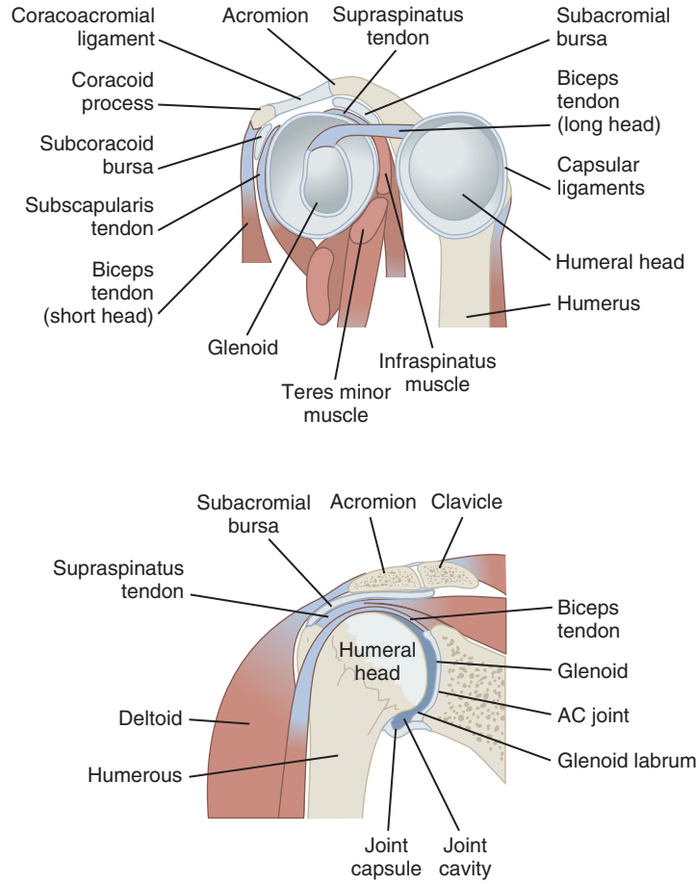

FIGURE 2-2 Anatomy of the glenohumeral joint

and external rotation.[7] The **capsular pattern of the GH joint** is external rotation, abduction, and internal rotation.[9]

The coracoacromial arch forms the roof of the glenohumeral joint and is composed of the acromion, the coracoid process, and the coracoacromial ligament. The space between the arch and the humeral head contains the subacromial bursa, the rotator cuff tendons, and the long head of the biceps. Impingement of the structures in the subacromial space is a common source of shoulder pain and is often related to impaired biomechanics of the shoulder girdle complex.[10–12]

The motions of the glenohumeral joint include flexion/extension around a coronal axis, abduction/adduction around a sagittal (A-P) axis, and internal/external rotation around a vertical axis. Open-chain movement involves the convex humeral head rolling and gliding in opposite directions. The available range of motion (ROM) is approximately 120 degrees in flexion and 50 degrees in extension. Total ROM in abduction is 90 to 120 degrees, accompanied by approximately 40 degrees of external rotation. The total range of motion of rotation is dependent on the position of the humerus in the frontal plane, with the total ROM increasing to 120 degrees with the arm in 90 degrees abduction compared to 60 degrees with the arm in the neutral position. During elevation of the shoulder, inferior gliding of the humeral head is needed to prevent superior translation of the humeral head as a result of the superior roll that occurs during this motion and to maintain the head of the humerus in its central position in the glenoid fossa. The rotator cuff is thought to play an important role in maintaining this central position of the humeral head and may play a role in imparting the inferior glide of the humeral head.[2,3,8,13,14] **FIGURE 2-3** illustrates the relationship of the supraspinatus and biceps brachii tendons to the humeral head.

The **acromioclavicular (AC) joint** is a plane synovial joint with 6 degrees of freedom. The

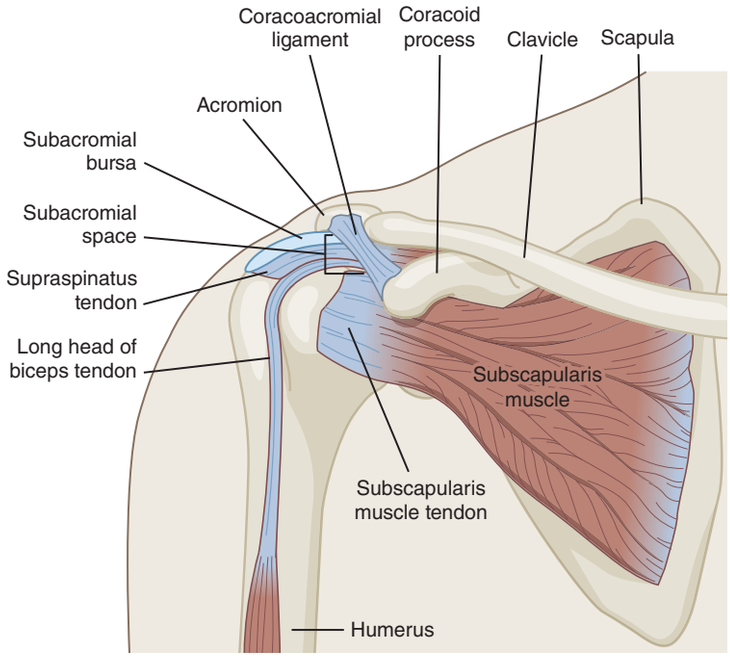

FIGURE 2-3 The relationship of the supraspinatus and biceps brachii tendons to the humeral head

joint surfaces consist of the lateral end of the clavicle and an articular facet on the acromion of the scapula, and there is significant variability of the shape and size of the joint surfaces.[2,15] The joint capsule is quite lax and provides little structural support. The joint has an intra-articular meniscus that gradually degenerates with age and is no longer functional after age 40. The hyaline cartilage of the joint surfaces also degenerates with age, becoming fibrocartilage by the third decade of life.[15] Structural support is provided by 4 ligaments: the superior and inferior acromioclavicular ligaments and the conoid and trapezoid portions of the coracoclavicular ligament. The superior AC ligament is stronger than the inferior AC ligament, and the AC ligaments control anterior-posterior motion and maintain joint approximation. The conoid ligament controls inferior-superior motion, and the trapezoid ligament, as a function of its more horizontal orientation, controls posterior translatory forces. The coracoclavicular ligament also provides the coupling of posterior clavicular rotation with scapular rotation during shoulder girdle elevation (see **FIGURE 2-4**).

Rotatory motions at the AC joint include upward/downward rotation, internal/external rotation, and anterior/posterior tipping of the scapula relative to the clavicle, with a total available range of approximately 30 degrees for each of these motions.[2,15] The loose-packed position of the AC joint is the arm at the resting position, the closed-packed position is 90 degrees of abduction, and the capsular pattern is pain and limitation end range of elevation and horizontal adduction.[7,16]

The **sternoclavicular (SC) joint**, a saddle-shaped synovial joint, is the only direct physical link between the shoulder girdle and the axial skeleton. The joint consists of the medial end of the clavicle and a notch made up of the lateral/proximal manubrium and the cartilage of the first rib. The 2 joint surfaces are separated by an articular disc, which increases the congruity of the 2 joint surfaces and has attachments for the capsular ligaments.[17] The disc divides the joint space into 2 compartments (see **FIGURE 2-5**).

During clavicular elevation and depression, the convex medial clavicle moves on the stationary disc, with movement thus occurring in the lateral joint compartment and the medial clavicle rolling superiorly and gliding inferiorly, with a total available range of 55 to 60 degrees. During clavicular protraction and retraction, the concave disc and the distal clavicle move on the stationary manubrial joint surface, with the disc and

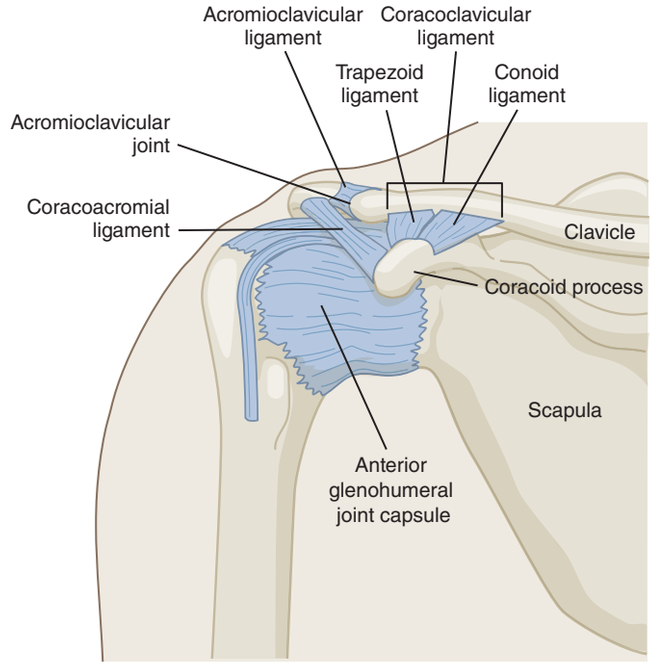

FIGURE 2-4 The acromioclavicular joint

clavicle rolling and gliding in the same direction, with an available total range of 35 to 50 degrees. In addition, long axis rotation of the clavicle allows for posterior rotation of the clavicle from the neutral position, with up to 50 degrees of posterior rotation possible.[2] The joint capsule envelops both joint compartments and is reinforced anteriorly and posteriorly by the sternoclavicular ligaments that limit anterior/posterior movement of the distal clavicle. The costoclavicular ligament is a substantial ligament that has insertions at the inferior aspect of the medial clavicle and costochondral junction of the first rib.[17] The ligament has been described as having 2 bundles: the anterior bundle and the posterior bundle,[2] though other authors also describe the 2 bundles as being continuous.[17] The costoclavicular ligament limits clavicular elevation and

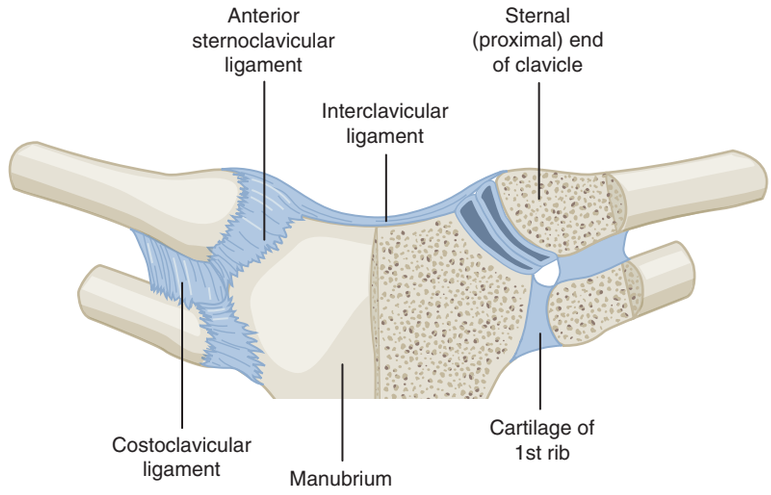

FIGURE 2-5 The sternoclavicular joint

may play a role in imparting an inferior glide of the clavicle when the ligament is fully loaded.[2] The interclavicular ligament is located on the superior manubrium, connecting the bilateral SC joint at their superomedial aspects.[17] The ligament may provide inferior and superior stability of the clavicle,[2] though that function is debated by other authors.[17] The **loose-packed position of the SC joint** is with the arm resting at the side, whereas the **closed-packed position** is full elevation and scapular protraction. The **capsular pattern** is pain and restriction upon joint loading in horizontal adduction and full elevation.[7,16]

The **scapulothoracic (ST) joint** is a physiologic articulation of the thorax and the anterior aspect of the scapula. Although the ST joint is not a true anatomical joint, motion at the ST joint contributes significantly to the total shoulder complex motion: approximately 60 degrees of the total ROM of the shoulder complex into elevation is accounted for by the scapular movement. Motion at the ST joint cannot occur independently from motion at the AC and SC joints, considering that the connection of the scapula to the axial skeleton is through the AC and SC joints. In addition to the motions described at the AC joint that involve motion of the scapula relative to the clavicle, the scapula can also move in upward/downward rotation, elevation/depression, and protraction/retraction. Upward rotation occurs during shoulder complex elevation, with a total available ROM of 60 degrees. Upward rotation is mostly a combination of motions at the AC and SC joints. Elevation of the scapula is accompanied by clavicular elevation at the SC joint. Protraction/retraction is a translation of the scapula along the shape of the convex thorax, requiring internal/external rotation at the AC joint and protraction/retraction of the clavicle at the SC joint. Anterior/posterior tipping of the scapula accompanies long axis rotation of the clavicle at the SC joint. Stability of the ST joint depends to a large extent on musculature to provide for a stable base for motion of the upper extremity.[2,3,8,18,19]

Functional Biomechanics of Shoulder Complex Elevation

Shoulder elevation refers to the movement of the upper extremity away from the resting position alongside the body. Although elevation can occur in any plane, the term scaption is used to describe elevation in the plane of the scapula, which is 30 to 45 degrees anterior to the frontal plane. Movement in this plane appears to maximize joint congruity and to have optimized joint performance while minimizing joint impingement.[3] During elevation, coordinated movement takes place in the 4 joints of the shoulder complex and the upper thoracic spine, which results in an optimal relationship between the scapular and humeral alignment and optimal muscle performance.[2] The overall ratio of movement between GH and ST motion, also referred to as the scapulothoracic rhythm, is 2:1; however, the contribution of the GH and ST joints varies throughout the range. During the initial phase of elevation, the humeral head migrates superiorly to center itself in the glenoid fossa, and it remains in this centered position throughout the remaining ROM. Scapular elevation and upward rotation occurs as a result of elevation at the SC joint. The GH joint contribution to motion compared to ST motion is increased (3:1). During the middle phase of elevation (from 60 to 140 degrees), the relative contribution of the ST joint increases, and ST motion exceeds GH motion (0.7:1). After 90 degrees of elevation, maximal shear forces develop in the GH joint as a result of muscular activity of the deltoid and rotator cuff muscles. The humeral head remains centered in the glenoid fossa, indicating an inferior glide that occurs together with a superior roll, as a result of the activity of the rotator cuff. The humerus also externally rotates during elevation. The relative contribution of the AC and SC joints to scapular motion shifts toward the AC joint as the angle of elevation increases, and a posterior rotation of the clavicle occurs during scapular upward rotation. After 140 degrees of elevation, the GH contribution relative to the ST joint again increases to a 3.5:1 ratio. In addition to upward rotation of the scapula, the scapula also tips posteriorly by approximately 30 degrees and externally rotates on the thorax throughout the range of elevation.[2,3,8] During the final phase of elevation, the upper thoracic spine rotates to the ipsilateral side and moves toward extension.[6]

The primary mover of the glenohumeral joint in elevation is the deltoid muscle, with the

anterior and middle parts of the deltoid showing the most activity during scaption. The deltoid is increasingly active during humeral elevation, with peak activity at 90 degrees of abduction. The rotator cuff shows an activation pattern similar to the deltoid muscle, with the supraspinatus muscle showing peak activity at 90 degrees of humeral abduction. The supraspinatus muscle also compresses the GH joint and guides to position the humeral head in the center of the glenoid fossa. The other rotator cuff muscles, including the subscapularis, infraspinatus, and teres minor, also gradually increase in activity throughout the range, with a peak in activity at 70 degrees of elevation to provide for inferior glide of the humeral head, and again at 115 degrees in order to produce humeral external rotation.[2,20] The upper trapezius and serratus anterior muscles form a force couple with the lower trapezius muscle to provide for upward rotation of the scapula. The role of the upper trapezius appears to be more critical during abduction of the humerus, whereas the serratus anterior appears more critical during flexion of the humerus. The rhomboid muscles act as scapular stabilizers during elevation, eccentrically controlling the scapula as it upwardly rotates.[2,8]

The latissimus dorsi and pectoral muscles are prime movers of depression of the shoulder complex, which occurs during important closed chain functional activities such as pushing up out of a chair. The teres major and rhomboid muscles work synergistically to stabilize the scapula during these activities.[2]

When evaluating a patient with shoulder dysfunction, it is important to assess all osteokinematic and arthrokinematic motions of the 4 shoulder girdle joints, considering the complexity of the biomechanics of the shoulder girdle. In addition, the mobility of the upper thoracic spine needs to be assessed,[6,21] and the cervical spine needs to be cleared as a potential source of shoulder pain. The function of the musculature needs to be examined carefully, considering the role of the musculature in movement and active stabilization of the shoulder girdle. Recent evidence indicates that manual therapy can be a useful intervention in the treatment of shoulder pain and dysfunction. A recent systematic review found level B evidence for the effectiveness of manual therapy for the treatment of a variety of shoulder dysfunctions, including rotator cuff disorders and adhesive capsulitis.[22] Systematic review by Camarinos and Marinko[23] and Howard et al.[24] found evidence that manual therapy of the shoulder girdle joints improved mobility and pain of the shoulder. Surenkok et al. found evidence that scapular mobilization results in decreased pain and increased mobility and physical function in patients with shoulder dysfunction.[25] Moore et al. studied the immediate effects of a muscle energy technique (MET) on shoulder ROM in overhead athletes and found that a single application of a MET technique to the external rotators and horizontal abductors of the shoulder resulted in increased ROM of internal rotation and horizontal adduction.[26] In a study by Djordjevic et al., mobilization with movement combined with kinesiotaping resulted in increased active ROM and decreased pain in patients with painful shoulders.[27] Godges et al. found that soft tissue mobilization of the subscapularis muscle in combination with PNF contract-relax techniques led to an increase in external rotation ROM and overhead reach. The authors postulated that the decreased length and tightness of subscapularis muscle results in decreased ROM in external rotation at 45 degrees abduction when compared to 90 degrees of abduction and that lengthening the muscle results in increased external rotation ROM, with similar findings reported in another study.[28,29] Recent evidence also indicates that manual therapy directed at the upper thoracic and cervical spine can result in decreased pain and improved function of patients with shoulder dysfunction and pain.[4–6,21,30]

Common shoulder girdle dysfunctions that are routinely treated with manual therapy include adhesive capsulitis, shoulder impingement (including rotator cuff pathology), and osteoarthritis. Adhesive capsulitis (frozen shoulder) has a prevalence of 2 to 5% of the general population but is significantly more prevalent in patients with thyroid disease or diabetes mellitus (up to 38%). It is characterized by the presence of multiregional synovitis and frequently progresses to significant fibrosis of the joint capsule complex, leading to significant loss of ROM.[31] The loss of ROM is likely to occur in a

capsular pattern, and clinicians should evaluate active and passive ROM, as well as glenohumeral joint accessory motion. A recent clinical practice guideline recommends manual therapy techniques for pain management, improvement of ROM, and functional improvement. Stretching exercises were also recommended and should be dosed based on the patient's tissue irritability level.[31] Vermeulen et al.[32] found that high-grade mobilization techniques were more effective than low-grade mobilization techniques in restoring joint mobility and reducing disability in patients with adhesive capsulitis of more than 3 months in duration, with a greater than 50% loss of ROM. A recent study examined the use of end-range grade IV mobilization techniques and scapular mobilization in patients with significant loss of ROM resulting from adhesive capsulitis and found a greater improvement in ROM, disability, and kinematics compared to patients who received standard physical therapy, which included midrange mobilizations, stretching exercises, and modalities.[33] Johnson et al.[34] found that posterior glide mobilizations were more effective than anterior glide mobilizations in restoring external rotation ROM in patients with primary adhesive capsulitis. Although this finding appears to contradict the convex/concave rule, the authors postulate that asymmetrical capsular tightness may affect humeral head motion.[34] Tightness of the anterior capsule and the rotator cuff interval may influence the arthrokinematic glides and in this case may prevent the anterior glide normally associated with external rotation. The posteriorly directed mobilization may be more effective in restoring anterior capsule mobility than an anteriorly directed mobilization and may thus be more effective in restoring external rotation mobility.

Subacromial impingement syndrome (SIS) can include impingement of the structures in the subacromial space, resulting in tendinopathy of the rotator cuff tendons, rotator cuff tears, and bursitis. This impingement can be the result of altered mobility of the shoulder girdle joints. Decreased mobility of the glenohumeral joint, especially of the inferior glide accessory motion, can be a contributing factor to the development of subacromial impingement. The function of the SC and AC joints should also be considered, because the loss of ROM in these joints may lead to altered scapular movement.[12] A recent systematic review found limited evidence supporting the effectiveness of manual therapy in patients with SIS. These authors also found moderate evidence supporting the use of exercise therapy in this population.[10] A systematic review by Braun and Hanchard concluded that manual therapy and exercise seem effective for the treatment of SIS but identified the need for further high-quality research.[35] Rhon et al. compared the long-term effectiveness of manual therapy to the use of corticosteroid injections and found that both groups had significant improvements in pain and function; however, the manual therapy group used significantly less follow-up healthcare services than the injection group.[36] Mobilization with movement and glenohumeral mobilizations in combination with a supervised exercise program were found to be effective in decreasing pain and increasing function.[37,38] Tate et al. reported that a program using strengthening of the rotator cuff and scapular muscles, combined with manual therapy for posterior and inferior glides of the glenohumeral joint and the thoracic spine, resulted in symptomatic and functional improvement in patients with SIS.[39]

Osteoarthritis is a frequently observed pathology of the AC joint and may contribute to the development of subacromial impingement.[15,17,40] Although there is no research directly examining the effect of manual therapy in patients with AC joint arthritis, Harris et al. reported that patients with primary AC joint pain had decreased pain and improved function following treatment with accessory joint glide techniques of the distal clavicle.[41] There is currently insufficient evidence to evaluate the effectiveness of manual therapy in the treatment of osteoarthritis of the glenohumeral joint.

Shoulder pain can be a manifestation of dysfunction and disease in other anatomical structures and regions. Cervical dysfunction can be a source of referred pain to the shoulder, including thoracic outlet syndrome and cervical radiculopathy. Manual therapy practitioners should also perform systems screening for nonmechanical causes of shoulder pain, with emphasis on the cardiovascular, pulmonary, and upper gastrointestinal systems.[42]

CASE STUDY

Patient is a 58-year-old female artistic painter. She paints wall murals but has been unable to do so due to having right shoulder pain. Patient states she fell off a ladder on her shoulder 3 months ago and has difficulty raising her arm. The pertinent medical history includes insulin-dependent diabetes mellitus and hypothyroidism. Physical therapy examination findings are as follows:

- Pain at end ranges with active and passive range of motion
- Presence of a painful arc of 60 to 120 degrees abduction
- Decreased active and passive range of motion in a capsular pattern
- Restricted inferior and posterior direction glides
- Decreased strength and poor functional reach ability above shoulder height and when reaching behind her back affecting her activities of daily living and work activities.

1. What is the shoulder capsular pattern?
2. What diagnoses can be concluded from decreased ROM in capsular pattern of the glenohumeral joint?
3. How do you determine if the joint condition is acute, subacute, or chronic?
4. How would that information direct your joint manipulation intervention?
5. Which manual therapy techniques are appropriate for this patient, based on existing evidence?

Per the evidence outlined in this chapter, the therapist may consider non-thrust joint manipulation of inferior and posterior glides, using grade III or IV if tolerated by the patient. MWM in the affected directions may also be considered. The patient can be instructed in self-mobilization techniques in the affected directions. Additional evidence for the use of these techniques include:

- A Cochrane review by Page et al.[43] concluded that a combination of manual therapy and exercise had short-term clinical importance in patients with adhesive capsulitis.
- Desjardins-Charbonneau et al.[44] performed a systematic review and meta-analysis on the efficacy of manual therapy for patients with rotator cuff tendinopathy. A small statistically significant reduction in pain was found with manual therapy compared to a placebo. When adding manual therapy to an exercise program, there was a significant decrease in pain. Based on low to moderate quality evidence, manual therapy may decrease pain, but it was unclear whether it can improve function.
- Delgado-Gil et al.[45] investigated the effects of mobilization with movement on pain and end range of motion with patients with impingement syndrome and found that patients receiving 4 sessions of mobilization with movement had significantly better outcomes for pain during active flexion and external rotation.

Key Terms

Acromioclavicular joint classification: Plane synovial joint with 6 degrees of freedom.

Capsular pattern glenohumeral joint: External rotation, abduction, and internal rotation.

Capsular pattern sternoclavicular joint: Pain and restriction upon joint loading in horizontal adduction and full elevation.

Closed-packed position glenohumeral joint: Full abduction and external rotation.

Closed-packed position sternoclavicular joint: Full elevation and scapular protraction with 90 degrees of abduction.

Glenohumeral joint classification: Synovial, multiaxial, ball-and-socket joint with 6 degrees of freedom.

Loose-packed position glenohumeral joint: 40 to 55 degrees of abduction and 30 degrees of horizontal adduction.

Loose-packed position sternoclavicular joint: The arm resting at the side.

Scapulothoracic joint classification: Physiologic articulation of the thorax and the anterior aspect of the scapula. Although the ST joint is not a true anatomical joint, motion at the ST joint contributes significantly to the total shoulder complex motion.

Sternoclavicular joint classification: Saddle-shaped synovial joint with 2 degrees of freedom, clavicular head convex in the frontal plane and concave in the transverse plane.

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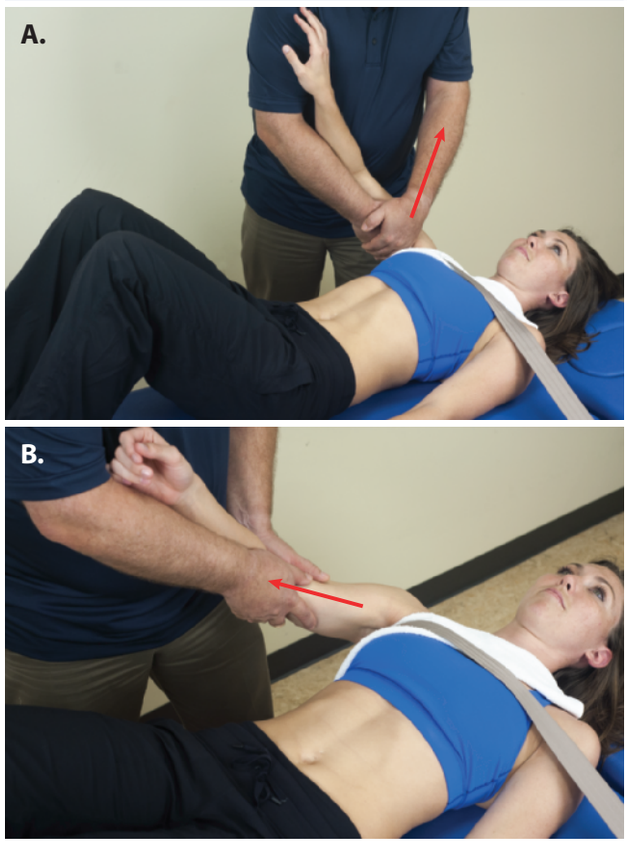
Manual Therapy Techniques for the Shoulder

Shoulder General Mobility

Joint: Shoulder
Shoulder General Motion Limitation

Type of Manipulation: Joint traction
Restricted Motion: Limited Shoulder Mobility



Patient Position: Supine at the side of the table

Therapist Position: Standing at side by the foot of the table

1. The therapist places the hands above the elbow around the humerus.
2. The therapist lifts the shoulder to about 30 degrees of shoulder flexion, 30 degrees of shoulder abduction, and 5 degrees of external rotation.
3. The therapist locks the elbows at 90 degrees at their side and shifts and bodyweight away from the patient in line with the abduction of the shoulder to create traction at the shoulder.
4. The therapist maintains traction until the tissue relaxes.

FIGURE 2-6

Notes: This technique can be used for the reduction of a glenohumeral dislocation as in Figure B.

The therapist can perform a thrust technique at tissue tension.

The open pack position of the shoulder is 30 degrees of shoulder flexion, 30 degrees of shoulder abduction, and 5 degrees of external rotation.

Joint: Shoulder
Shoulder General Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Mobility

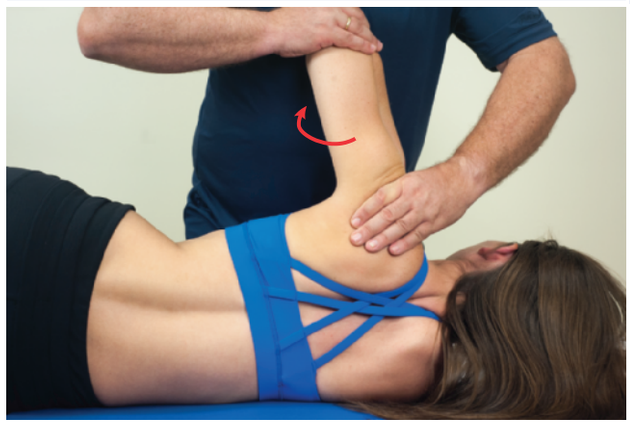


FIGURE 2-7

Patient Position: Sidelying

Therapist Position: Standing in front of the patient

1. The therapist places the cephalad hand on the superior proximal humeral head and the caudad hand around the elbow.
2. While the patient lifts the arm into 90 degrees of shoulder abduction, the patient actively circumducts the shoulder.
3. As the patient circumducts the shoulder, the therapist uses the caudad hand to distract the humerus and uses the cephalad hand to perform a circular accessory glide of the proximal humerus to facilitate the circumduction motion of the shoulder. The glide (humeral head convex) is performed in the opposite direction of the position the elbow is going.
4. This is repeated and performed in a rhythmic format when the arm is brought into circumduction.

Notes: This is part of the Spencer technique sequence.

Joint: Shoulder
Shoulder General Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Mobility

FIGURE 2-8

Patient Position: Standing

1. The patient stands bent forward to bring the trunk parallel to the ground. The patient stands with one foot forward and one foot backward.
2. The patient lets the arm hang against gravity in a pendulum position.
3. The patient shifts bodyweight back and forth to create passive movement at the shoulder.

Notes: The patient can stand with the feet abducted and shift side to side. This is often termed a Codman's or pendulum exercise.

Joint: Shoulder
Shoulder General Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Mobility

FIGURE 2-9

Patient Position: Prone

1. The patient places a wrist weight strapped around the wrist (usually under 5 lbs).
2. The patient lets the arm hang off the edge of the table against gravity to create a traction force at the shoulder.
3. The patient can let the arm hang until the tissues relax.

Notes: A patient with adhesive capsulitis would benefit from this technique.

Joint: Shoulder
Shoulder General Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Mobility

FIGURE 2-10

Patient Position: Sidelying

Therapist Position: Standing in front of the patient

1. The therapist places the caudad hand around the inferior border of the scapula.
2. The therapist places the cephalad hand around the top of the scapula from the thumb on the anterior chest wall and the fingers around to the spine of the scapula.
3. The therapist uses both hands in unison to move the scapula in all planes.

Notes: This technique will be beneficial for patients with scapulothoracic dysfunction.

Shoulder Flexion

2B Shoulder Flexion Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Flexion

Patient Position: Supine at the side of the table

Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The therapist lifts the humerus with the cephalad hand and stabilizes the scapula with the caudad hand.
2. The humerus should be able to move to 120 degrees with the scapula stabilized.
3. At the tissue barrier, the therapist can create a progressive oscillation to manipulate the scapula in a posterior/inferior direction while stabilizing the humerus.

FIGURE 2-11

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Flexion

Patient Position: Supine at the side of the table

Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The therapist lifts the humerus into flexion with the caudad hand and tractions the humerus.
2. The therapist places the cephalad hand on the anterior portion of the humeral head.
3. The therapist creates a progressive oscillation with the cephalad hand in a posterior and inferior direction on the humeral head to increase mobility of the posterior capsule.

FIGURE 2-12

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Restricted Motion: Limited Shoulder Flexion

FIGURE 2-13

Patient Position: Supine with the shoulder off the edge at the side of the table

Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The therapist places the caudad hand on the distal humerus. The therapist places the cephalad hand on the anterior surface of the humeral head.
2. The therapist lifts the humerus into the limitation of shoulder flexion.
3. The therapist glides the humeral head in a posterior and inferior direction to take up tissue tension.
4. A high velocity- low amplitude (HVLA) thrust is performed at the end of tissue tension. This is an anterior to posterior/inferior direction of force.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Flexion

FIGURE 2-14

Patient Position: Supine

Therapist Position: Standing on the involved side of the patient

1. The therapist places the cephalad hand at the posterior distal humerus and the caudal hand under the scapula to maintain proper scapular downward glide position.
2. The therapist lifts the humerus to the restrictive barrier of shoulder flexion.
3. The patient isometrically contracts the latissimus dorsi muscle (away from the restrictive barrier) into shoulder extension for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of pressure, and then the patient completely relaxes.
4. Upon relaxation, the therapist takes up the additional tissue slack and pushes the shoulder to the new restrictive barrier of shoulder flexion. This is repeated until no further relaxation or improvement of range of motion into shoulder flexion occurs.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Flexion (Glenohumeral)

FIGURE 2-15

Patient Position: Seated

Therapist Position: Standing on the same side of the patient's shoulder to be treated facing the shoulder

1. The therapist places the cephalad hand at the anterior proximal humerus of the shoulder to be mobilized. The caudad hand holds the arm for stabilization and facilitating upward rotation.
2. While the patient lifts the arm into shoulder flexion, the therapist places a force (accessory glide) at the anterior proximal humerus in a posterior and inferior direction.
3. As the patient lifts further into shoulder flexion, the therapist uses the cephalad hand to perform an accessory glide to take up all of the tissue tension in a posterior and inferior direction of the shoulder capsule. The therapist uses the caudad hand to facilitate upward rotation of the scapula.
4. This is repeated until a greater amount of shoulder flexion is obtained.

Notes: The therapist can be standing behind the patient or in front of the patient gliding the humeral head posteriorly.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Flexion (Sternoclavicular)

FIGURE 2-16

Patient Position: Supine

Therapist Position: Standing at the head of the table

1. The therapist places the cephalad hand at the sternoclavicular joint of the shoulder to be mobilized. The caudad hand is over the clavicle for facilitating upward rotation.
2. While the patient lifts the arm into shoulder flexion, the therapist places a force (accessory glide) at the proximal clavicle in inferior direction with the cephalad hand.
3. This is repeated until a greater amount of shoulder flexion is obtained.

Notes: This can also be performed on the acromioclavicular joint

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Flexion (Ribs/Thoracic)

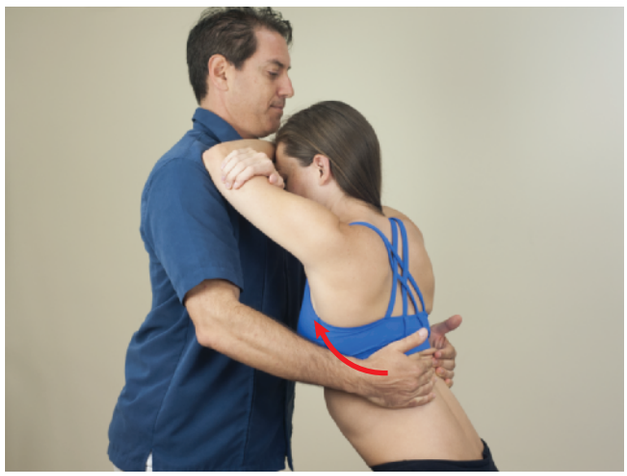


FIGURE 2-17

Patient Position: Seated

Therapist Position: Standing in front of the patient

1. The patient crosses arms in front, grasps each elbow, and sits in a flexed trunk posture.
2. The therapist places the patient's forearms onto the upper chest. The therapist places the both hands around the patient at the posterior rib angles to facilitate upward rotation.
3. While the patient lifts into trunk extension, the therapist places a sweeping force (accessory glide) at the rib angles to facilitate upward rotation of the rib cage.
4. As the patient lifts further into trunk extension, the therapist adds an anterior gliding of the thoracic spine.
5. This is repeated until a greater amount of trunk extension is obtained.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder Flexion

FIGURE 2-18

Patient Position: Prone

Therapist Position: Standing on the side of the patient and being able to support the patient's shoulders into extension

1. The patient lies prone. The therapist palpates the latissmus dorsi at the anterior aspect of the humerus below the bicipital groove. The therapist presses into the muscle of discomfort and finds the most hypertonic uncomfortable point. The therapist asks the patient to rate the discomfort at a 10/10.
2. The therapist passively extends the shoulder to 30 degrees, internally rotates the shoulder and tractions the humerus distally.
3. The therapist palpates the latissimus dorsi until the palpable point is down to a 2/10 discomfort level.
4. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively straightens out the arm and rechecks the point in the original position. If the point produces more than 2/10 discomfort the treatment is repeated.

Notes: This should decrease the hypertonicity allowing the shoulder to flex a greater distance. This can be repeated with the posterior deltoid muscle. This is an indirect technique.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder Flexion

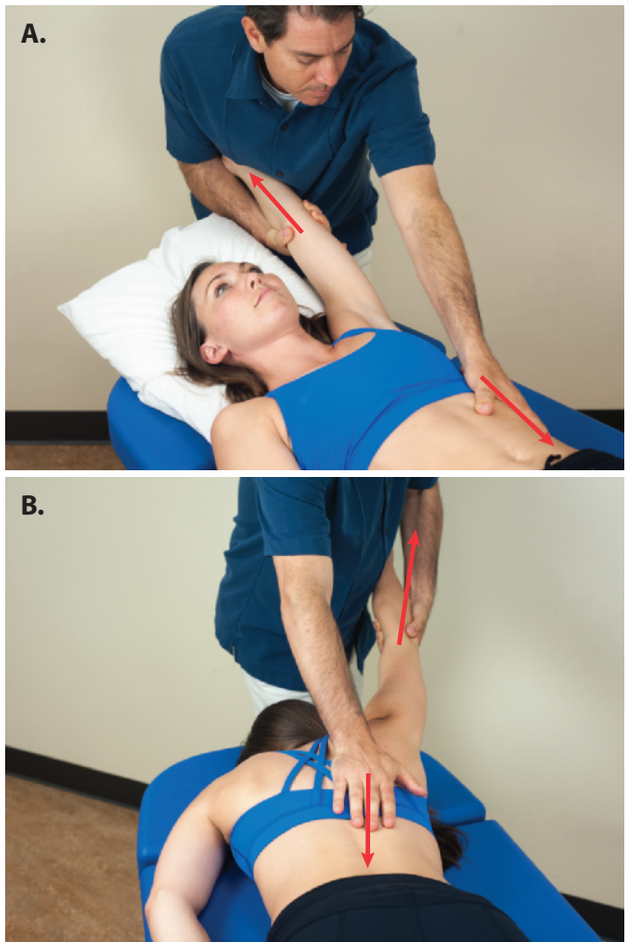


FIGURE 2-19

Patient Position: Supine or prone

Therapist Position: Standing on the side of the table

1. The patient lies supine (Figure A).
2. The therapist palpates the latissimus dorsi muscles, pectoralis major, and anterior ribs that have limited extensibility.
3. The therapist uses a tissue tension technique to mobilize the fascia.
4. The therapist palpates into the soft tissue and uses the caudad hand to grasp the humerus and flex the shoulder with upward traction.
5. The therapist uses the cephalad hand on the latissimus dorsi or pectoralis major to engage the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes. The therapist uses both hands in opposite directions.
6. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Notes: Depending on the specific muscle identified, the fiber direction will change. In Figure B. the therapist utilizes their cephalad hand to raise the arm into shoulder flexion while the caudad hand grasps onto the scapula to engage the restrictive barrier in an inferior direction.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder Flexion

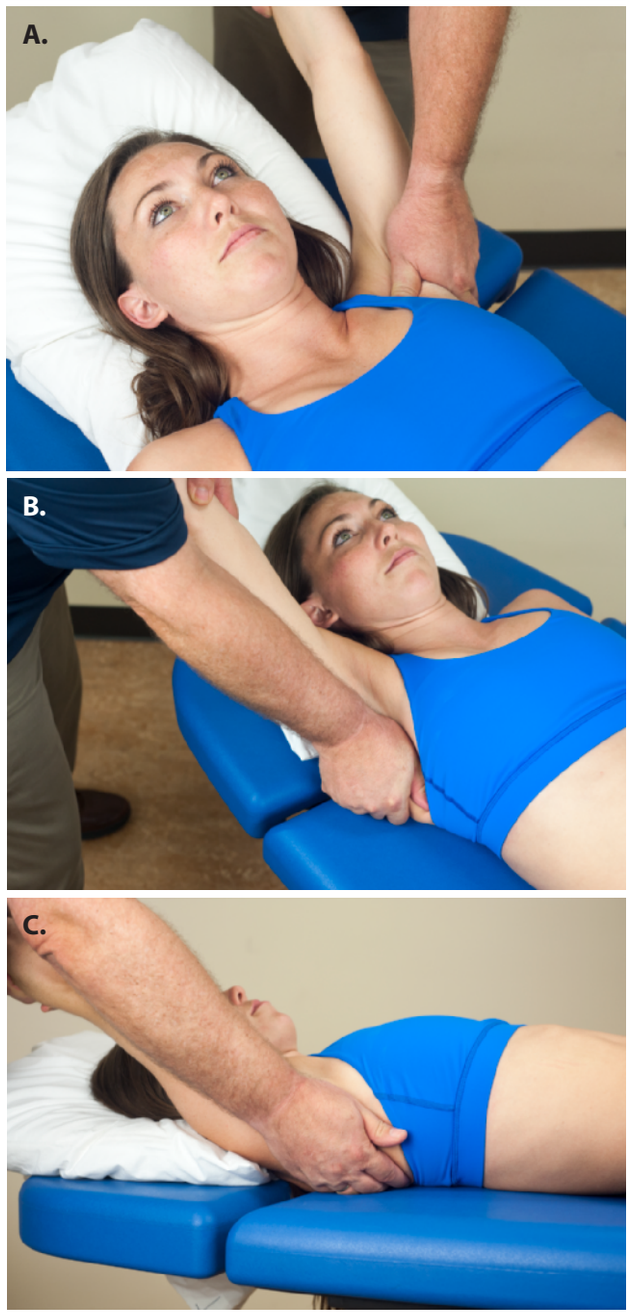


FIGURE 2-20

Manual soft tissue manipulation

Patient Position: Supine

Therapist Position: Standing on the involved side of the patient

1. The patient lies supine.
2. The therapist palpates the pectoralis, subscapularis, and latissimus dorsi muscles and holds deep pressure to relax the muscle.
3. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
4. This is repeated until the soft tissue relaxes.

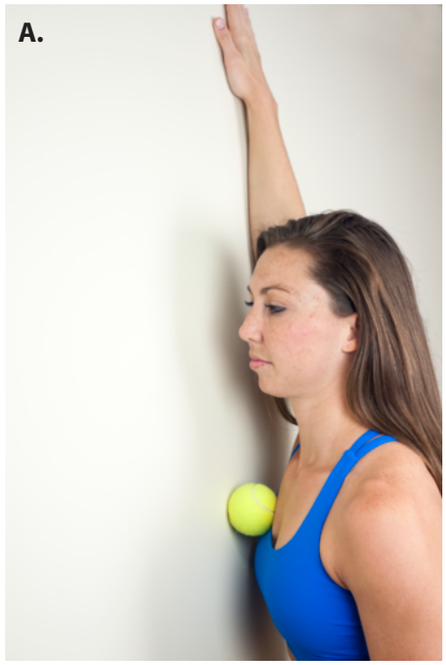


FIGURE 2-21

Self soft tissue manipulation

Patient Position: Standing with bodyweight on a massage ball

1. The patient places bodyweight on a massage ball with the pectoralis muscle.
2. The patient can hold statically or rock side to side to relax the soft tissues.
3. This is repeated until the soft tissue relaxes.

Notes: A towel can be placed over the ball to soften the technique. As an alternate technique the patient can be prone over a foam roller and roll back and forth over the latissimus dorsi or pectoralis muscles as seen in Figure C.

Joint: Shoulder
Shoulder Flexion Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Flexion

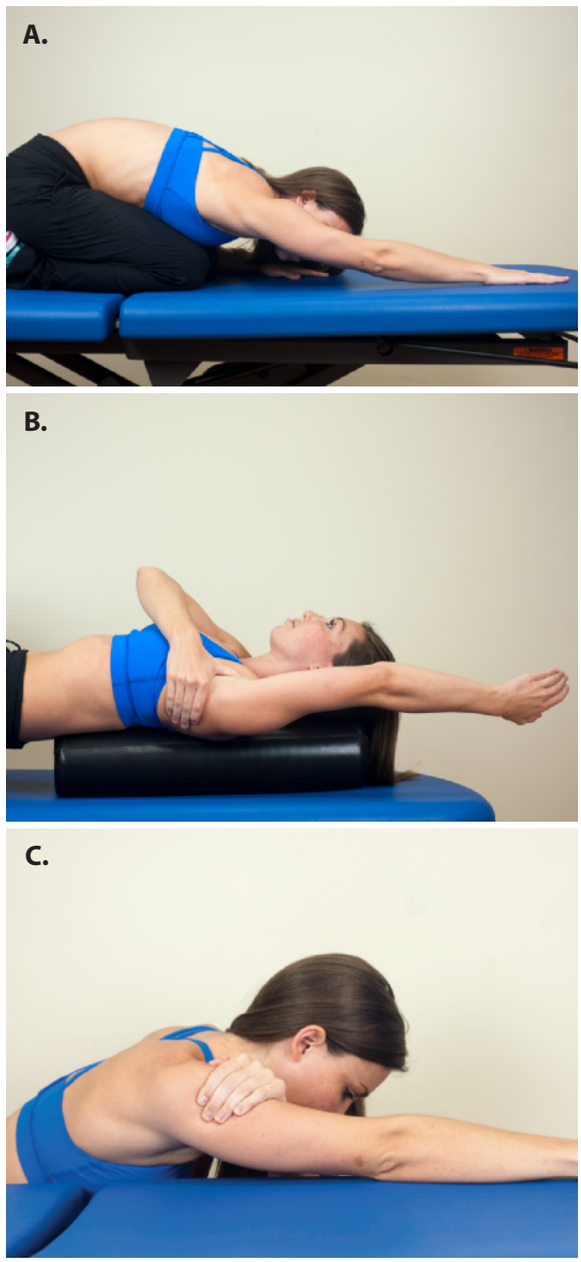


FIGURE 2-22

Patient Position: Quadruped

1. The patient starts on hands and knees on the floor with the shoulder flexed on the side to be mobilized.
2. The patient can place a foot onto the wall to push away from the wall to get greater traction on the belt.
3. The patient flexes the shoulder to be mobilized until tissue barrier is met.
4. The patient can hold tension statically or rock the shoulder into flexion by keeping a hand on the floor and shifting bodyweight posteriorly to create traction on the shoulder while stretching into flexion.

Alternate Techniques: In Figure B, the patient can lie over a foam roll in line with the spine. The patient raises the shoulder to be mobilized into flexion. With the opposite hand the patient reaches around and grasps onto the opposite scapula and mobilizes into scapular upward rotation (Figure B). Figure C shows the patient seated, with the involved extremity on the table. The patient bends forward to the restriction and provides a posterior glide with the opposite hand.

Shoulder Extension

2C Shoulder Extension Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Extension

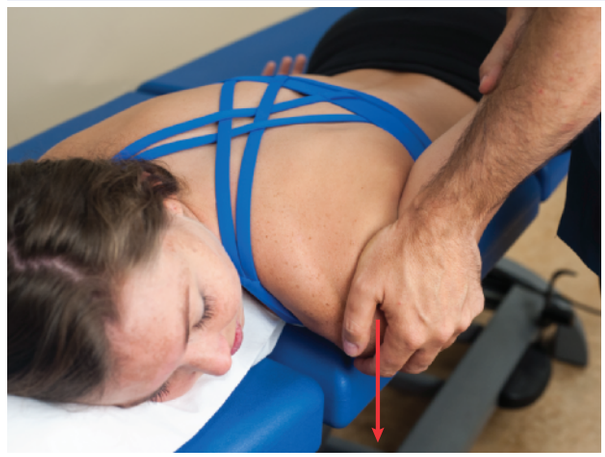


FIGURE 2-23

Patient Position: Prone at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The patient lies prone.
2. The therapist places the cephalad hand on the shoulder at the posterior humeral head and the caudal hand lifting the humerus into shoulder extension with the arm held against the body.
3. While lifting the humerus into shoulder extension, the therapist places an equal and opposite counterforce at the posterior humeral head of the shoulder with the cephalad hand in an anterior direction.
4. At the tissue barrier, the therapist can create a progressive oscillation to manipulate the shoulder capsule. This is a posterior to anterior direction of force.

Notes: Caution should be taken as the anterior capsule can stretch quickly.

Joint: Shoulder
Shoulder (Horizontal) Extension Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder (Horizontal) Extension

FIGURE 2-24

Patient Position: Prone at the side of the table with the shoulder off the edge

Therapist Position: Standing on the involved side of the patient

1. The patient lies prone.
2. The therapist places the cephalad hand on the shoulder at the posterior humeral head and the caudal hand lifting the humerus into shoulder horizontal extension with the arm held against the body.
3. While lifting the humerus into shoulder horizontal extension, the therapist places an equal and opposite counterforce at the posterior humeral head of the shoulder with the cephalad hand in an anterior direction.
4. At the tissue barrier, the therapist can create a progressive oscillation to manipulate the shoulder capsule. This is a posterior to anterior direction of force.

Notes: Caution should be taken as the anterior capsule can stretch quickly.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Restricted Motion: Limited Shoulder Extension

FIGURE 2-25

Patient Position: Prone at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The therapist places both hands at the superior portion of the humeral head with thumbs on the posterior portion of the humeral head.
2. The therapist lifts the humerus into shoulder extension by grasping with both hands and stabilizing the arm against his or her body with the forearm.
3. The therapist takes up all of the tissue tension with shoulder extension, an anterior humeral glide with the thumbs, and creates a distraction at the shoulder.
4. A high velocity-low-amplitude thrust is performed at the end of tissue tension. This is a posterior to anterior direction of force down toward the table.

Notes: Caution should be taken as the anterior capsule can stretch quickly.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Extension

FIGURE 2-26

Patient Position: Sidelying at the side of the table, with the involved shoulder up

Therapist Position: Standing on the involved side of the patient

1. The therapist places the cephalad hand on the posterior portion of the humeral head.
2. The therapist uses the caudal hand on the distal humerus to extend the shoulder and take up the tissue tension to the restrictive barrier of shoulder extension.
3. The patient isometrically contracts the biceps (away from the restrictive barrier) to flex the shoulder for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of pressure, and then the patient completely relaxes.
4. Upon relaxation, the therapist takes up the additional tissue slack into the new restrictive barrier of shoulder extension. This is repeated until there is no further relaxation or improvement of range of motion into shoulder extension occurs.

Notes: Caution should be taken as the anterior capsule can stretch quickly.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Extension

Patient Position: Seated

Therapist Position: Standing behind the patient on the involved side

1. The therapist places the cephalad hand on the anterior chest wall and clavicle and the caudal hand on the posterior portion of the humeral head.
2. While the patient lifts the arm into shoulder extension, the therapist uses the caudal hand to perform an accessory glide of the humeral.
3. The therapist takes up all of the tissue tension in an anterior direction to facilitate an anterior glide of the humeral head.
4. This is repeated until a great amount of shoulder extension is obtained.

FIGURE 2-27

Notes: The patient can also be sidelying with the involved shoulder up and elbow bent, see Figure B.

Notes: Caution should be taken as the anterior capsule can stretch quickly.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder Extension

FIGURE 2-28

Patient Position: Supine

Therapist Position: Standing on the side of the patient

1. The patient lies supine. The therapist palpates the long head of the biceps. The therapist presses into the muscle of discomfort and finds the most hypertonic uncomfortable point. The therapist asks the patient to rate the discomfort at a 10/10.
2. The therapist then passively flexes the shoulders and places the dorsum of the hand on the forehead and rotates the shoulder into internal or external rotation until the palpable point is down to a 2/10 discomfort level.
3. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively straightens out the arm and rechecks the point. If the point produces more than 2/10 discomfort the treatment is repeated.

Notes: This should decrease the hypertonicity of the biceps allowing the shoulder to extend a greater distance. This is an indirect technique.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder Extension

FIGURE 2-29

Patient Position: Supine with the involved shoulder off the edge of the table.

Therapist Position: Seated at the involved side of the patient

1. The therapist palpates the biceps that has limited elongation length or limited side to side mobility.
2. The therapist uses a tissue tension technique to mobilize the fascia.
3. The therapist uses both hands in opposite directions, placing the cephalad hand on the humeral head and the caudad hand on the distal biceps with the shoulder brought into extension.
4. The therapist palpates into the soft tissue and engages the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes.
5. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder Extension

A.

Manual soft tissue manipulation

Patient Position: Supine

Therapist Position: Standing on the side of the table

1. The patient lies supine.
2. The therapist palpates the biceps muscle and holds deep pressure to relax the muscle.
3. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
4. This is repeated until the soft tissue relaxes.

Notes: The therapist can do side-to-side mobility to relax the biceps.

B.

Self soft tissue manipulation

Patient Position: Prone on knobby ball (tennis ball)

1. The patient lies prone with the ball under the anterior portion of the shoulder to be mobilized
2. The patient rolls over the ball on the bicep tendons of the shoulder to be mobilized. The patient can hold tension statically or rock back and forth to relax the soft tissues underneath.

FIGURE 2-30

Notes: A towel can be placed over the ball for comfort.

Joint: Shoulder
Shoulder Extension Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Extension

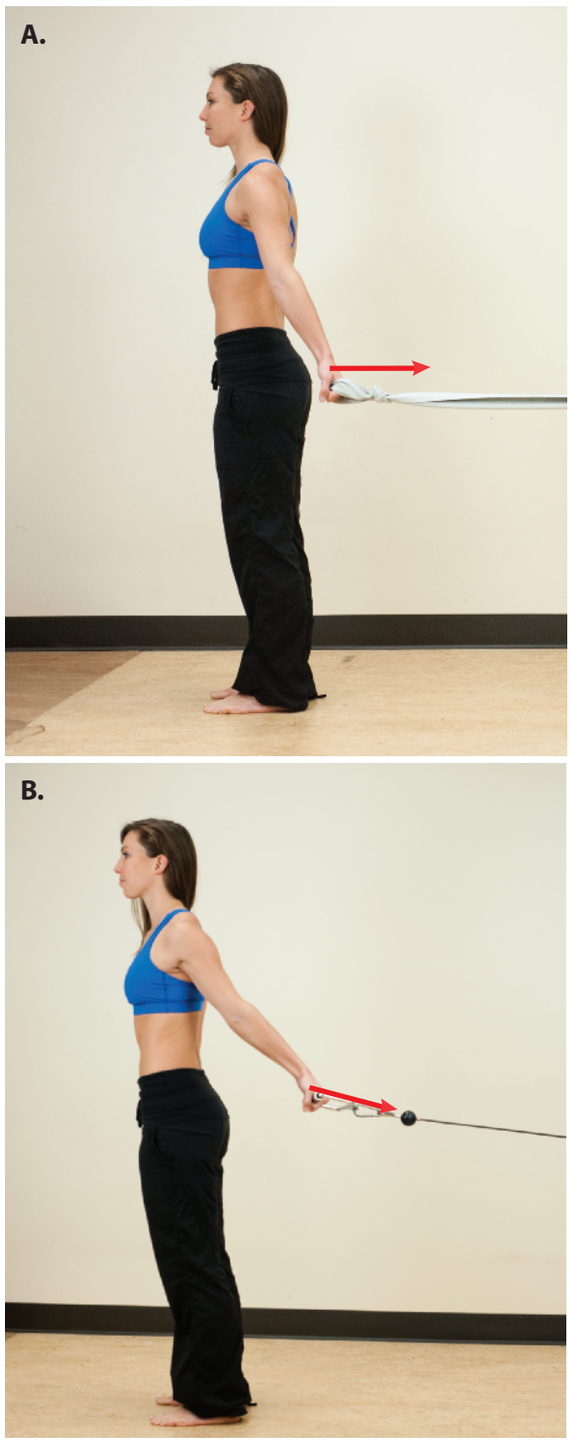


FIGURE 2-31

Patient Position: Standing perpendicular facing away from the wall/attachment of the elastic band or pulley.

1. The patient stands holding an elastic cord in the hand of the involved shoulder to be mobilized. The elastic band is attached at a height lower then the hand when it is by the side.
2. The patient places one foot forward. The patient can step forward and allow the shoulder to be pulled in shoulder extension
3. The band will have a posterior and inferior pulling force on the shoulder.
4. The patient allows the shoulder to be mobilized until tissue tension is felt. The patient can hold tension statically or contract the shoulder into flexion and then relaxing the shoulder into further extension.

Shoulder Abduction

2D Shoulder Abduction Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Abduction

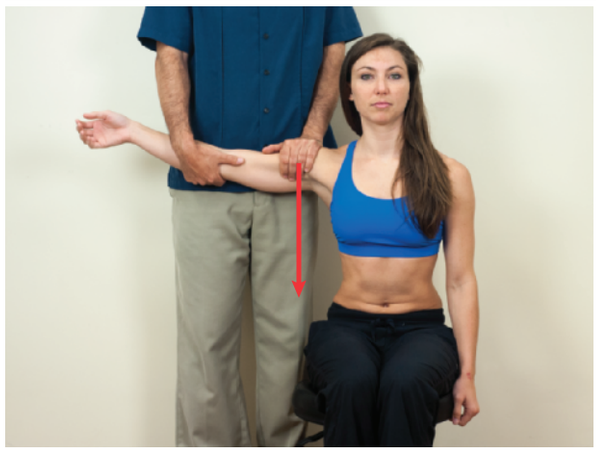


FIGURE 2-32

Patient Position: Seated

Therapist Position: Standing at the side of the patient above the involved shoulder

1. The therapist places the cephalad hand on superior proximal humeral head and the caudad hand around the midshaft of the humerus being pulled against the thigh of the therapist.
2. While the arm is lifted into abduction, the humerus is distracted by rotating the therapist's hip away.
3. The mobilization force is performed with the cephalad hand. The force is directed inferiorly.
4. At the tissue barrier, the therapist can create a progressive oscillation or a sustained distraction to manipulate the shoulder capsule.

Notes: This technique can be performed while sitting using a mobilization belt around the patient's proximal humerus and the therapist's foot to create an inferior glenohumeral glide.

Joint: Shoulder
Shoulder Abduction (Horizontal) Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Horizontal Abduction

FIGURE 2-33

Patient Position: Prone with the shoulder off the table

Therapist Position: Standing on the inferior side of the patient's shoulder to be treated

1. The therapist places the cephalad hand on the posterior proximal humerus and the caudad hand grasping around the elbow.
2. The arm is positioned in shoulder abduction and external rotation. As the arm is abducted, the therapist takes up the slack by gliding the humerus anteriorly with the cephalad hand at the proximal posterior portion of the humerus.
3. At the tissue barrier, the therapist can create a progressive oscillation or a sustained distraction to manipulate the shoulder capsule.

Notes: This should be done with caution as the shoulder can dislocate anteriorly easily in this position. This may be considered for patients with a posteriorly subluxed glenohumeral joint.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Restricted Motion: Limited Shoulder Abduction

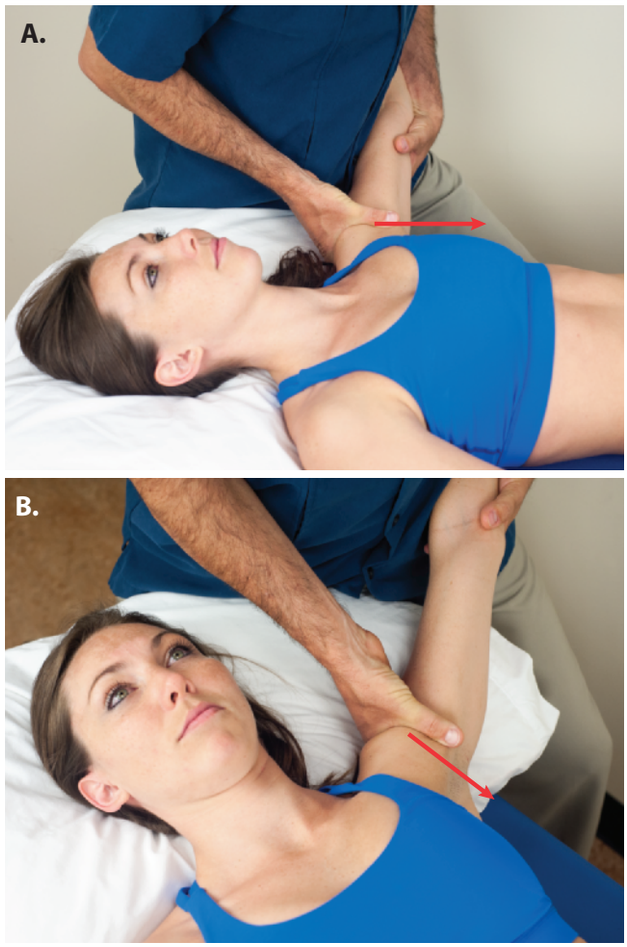


FIGURE 2-34

Patient Position: Supine with the involved shoulder at the edge of the table

Therapist Position: Standing at the side of the patient above the involved shoulder

1. The therapist places the cephalad hand on superior proximal humeral head and the caudad hand around the midshaft of the humerus being pulled against the thigh of the therapist.
2. While the arm is lifted into abduction, the humerus is distracted by rotating the therapist's hip away from the table.
3. As the therapist abducts the shoulder, the tissue barrier is engaged by imparting an inferior directed force at the greater trochanter.
4. At the tissue barrier, the therapist performs a high velocity-low amplitude (HVLA) thrust with the cephalad hand in an inferior direction.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Abduction

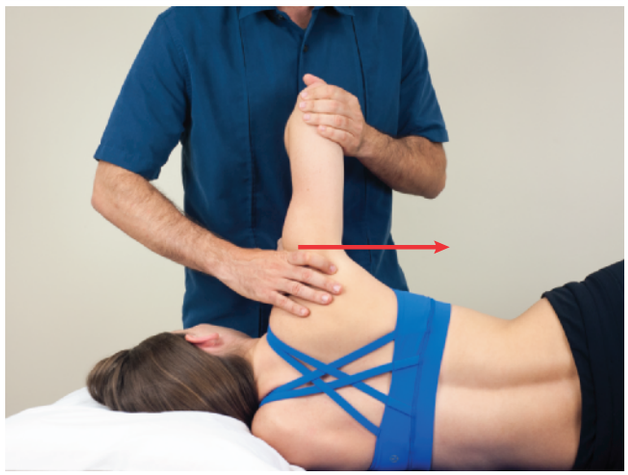


FIGURE 2-35

Patient Position: Sidelying

Therapist Position: Standing on the involved side

1. The therapist stands perpendicular to the patient and places the patient's arm in abduction (the arm needs to be in neutral, no internal or external rotation).
2. The therapist places one hand around the proximal humerus with the fingertips at the superior portion of the humerus.
3. The therapist abducts the shoulder to the restrictive barrier.
4. The patient isometrically contracts the adductors (away from the restrictive barrier) for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of force, and then the patient completely relaxes.
5. Upon relaxation, the therapist takes up the slack by gliding the humerus inferiorly and lifting the shoulder into further shoulder abduction to the new restrictive barrier. This is repeated until there is no further relaxation or improvement of range of motion into shoulder abduction.

Notes: This technique can also be performed in supine with different hand placements.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Abduction (Sternoclavicular)

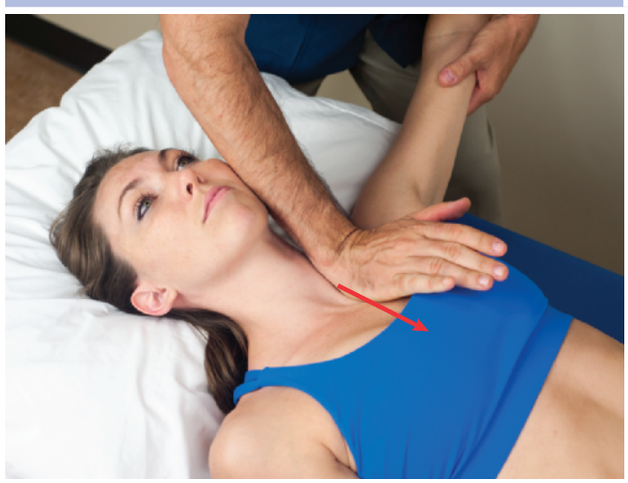


FIGURE 2-36

Patient Position: Supine at the side of the table

Therapist Position: Standing at the side of the patient above the involved shoulder

1. The therapist places the cephalad hand at the sternoclavicular joint on the distal clavicle and the caudal hand on the midshaft of the humerus.
2. The therapist internally rotates the shoulder and abducts the shoulder to the restrictive barrier.
3. The patient isometrically contracts the shoulder adductors (away from the restrictive barrier) for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of force, and then the patient completely relaxes.
4. Upon relaxation, the therapist takes up the slack by gliding the clavicle into an inferior glide toward the patient's feet and further abducting the shoulder to the new restrictive barrier. This is repeated until there is no further relaxation or improvement of range of motion into shoulder abduction and inferior clavicle glide.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Abduction

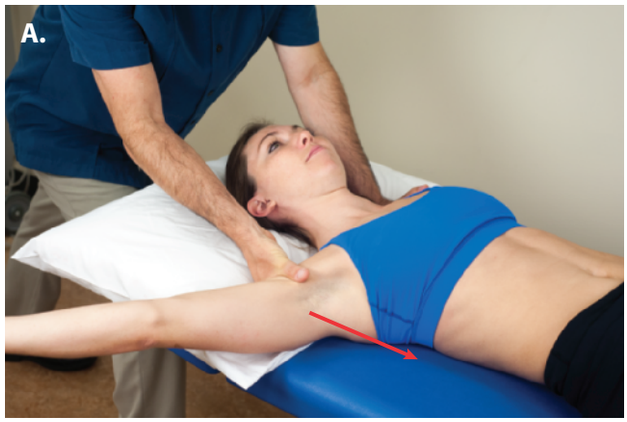


FIGURE 2-37

Patient Position: Supine

Therapist Position: Standing at the head of the table

1. The therapist places the cephalad hand on superior proximal humeral head and the caudad hand on the opposite shoulder.
2. While the patient lifts the arm into shoulder abduction, the therapist performs an accessory glide to take up all of the tissue tension with the cephalad hand in a lateral and inferior direction at the humeral head.
3. This is repeated and performed in a rhythmic format when the arm is brought into shoulder abduction.

Notes: This technique can be performed with the patient seated or standing as in Figure B.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Abduction (Scapulothoracic)

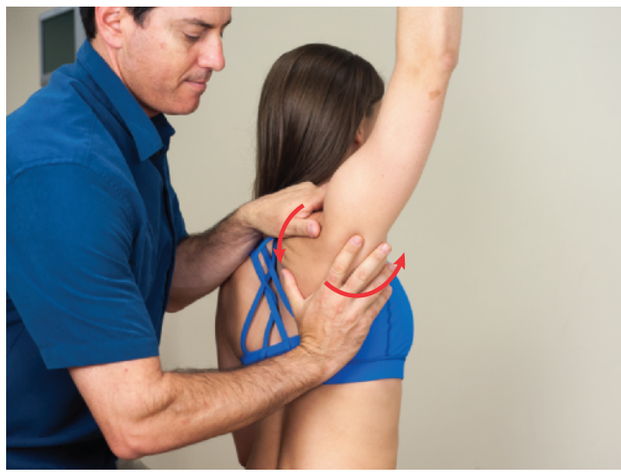


FIGURE 2-38

Patient Position: Seated

Therapist Position: Standing behind patient

1. The therapist places the cephalad hand on the superior vertebral border of the scapula and the caudal hand at the inferior portion of the scapula with the webspace of the hand on the inferior angle.
2. When the patient lifts the arm into abduction, the therapist performs an accessory glide to take up all of the tissue tension with the hands in an upward rotation movement of the scapula.
3. This is repeated and performed in a rhythmic format when the arm is brought into shoulder abduction.

Notes: This can also be performed in sidelying position.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder Abduction

FIGURE 2-39

Patient Position: Supine

Therapist Position: Standing on side to be treated

1. The patient lies supine. The therapist palpates on the high lateral border of the axilla on the medial humerus and finds the most hypertonic uncomfortable point. The therapist asks the patient to rate the discomfort at a 10/10.
2. The therapist passively adducts and compresses the shaft of the humerus into the axilla
3. The therapist palpates the point and continues to move the shoulder into adduction and internal rotation until the palpable point is down to a 2/10 discomfort level.
4. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively straightens out the arm and rechecks the point. If the point produces more than 2/10 discomfort the treatment is repeated.

Notes: This should decrease the hypertonicity of the shoulder adductors and internal rotators allowing the shoulder to abduct a greater distance. This is an indirect technique.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder Abduction

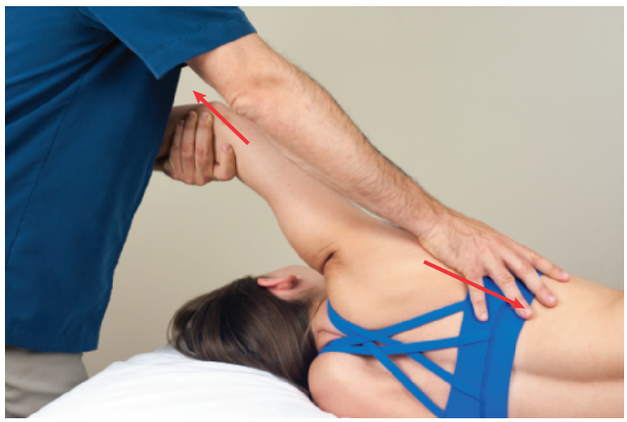


FIGURE 2-40

Patient Position: Sidelying

Therapist Position: Standing at the side of the table behind the patient.

1. The patient is sidelying with the shoulder abducted.
2. The therapist palpates the latissimus dorsi muscle group for limited fascia mobility with the caudad hand facing toward the hips and the cephalad hand pulling the humerus into shoulder abduction.
3. The therapist uses a tissue tension technique to mobilize the fascia.
4. The therapist palpates into the soft tissue and engages the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes.
5. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Notes: The therapist can place a pillow under the thoracic spine to sidebend the patient away to reach the restrictive barrier.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder Abduction

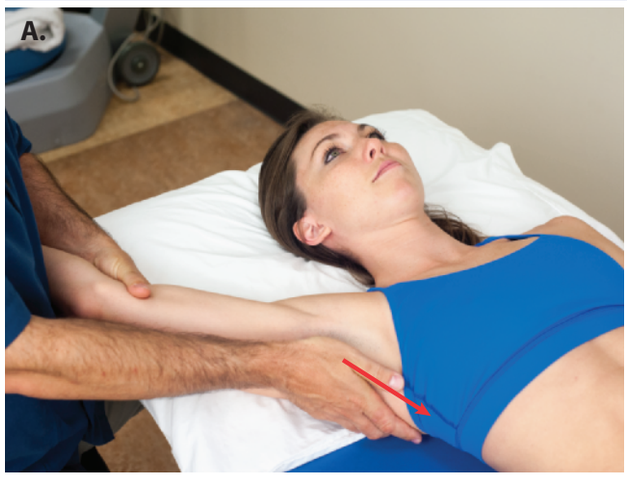


FIGURE 2-41

Manual soft tissue manipulation

Patient Position: Supine

Therapist position: Standing on the side of the table

1. The patient lies supine.
2. The therapist palpates the shoulder adductor and internal rotator muscles and holds deep pressure to relax the muscle.
3. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
4. This is repeated until the soft tissue relaxes.

Self soft tissue manipulation

Patient Position: Sidelying on foam roller

1. The patient is sidelying with the foam roller under the shoulder to be mobilized.
2. The patient rolls over the foam roller on the shoulder adductors. The patient can hold tension statically or rock back and forth to relax the soft tissues underneath as between Figures B and C.

FIGURE 2-41 (*CONTINUED*)

Notes: A towel can be placed for comfort. The patient can also use a massage knobby ball instead of the foam roller. The patient can perform the technique standing if they have enough shoulder abduction to reach the soft tissues involved as seen in Figure D.

Joint: Shoulder
Shoulder Abduction Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Abduction

FIGURE 2-42

Patient Position: Seated with the arm supported at the elbow in a neutral position.

1. The patient sits with the arm abducted to 90 degrees and places a mobilization strap around the proximal portion of the humeral head.
2. The patient abducts the shoulder to the tissue barrier. The patient's thigh then pulls downward on the mobilization strap with the knee or foot to create an inferior humeral glide.
3. The patient continues to increase active shoulder abduction along with a humeral head inferior glide.

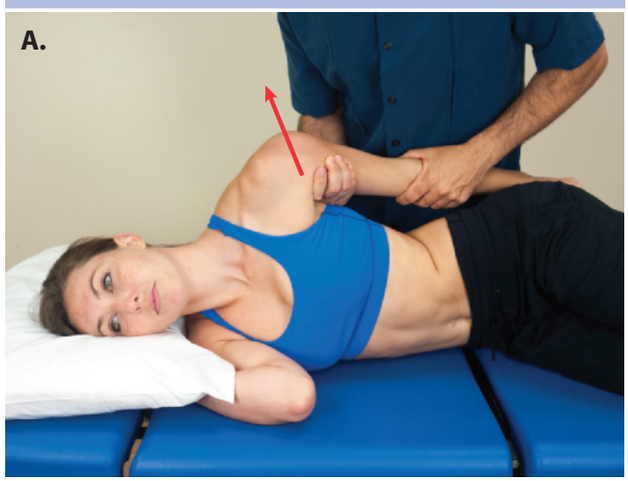
Shoulder Adduction

2E Shoulder Adduction Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Adduction



Patient Position: Sidelying at the side of the table

Therapist Position: Standing on involved side of the patient

1. The therapist places the cephalad hand on the superior medial humerus up into the arm pit and the caudal hand on the distal humerus by the elbow.
2. The therapist steps or leans back to create a distal pull at the shoulder joint.
3. The therapist performs a lateral glide on the humerus with the cephalad hand. At the tissue barrier, the therapist can create a progressive oscillation or a sustained distraction to manipulate the shoulder capsule.

FIGURE 2-43

LIMITED SHOULDER ABDUCTION

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Horizontal (Flexion) Adduction (Sternoclavicular)

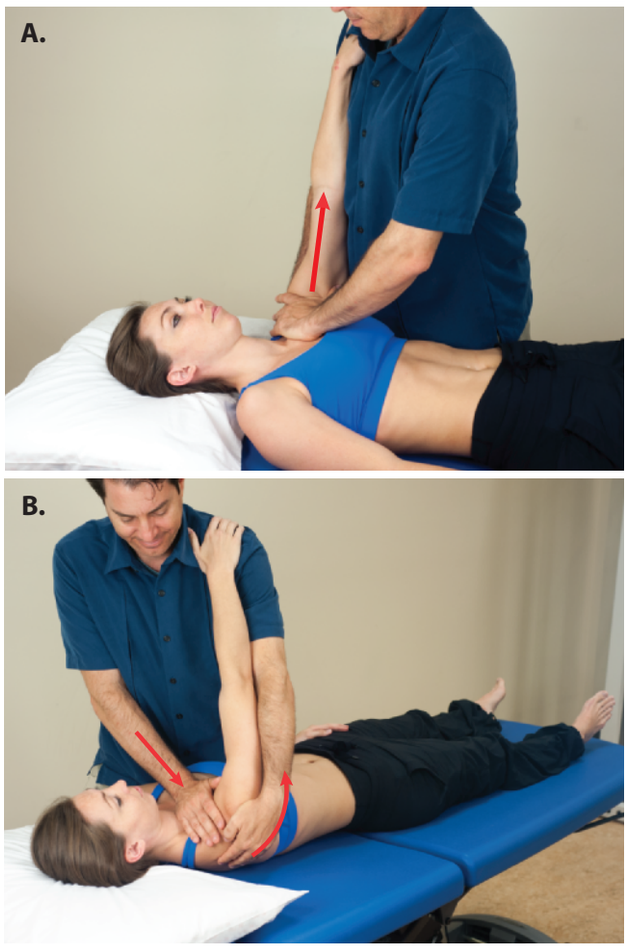


FIGURE 2-44

Patient Position: Supine at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The therapist places the cephalad hand (hypothenar eminence) on the proximal clavicle and the caudal hand around the body and grasping the scapula.
2. The patient grasps the top of the therapist's shoulder with the dysfunctional arm.
3. The therapist steps or leans back to create protraction of the scapula.
4. The therapist performs a posterior glide on the proximal clavicle with the cephalad hand. At the tissue barrier, the therapist can create a progressive oscillation to depress the proximal clavicle.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Restricted Motion: Limited Shoulder Horizontal Adduction

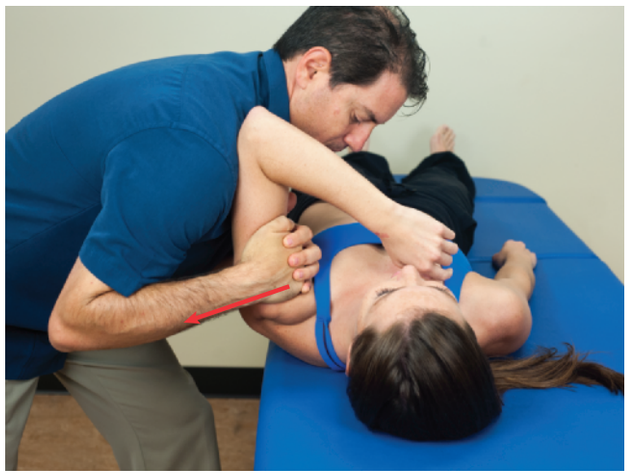


FIGURE 2-45

Patient Position: Supine at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The therapist places both hands on the proximal humerus.
2. The therapist brings the shoulder up to 90 degrees shoulder flexion and steps or leans back to create a lateral pull at the shoulder joint.
3. At the tissue barrier, the therapist uses the cephalad hand to take up all of the tissue tension with a posterior and lateral humeral glide. At the barrier, the therapist generates a HVLA thrust gliding the humeral head laterally and posteriorly.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Horizontal Adduction

FIGURE 2-46

Patient Position: Supine at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The therapist places a mobilization strap around the therapist's waist and around the patient's humerus, as proximal on the humerus as possible.
2. The therapist brings the shoulder up to 90 degrees of flexion.
3. The therapist places the cephalad hand on the elbow and the caudal hand stabilizing the humerus.
4. The therapist steps or leans back to create a lateral pull on the humerus, while placing an equal and opposite counterforce at the elbow with the cephalad hand in a medial direction until the restrictive barrier of shoulder horizontal adduction is met.
5. The patient isometrically contracts the shoulder abductors (away from the restrictive barrier) for 3 to 5 seconds, meeting the force with approximately 5 lbs of pressure, and then the patient completely relaxes.
6. Upon relaxation, the therapist takes up the slack distracting the humeral head laterally and pushing the elbow medially until the new restrictive barrier of shoulder adduction is met. This is repeated until there is no further relaxation or improvement range of motion into shoulder adduction occurs.

Notes: A towel may be placed under the belt for comfort. The therapist can use hands instead of a belt with the humerus stabilized against the therapist's shoulder.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Horizontal Adduction

Patient Position: Sidelying at the side of the table

Therapist Position: Standing on the involved side of the patient

1. The patient brings the shoulder up to 90 degrees of shoulder flexion.
2. The therapist places the cephalad hand on the elbow and the caudal hand on the medial proximal humerus.
3. While the patient actively horizontally adducts the shoulder, the therapist performs an accessory glide to take up all of the tissue tension in a lateral direction of the proximal humerus.
4. This is repeated and performed in a rhythmic format as shoulder adduction is performed.

FIGURE 2-47

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder Adduction

Patient Position: Prone with the involved arm off the edge of the table

Therapist Position: Standing on the uninvolved side of the patient

1. The therapist palpates the middle and posterior deltoid that is hypertonic. The therapist presses into the muscle of discomfort and finds the most hypertonic uncomfortable point. The therapist asks the patients to rate the discomfort at a 10/10.
2. The therapist passively abducts and rotates the shoulder and downwardly rotates the scapula.
3. The therapist palpates the muscle and continues to move the shoulder until the palpable point is down to a 2/10 discomfort level.
4. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively brings the arm back to midline and rechecks the point. If the point produces more than 2/10 discomfort the treatment is repeated.

FIGURE 2-48

Notes: This should decrease the hypertonicity allowing the shoulder to adduct a greater distance. This is an indirect technique.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder Horizontal Adduction

FIGURE 2-49

Patient Position: Seated

Therapist Position: Standing on the front side of the patient

1. The therapist horizontally adducts the shoulder and assesses protraction of the scapula for limited fascia mobility. The therapist places the cephalad hand on the scapula and the caudad hand on the midshaft of the humerus to pull the humerus into horizontal adduction and scapular protraction.
2. The therapist uses a tissue tension technique to mobilize the fascia.
3. The therapist palpates into the soft tissue and engages the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes.
4. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder Adduction

FIGURE 2-50

Manual soft tissue manipulation

Patient Position: Prone

Therapist Position: Seated on the involved side of the patient

1. The patient lies prone.
2. The therapist palpates the posterior lateral shoulder structures for increased tone and soft tissue tightness, and applies deep pressure.
3. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
4. This is repeated until the soft tissue relaxes.

Notes: The therapist can use a soft tissue traction device (plunger) to assist in relaxing the tissues.

B.

C.

FIGURE 2-50 (*CONTINUED*)

Self soft tissue manipulation

Patient Position: Standing or supine with the posterior shoulder on foam roller or massage ball

1. The patient rolls over the foam roller on the shoulder abductors of the shoulder to be mobilized.
2. The patient can hold tension statically or rock back and forth to relax the soft tissues underneath.

Notes: A towel can be placed for comfort. The patient can also use a massage knobby ball instead of the foam roller.

Joint: Shoulder
Shoulder Adduction Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Adduction

FIGURE 2-51

Patient Position: Standing or seated

1. The patient stands or sits and slowly brings the humerus into horizontal adduction.
2. The patient places a rolled towel right over the coracoid process and uses the opposite hand to traction and pull the arm across the body.
3. This can be repeated or statically held.

Notes: A rolled towel placed in the anterior shoulder crease will assist with providing a lateral glide of the humeral head when horizontally adducting the shoulder. The patient should not feel a medial humeral head pinch.

Shoulder Internal Rotation

2F Shoulder Internal Rotation Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder Internal Rotation

FIGURE 2-52

Patient Position: Supine with the arm at 90 degrees of flexion and maximal internal rotation

Therapist Position: Standing on the side of the patient's shoulder to be treated

1. The therapist places a belt around the therapist's waist and around the proximal humerus.
2. The therapist places the cephalad hand on the bent elbow in order to be able to apply a posterior force onto the humerus. The caudad hand can assist in applying a lateral distraction on the humerus.
3. The therapist uses bodyweight to shift away from the patient to create the posterior glide while the arm is in internal rotation to tissue tension.
4. At the tissue barrier, the therapist can create a progressive oscillation to manipulate the shoulder capsule in a posterior direction.

Notes: The therapist can use a mobilization strap around the therapist's waist and around the patient's humerus for humeral lateral traction.

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Restricted Motion: Limited Shoulder Internal Rotation

FIGURE 2-53

Patient Position: Supine at the side of the table, with the shoulder off the edge

Therapist Position: Standing on the involved side of the patient

1. The therapist places the cephalad hand on the forearm to internally rotate the shoulder and the caudal hand on the anterior proximal humerus.
2. The therapist stands above the shoulder in order to use the body to increase internal rotation.
3. The therapist brings the shoulder up to 90 degrees of shoulder abduction with maximum shoulder internal rotation.
4. At the tissue barrier of shoulder internal rotation and a posterior glide of the humerus at the glenohumeral joint, the therapist creates a quick HVLA thrust in a posterior direction onto the shoulder capsule with the caudal hand.

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder Internal Rotation

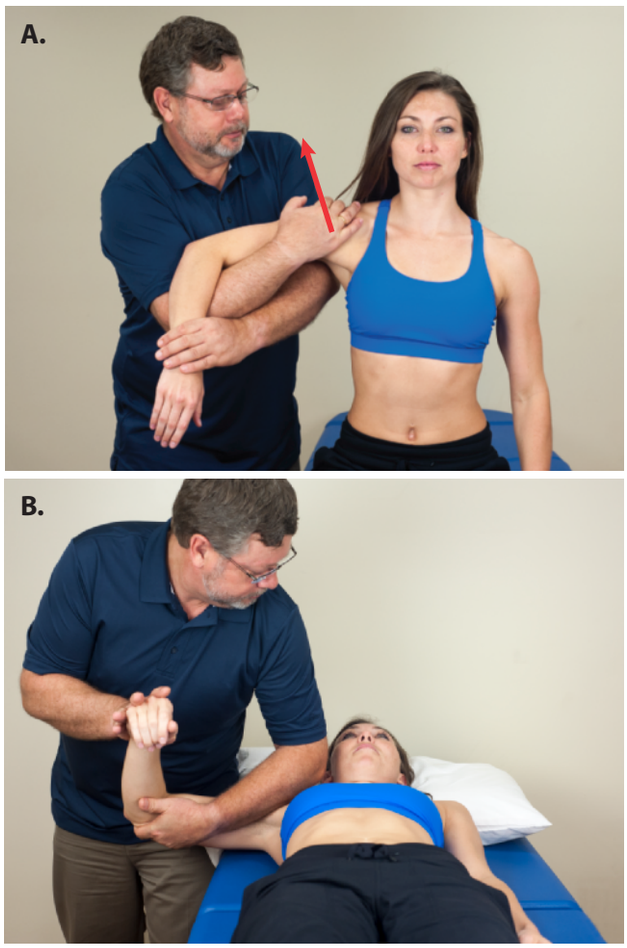


FIGURE 2-54

Patient Position: Seated

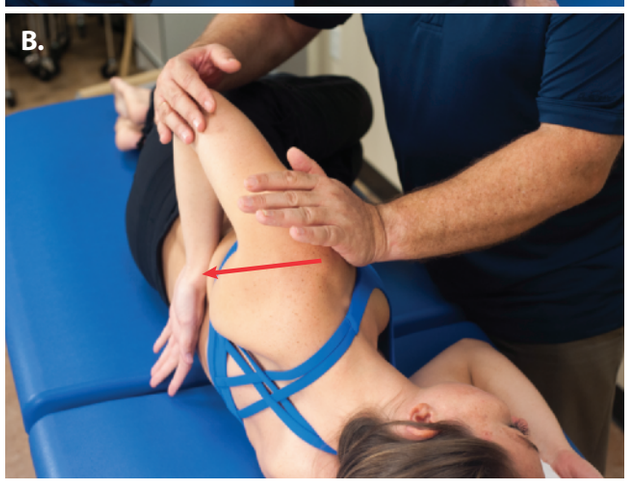
Therapist Position: Standing on the involved side of the patient

1. The therapist places the cephalad hand on the top of the shoulder to stabilize and the caudal hand on the forearm to internally rotate the shoulder.
2. The therapist bends the patient's elbow to 90 degrees, brings the shoulder up to 90 degrees of abduction, and maximally internally rotates the shoulder to the restrictive barrier.
3. The patient isometrically contracts the external rotators of the shoulder (away from the restrictive barrier) for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of pressure, and then the patient completely relaxes.
4. Upon relaxation, the therapist takes up the slack pushing the shoulder into further internal rotation until the new restrictive barrier is met. This is repeated until there is no further relaxation or improvement of range of motion into shoulder internal rotation occurs.

Notes: Technique can be performed with patient in supine as in Figure B.

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder Internal Rotation



Patient Position: Seated

Therapist Position: Standing on the involved side of the patient

1. The patient internally rotates the shoulder.
2. The therapist places the cephalad hand on the anterior aspect of the shoulder and the caudal hand on forearm to assist in internally rotating the arm.
3. As the patient internally rotates the shoulder and brings the arm behind the body, the therapist uses the cephalad hand and performs an accessory glide to take up all of the tissue tension in a posterior directed force on the anterior surface of the humerus.
4. Each time the patient actively internally rotates the shoulder the therapist performs the posterior humeral accessory glide.

FIGURE 2-55

Notes: This can be performed in sidelying as in Figure B and in supine (Figure C).

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder Internal Rotation

FIGURE 2-56

Patient Position: Supine

Therapist Position: Standing on the involved side of the patient

1. The therapist palpates the rotator cuff muscles (supraspinatus) that are hypertonic. The therapist presses into the muscle of discomfort and finds the most hypertonic uncomfortable point. The therapist asks the patient to rate the discomfort at a 10/10.
2. The therapist then passively abducts the arm to 45 degrees, flexion to 45 degrees, and externally rotates the shoulder.
3. The therapist then palpates the supraspinatus muscle and continues to move the shoulder until the palpable point is down to a 2/10 discomfort level.
4. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively straightens out the arm and rechecks the point. If the point produces more than 2/10 discomfort the treatment is repeated.

Notes: This should decrease the hypertonicity of the external rotators allowing the shoulder to internally rotate a greater distance. This is an indirect technique.

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder Internal Rotation

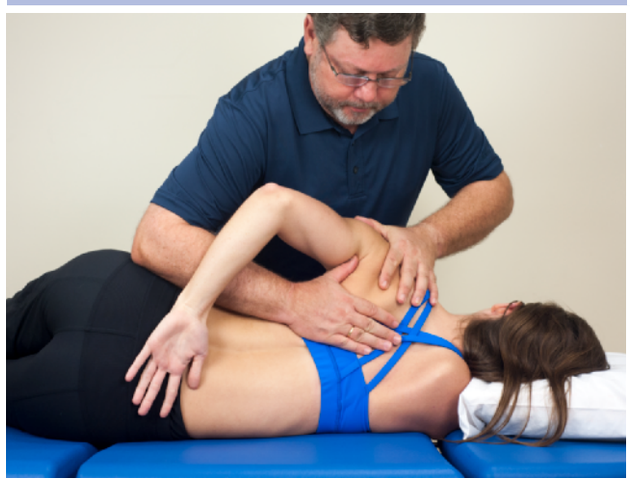


FIGURE 2-57

Patient Position: Sidelying, dysfunctional side up

Therapist Position: Standing in front of the patient

1. The patient is positioned sidelying with the dysfunctional side of the shoulder to be mobilized facing up.
2. The therapist uses the cephalad hand on the anterior part of the humerus and the caudad hand on the vertebral border and inferior angle of the scapula.
3. The therapist uses a tissue tension technique to mobilize the fascia, with a posterior glide of the humerus and downward rotation of the scapula.
4. The therapist palpates into the soft tissue and engages the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes.
5. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder Internal Rotation

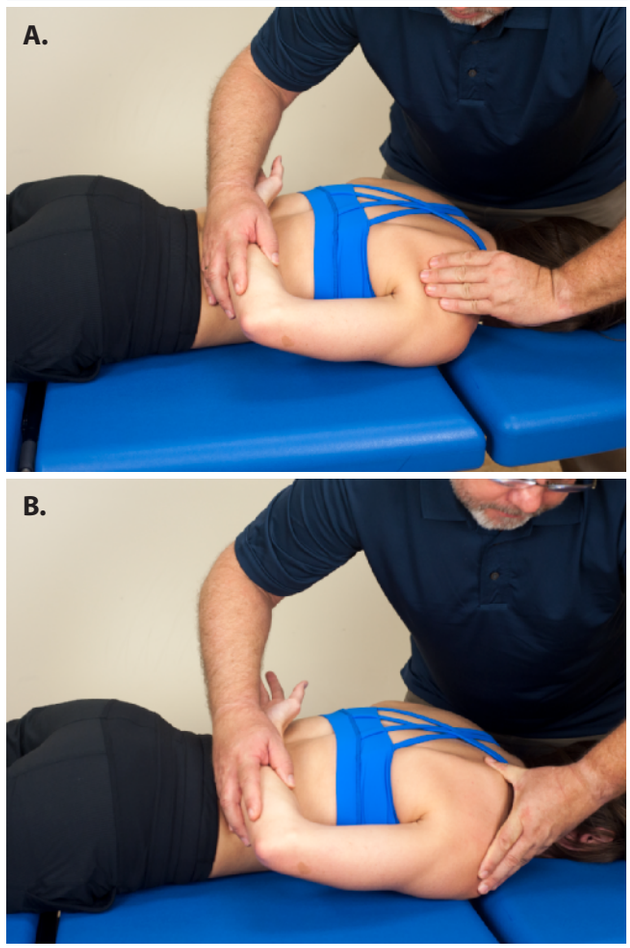


FIGURE 2-58

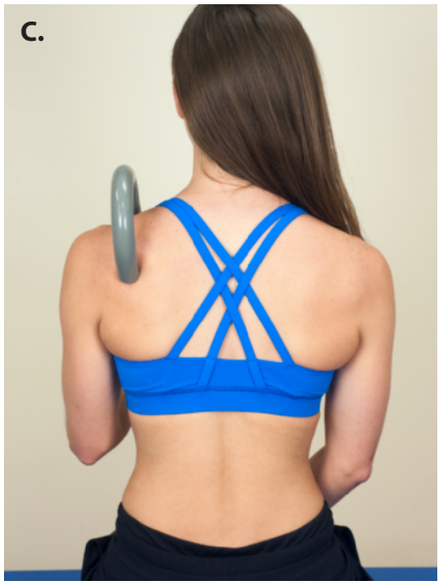
Manual soft tissue manipulation

Patient Position: Prone

Therapist Position: Standing on the side of the table

1. The patient lies prone
2. The therapist palpates the supraspinatus muscle.
3. The therapist performs deep pressure and holds until the muscle relaxes.
4. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
5. This is repeated until the soft tissue relaxes.

C.



D.

FIGURE 2-58 (*CONTINUED*)

Self soft tissue manipulation

Patient Position: Seated

1. The patient applies pressure on the supraspinatus muscle by using a cane or massage stick.
2. The patient can hold statically or rock back and forth to relax the soft tissues.
3. This is repeated until the soft tissue relaxes.

Notes: The patient can also rest bodyweight on a ball (Figure D).

Joint: Shoulder
Shoulder Internal Rotation Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder Internal Rotation

A.

B.

Patient Position: Sidelying

1. The patient lies on the shoulder to be mobilized and brings the arm up to 90 degrees of elbow and shoulder flexion.
2. The patient pushes the forearm into internal rotation toward the table.
3. The patient can hold statically or perform contact relax muscle energy.

FIGURE 2-59

Notes: This can also be performed standing (Figure B) with an elastic band or strap providing a posterior glide while the patient internally rotates the shoulder behind the back.

Shoulder External Rotation

2G Shoulder External Rotation Manual Therapy Techniques

- Joint manipulation, non-thrust
- Joint manipulation, thrust
- Muscle energy technique
- Mobilization with movement
- Counterstrain technique
- Myofascial manipulation
- Soft tissue manipulation
- Self-mobilization

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Joint manipulation, non-thrust
Restricted Motion: Limited Shoulder External Rotation

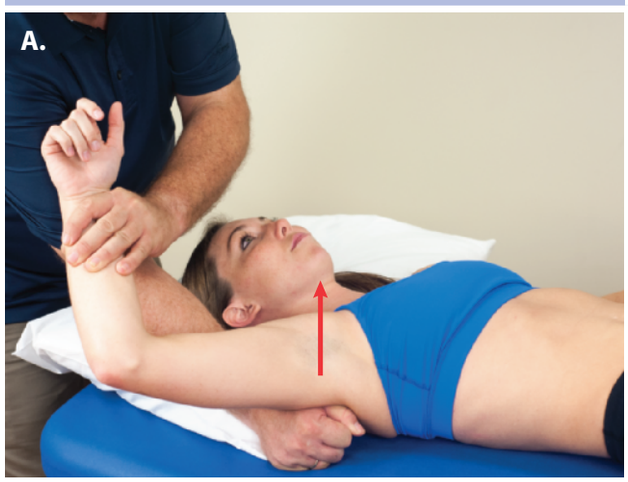


FIGURE 2-60

Patient Position: Supine

Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The therapist places the cephalad hand on the midshaft of the forearm and the caudal hand behind the humerus at the glenohumeral joint.
2. The humerus is placed into flexion, abduction, and external rotation. As the therapist externally rotates the shoulder, the tissue tension is taken up by pressing the humerus in an anterior direction.
3. At the tissue barrier, the therapist performs progressive oscillations in an anterior direction on the humeral head.

Notes: This can also be performed while sitting as in Figure B.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Joint manipulation, thrust
Joint Dysfunction: Limited Shoulder External Rotation

FIGURE 2-61

Patient Position: Prone with the shoulder off the table

Therapist Position: Standing on the inferior side of the patient's shoulder to be treated

1. The therapist places the cephalad hand on the posterior proximal humerus and the caudad hand grasping around the elbow.
2. The arm is positioned in shoulder abduction and external rotation. As the arm is abducted, the therapist takes up the slack by gliding the humerus anteriorly with the cephalad hand at the proximal posterior portion of the humerus.
3. At the tissue barrier, the therapist performs a quick thrust in an anterior direction.

Notes: This should be done with caution as the shoulder can dislocate anteriorly easily in this position. This may be considered for patients with a posteriorly subluxed glenohumeral joint.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Muscle energy technique
Restricted Motion: Limited Shoulder External Rotation

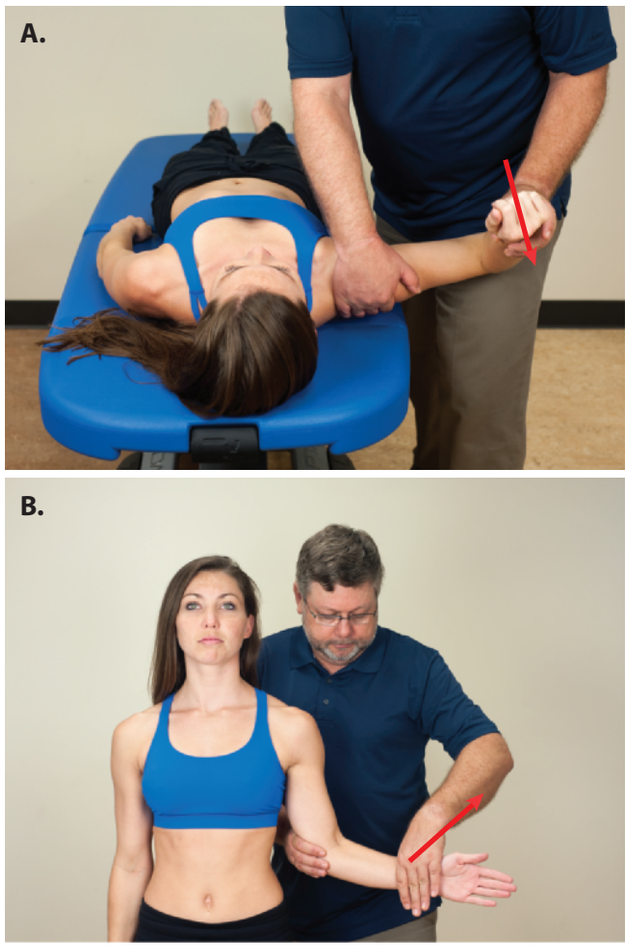


FIGURE 2-62

Patient Position: Supine at the side of the table

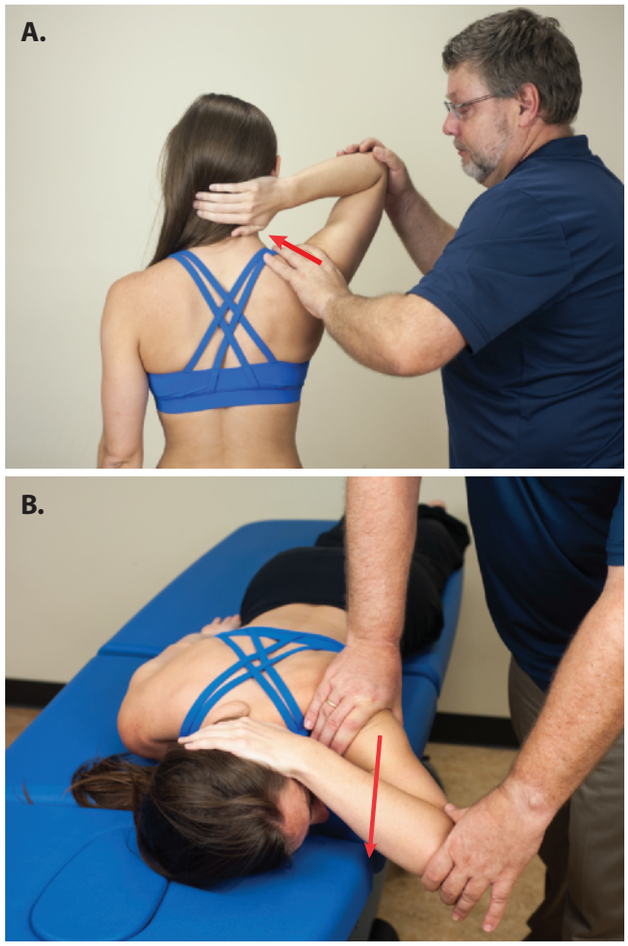
Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The therapist places the cephalad hand on the forearm and the caudal hand on clavicle
2. The therapist brings the patient's shoulder and knee up to 90 degrees of shoulder abduction and externally rotates the arm into maximum shoulder external rotation until the restrictive barrier is met.
3. The patient isometrically contracts the shoulder internal rotators (away from the restrictive barrier) for 3 to 5 seconds, meeting the therapist's force with approximately 5 lbs of pressure, and then the patient completely relaxes.
4. Upon relaxation, the therapist takes up the slack pushing the arm into further external rotation to the new restrictive barrier. This is repeated until there is no further relaxation or improvement of range of motion into shoulder external rotation occurs.

Notes: This can also be performed standing against a wall with the arm in neutral flexion and abduction. This can be performed in varying degrees of shoulder abduction.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Mobilization with movement
Restricted Motion: Limited Shoulder External Rotation



Patient Position: Seated

Therapist Position: Standing on the same side of the patient's shoulder to be treated

1. The patient places the arm in 135 degrees of abduction and places the hand around his or her neck.
2. The therapist places the cephalad hand on the elbow and the caudal hand on the posterior shoulder and scapula.
3. As the patient performs external rotation of the shoulder, the therapist performs an accessory glide to take up all of the tissue tension in an anterior direction on the posterior humerus along with a posterior tilt of the scapula.
4. This is repeated each time the patient actively externally rotates the shoulder.

FIGURE 2-63

Notes: This can be performed prone as in Figure B.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Counterstrain technique
Restricted Motion: Limited Shoulder External Rotation

FIGURE 2-64

Patient Position: Prone

Therapist Position: Standing on the side of the patient

1. The patient lies prone. The therapist palpates the subscapularis that is hypertonic. The therapist presses into the muscle of discomfort and finds the most hypertonic uncomfortable point. The therapist asks the patient to rate the discomfort at a 10/10.
2. The therapist then passively internally rotates the shoulder with some extension and abduction.
3. The therapist then palpates the adductor muscle and continues to move the shoulder until the palpable point is down to a 2/10 discomfort level.
4. The therapist holds the position for 90 seconds. The therapist does not need to place pressure on the point for the 90 seconds. Once the 90 seconds are up, the therapist passively straightens out the arm and rechecks the point. If the point produces more than 2/10 discomfort the treatment is repeated.

Notes: This should decrease the hypertonicity of the internal rotators allowing the shoulder to externally rotate a greater distance. This is an indirect technique.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Myofascial manipulation
Restricted Motion: Limited Shoulder External Rotation

FIGURE 2-65

Patient Position: Supine

Therapist Position: Standing on the side of the patient

1. The patient lies supine with the shoulder abducted to 90 degrees.
2. The therapist palpates the pectoralis major.
3. The therapist uses a tissue tension technique to mobilize the fascia by grasping the elbow with the cephalad hand to elongate and anchor the tissue tension into external rotation. The therapist uses the caudal hand to engage the restrictive barrier.
4. The therapist palpates into the soft tissue and engages the restrictive barrier with a light force in the direction of tension, sometimes up to 3 to 5 minutes.
5. A light pressure on the barrier is held until the tissue barrier softens and relaxes and the myofascial unit elongates.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Soft tissue manipulation
Restricted Motion: Limited Shoulder External Rotation

A.

Manual soft tissue manipulation

Patient Position: Supine

Therapist Position: Standing or seated on the side of the table

1. The patient lies supine
2. The therapist palpates the subscapularis muscle and applies deep pressure and holds until the muscle relaxes.
3. The therapist can perform soft tissue manipulation with gentle strumming and lateral mobilization of the muscles and tendons, and with circular strokes to increase circulation.
4. This is repeated until the soft tissue relaxes.

B.

Self soft tissue manipulation

Patient Position: Prone over a foam roller or massage ball under the involved adductor muscle.

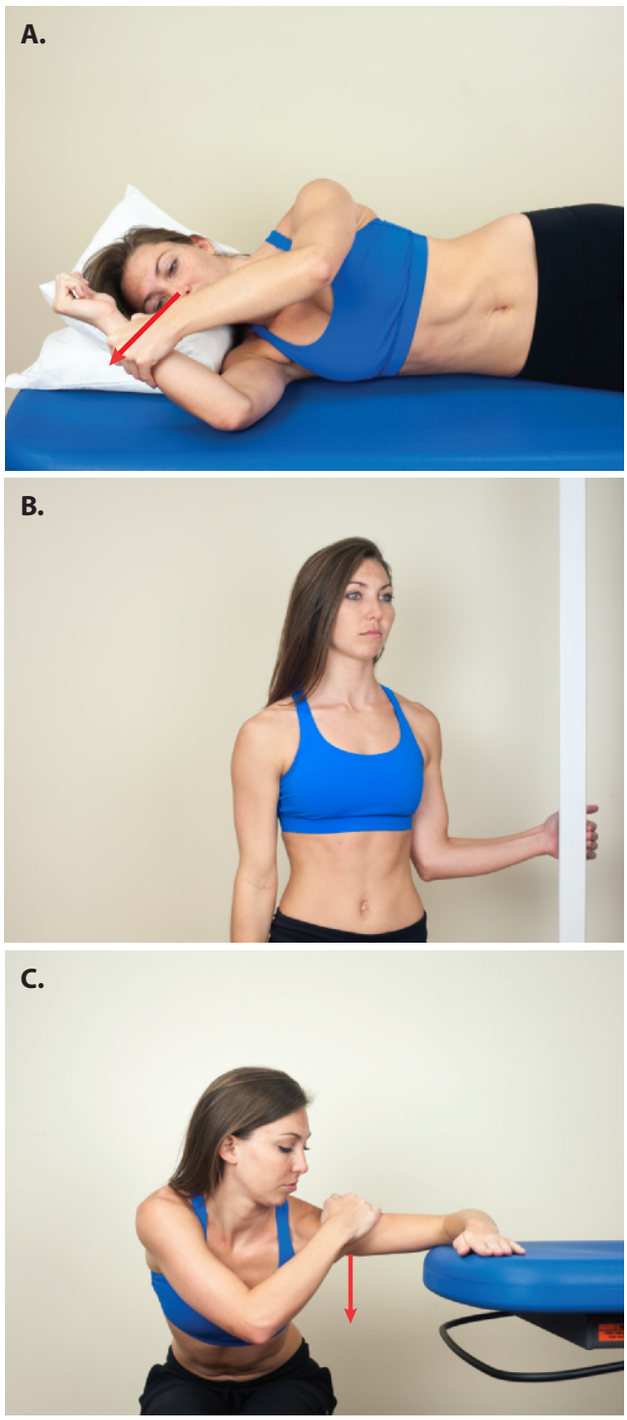
1. The patient lies prone with the shoulder in external rotation with a knobby ball on the pectoralis major of the side of the shoulder to be mobilized
2. The patient can hold tension statically or rock back and forth to relax the soft tissues underneath.

FIGURE 2-66

Notes: A towel can be placed for comfort. The patient can also use a foam roller.

Joint: Shoulder
Shoulder External Rotation Motion Limitation

Type of Manipulation: Self-mobilization
Restricted Motion: Limited Shoulder External Rotation



Patient Position: Sidelying on the dysfunctional side

1. The patient places a hand on the distal forearm to be mobilized.
2. The patient externally rotates the shoulder and pushes the forearm in a downward direction toward the table.
3. The patient can statically hold or perform a contract-relax technique.

FIGURE 2-67

Notes: It is important to maintain the sidelying position and scapula stabilization. This stretch can also be performed in standing (see Figure B). Figure C shows the patient sitting with the shoulder placed in external rotation on the table. The patient provides an anterior glide of the glenohumeral joint.