Physical Therapy Protocol for Massive Irreparable Rotator Cuff Tears

From: Shepet KH, Liechti DL, Kuhn JE. Nonoperative Treatment of Chronic, Massive, Irreparable Rotator Cuff Tears: A Systematic Review with Synthesis of a Standardized Rehabilitation Protocol. Journal of Shoulder Elbow Surgery

General Comments:

The therapist should set patient expectations by providing education regarding the pathology and goals of the rehabilitation program while reassuring the patient that progress may be slow and may require many months [1,2]. Patients should be informed that pain relief and improved function are expected, but patients may still have weakness with overhead activities after rehabilitation [1]. Patients should work with a physical therapist to ensure the exercises are being performed correctly at the frequency and duration as prescribed [1,2,4].

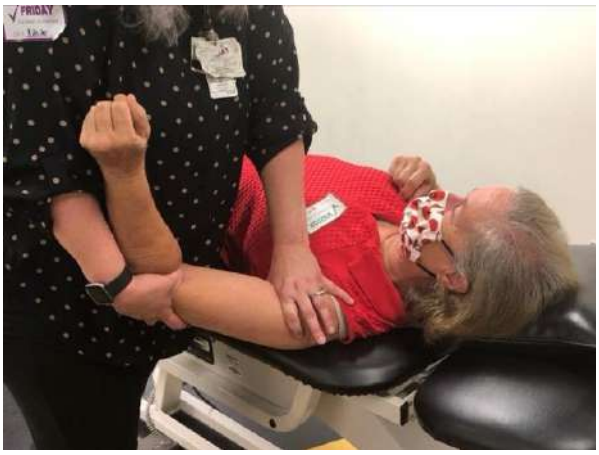
Progress is expected to be slow, and the program should be prescribed for at least 2 to 3 sessions per week for a minimum of 12 weeks [4,5] and may require up to 5 months of some form of supervised physical therapy [2]. Patients who have received adequate education should be able to progress to home exercises with decreasing visits with the therapist [2].

Modalities and Other Treatments

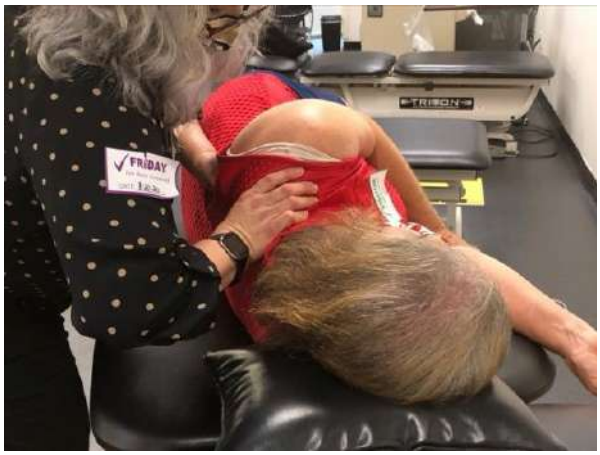
If patients are experiencing significant pain, subacromial corticosteroid injections or nonsteroidal anti-inflammatory drugs may be helpful [6.7].

Manual Therapy

Manual therapy may be an helpful component of the rehabilitation program [1,3,4]. Two types of manual therapy may be employed [3]. Each technique requires 8 to 10 repetitions with a 30 second rest between each one. Posterior glenohumeral mobilization is performed with the patient supine with the shoulder abducted to 30° to 40° and slight external rotation. The therapist provides inferior axial distraction followed by a posterior glide maintained for one minute. Scapular mobilization is performed with the patient lateral [3].



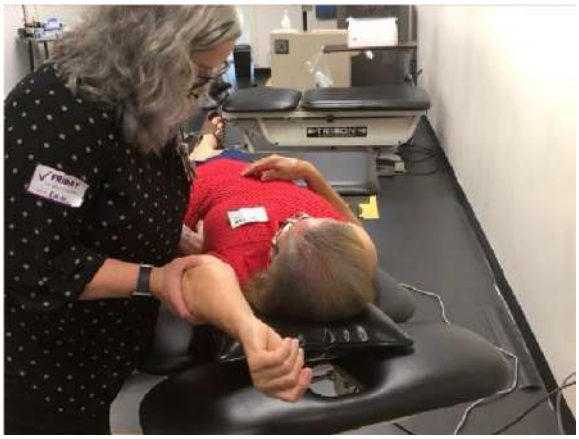
Posterior Glenohumeral Mobilization



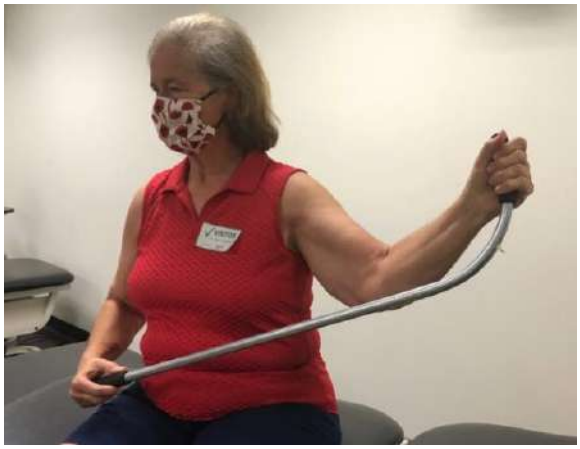
Scapular Mobilization

Flexibility-Passive Range of Motion

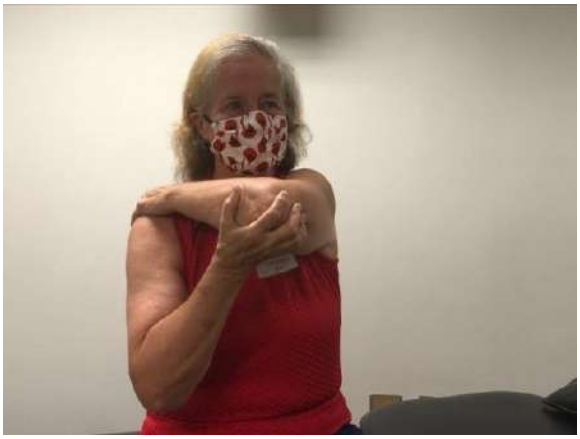
Disuse and pain can lead to stiffness in the shoulder in multiple planes of motion. Stretching within the limits pain is important. Forward elevation, external rotation, and internal rotation (posterior capsule stretching) is encouraged. Patients with poor function can start with stretching exercises in a supine position or lateral position, moving to upright when function improves.



Forward Elevation (Inferior Capsule) Stretch



External Rotation (Anterior Capsule) Stretch



Cross Body Stretch

Sleeper Stretch

Internal Rotation (Posterior Capsule) Stretches

Postural, Scapular Stabilization, and Proprioception Exercises

Posture correction, training in appropriate muscle recruitment, and improving proprioception through exercises that involve weight bearing of the involved upper extremity are important [1,3,4].

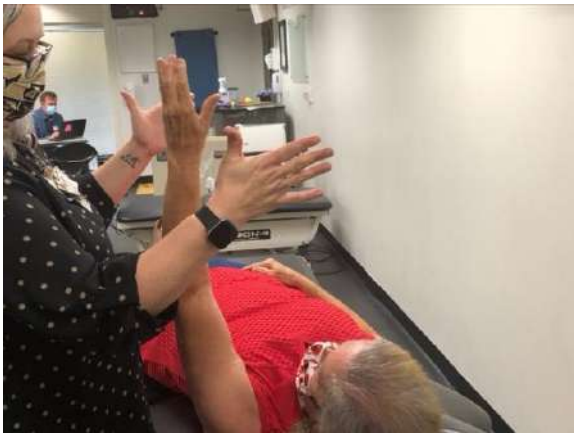
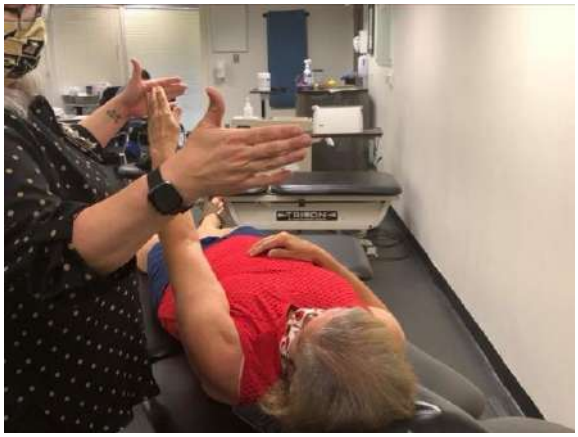
Strengthening

An important component of strengthening is the re-education of muscle recruitment [1,3,5]. After range of motion is improved, the program should incorporate deltoid and teres minor strengthening exercises [1,2,3,5] . These generally begin with the patient supine and progress to standing with gradually increasing amount of resistance. The strengthening program always focuses on conscious muscle control [1,3,4].

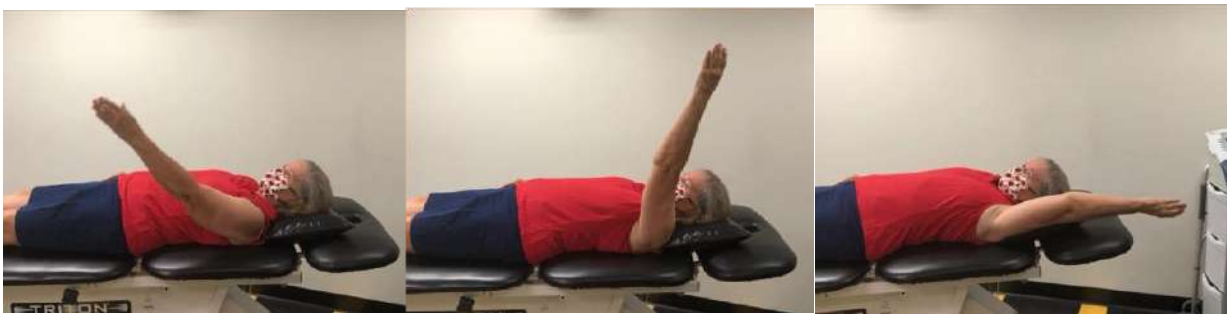
Deltoid re-education exercises should be done 3 to 5 times each day [5]. Begin by performing pendulum exercises as a warm up for 5 minutes. While supine the arm is moved to 90° of forward elevation. If a patient is very weak, this can be done with the elbow flexed to reduce the lever arm [1]. Active assisted motion is employed first, using the uninjured arm to assist the injured arm. The arm is held in this position using the patient's own shoulder strength. Using the other arm or a cane to assist, the arm should be moved into full elevation and back to the arm at the side slowly. This motion should be smooth and continuous for 5 minutes or until the arm is fatigues [5].

Active Assisted Supine Forward Elevation

When active assisted full arc of elevation is achieved, the patient is instructed to repeat this exercise without assistance (active elevation) while supine [5]. When patients have good control going to the vertical and back then they begin to do controlled swaying movements. The sways go through an arc of approximately 20 degrees from cephalad to caudad [1], with gradual increases in the arc of motion until full active elevation is achieved [5]. The therapist will provide the ranges for the arc of motion [5]. Patients should focus on the eccentric (lowering) phase of motion [1].

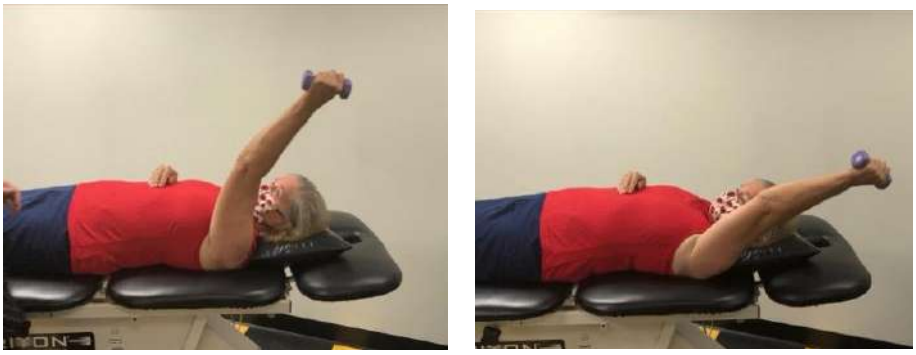



Working within Arc of Motion Based on the Patient's Ability. As Control Improves the Arc is Widened

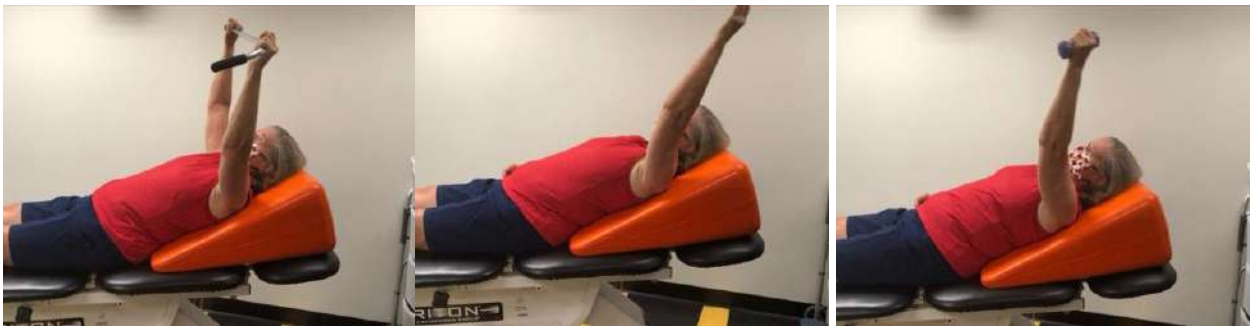


Active Supine Forward Elevation with Full Motion

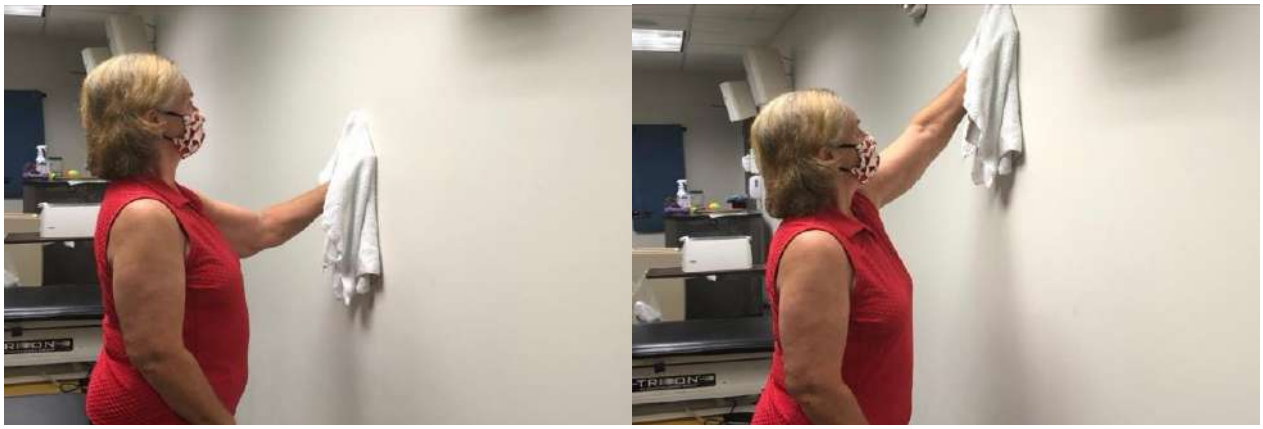
When the patient achieves a full arc of active forward elevation, a light weight (can of beans or water bottle), is held in the hand as the patient works on elevating the arm with resistance while supine.[1,5] This is done for 5 minutes or until the patient is fatigued. Gaining control during the eccentric lowering phase of this exercise is encouraged.[1] When the patient can comfortably perform full elevation while supine using a 1kg weight, the head of the bed is raised and the program is repeated starting with active assisted, then active, then resistive exercises.



Resisted Supine Forward Elevation



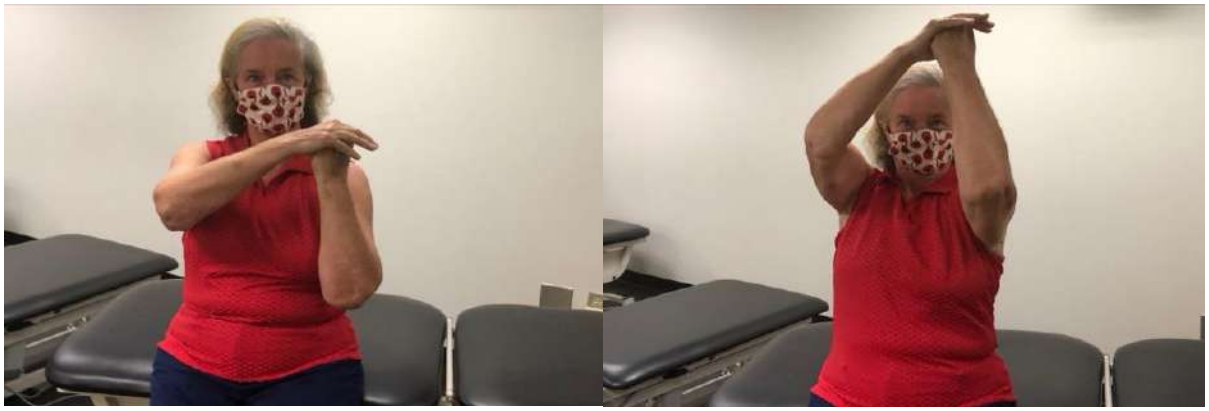
When the patient gains the ability to raise the arm to full elevation when the head of the bed is 45°, wall slides are added to the program [1]. Patients are instructed to push a cloth or ball up the wall and then lower the arm under good control eccentrically firing the muscles during descent[1].

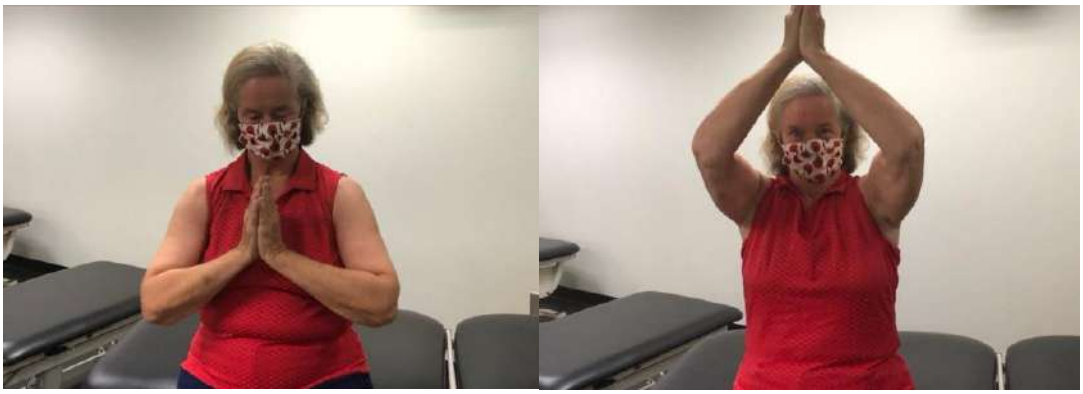


Wall Slides

As the patient gains strength the head of the bed is raised until the patient is upright. It has been noted that some patients struggle at 70° of forward elevation and may be helped by using the assistance of the other arm, and concentrating on overhead control [1].

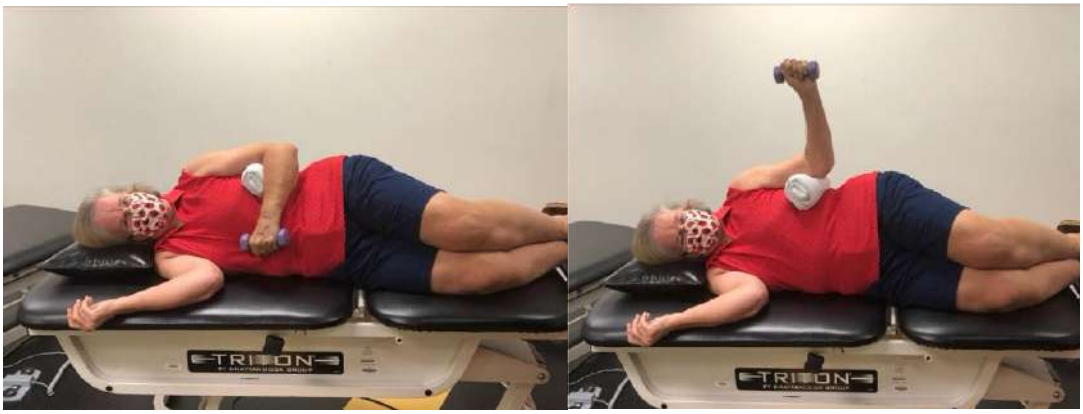
Additionally, an "Hand over Fist" exercise described by Levy et al [5] may be employed to strengthen the deltoid. The hand of the involved arm is clenched into a fist, with the hand of the contralateral side place on top of the fist. The patient is instructed to push up on the contralateral hand and elevatio n may be achieved. This exercise should be done with 10 repetitions for 3 to 5 sets each day [5]. The authors of the systematic review have found a similar effect using the "preacher sign" where the flat hands are placed together and the arms are elevated together.



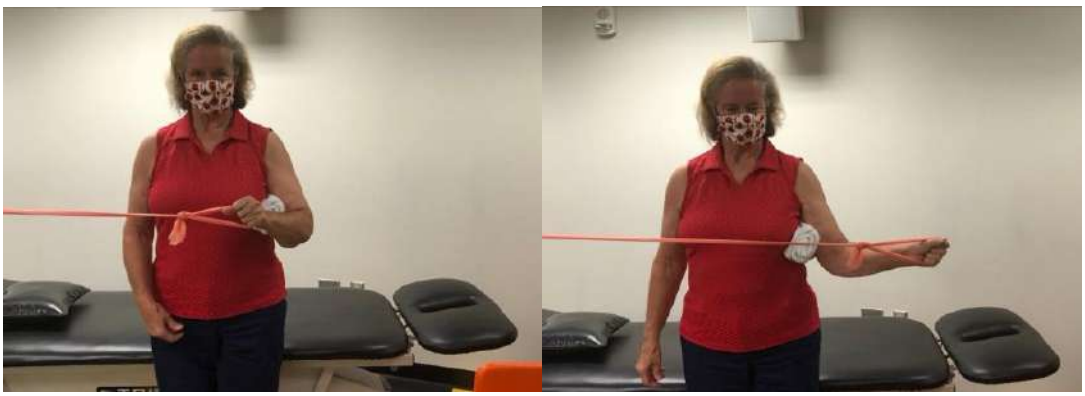


Preacher Sign

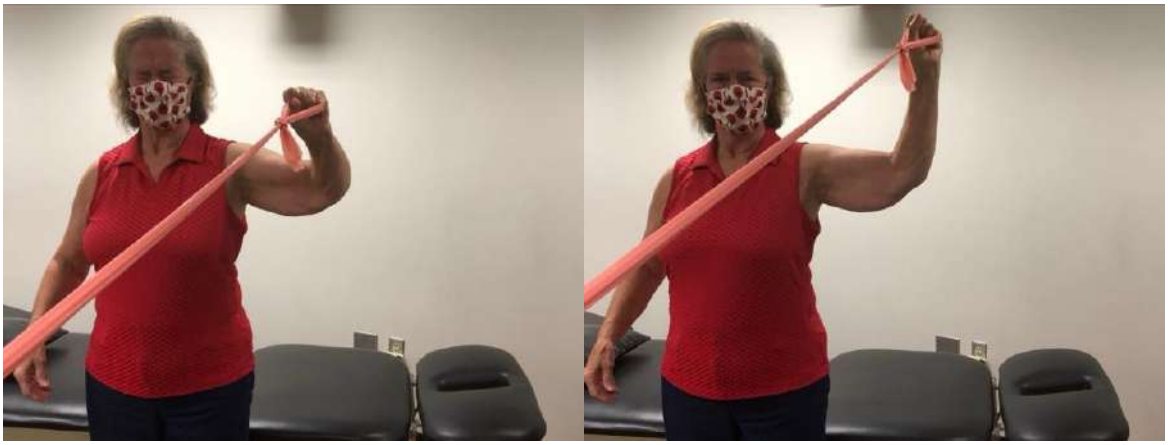
Strengthening the Teres Minor is done using external rotation against resistance using bands while sitting[1] or with light weights while lying on the contralateral side.



Strengthening Teres Minor Lateral Position



Strengthening Teres Minor Upright arm at Side



Strengthening Teres Minor Upright in Abduction

Notes on Progression of the Program

Monitoring patient pain is important in gaging when to progress [2,4]. Pain should be no more than moderate (<4/10 on VAS) during and after the exercise program [4]. Progression can occur by removing external supports, altering the starting and finishing positions for the arc of elevation, increasing the load and/or the number of repetitions.