



Nonoperative Rehabilitation for Full Thickness Rotator Cuff Tears Therapist Booklet

Introduction

The Shoulder MOON group is a Multicenter Orthopaedic Outcomes Network, a consortium of institutions working together to bring patients the best possible care with disorders of the shoulder. You have been kind enough to be in our rehabilitation study. We are trying to find out why some patients with rotator cuff tears get better with therapy and others do not.

The patient before you is participating in a study to determine the effectiveness of physical therapy in treating rotator cuff tears. It is essential that he or she follow this rehabilitation program very closely. This rehabilitation program has been distilled from seven Level 1 or Level 2 randomized controlled trials that demonstrate benefits from physical therapy for treating rotator cuff pain. Please follow this program carefully.

Do not add, alter, or skip any of the treatments in this protocol.

The therapist can provide instruction on patient directed active range of motion, patient directed flexibility, and patient directed strengthening. There is evidence that manual therapy can be helpful at improving outcomes and should be included at the discretion of the therapist. When the patient no longer needs manual therapy and is ready to continue the exercise program at home, he or she can be moved to a home exercise program, as there is evidence that home exercise programs can be as effective as regular physical therapy visits.

Patients should perform the strengthening exercises three times per week. Range of motion and flexibility exercises can be performed daily.

Modalities

With regard to modalities, some of these exercise programs use heat and cold. Thermal modalities should be applied for 15 minutes before and after exercise. There is limited evidence to support the use of electrotherapy. There is no evidence to support the use of ultrasound.



Therapist Directed Manual Therapy

In patients who have limited range of motion or who otherwise might benefit, some well-designed studies with a high level of evidence suggest that manual therapy is of benefit. This manual therapy is primarily aimed at shoulder but may be directed to the shoulder girdle, the cervical spine and the upper thoracic spine. In most cases passive accessory or passive physiologic joint mobilization Maitland grades I-IV is used. Maitland Mobilization Techniques are performed 2-4 times at 30 seconds each with two or three oscillations per second with the grade of stretch determined by the patients response and end feel testing, and should include:

- Inferior glide
- Anterior glide
- Posterior glide
- Long axis traction

The goals are to:

- Enhance glenohumeral caudal glide in positions of flexion or abduction
- Increase physiological flexion or internal rotation

If a patient reaches a plateau:

- Change the vigor of the technique used
- Change the technique
- Direct treatment toward the relevant movement limitations

Typical treatment during subsequent visits should focus on:

- Improving the combined physiologic movements of hand behind back or shoulder quadrant
- Increasing upper thoracic extension or side bend
- Enhancing extension, rotation, or side bend of the cervical spine

Techniques may also include soft tissue massage and muscle stretching, particularly of the pectoralis minor, infraspinatus, teres minor, upper trapezius, sternocleidomastoid and scalenes musculatures. Effleurage, friction and kneading techniques may also be employed with the subject sitting and the arm supported loosely

Patient Directed Flexibility

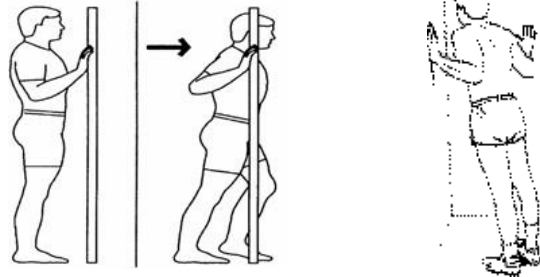
Each stretch is 30 seconds each with 10 seconds rest between each stretch, repeat five times per day.

Anterior Shoulder Stretches

Door Stretch. The patient's hands are placed at shoulder height on with the forearms on the door jamb. The patient leans into the door space stretching the tissues in front (especially pectoralis minor). This can be done in a corner where two walls meet, and the patient would lean into the corner.

**Anterior Shoulder Stretch
(Door Stretch)**

Place hands at shoulder level on each side of a door or in a corner of a room.



Posterior Shoulder Stretches

Sleeper Stretch. The patient lies on the injured side. The arm is forward elevated to 90 degrees from the body, the elbow is bent to 90 degrees. The uninjured arm pushes the forearm of the injured shoulder toward the table internally rotating the shoulder.

**Posterior Shoulder Stretch
(Sleeper Stretch)**

Lie on your side on a flat surface. Bring involved arm across in front of body as shown. Push down on hand toward table. Gently pull across chest until a stretch is felt in the back of shoulder.



Golfer Stretch. Patient reaches the injured arm toward the opposite scapula and uses other hand to horizontally adduct the arm.



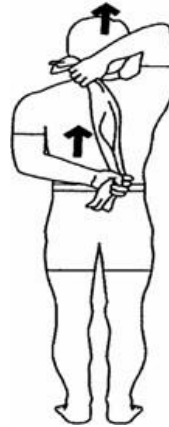
**Posterior Shoulder Stretch
(Golfer Stretch)**

Bring involved arm across in front of body as shown. Hold elbow with other arm. Gently flex the bent arm which will pull the other arm across chest until a stretch is felt in the back of shoulder.

Towel Stretch. Patient uses a towel behind the back, and performs towel assisted internal rotation. The hand of the uninjured arm is placed behind the neck and the hand of the injured shoulder by the back pocket. A towel is held with both hands. The uninjured arm pulls upward, bringing the uninjured arm up the back, stretching the posterior capsule.

**Posterior Shoulder Stretch
(Towel Stretch)**

Hold uninjured arm over shoulder with towel as shown. Grasp towel with involved arm. Slowly pull upward with uninjured arm until a gentle stretch is felt.



Directed Active and Active Assisted Range of Motion

The patient begins with **pendulum exercises** for the shoulder. He/she should be instructed to use the momentum of the body to move the arm. They should be told NOT to use the shoulder muscles. The patient should move the arm counterclockwise, clockwise, forward and back, and side to side. *Do 20 cycles for each motion.*



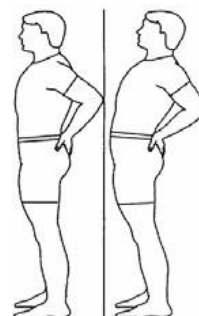
Pendulum Exercises:

Let the arm dangle. Make 20 small counterclockwise circles. Make 20 small clockwise circles. Make forward and backward motions then side to side motions.

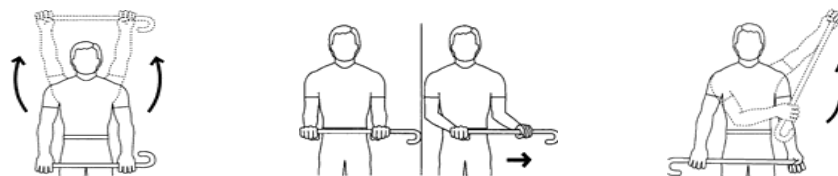
Posture exercises should be done within the pain free range.

Posture exercises:

Put hands on hips, lean back and hold.



Active assisted range of motion using a cane or a pulley system. Motions include forward elevation, external rotation, and abduction. *Do 3 sets of 10 repetitions.* These can be done lying down, and when comfortable, have the patient do them while standing upright.



Active Assisted Range of Motion using a cane:

Lying supine, hold the cane with both hands. Elevate the arms using the healthy arm to guide the injured arm. Increase the use of the injured arm as directed by comfort. These can be done upright when comfortable. Images demonstrate Forward Elevation, External Rotation, and Abduction. Can do standing if comfortable.

Active training of the scapula muscles (rhomboid, serratus, trapezius, levator scapulae, and pectoralis minor) should be done using the exercises depicted, by doing shoulder shrugs and by pinching the shoulder blades behind. *Do 3 sets of 10 repetitions.*

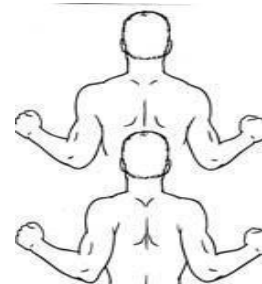
Active Training of the scapula muscles:

Shoulder Shrugs – pull shoulders up and back and hold.

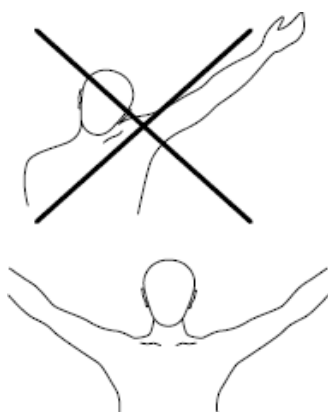


Active Training of the scapula muscles:

Pinch the back of the shoulder blades together using good posture.



Active range of motion of the shoulder. Muscle relaxation exercise for the upper trapezius are performed by having the patient raise the arm in the scapular plane without shrugging the shoulder. Relaxation is enhanced through visual input by performing in front of the mirror, or by proprioceptive input by placing the uninvolved hand on the active upper trapezius. *The patient should do 3 sets of 10 repetitions.*



Active Range of Motion:

In front of a mirror practice raising your arm in front of your body without shrugging your shoulder.

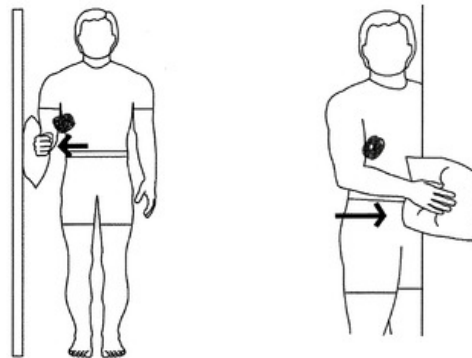
Patient Directed Strengthening

Strengthening should be done 3 to 4 times each week with 3 sets with 10 repetitions for each exercise. Repetitions and or resistance can be increased as tolerated. Teach and emphasize good form. Patients exceeding mild discomfort should reduce the level of resistance, or modify the range of the exercise until they are comfortable enough to progress. Strengthening of the rotator cuff is done within limits of pain.

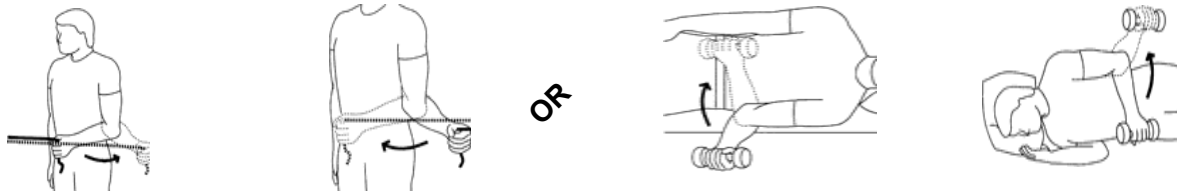
Do NOT have the patient perform full-can or empty-can supraspinatus exercises!

Rotator Cuff Strengthening

Internal and External Rotation Isometrics against a wall. Hold pressure for 20 seconds then rest. *Do 3 sets of 10 repetitions.*



Internal and External Rotation against resistance. Patient stands when using elastic bands or lies on side to use hand weights. Keep the arm against the body. Internally rotate against resistance for internal rotation. Externally rotate against resistance for external rotation. Patients can progress from an initial position of the arm close to the side, to a position of abduction of the arm. *Try to progress as 3 sets, 10 reps the first week, 3 sets of 15 reps the second week, 3 sets of 20 reps the third week.* Then progress by shortening the band. Exercises should induce fatigue but not cause increased shoulder pain. Increase the resistance (or weight) and the number of repetitions as tolerated by pain.



External Rotation:

Secure elastic at waist level. Hold elbow at 90 degrees, arm at side. Pull hand away from body, as shown,

Internal Rotation:

Secure elastic at waist level. Hold elbow at 90 degrees, arm at side. Pull hand away from body, as shown.

Internal Rotation:

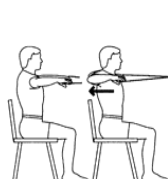
Lie on involved side, elbow bent at 90 degrees, arm at side. With or without weight, pull hand inward across body.

External Rotation:

Lie on side, involved side up. Arm at side, elbow bent, with or without weight. Move hand up as shown.

Postural and Periscapular Muscle Strengthening

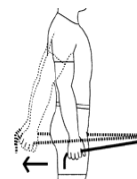
Rows: While seated or standing bend elbows and pull elastic cords back. Try to pinch shoulder blades behind you. An upright row can be done with a hand weight as directed.



Rows:
 Seated or standing, bend elbows and pull elastic cord back. Try to pinch your shoulder blades behind you.



Upright Row:
 Do one arm at a time. While standing, lean over a table. Bend at waist. Pull hand weight back, pulling shoulder blade back.



Low Trapezius:
 Stand upright. Grasp elastic bands. Keep elbows straight and pull. Try to reach behind you.

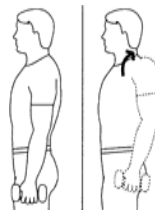
Chair Press: Use arms on bottom of chair or armrests to get out of a chair. Hold the position then relax.



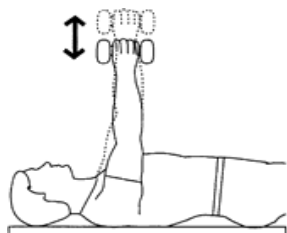
Chair Press:
 While seated, press up on chair, lifting body off chair.

Shrugs: Like the posture exercise for range of motion, repeat using hand weights.

Shrugs:
 Stand with weights in hands. Roll shoulders back and hold.



Press Up: While lying on your back holding hand weights and elbows locked push up toward the ceiling.



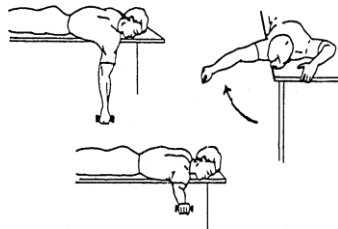
Press Up:
 Lie on back, elbow locked straight, weight in hand. Move arm up toward ceiling as far as possible.

Push Up Plus: With hands or forearms on table, do a pushup, then really push to try to touch your spine to the ceiling.

Pushup Plus:
 Lie on back, elbow locked straight, weight in hand. Move arm up toward ceiling as far as possible.



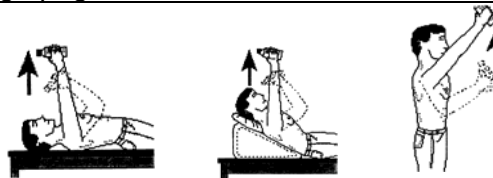
Posterior Deltoid: Lying on your stomach with your arm over the table and a weight in your hand, bring the arm out to the side and hold.



Posterior Deltoid Exercise:
 Lie on back, elbow locked straight, weight in hand. Move arm up toward ceiling as far as possible.

Jackins' Exercises

For patients with limited active forward elevation, **Jackins' exercises** may be used. Begin lying on your back. Raise the injured arm using the uninjured arm to help do *at least 3 sets of 10 repetitions*. When this is easy, practice raising the arm by itself. When this is easy, use a small weight. When this is easy, raise the head of the bed about 20 degrees and repeat the process. When this becomes easy, raise the head of the bed another 20 degrees and repeat the process again. Continue to raise the head of the bed and repeat the process until you are lifting weights while standing upright.



Jackins' Exercises are designed for patients with difficulty with forward elevation. While lying on back lift arm over head, use the other arm to help, then use the arm alone, then add 1 or 2 lb weights and repeat. Then raise back 20 degrees and repeat sequence. Keep raising back 20 degrees and repeat sequence until upright.



Home Rehabilitation

Patients in whom manual therapy is no longer necessary can be moved to a home exercise program. Movement to a home program is at the discretion of the physician and therapist.

Please instruct the patient in proper form and technique for the exercises listed in this booklet. Do not add or remove any exercises. Please set up a progression program. If the patient has any questions, please instruct him/her to contact his/her physician.

If you have questions, please contact the referring MOON surgeon or contact the study coordinator.

Thank you for your participation in this research effort!



References

- Bang M, Deyle G. Comparison of supervised exercise with and without manual physical therapy for patients with impingement syndrome. *J Ortho Sports Phys Ther* 2000;30(3):126-137
- Binder A, Parr G, Hazleman B. Pulsed electromagnetic field therapy of persistent rotator cuff tendonitis. *Lancet* 1984;1(8379):695-698
- Brox J, Staff P, Ljunggren A, Brevik J. Arthroscopic surgery compared with supervised exercises in patients with rotator cuff disease. *BMJ* 1993;307(6909):899-903
- Brox JI, Gjengedal E, Uppheim G, Bohmer AS, Brevik JI, Ljuggren AE, Staff PH. Arthroscopic surgery versus supervised exercises in patient with rotator cuff disease (stage II impingement syndrome): A prospective, randomized, controlled study in 125 patients with a 2 ½ year follow-up. *J Shoulder Elbow Surg* 1997;8(2):102-111.
- Conroy DE, Hayes KW. The effect of mobilization as a component of comprehensive treatment for primary shoulder impingement syndrome. *J Ortho Sports Phys Ther* 1998;28(1):3-14.
- Desmeules F, Cote CH, Fremont P. Therapeutic exercise and orthopaedic manual therapy for impingement syndrome. A systematic review. *Clin J Sports Med* 2003;13:176-82.
- Ginn KA, Herbert RD, Khouw W, Lee R. A randomized, controlled trial of a treatment for shoulder pain. *Phys Ther* 1997;77(8):802-811.
- Grant HJ, Arthur A, Pichora DR. Evaluation of interventions for rotator cuff pathology: a systematic review. *J Hand Ther* 2004; 17(2):274-299
- Green S, Buchbinder R, Hetrick S. Physiotherapy interventions for shoulder pain. *Cochrane Database of Systematic Reviews* 2003 Volume 2: CD004258.
- Haahr JP, Ostergaard S, Dalsgaard J, Norup K, Frost P, Lausen S, Holm EA, Andersen JH. Exercises versus arthroscopic decompression in patients with subacromial impingement: a randomised, controlled study in 90 cases with a one year follow up. *Ann Rheum Dis.* 2005
- Ludewig PM, Borstad JD. Effects of a home exercise programme on shoulder pain and functional status in construction workers. *Occup Envi-ron Med* 2003; 60:841-9.
- Michener LA, Walsworth MK, Burnet EN. Effectiveness of rehabilitation for patients with subacromial impingement syndrome: A systematic re-view. *J Hand Ther* 2004; 17(2):152-164
- Van Der Heijden GJ. Physiotherapy for patients with soft tissue disorders: a systematic review of randomized clinical trials. *BMJ* 1997;315: 25-30