

SHOULDER REHABILITATION

Dr. Mahmoud Sous
Priyanka Yadav

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A complete care guide for Shoulder Rehab

*Dr. Mahmoud Sous
Priyanka Yadav*

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Dr. Mahmoud Sous – Ph.D.

During the period of 1995-1999, I went to the medical school in Poland to research about the various methods of back pain treatment. After finishing my PhD, I took variety of courses including naturopath, acupuncture, and manual techniques. This gave me an idea that exercises, and massage could be helpful in treatment of chronic pain. But my findings didn't stop me here, I also worked as a naturopath practitioner in Canada where I got familiar about treatments with Chinese medicines, osteopath techniques and some other manual therapies which helps in pain management.

Fixing injuries requires an understanding of anatomy and biomechanics. That is why my research and treatment belong to the holistic approach of using different techniques and remedies for the treatment of back pain. In 1990, I realize that there are some complex spinal aspects and issues which leads to of back pain. So, from my case studies I formulated a guideline which is clear and easy to understand and will fix your issues.

My goal is to help people visualize how the body functions and what happens inside when you experience pain. Healing requires to focus on one's action because pain results due to faulty actions and movements. This thought motivated me to work on a book which will include all home remedies where people can treat themselves to fix their pain. I have included knowledge based on my clinical research using manual massage therapy, food habits, nutrition facts, heat, sauna, hydrotherapy, cold water treatments which overall helps in pain management. It gives me pleasure to introduce this book to the community where I have shared all my experienced treatment plans.



Priyanka Yadav (Physiotherapist)

I started my career in 2011, since then I have worked as a Physiotherapist in several clinics and hospitals in India. Working mostly in the Outpatient department made me realize that Physio's role is extremely crucial in the rehabilitation and recovery process of a patient. My desire to reach out to more people motivated me to work for this book. Have worked with Dr. Mahmoud on several research books on self-pain management. We have been constantly working on curating the best suited protocol for various Musculoskeletal conditions. Additionally, we have also included approaches with alternative medicine.

We Believe in a Pain-Free Society!

Dr. Sous's Team who have contributed with their approaches in this book.

- * Priyanka Yadav - Physiotherapist
- * Liming Nang - Acupuncturist
- * Navjot Kaur - Physiotherapist
- * Payal Vaghani - Physiotherapist
- * Revathi Kandaswamy - Massage Therapist
- * Mandeep Kaur - Physiotherapist
- * Youssef Elaridi - RMT
- * Haitham Ajoury - layout and design

This is a self-help book written by Mahmoud Sous PhD, DO and team. It is the result of more than 16 years of musculoskeletal experience practicing in corporate and private physiotherapy clinics around the world. This book was created to help you get to know your shoulders better and is based on more holistic approach to treat and prevent shoulder injuries and pain. Shoulder pain is very common, and although shoulder pain can be alarming, serious, or permanent damage to the shoulder is uncommon. This book will help explain how the shoulder is put together and why shoulder pain and dysfunctions occur, enable you with ways of coping with pain.

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INTRODUCTION

This is a self-help book written by Mahmoud Sous “PhD” and team. It is the result of more than 16 years of musculoskeletal experience practicing in corporate and private physiotherapy clinics around the world. This book was written to help you get to know your shoulders better and is based on more holistic approach to treat and prevent shoulder injuries and pain. Shoulder pain is very common, and although shoulder pain can be alarming, serious, or permanent damage to the shoulder is uncommon. This book will help explain how the shoulder is put together and why shoulder pain and dysfunctions occur, enable you with ways of coping with pain.

The shoulder is the most mobile joint in the body. It enjoys an amazing range of motion; it can rotate 360 degrees and can extend upward, sideways, across the body, outward and inward. That makes it the most useful joint we have, which in turn makes the shoulder more prone to injuries and fatigue. This friendly manual outlines the causes for common shoulder conditions, including shoulder impingement, frozen shoulder, rotator cuff tear, tendonitis, dislocation, fractures, and repetitive motion injuries.

This book explores the anatomy and function of the shoulder, methods of preventing pain and injury, and treatment methods that anyone can implement for better shoulder health and function. Most people don't realize that it is important to stay active despite the presence of shoulder pain. As it enhances the blood flow to the ligaments, muscles, and tendons, which is one of the critical elements in rapid recovery for injuries.

Studies show that activity is vital to recovery and long-term shoulder health. While it may be uncomfortable at times, physical activity can actually relieve pain and even stop it from coming back. The key is to find smart ways to move, stretch and exercise your way to healthy shoulders.

Illustrated with over 1400 step-by-step photographs, which offer easy-to-follow exercises to:

- Build strength
- Improve flexibility
- Speed up recovery
- Prevent injury

The images of the exercises are performed by the therapists and the patients.

The Shoulder Book is a patient resource for individuals with shoulder injuries to help them better understand their injury. A team of experts specializing in shoulder injuries and medical management collaborated on this project.

CHAPTER 1: BICIPITAL TENDONITIS

What is bicipital tendonitis?

Bicipital tendonitis is an inflammation or irritation of the upper biceps tendon. Also called the long head of the biceps tendon, this strong, cord-like structure connects the biceps muscle to the bones in the shoulder.

Pain in the front of the shoulder and weakness are common symptoms of biceps tendonitis. They can often be relieved with rest, physiotherapy exercises, and proper pain-relieving medication. Physiotherapists examine the exact source of the pain by assessing the entire shoulder, and typically describe a program of activity modification, stretching, and strengthening to resolve pain and return individuals to their desired activities. In severe cases, surgery may be needed to repair the tendon.

Bicipital tendonitis usually occurs along with other shoulder problems. In most cases, there is also damage to the rotator cuff tendon.

Other problems that often accompany biceps tendonitis include:

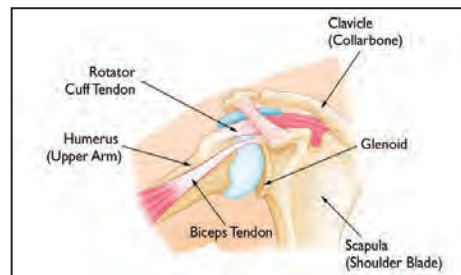
- Arthritis of the shoulder joint
- Tears in the glenoid labrum
- Chronic shoulder instability (dislocation)
- Shoulder impingement
- Other diseases that cause inflammation of the shoulder joint lining

Anatomy:

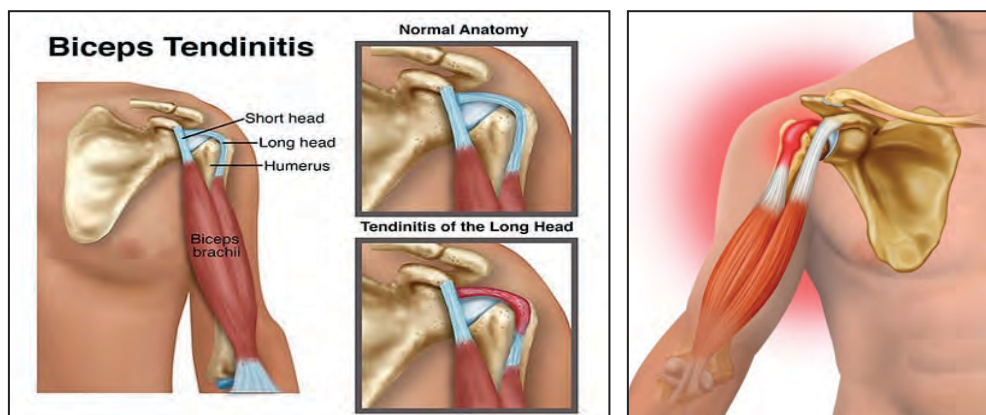
The shoulder joint is a ball-and-socket joint that is made up of three bones: upper arm bone (humerus), shoulder blade (scapula), and the collarbone (clavicle).

Glenoid: The head of the upper arm bone fits into the rounded socket in the shoulder blade. This socket is called the glenoid. The glenoid is lined with soft cartilage called the labrum. This tissue helps the head of the upper arm fit into the shoulder socket.

Rotator cuff: A combination of muscles and tendons keeps the arm centered in the shoulder socket. These tissues are called the rotator cuff. They cover the head of the upper arm bone and attach it to the shoulder blade.



Biceps tendons: The biceps muscle is in the front of the upper arm. It has two tendons that attach it to bones in the shoulder. The long head attaches to the top of the shoulder socket (glenoid). The short head of the biceps tendon attaches to a bump on the shoulder blade called the coracoid process.



Causes:

Bicep tendonitis occurs when tendons in the biceps become inflamed. This can sometimes be due to microscopic tears.

Causes of biceps tendonitis can include:

- General wear and tear
- Overuse of a tendon in a repetitive motion such as swimming, tennis, and baseball can also put people at risk for biceps tendonitis.
- The repetitive overhead motion may play a part in other shoulder problems that occur with biceps tendonitis. Rotator cuff tears, osteoarthritis, and chronic shoulder instability are often caused by overuse.
- Poor posture
- Lifting something heavy.
- Poor technique while playing sports.
- Injury
- Shoulder impingement

Symptoms:

The most obvious symptom will be a sudden, severe pain in the upper part of the arm or at the elbow, depending on where the tendon is injured.

Other signs that may have torn a biceps tendon can include:

- Sharp pain at the shoulder or elbow.
- Sometimes, the pain will radiate down up to the elbow or towards the neck.
- A bruise appears on the upper arm or forearm near the elbow.
- May get weakness in the shoulder or elbow while performing any overhead or lifting activities.
- May get trouble while rotating arm from a “palm down” to a “palm up” position.
- Snapping” sound may also be heard while moving the shoulder, or a “catching” or “clicking” sensation may be felt A change in the contour of the front of your bicep in the upper arm.
- Tenderness may present in the front of the shoulder.

Differential Diagnosis:

Different Diagnosis of Anterior Shoulder Pain

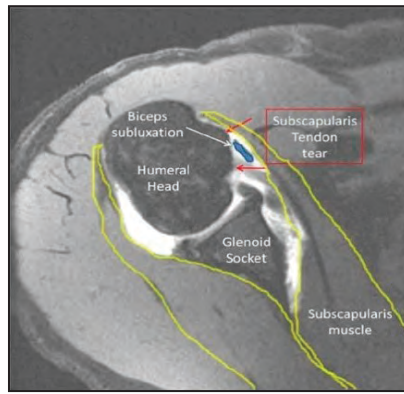
- Acromioclavicular joint pathology
- Adhesive capsulitis
- Cervical spine pathology
- Glenohumeral arthritis
- Glenohumeral instability
- Humeral head osteonecrosis
- Sub-acromial Impingement syndrome
- Rotator cuff tears
- Superior labrum anterior-posterior lesions.

Diagnosis:

X-ray: Although they only visualize bones, x-rays may show other problems in your shoulder joint. It can help rule out any other symptoms that you may be experiencing.

Magnetic resonance imaging (MRI) and ultrasound: These images can show greater detail soft tissues like the bicep's tendon.





Physiotherapy Examination:

During the PT evaluation for biceps tendonitis, your physical therapist will perform various tests and measures. These are done to determine your functional baseline and to guide treatment for your shoulder. Tests commonly performed during an evaluation for biceps tendonitis include:

- Palpation
- Range of motion (ROM)
- Strength
- Special shoulder tests
- Functional mobility

During the examination, your doctor will assess your shoulder for range of motion, strength, and signs of shoulder instability. In addition, he or she will perform specific physical examination tests to check the function of your biceps.

1. **Palpation:** Pain with palpation over the bicipital groove (which is most felt in 10° of internal rotation) is a common physical finding for patients with biceps tendinopathy.
2. **Range of Movement (ROM):** Testing of cervical, shoulder and elbow AROM should all be completed as well as PROM of shoulder and elbow.
3. **Strength Testing:** Strength testing of shoulder, elbow and wrist should all be completed to ensure no significant weakness of other structures. There may also be associated rotator cuff weakness due to the high prevalence of shoulder injuries accompanying biceps tendinopathy.
4. **Provocative tests:** If any of these tests is positive, it indicates that impingement is present, which can lead to biceps tendinopathy. No validated cluster of diagnostic tests is currently available for ruling in or out biceps tendinopathy specifically. Therefore, these tests should be used to help guide the diagnosis:

SPECIAL TESTS

Special tests are used during a physical examination by clinicians in physical therapy and orthopedic department. The tests can be used to rule in or out whether a patient has a certain musculoskeletal problem. They are helpful in diagnosing orthopedic conditions and injuries. Some of the special tests which are important in diagnosing bicipital tendonitis are discussed below.

Yergason test:

Yergason test requires the patient to place the arm at his or her side with the elbow flexed at 90 degrees and supinate against resistance.

The test is considered positive if the pain is referred to the bicipital groove.



Neer’s test:

Neer’s impingement sign is elicited when the patient’s rotator cuff tendons are pinched under the coracoacromial arch. The test is performed by placing the arm in forced flexion with the arm fully pronated. The scapula of the patient should be stabilized during the maneuver to prevent scapulothoracic motion. If the patient experiences pain, it is a positive sign of impingement syndrome.



Hawkin’s test:

The patient flexes the elbow to 90 degrees while the physician elevates the patient’s shoulder to 90 degrees and places the forearm in a neutral position. With the arm supported, the humerus is rotated internally. The test is positive if bicipital groove pain is present. Pain with this maneuver suggests subacromial impingement or rotator cuff tendonitis. This test is more sensitive for impingement than Neer’s test.



Speed test:

The patient tries to flex the shoulder against resistance with the elbow extended and the forearm supinated. A positive test is a pain radiating to the bicipital groove.



Once your PT has assessed your condition and completed the evaluation, they will discuss your plan of care with you. Goals will be set, and treatment for your biceps tendonitis can begin.

Treatment:

Contrast bath

All you do is have one bucket of hot water (must be as hot as you can handle on your skin) and one bucket of cold water. Place a towel or good size rag in each bucket. Place your hand fully outstretched so that your biceps tendon will be more prominent at the front of the shoulder. Then, start with the hot towel and place it at the front of the shoulder (do not squeeze or wring out the towel). Leave the towel there until it starts to cool and is no longer burning (usually around 30 seconds). Throw it back in the hot bucket and grab the cold towel. Place this over your shoulder for about 30 seconds.

Throw that back in the cold bucket and continue to repeat this process until you've gone through it at least 6-7 times. Do this 3 times per day, morning, noon, and night for best results.

Conservative treatment:

Initial treatment should consist of pain management and reducing the inflammation. The mainstays of treatment have included rest and ice, nonsteroidal anti-inflammatory medications, periodic local corticosteroid injections, and corticosteroid injections along the tendon sheath may be indicated.

Rest

The first component in addressing tendinopathy is to rest from the offending activity. Usually, there is some activity performed with repetition that led to the tendon pathology. Reducing the constant irritating load on the tendon helps prevent it from getting worse and also gives the tissue a better opportunity to repair.

Ice

Ice may be used in the treatment of biceps tendonitis. Ice decreases blood flow and can be used to control localized pain, swelling, and inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.



Massage Therapy

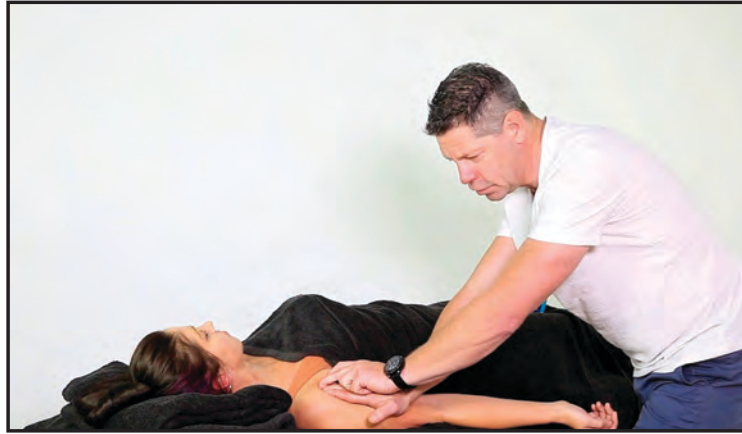
Soft-tissue therapies such as Remedial Massage are recommended to assist the rehabilitation process for many shoulder injuries. Remedial Massage can reduce the recovery time by increasing the circulation of blood to the affected area and by allowing lymph to return to the heart for re-circulation. Remedial massage may also help by reducing the severity of any scar tissue that has been left behind at the site of injury.

Massage can greatly help with bicipital tendonitis. Of course, initially, we treat this injury with ice and rest and let the body heal itself. In the later subacute stages of injury (about three weeks in), we can start massaging the muscle to help the healing process. Massage helps release tension in the biceps, thereby lessening the tug of the muscle on its inflamed tendon, as well as cross-fiber frictioning to the tendon itself. This brings extra blood flow to the area, stimulating the healing process and making it so the body lays down a nice, mobile bit of scar tissue that won't limit your range of motion once healing is complete.



Trigger Points:

A Remedial Massage Therapist may also be able to provide some relief by deactivating trigger points in the bicipital tendon. There is a specific place at the front of the shoulder joint where the biceps tendon is prominent and at that point is painful. Many people find that work on this trigger point can substantially reduce their bicipital pain issues. It is certainly worth a shot as it doesn't take long to locate and release this trigger point.



Self-Massage

You can massage the biceps at the place where it's painful. It can be around the origin of the tendon but also somewhere in the muscle. Massage it vigorously for 15-20 minutes per day. You should feel a reduction in pain in the next couple of days. It's best to use a circular or figure 8 motion with your massage to activate the oil properties and quickly release the inflammation.

You can also hold firm pressure on tender areas for 30 seconds each. Remember to breathe in and out through your nose with sound. Breathing with sound will help to activate the vagus nerve and further reduce the pain.



You can use any of the following essential oil or a combination of them mentioned below. But always remember to dilute your essential oils appropriately with a nice plant-based carrier oil such as coconut oil, olive oil, jojoba oil, almond oil, and many more.

Some of the essential oils that are good for bicipital tendonitis injury:

Wintergreen essential oil: This oil is helpful since it has a reputation for relieving pain in muscle tissues. It contains methyl salicylate, which acts like cortisone. It's good for tendonitis because it acts as a natural inflammatory. It's usually diluted in a carrier oil before being directly applied to the affected area.



Chamomile essential oil: It is known for its pain-relieving ability and has compounds that are soothing to the skin and muscles.



Sweet Marjoram essential oil: This oil helps because it acts as a painkiller. A lot of people with tendonitis complain about dull aches, which may be relieved with this oil. Its compounds are said to help with joint stiffness and muscle spasms as well.



Lavender essential oil: You might not think of this as one of the essential oils for tendon repair, but lavender oil has been used for centuries for headaches and contains a mild sedative, making it a viable option for tendonitis. Lavender oil has anti-inflammatory and analgesic properties. People who have undergone surgery for tendonitis can use lavender oil as a follow-up method by inhaling it directly from the bottle. Some people suggest that it affects them in the way a pain medication like morphine would.



Peppermint essential oil: This oil has antispasmodic properties that can help with inflammation and arthritis. It is also calming so it can assist with aches and pains. Since it contains menthol, it's cooling and refreshing when applied.



Clary Sage essential oil: This is one of the essential oils for tendon pain because it has a relaxing impact and seems to work well as a massage oil for aching joints and muscles. It is commonly mixed with chamomile essential oil to relieve tension.



Helichrysum essential oil: Considered a good joint pain reliever since it has a significant number of anti-inflammatory compounds called sesquiterpene hydrocarbons. It also has relaxing properties and is known to reduce tissue tension around injury locations.



Rose geranium essential oil: This oil is thought to be a very good anti-inflammatory that can have the same effect as anti-arthritis medications.



Lemongrass essential oil: Known to soothe sore muscles, this essential oil has the potential to reduce symptoms of rheumatism and arthritis. Some tendonitis sufferers report that it reduces inflammation and pain.



Frankincense essential oil: This is oil that has analgesic and anti-inflammatory properties, making it a good oil for tendonitis. It is also considered an effective essential oil for relieving stress.



Fish oil: It has been shown to promote connective tissue healing. The use of this oil has the potential to improve stiffness and tendon strength.



Recipes for Essential Oils for Bicipital Tendonitis

Recipe 1

Mix three to four drops of Birch and Lemongrass oil in a carrier oil and massage onto the bicipital tendon. Wait a few minutes and lightly rub some peppermint oil over top to help the oils penetrate deeper into the skin. Putting a warm compress over the affected area can also help. Follow this process two to three times a day until you feel relief from the soreness.

Recipe 2

Mix 10 drops of Peppermint oil, five drops of Marjoram, five drops of Melaleuca, six drops of Rosemary, and two drops of Lemongrass essential oil with a carrier oil. Once it's well mixed, rub it on the affected tendon and then place a warm cloth over top. If the pain is severe, you can add a few drops of Helichrysum essential oil.

Tips and Warnings While Using Essential Oils

When using essential oils, it's important to dilute them in a carrier oil, such as coconut, olive, or jojoba oil to avoid causing any irritation to the skin. Even with a carrier oil, it's wise to do a patch test to make sure you don't have any kind of reaction. Most people use the underside of their arm, which is less visible.

Patch Test: A patch test allows you to see how your skin reacts to a substance before using it more widely. Here are the steps for performing a patch test:

- Wash your forearm with mild, unscented soap, and pat the area dry.
- Dab a few drops of diluted essential oil onto a patch of skin on your forearm.
- Place a bandage over the patch, and keep the area dry for 24 hours.

If you notice any rash, irritation, or discomfort during the 24 hours, remove the bandage and wash your skin thoroughly with gentle soap and water. Don't use the essential oil if any reaction develops during the patch test.

If no irritation develops during the 24 hours, it's likely safe for you to use the diluted essential oil. However, a successful patch test doesn't mean that you won't develop an allergy or experience a reaction after future use.

Here are a few more essential oil tips:

- Coconut oil or olive oil is the best carrier oil to cover a large area
- Both hot and cold cloths can soothe as well as help oil penetrate deeper
- You can get pain relief by using just one oil
- If you apply oil then expose your skin to the sun, you can get burns.
- If you have an allergic reaction when using an essential oil, stop using the oil immediately.

After massage, you can perform some stretches to the muscle and tendon at home to allow the muscle fibers to lengthen, contract and reset the muscle length. If you are still experiencing pain, you can follow this with an ice massage, twice a week for about four weeks.

Physiotherapy treatment: This may start with isometric training if the pain is the primary issue progressing into eccentric training and eventually concentric loading as with other forms of tendon rehab. Stretching and strengthening programs are a common component of most therapy programs.

Physiotherapists also use other modalities, including ultrasound, iontophoresis, deep transverse friction massage, low-level laser therapy, and hyperthermia.

Ultrasound

Sound waves are transmitted to the shoulder using an ultrasound therapy machine, a qualified physical therapist applies vibrating circular motions to the affected area. The machine's settings can be changed to adjust the depth and intensity.

The theory is that during application, sound waves entering the damaged body tissues increase blood flow. It targets muscles, tendons, joints, and ligaments. The process is believed to be therapeutic, enhancing healing and decreasing pain.



Laser Therapy:



Kinesiology Tape

Some physical therapists use a treatment technique called kinesiology taping, also known as K-tape. Your PT will apply strips of flexible fabric tape to your upper arm or shoulder. The tape is used to decrease pain and spasm or to facilitate proper muscle function.

The physiotherapist must consider both the patient's subjective response to injury and the physiological mechanisms of tissue healing; both are essential in relation to a patient's return to optimal performance.

Physiotherapy intervention should include:

- Restoring a pain-free
- Range of motion – Pain-free range can be achieved with such activities as PROM, Active-Assisted Range of Motion (AAROM), and mobilization via manual therapy
- Proper scapulothoracic rhythm.
- Painful activities such as abduction and overhead activities should be avoided in the early stages of recovery as they can exacerbate symptoms.
- Strengthening program consisting of heavy slow loading should begin with an emphasis on the scapular stabilizers, rotator cuff, and biceps tendon.
- Resisted exercises with the progression of weight and TheraBand and position against gravity.

Passive Range of Motion

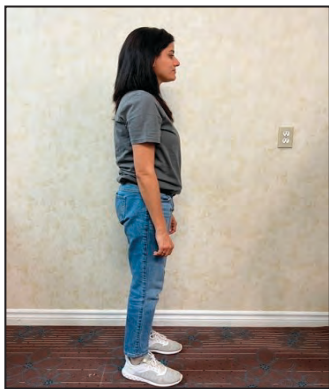
Passive range of motion simply means that the shoulder is moved by someone else (therapist) to stretch the muscles. The patient does not help with this movement at all. This can be done as examination procedure as well as first line of treatment exercise. Your physical therapist will assess your shoulder motion compared to the expected normal motion and to the motion of your other shoulder. Your physical therapist will guide you through exercises to improve your shoulder's range of motion.



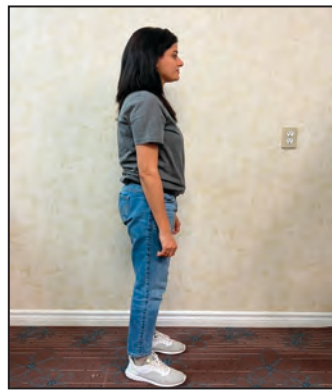


Active range of motion: These exercises are active, they are done by you, using your own muscle strength and power with no external help. This helps to improve overall muscular function, strength, and range of motion around your shoulder.

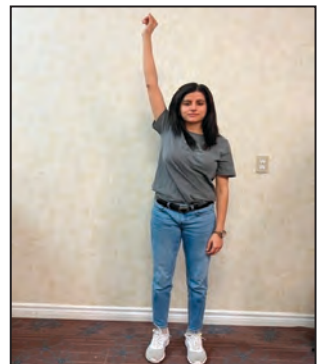
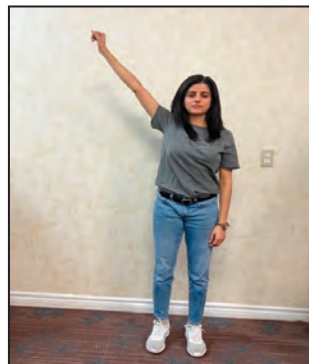
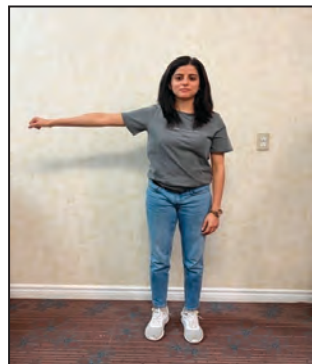
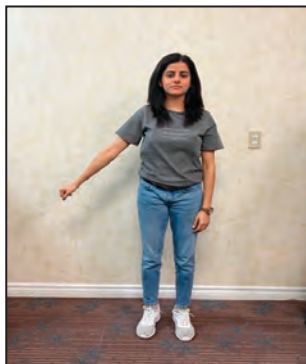
Shoulder flexion: Bring arm forward and raising it straight, above your head. Then returning arm to the side.



Shoulder Extension: Keeping your elbow straight bring your arm backwards.



Shoulder Abduction/ Adduction: Moving arm away from the side and above head keeping elbow straight, is abduction and returning arm to the side is adduction.



Shoulder External Rotation

Stand against a wall. Raise your arm out to the side at shoulder level and bend your elbow to 90 degrees. Now bring the forearm downward keeping the elbows fixed to the wall so that palm faces the wall.



Shoulder Internal Rotation: Using the same position as external rotation mentioned above, just move your forearm up towards your head, keeping elbows fixed at the wall.



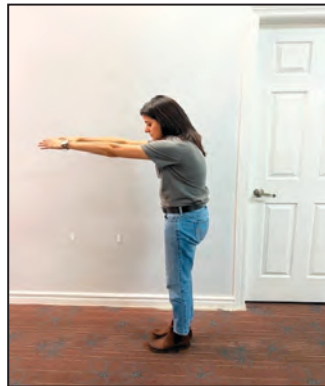
Shoulder elevation: Lifting your shoulders towards your ear is elevation.



Shoulder Depression: lowering shoulders toward hip is depression.



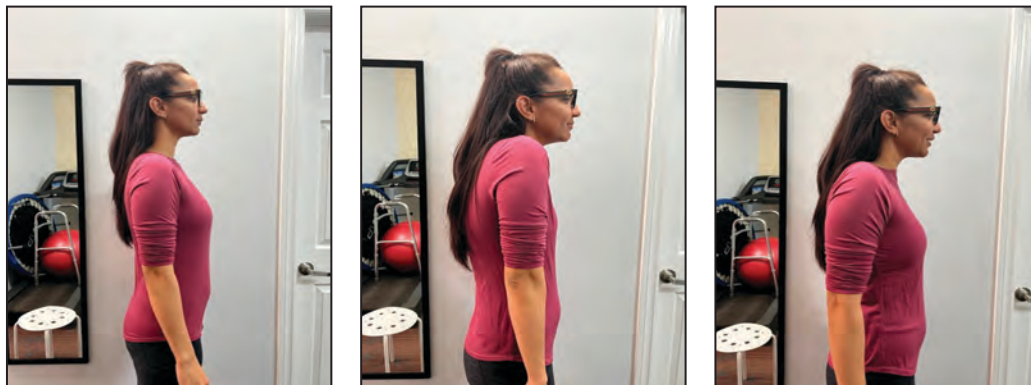
Shoulder protraction: With arm at shoulder level keeping elbows straight, reach forward as far as possible.



Shoulder Retraction: Using same position draw arm and shoulder back as far as possible.

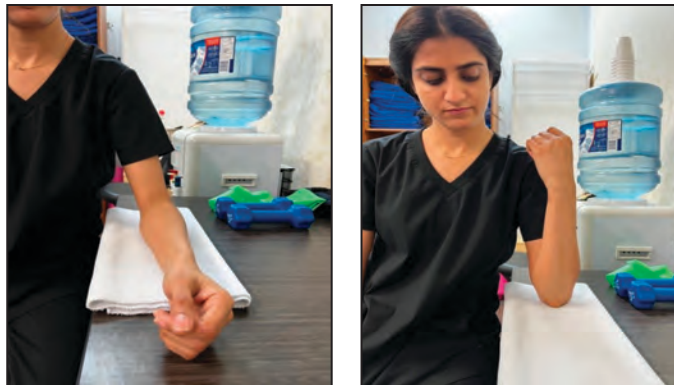


Scapular Active Range of Motion



Elbow Flexion and Extension:

- Flex and extend the elbow on your injured side by gently bringing the palm of your hand up to the shoulder.
- Be sure to bend the elbow as much as possible. Then straighten your arm and elbow.
- Complete 15 repetitions.
- Rest, and then complete another set of 15 repetitions.

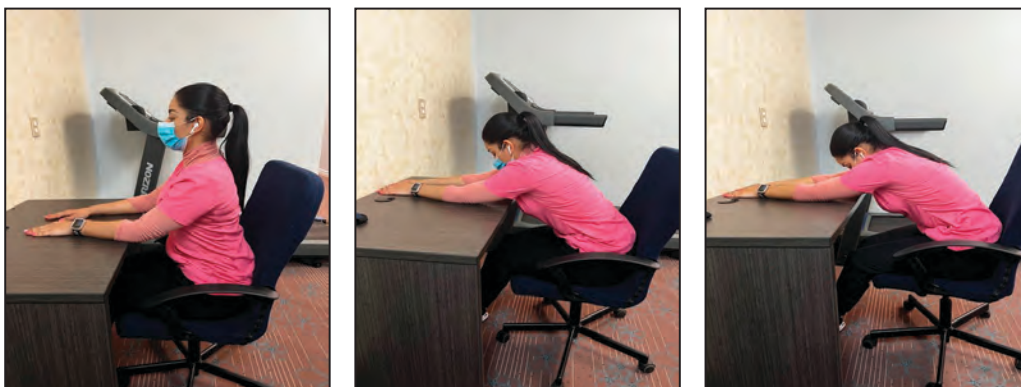


SHOULDER SELF-STRETCHING

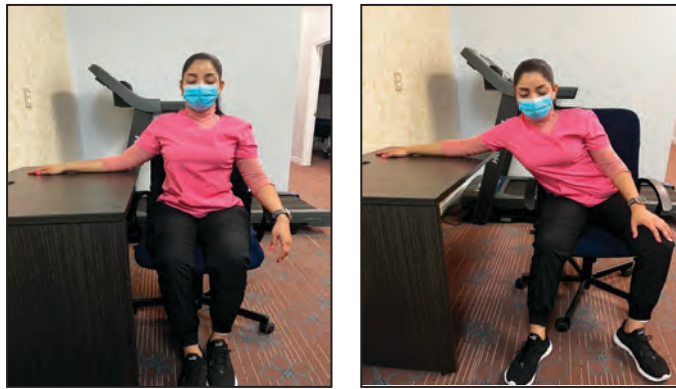
PENDULUM CIRCLES: Perform this exercise first. Relax your shoulders. Stand and lean over slightly, keeping your good hand at the edge of a table or anything which can support your weight. Allowing your affected arm to hang down. Swing the arm in a small circle about a foot in diameter. Perform 10 revolutions in each direction, once a day. As your symptoms improve, increase the diameter of your swing, but never force it. When you're ready for more, increase the stretch by holding a light weight (three to five pounds) in the swinging arm.



FLEXION STRETCH: Sitting upright on a chair or stool in front of a table. Slide forearm along the table, bending from waist until a stretch is felt. Hold this position for 30 seconds. Repeat it for 3-4 times. Do 1 session per day.



ABDUCTION STRETCH: With arm resting on table, palm up, bring head down towards arm and simultaneously move trunk away from the table. Hold for 30 seconds and come to original position. Repeat 1-4 times. Do 1 session per day.

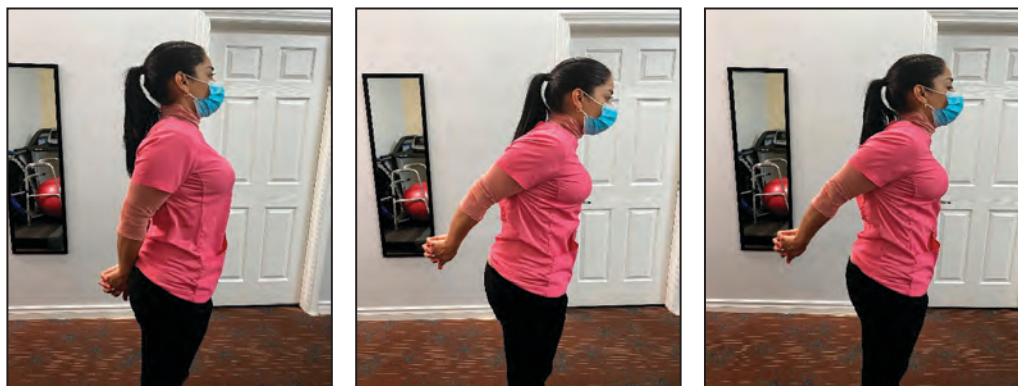


INTERNAL ROTATION / TOWEL STRETCH: Grasp a three-foot-long towel with both hands behind your back and hold it in a horizontal position. Use your good arm to pull the affected arm upward to stretch it. You can also perform a version of this exercise with a broom stick or rod. Grasp the bottom of the stick with the affected arm and pull the good hand up stretching the unaffected arm. Do these 10 to 20 times a day.



Standing bicep stretch

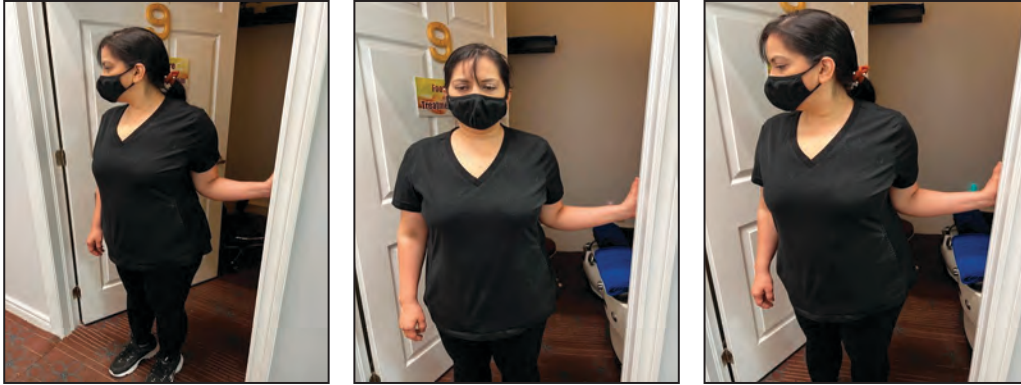
- Interlace your hands at the base of your spine.
- Straighten your arms and turn your palms to face down.
- Raise your arms up as high as you can.
- Hold this position for up to 1 minute.
- Repeat 1 to 3 times.



You'll feel a stretch in your biceps, chest, and shoulders.

EXTERNAL ROTATION STRETCH (DOOR STRETCH)

Keep palm of affected hand against a door frame with elbows bent at 90 degrees. Slowly turn your body away from the fixed hand until a stretch is felt. Hold the stretch for 30 seconds. Repeat it for 1-4 times. Do 1 session per day.



Biceps Stretch:

- Face a wall, standing about 6 inches away.
- With your palm down, raise the arm on your injured side and touch the thumb side of your hand to the wall.
- Make sure your arm is straight, and then turn your body away from your raised arm until you feel a stretch in the biceps.
- Hold this stretch for about 15 seconds.
- Rest, and then complete 2 more reps.



Pectoralis Stretch



Prevention:

- Avoid overhead activities

- Avoid repetitive movements

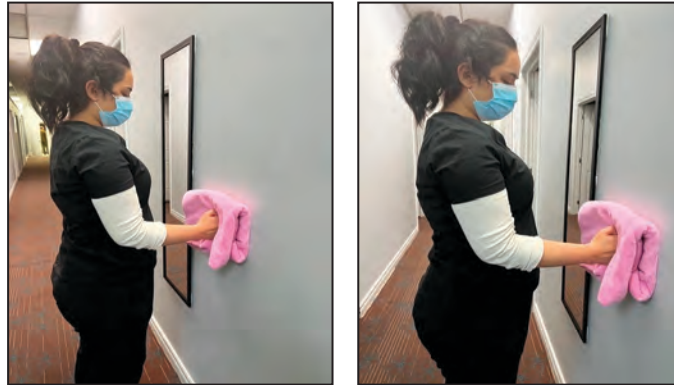
STRENGTHENING EXERCISES

ISOMETRIC EXERCISES FOR SHOULDER JOINT

The next set of exercises are designed to maintain muscle tone. It is important to note that in each isometric exercise no motion is allowed, i.e., motion is resisted and prevented by the good arm or an immovable object such as door jamb or wall.

FLEXION

Stand facing a wall. Gently push your fist forward into a wall with your elbow bent. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



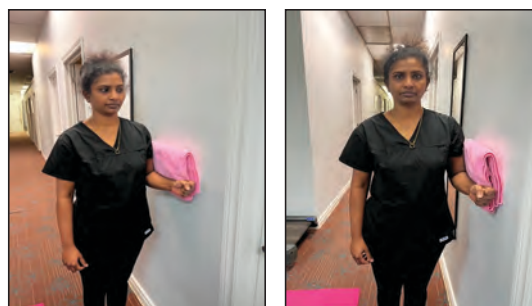
EXTENSION

Stand against a wall. Gently push your bent elbow back into a wall. Repeat 10 Times. Hold 10 Seconds Complete 2 Sets.



ABDUCTION

Stand against a wall sideways with elbows bent at 90 degrees. Gently push your elbow out to the side into a wall. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



ADDUCTION

Stand or sit on a chair with elbows bent at 90 degrees with a towel roll between your elbow & trunk. Gently push your elbow into the side of your body like you are pressing on the towel roll without moving your hands. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



Internal Rotation

Standing close to a door. Elbows flexed to 90 degrees and held closed to body. Attempt to push hand inward against the door jamb. You can keep a towel in between your hands and the wall to make it comfortable for your hands. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



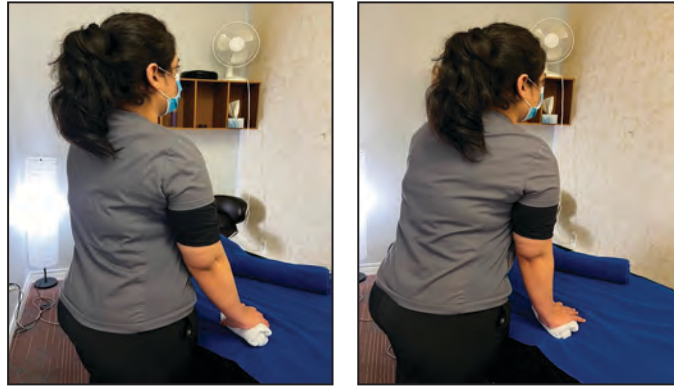
External Rotation: Standing close to a door. Elbows flexed to 90 degrees and held closed to body. Attempt to push hand outwards against the door jamb. You can keep a towel in between your hands and the wall to make it comfortable for your hands. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



SCAPULAR DEPRESSION

While standing in neutral spine, with elbow of affected arm fully extended and palm on ball. Slowly draw shoulder blade down towards

floor, palm will push into ball. Hold, slowly relax.



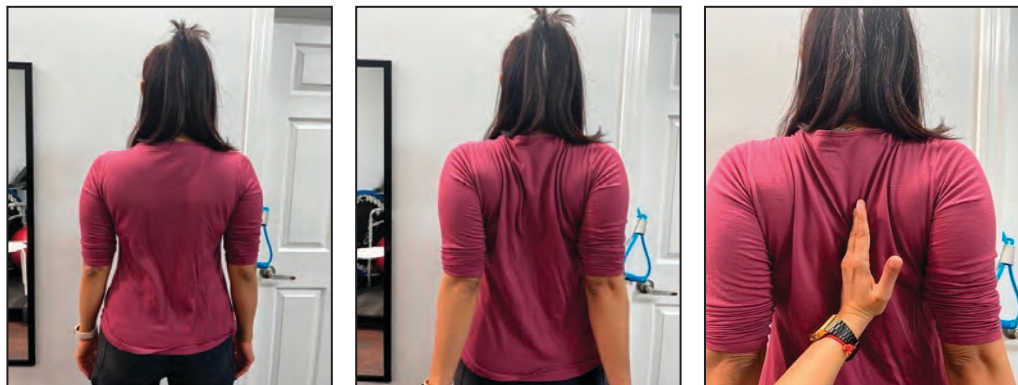
90/90 EXTERNAL ROTATION

While standing in a doorway, place elbow at shoulder level (90 degrees) and the back of your hand flat against the wall. Press back into the wall with your hand while keeping your elbow flat for 3 seconds. Relax. Repeat.



SCAP SETS

Pull your shoulders back, pinching the shoulder blades together. Do not let the shoulders come forward. Hold for 5-10 seconds. Repeat 10 times. Do 1 set daily.



Biceps Strengthening Exercises

Biceps Curls

Biceps curls help maintain the flexibility of your elbow and maintain the strength of your biceps.

Step 1: Stand upright with your injured arm hanging at your side, palm facing out.

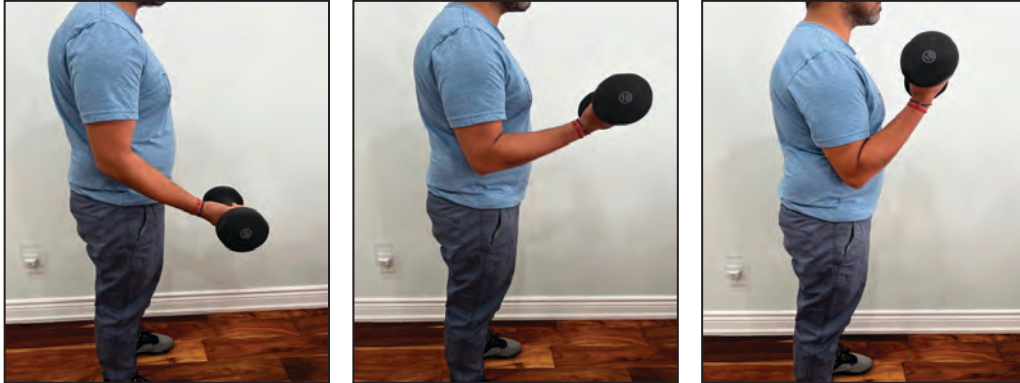
Step 2: Gently bend your injured arm at the elbow, bringing your palm toward your shoulder.

Step 3: Hold this bend for thirty seconds, then slowly release back to the starting position.

You can do this twice per set, and complete two sets daily. As the exercise begins to feel easier, you can add a weight to your hand.

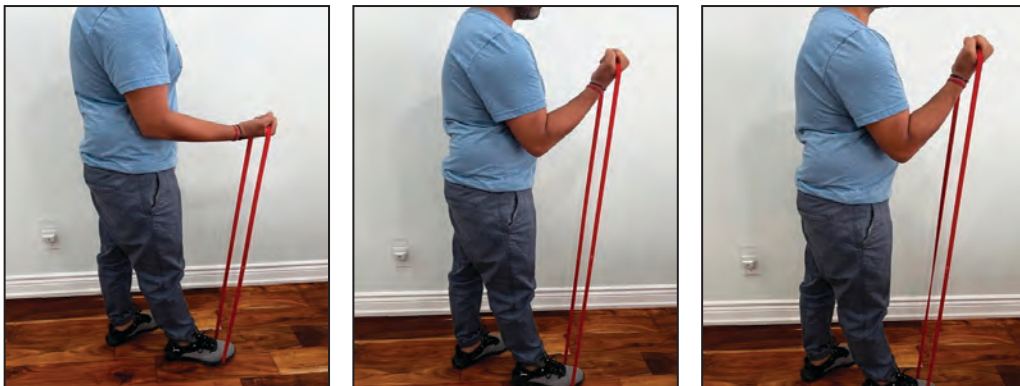
Dumbbell Curls

Hold your dumbbells (5 to 8 pounds) in your hands with your palm facing the ceiling. Bend your elbows and then straighten them. Do three sets of ten. Then switch holding the dumbbells with palms facing up and repeat the same repetitions.

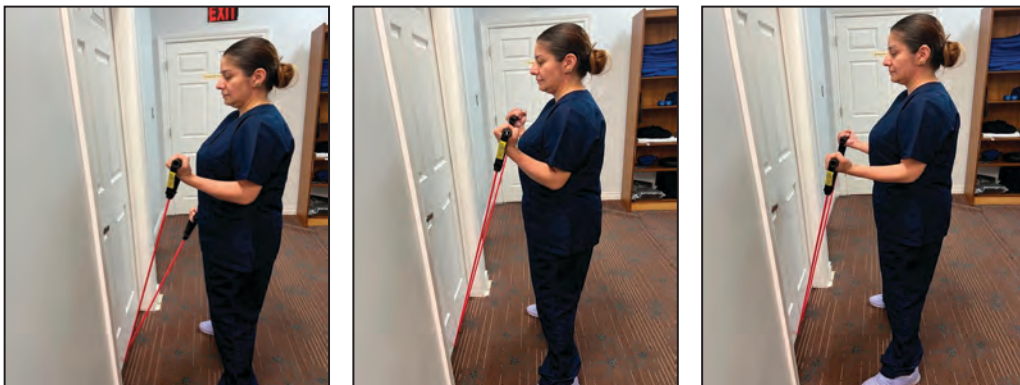


Resisted Elbow Flexion

1. Using your affected arm, hold one end of an elastic band in your hand.
2. Place the other end of the band under your foot on the same side of your body as your affected arm.
3. Slowly bend your elbow and bring your hand toward your shoulder. Your palm and the underside of your wrist should be facing up as you pull the band toward your shoulder. Count to 2 as you pull up.
4. Relax and slowly return to your starting position. Count to 5 as you return to the start.
5. Repeat 8 to 12 times.



You can do the same exercise with a different kind of a resistance band like shown in the picture below. You just need to secure one end to something stable like a door.



Resisted supination

For this and the following exercises, you will need elastic exercise material, such as surgical tubing or Thera-Band.

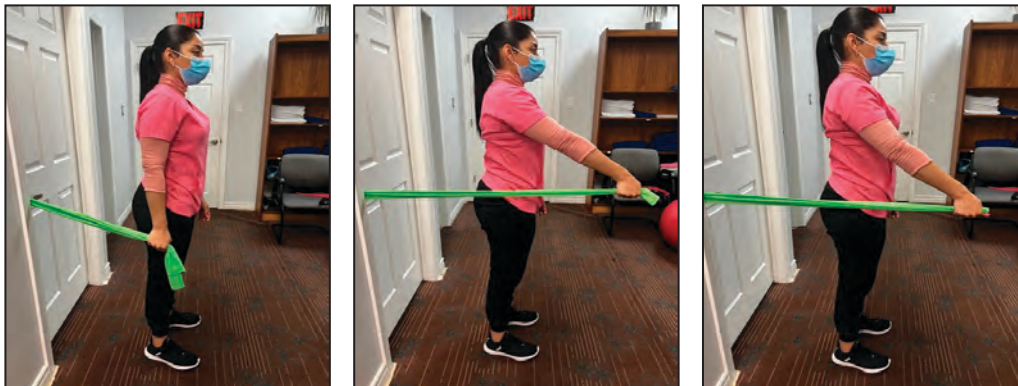
1. Sit leaning forward with your legs slightly spread. Then place your forearm on your thigh with your hand and affected wrist in front of your knee.
2. Grasp one end of an exercise band with your palm down, and step on the other end.
3. Keeping your wrist straight, roll your palm outward and away from your thigh for a count of 2, then slowly move your wrist back to the starting position to a count of 5.
4. Repeat 8 to 12 times.



Shoulder Resisted Strengthening Exercises

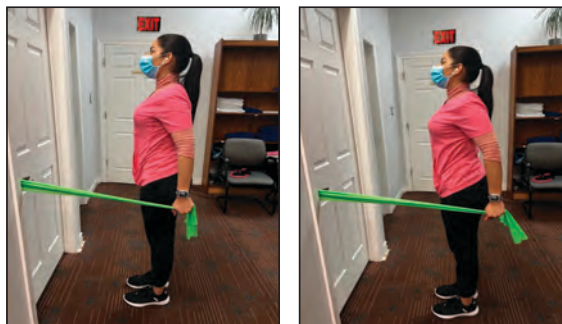
Active Resisted Flexion

Secure a Thera band or a resistance band on a doorknob or somewhere stable. Stand in front of the door, keeping your back towards the door and arms by the side. Keeping one end of the band on your affected hand, pull arm upward and outward. Move shoulder in pain free range of motion. Repeat this for 10 times. Do 1-2 session per day.



Active Resisted Extension

Using the same position now stand facing the door. Hold the band and pull arm at the back of your body. Be sure to keep elbow straight. Repeat this for 10 times. Do 1-2 session per day.



Active Resisted Abduction

Stand sideways with a resistance band secured at a doorknob. Grab the band and start with arm across the body, now pull away from the side. Be sure to keep elbow straight. Move through pain free range of motion. Repeat this for 10 times. Do 1-2 session per day.



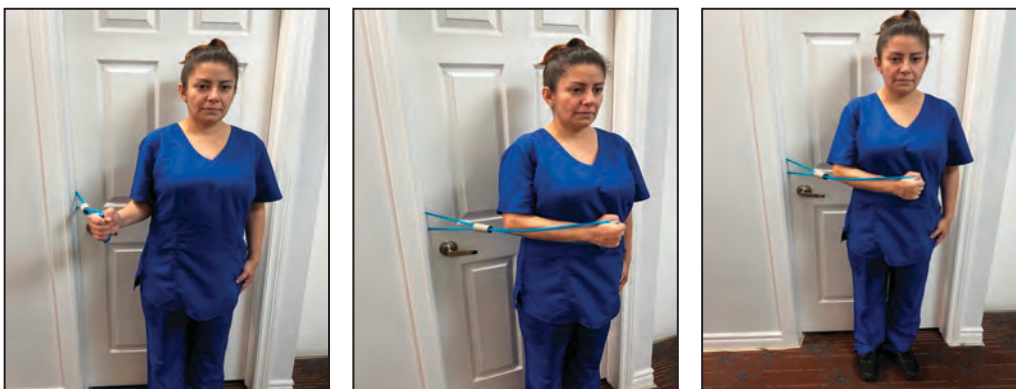
Active Resisted Adduction

Stand sideways with a resistance band secured at a doorknob. Pull the band with the affected arm towards the buttock. Do not twist or rotate trunk. Repeat for 10 times. Do 1-2 session per day.



Active Resisted Internal Rotation

Stand in front of a door with a resistance band secured at a doorjamb. Bend your elbow in at side, using the band rotate your arm inwards across the body. Be sure to keep the forearm parallel to the floor. Repeat this for 10 times. Do 1-2 session per day.



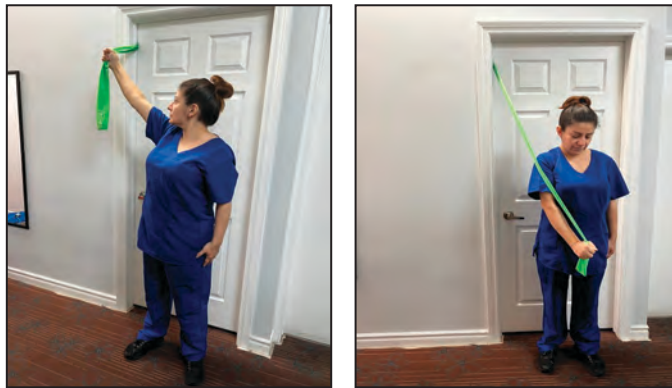
Active Resisted External Rotation

For external rotation the resistance band should be secured on the opposite side of the affected shoulder. Using the band, and keeping the elbow in at side, rotate the arm outwards away from the body. Be sure to keep the forearm parallel to the floor. Repeat this for 10 times. Do 1-2 session per day.



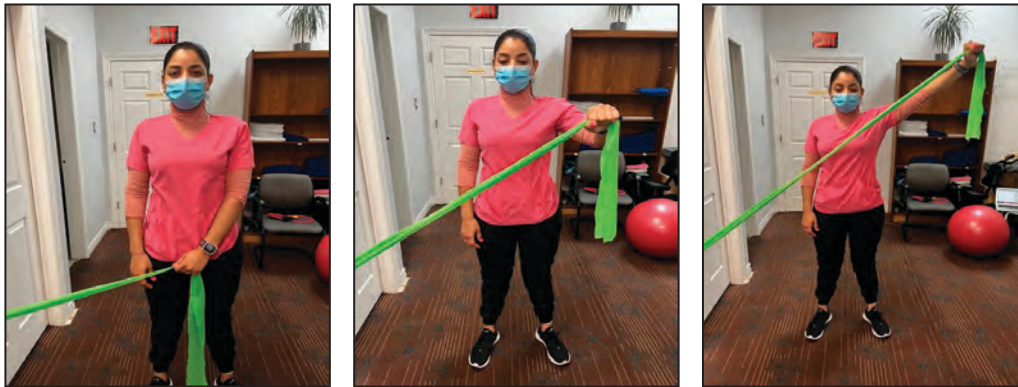
Resisted Diagonal Shoulder Movements:

Grasp tubing with arm above and behind you. Bring arm down across the body. Return slowly to starting position. Repeat 10-15 times per session. Do 1-2 sessions per day.



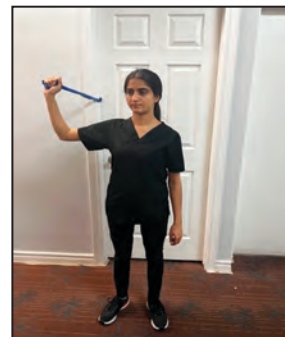
Active Resisted Diagonal Movement

Using tubing start with arm across body, palm facing backward. Pull arm across body and overhead, so palm now faces forward. Repeat 10-15 times per session. Do 1-2 sessions per day.



Strengthening Activities: Serving/ Throwing

With a Thera band secured at the back try to pull across body as though serving in tennis or throwing a ball. Repeat 10-15 times per session. Do 1-2 sessions per day.



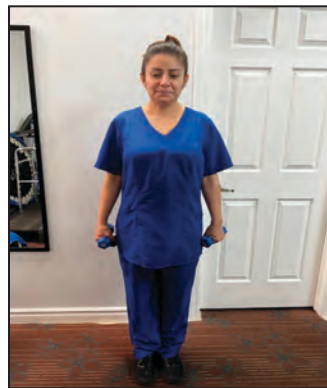
Supine forward flexion with dumbbells

Lie down straight on your back with dumbbells in both hands and lift both hands towards the ceiling. Hold the dumbbells at 90 degrees for 10-15 seconds. Repeat this for 15- 20 times. Do 1-2 session per day.



Progressive Resisted Exercises

Abduction with dumbbells: Holding 0-5 lbs. weights, raise arms out to sides. Repeat 10-30 times. Do 1-2 sessions per day.



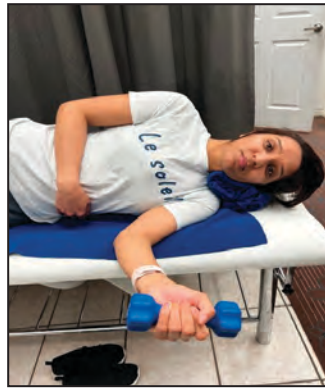
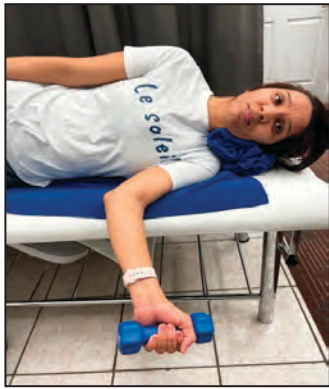
External Rotation (Side Lying)

Lie on a bed or a firm surface on your good side with neck supported using a towel roll or a small pillow. Holding 0-5 lbs. dumbbell, raise your arm towards ceiling. Keep elbow bent, tucked in, at your side. Repeat 10-15 times. Do 1-2 session per day.



Internal Rotation

For internal rotation now lie down on your side with your affected shoulder tucked under and elbows bent. You should come towards the edge of the bed, so that your forearm is hanging outside the bed. Holding a 0-5 lbs. dumbbell bring arm up towards body. Repeat 10-15 times. Do 1-2 sessions per day.



Supraspinatus Strengthening

Raise your arm diagonally from hip to just below shoulder level. Keep your elbow straight and thumb pointing downwards. Repeat 10- 30 times per set. Do 1-2 sessions per day.



Scaption with External Rotation

Raise your arm diagonally from hip. Keeping elbow straight and thumb pointing up, raise your arm above head.



Prone Horizontal Abduction with External Rotation

Lie down on your stomach with arms hanging by the side. Raise your arm straight out to the sides, bringing shoulder blades close together. Keep elbows straight and thumbs up. Repeat 10-30 times. Do 1-2 sessions per day.



Food & Nutrition:

If your blood supply is not as efficient, you are less likely to get nutrients to the tendons and this can contribute to further tissue damage as well as inflammation. Therefore, it is essential to improve your nutrient intake, to improve blood circulation, and to reduce inflammation in the body.

Omega 3: Supplementation (1-2g/day) is seen to have beneficial effects. The effectiveness of this is increased further when combined with an increased intake of polyphenols.

Good sources include blueberries, blackberries, strawberries, spinach, olives, walnuts, green tea and 70% dark chocolate.



Protein: Protein makes up the bulk of your tendons and ligaments. Collagen makes your tissues strong, while the protein elastin in ligaments provides some elasticity. Protein from your diet allows your body to produce new collagen and elastin to help keep your tendons and ligaments strong.

Good Sources of Protein: lean poultry, meat, fish, eggs, beans, lentils, and high protein dairy products like Greek yogurt. It's best for you to spread protein throughout the day at each of your meals and snack, to optimize your body's absorption of the amino acids.



Bone broth: Bone broth naturally contains collagen, which is beneficial for healing tendons, since it's actually what helps develop and form tissue within the body. Not only is it useful for tendonitis cases, but it can also aid in recovery from sprains, strains and ligament injuries.



Vitamin C: Tendons and ligaments also need vitamin C, a nutrient found in many vegetables and fruits, because both tissues contain large amounts of collagen. Vitamin C plays an essential role in new collagen production, and a Vitamin C deficiency can weaken your tendons and ligaments by preventing collagen synthesis. Try to consume at least 90 milligrams of Vitamin C daily, which is pretty easy to achieve with a diet rich in vegetables and fruit

Good Sources of Vitamin C: strawberries, red bell peppers, oranges, grapefruits, broccoli, and tomatoes provide particularly rich sources of the nutrient.



Vitamin E: Vitamin E reduces inflammation and may help to reduce tendonitis.

Good Sources of Vitamin E: wheat germ, fatty fish (e.g., salmon and tuna), nuts, olive oil, and eggs.



Vitamin A: Vitamin A is important for cell division, collagen renewal, tissue repair, and vision. This vitamin increases the elasticity of collagen, maintaining strength of tendons and ligaments. Good Sources of Vitamin A: eggs, fatty fish, leafy greens, yellow and orange

vegetables.



Minerals: Eating foods rich in essential minerals also helps maintain healthy tendons and ligaments. Tendons contain small amounts of calcium and manganese, as well as the trace mineral, copper.

Calcium also maintains healthy bones, helping to prevent bone disorders that could interfere with tendon and ligament function. Aim for 1,000 milligrams of calcium and remember Vitamin D helps your body absorb calcium. A well-rounded diet provides several essential minerals.

Good Sources of Calcium: dairy products, dark leafy greens, fermented tofu, and fortified products.

High-potassium and magnesium foods: Potassium-rich foods like coconut water, avocados, greens and bananas can speed healing. Magnesium found in these same foods are also important for muscle recovery, healthy circulation and helping you get good rest.

Good Sources of Manganese: lentils, chickpeas, and pineapple.

Good Sources of Copper: seeds and nuts.



Zinc: zinc benefits include tissue development and repair. (Found in high levels in beef, pumpkin seeds and spinach).



On the other hand, these foods can increase inflammation and make tendonitis worse:

Alcohol and caffeine: Alcohol can prolong inflammation and promote bone loss, as can caffeine that contains certain compounds that bind to calcium. We need calcium to help heal tissue that's been damaged, so this can stall your body from properly repairing itself so avoid caffeine overdose and limit alcohol consumption.



Too much sodium and salt: Sodium (found in nearly all packaged foods) counteracts potassium, and too much contributes to the loss of important nutrients from your body that are needed to facilitate the healing process, so avoid high-sodium foods as much as possible.



Sugar and refined grains: High levels of added sugar can decrease immune function, slow down wound healing and increase inflammation, not to mention contribute to unwanted weight gain, which can make tendonitis symptoms worse.



Hydrogenated oils and fried foods: Just like with sugar, refined oils are found in processed foods and are known to cause inflammation since they are a source of "pro-inflammatory" omega-6 fatty acids.

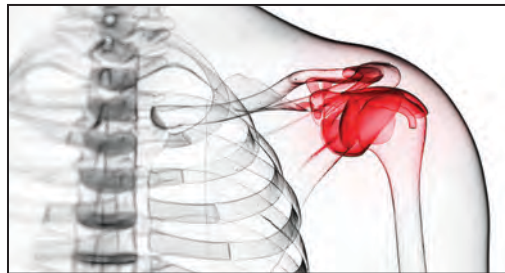


CHAPTER 2: FROZEN SHOULDER/ ADHESIVE CAPSULITIS

Frozen shoulder, also known as adhesive capsulitis, is a condition characterized by stiffness and pain in your shoulder joint. Signs and symptoms typically begin gradually, worsen over time, and then resolve, usually within one to three years.

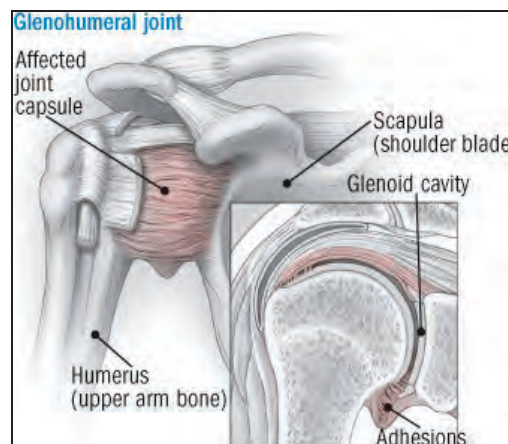
Frozen shoulder occurs when the strong connective tissue surrounding the shoulder joint (called the shoulder joint capsule) become thick, stiff, and inflamed. The joint capsule contains the ligaments that attach the top of the upper arm bone “humeral head” to the shoulder socket “glenoid”, firmly holding the joint in place. This is more commonly known as the “ball and socket” joint.

The condition is called “frozen” shoulder because the more pain that is felt, the less likely the shoulder will be used. Lack of use causes the shoulder capsule to thicken and becomes tight, making the shoulder even more difficult to move so it is “frozen” in its position.



Anatomy of a frozen shoulder

Normally, the head of the humerus moves smoothly in the glenoid cavity, a depression in the scapula. A shoulder is “frozen” when the capsule protecting the glenohumeral joint contracts and stiffens. Scar tissue (adhesions) may also form between the joint capsule and the head of the humerus.



Thick bands of tissue called adhesions develop. In many cases, there is less synovial fluid in the joint.

The hallmark signs of this condition are severe pain and being unable to move your shoulder either on your own or with the help of someone else. It develops in three stages:

Stage 1: Freezing

In the “freezing” stage, you slowly have more and more pain. As the pain worsens, your shoulder loses range of motion. Freezing typically lasts from 6 weeks to 9 months.

Stage 2: Frozen

Painful symptoms may improve during this stage, but the stiffness remains. During the 4 to 6 months of the “frozen” stage, daily activities may be very difficult.

Stage 3: Thawing

Shoulder motion slowly improves during the “thawing” stage. Complete return to normal or close to normal strength and motion typically takes from 6 months to 2 years.

Causes

Age & Gender

It’s not clear why some people develop it, but some groups are more at risk. Frozen shoulder happens more often in women than men, and you’re more likely to get it if you’re between the ages of 40 and 60.

Immobility or reduced mobility

People who’ve had prolonged immobility or reduced mobility of the shoulder are at higher risk of developing frozen shoulder. Immobility may be the result of many factors, including:

- Rotator cuff injury
- Broken arm
- Stroke
- Recovery from surgery

Systemic Diseases

Diabetes: Between 10 and 20 percent of individuals with diabetes mellitus develop frozen shoulder.

Other health diseases and conditions: Includes stroke, hypothyroidism (underactive thyroid gland), hyperthyroidism (overactive thyroid gland), Parkinson’s disease and heart disease. Stroke is a risk factor for frozen shoulder because movement of an arm and shoulder may be limited.

Physical Examination

After discussing your symptoms and medical history, your doctor will examine your shoulder.

- The doctor will move your shoulder in all directions to check the range of motion and if there is pain with movement. This type of exam, in which your doctor is moving your arm and not you, are called determining your “passive range of motion.”
- The doctor will also watch you move your shoulder to see your “active range of motion.”
- The two types of motion are compared. People with frozen shoulder have limited range of both active and passive motion.





A physical exam is usually enough to diagnose frozen shoulder, but your doctor may also order imaging tests such as X-rays, ultrasound, or MRI to rule out other problems like arthritis or a torn rotator cuff that can also cause pain and limit how far it moves.

Treatment

You can leave a frozen shoulder untreated, but the pain and stiffness can remain for up to three years. A combination of the following can speed up your recovery:

- Physical therapy
- Massage therapy
- Medication
- Surgery
- Home care

Physical Therapy

Physical therapy is the most common treatment for a frozen shoulder. The goal is to stretch your shoulder joint and regain the lost motion. It can take anywhere from a few weeks to nine months to see progress. A home exercise program of gentle range of motion exercises is important. If you don't see progress after six months of intense, daily exercises, speak to your doctor about other options.

Hot and cold compresses. When the shoulder pain is acute the sooner cold is applied, the quicker you can reduce inflammation and achieve real pain relief. This will help reduce the chance of a much longer lasting chronic injury. Ice is used first, right when you get your injury (during the 'freezing' stage), to decrease pain / swelling and inflammation. Ice is also essential when your frozen shoulder starts to heal in the 'thawing stage', as your pain spikes while you regain movement of your shoulder.



Heat comes later, to increase blood flow circulation and stimulate the body's healing response. Heat is also the best treatment when you're experiencing extreme limitation of movement in your shoulder during the 'frozen' stage of your injury. Heat relaxes the scar tissue surrounding your shoulder joint capsule, making it more pliable and flexible while speeding up the natural healing response that will eventually 'thaw' out your injury. Combining cold and warmth is a simple yet effective way to get immediate pain relief and promote long-term healing. This help reduce pain and swelling.



Transcutaneous electrical nerve stimulation (TENS). Use of a small battery-operated device that reduces pain by blocking nerve impulses.



Ultrasound Therapy

Sound waves are transmitted to the shoulder using an ultrasound therapy machine, a qualified physical therapist applies vibrating circular motions to the affected area. The machine's settings can be changed to adjust the depth and intensity.

The theory is that during application, sound waves entering the damaged body tissues increase blood flow. It targets muscles, tendons, joints, and ligaments. The process is believed to be therapeutic, enhancing healing and decreasing pain.



Deep Heating Effects vs Non-Thermal Effects

Therapeutic ultrasound is used in two different ways. Both use sound waves.

Deep heating effects use continuous sound waves to loosen tight muscles and tendons. With frozen shoulder, ultrasound improves the ability of the shoulder to stretch. Improved blood circulation is believed to quicken the healing process by reducing pain and increasing flexibility and range of motion.

Non-thermal effects send sound waves in pulses, as opposed to continuous waves. Ultrasound introduces energy to the body. In a process called Cavitation, tiny gas bubbles around the affected tissues rapidly expand and contract. Cavitation's are believed to speed up cellular processes and improve the healing of damaged tissue.



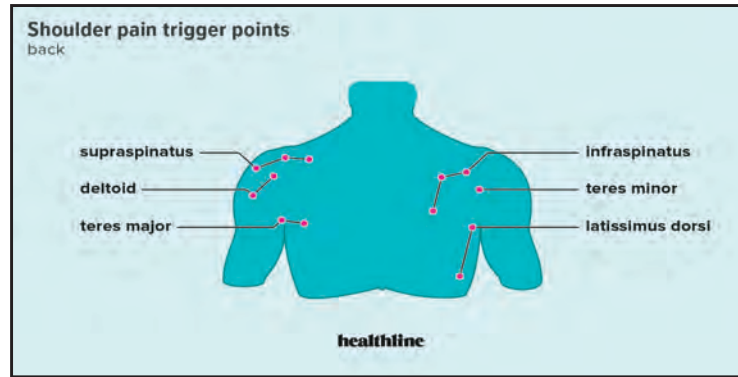
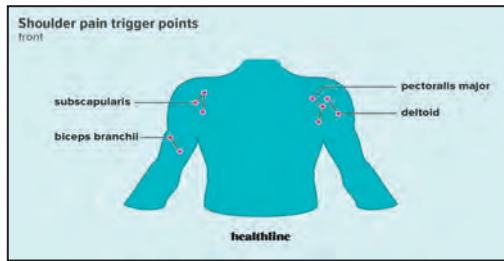
Benefits of massage and stretching for frozen shoulder

Massage and stretching are extremely beneficial for treating frozen shoulder pain.

- Massage helps to relieve tension and tightness so your muscles can relax. This helps to restore mobility and improve function. It also may help improve blood flow to the affected area and reduce inflammation.
- Stretching improves flexibility, increases range of motion, and lengthens muscle fibers.
- Both of these treatments can alleviate pain and discomfort.

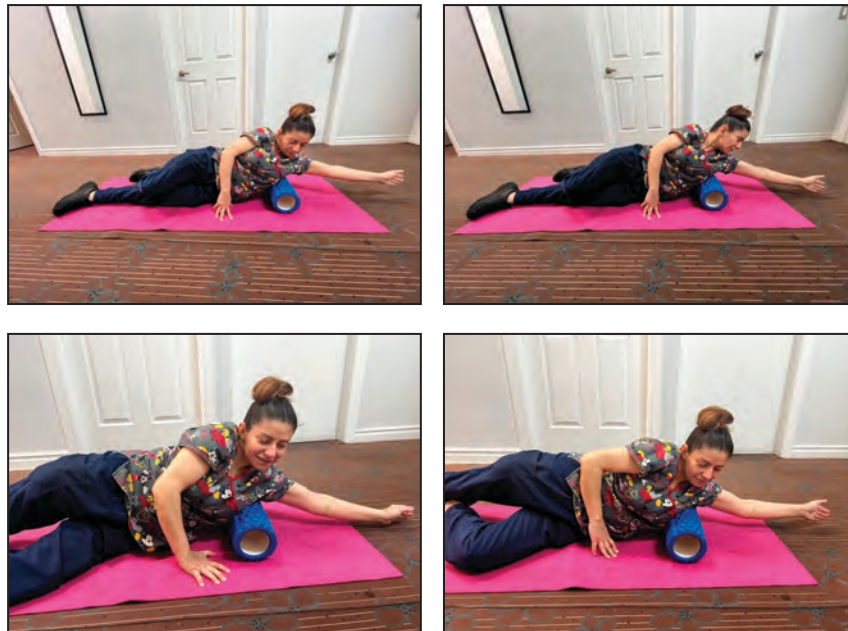
Trigger points: are muscle knots, lumps, or sensitive areas that can occur due to injury, overuse, or referred pain from another area of your body. They can cause pain, reduced mobility, and muscle weakness. Trigger points can also lead to poor circulation, contractions, and spasms.

There are certain trigger points connected to frozen shoulder. Learning about these specific areas may help you to understand how to treat frozen shoulder.



Foam roller shoulder massage side lying position

- Place a foam roller under the underarm of your affected arm.
- Lengthen your arm, keeping the hand of your affect arm extended upward.
- Roll back and forth a few times.



Foam rolling Deltoids to get mobility back

Lie on your side with the foam roller underneath your right shoulder. Your lower body can be resting on the ground comfortably with your left arm out in front to guide movement.

Roll slowly up and down over your deltoid muscle. Rotate your trunk slightly so you can hit part of your upper back as well if needed.

Repeat for 30 seconds.



Foam roller underarm massage

- Place a foam roller under the underarm of your affected arm.
- Rest your arm on the floor.
- Lengthen your arm.
- Gently roll back and forth over the foam roller.
- Continue for up to 1 minute.



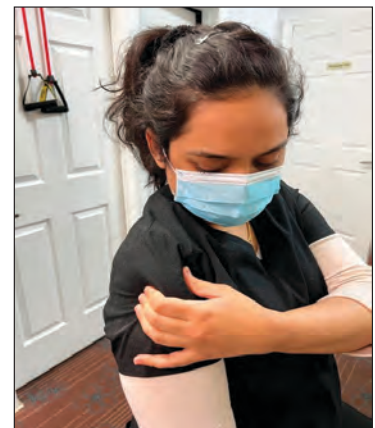
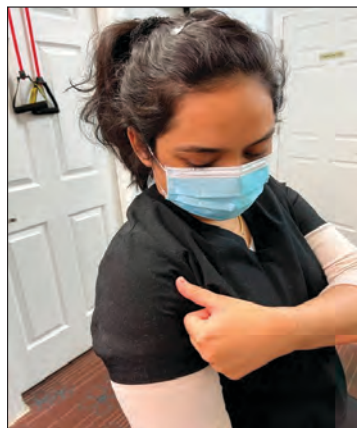
Foam roller massage in sitting

- Place a foam roller in the armpit of the affected arm
- Using a table or countertop for support, gently lean your weight on to the foam roller
- Extend your arm out as if you're reaching for something and gently roll back and forth to loosen the muscles in your shoulder. You can also use this tool to gently massage your shoulder by placing it in between your shoulder and neck.
- As your shoulder tension begins to release, put more weight on to the roller and try to rotate your upper arm back and forth as you roll.

Simple self-massage

If you prefer not to use a foam roller, an effective method of massage for frozen shoulder involves massaging the arm and shoulder with your good hand.

- Use your opposite hand to massage your affected shoulder and arm.
- Focus on any sensitive areas.
- Gently move your affected arm as you massage your shoulder and arm.





Electronic massage

You can also use an electronic massage tool to improve mobility and relieve tension. Focus on tender areas and trigger points. You can try moving the head of the massager at different parts of the shoulder to target the trigger points.



Massage for frozen shoulder:

Active release technique

This approach to massage works to correct soft tissue restrictions caused by scar tissue and adhesions to resolve pain and range of motion restrictions. A therapist who practices this type of therapy will use a combination of massage, movements and stretches to release muscular tension.

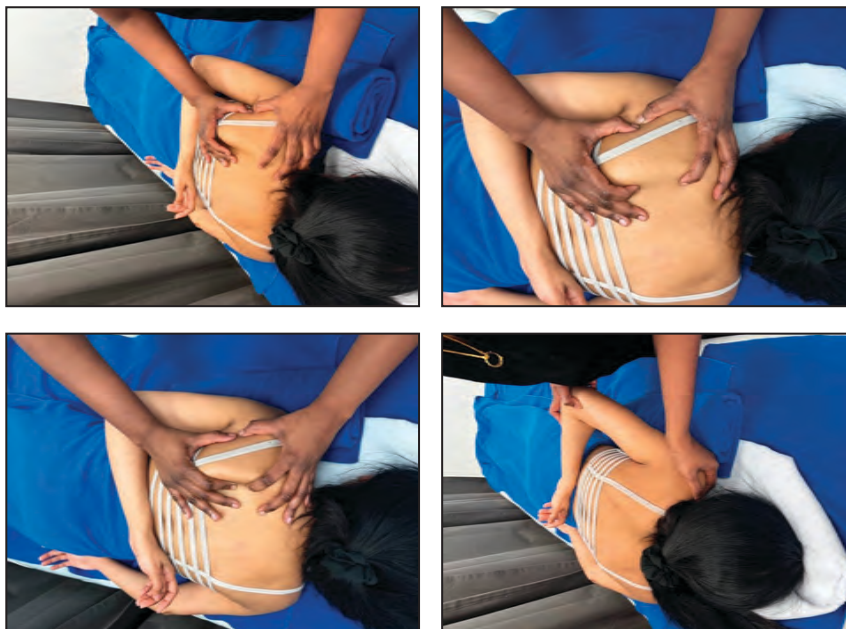
Trigger Point Therapy

This type of massage is used to manage muscular pain. Trigger points are painful spots found in muscle tissue that result from acute trauma or repetitive microtrauma. Identifying and breaking up these trigger points is an effective pain management.

Deep tissue Massage

Deep tissue massage is a type of massage therapy which uses firm pressure and slow strokes in order to reach deeper layers of muscles, tendons, and fascia, which is the protective layer surrounding your muscles, bones, and joints.

At the beginning of the massage, lighter pressure is applied to warm up and prep the muscles, then specific techniques are applied to targeted areas. These techniques target and physically break down scar tissue and muscle “knots” or adhesions (bands of painful, rigid tissue) that can disrupt circulation and cause pain, limited range of motion, and inflammation. Also, you may be asked to breathe deeply as your massage therapist works on tense areas.

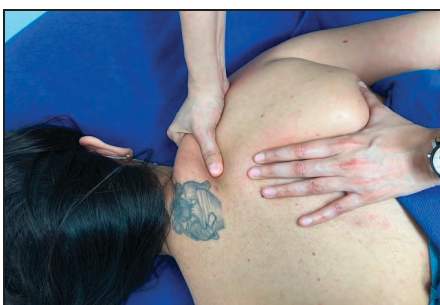
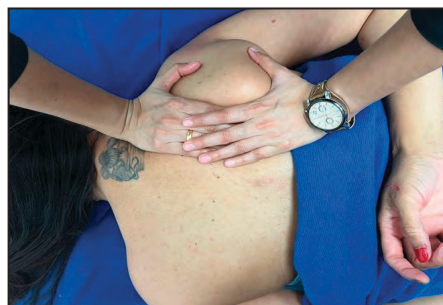


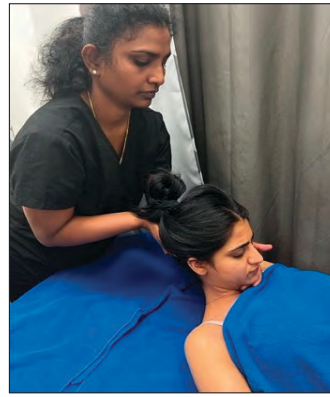
The most common Deep Tissue Massage techniques are:

Stripping: Deep, firm pressure applied in long, slow strokes along the length of the muscle fibers using the therapist's elbow, forearm, knuckles, and thumbs.

Friction: Pressure applied across the grain of a muscle to release adhesions and realign tissue fibers.

You may feel some stiffness or soreness post-massage, but it should subside within a day or so. Also, drinking water after your massage will help to flush the metabolic waste from the tissues.





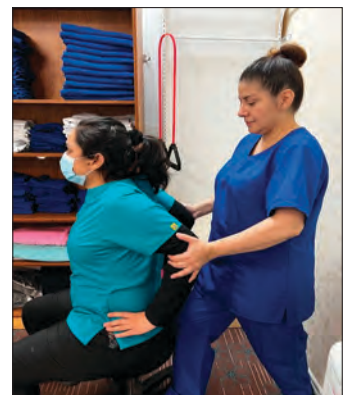
Stretches for frozen shoulder

Always warm up your shoulder before performing your exercises. The best way to do that is to take a warm shower or bath for 10 to 15 minutes. You can also use a moist heating pad or damp towel heated in the microwave, but it may not be as effective.

In performing the following exercises, stretch to the point of tension but not pain.

Passive stretches for the neck and shoulders

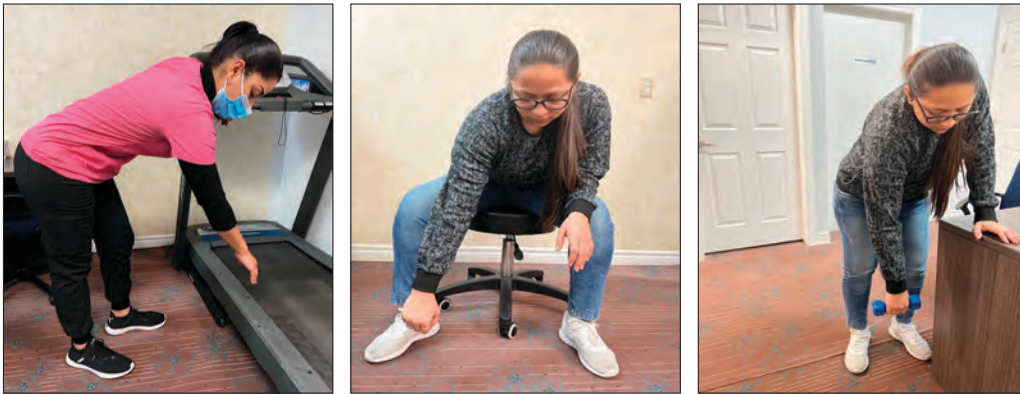
These are the stretches which are performed by a trained physical therapist or a massage therapist. In passive stretches the therapist will do the stretch for you in pain free range of motion. Below are the pictures for various shoulder and neck stretches which will be helpful for frozen shoulder case.





Active Stretches

Pendulum stretch: Perform this exercise first. Relax your shoulders. Stand and lean over slightly, using your good hand at the edge of a table or anything which can support your weight. Allowing your affected arm to hang down. Swing the arm in a small circle about a foot in diameter. Perform 10 revolutions in each direction, once a day. As your symptoms improve, increase the diameter of your swing, but never force it. When you're ready for more, increase the stretch by holding a light weight (three to five pounds) in the swinging arm.



Overhead stretch: Supine position. Lie on your back with your legs straight. Use your unaffected arm to lift your affected arm overhead until you feel a gentle stretch. Hold for 15 seconds and slowly lower to start position. Relax and repeat.

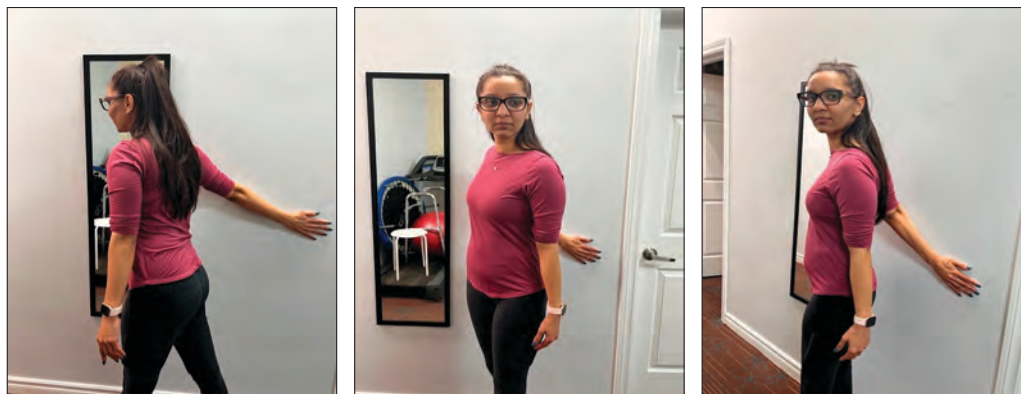


Towel stretch. Grasp a three-foot-long towel with both hands behind your back and hold it in a horizontal position. Use your good arm to pull the affected arm upward to stretch it. You can also perform an advanced version of this exercise with the towel draped over your good shoulder. Grasp the bottom of the towel with the affected arm and pull it toward the lower back with the unaffected arm. Do these 10 to 20 times a day.

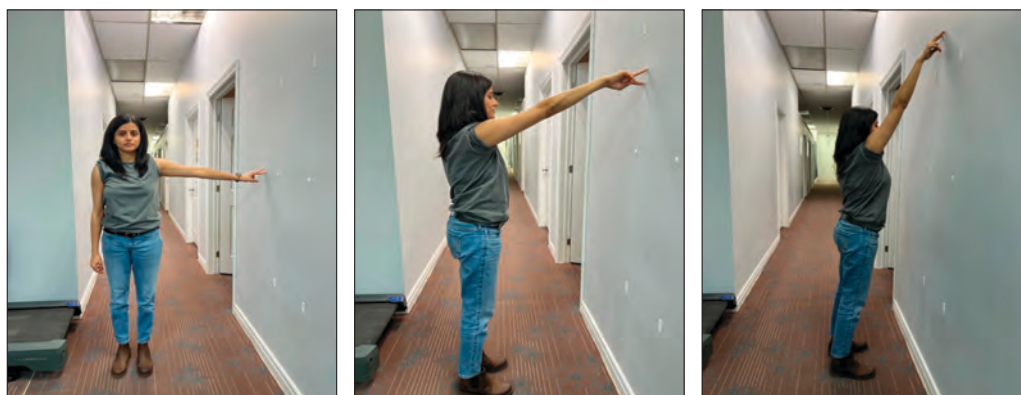


Chest opener

Stand with your affected shoulder near a wall, about one foot away. Place your hand against the wall at about chest level. Keeping the palm of your hand flat against the wall, slowly turn away from the wall as far as you can. When you reach that point, pause, and take a deep breath before turning back towards the wall.



Finger walks. Face a wall three-quarters of an arm's length away. Reach out and touch the wall at waist level with the fingertips of the affected arm. With your elbow slightly bent, slowly walk your fingers up the wall, spider-like, until you've raised your arm to shoulder level, or as far as you comfortably can. Your fingers should be doing the work, not your shoulder muscles. Slowly lower the arm (with the help of the good arm, if necessary) and repeat. Perform this exercise 10 to 20 times a day. You can also do this exercise standing to the side of the wall taking fingers upwards which will help in abduction of shoulder.



Cross-body stretch. Sit or stand. Use your good arm to lift your affected arm at the elbow, and bring it up and across your body, exerting gentle pressure to stretch the shoulder. Hold the stretch for 15 to 20 seconds. Do this exercise 10 to 20 times per day.



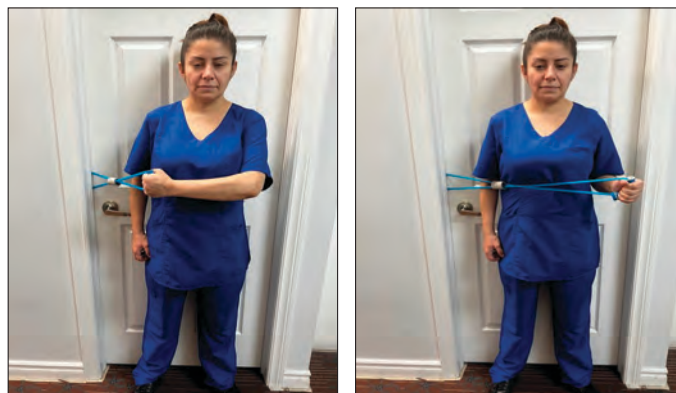
Armpit stretch: Using your good arm, lift the affected arm onto a shelf about breast high. Gently bend your knees, opening the armpit. Deepen your knee bend slightly, gently stretching the armpit, and then straighten. With each knee bend, stretch a little further, but don't force it. Do these 10 to 20 times each day.



Strengthening Exercises

After your range of motion improves, you can add rotator cuff strengthening exercises. Be sure to warm up your shoulder and do your stretching exercises before you perform strengthening exercises.

Outward rotation/ External Rotation: Hold a rubber exercise band between your hands with your elbows at a 90-degree angle close to your body. Rotate the lower part of the affected arm outward and hold for five seconds. Repeat 10 to 15 times, once a day.



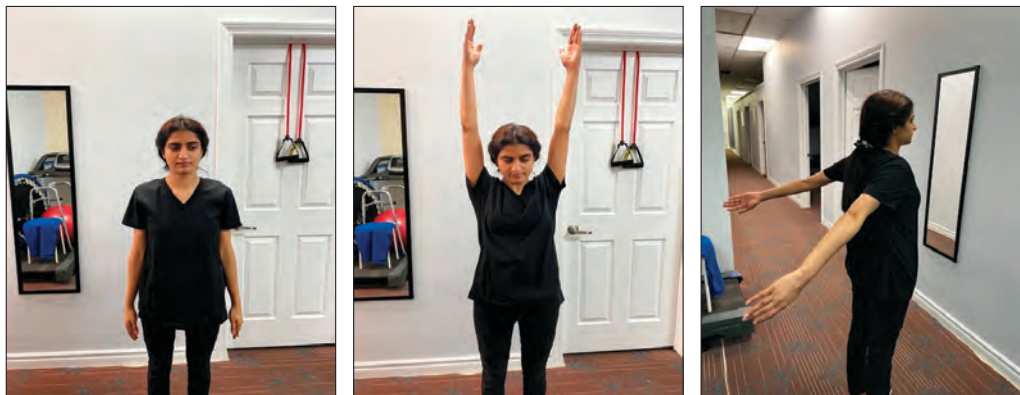
Inward rotation/ Internal rotation: Stand next to a closed door, and hook one end of a rubber exercise band around the doorknob. Grasp the other end with the hand of the affected arm, holding the elbow at a 90-degree angle. Pull the band toward your body two or three inches and hold for five seconds. Repeat 10 to 15 times, once a day.



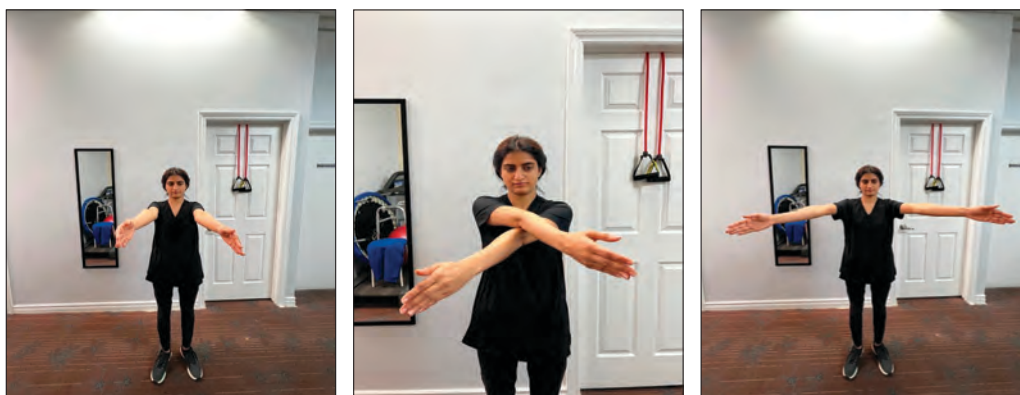
Shoulder mobility exercises

1. Standing arm swings: This is a great dynamic exercise that helps to increase blood flow to the shoulder joint.

- Stand tall with your arms by your sides.
- Engage your core and swing your arms forward until they're as high as you can go. Make sure you don't raise your shoulders. Then take it to the back of your body.
- Return your arms to the starting position and repeat.
- Do this movement for 30 to 60 seconds.

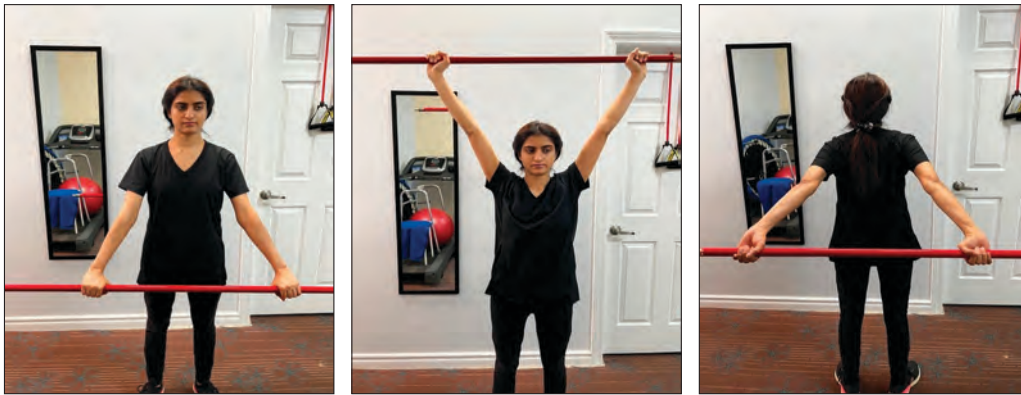


You can also do this swinging of arm in horizontal plane. For that you need to raise your arms straight up until your shoulder level and the move your both hands horizontally crossing both arms each other and then opening it to your maximum range. Please refer to the picture below for better understanding.



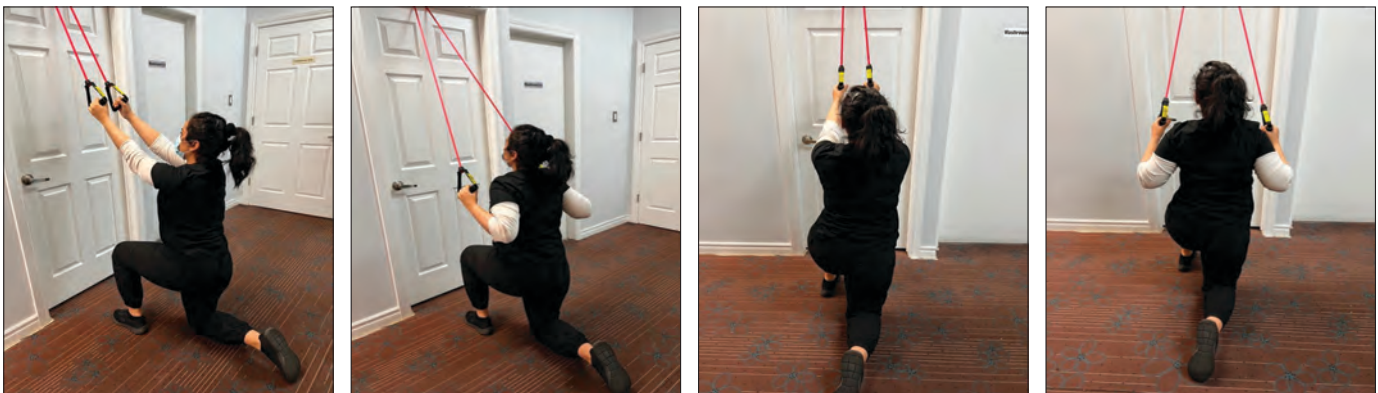
2. Shoulder pass-through:

- Stand with your feet shoulder-width apart and your arms in front of your body.
- Hold a stick, like a broomstick or PVC pipe, with an overhand grip. Your arms will be wider than shoulder-width. Make sure the stick or pipe is parallel to the floor.
- Engage your core and slowly raise the broomstick or pipe above your head, keeping your arms straight. Only go as far as comfortable.
- Hold the pose for a few seconds.
- Return to the starting position.
- Repeat 5 times.



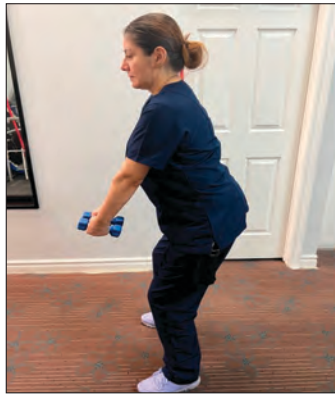
3. High-to-low rows:

- Secure a resistance band to a sturdy object above shoulder height.
- Kneel down on one knee and grab the band with the both hands.
- Pull the band toward your body while keeping your torso and arm straight. Focus on squeezing the shoulder blades together.
- Return to the starting position and repeat.
- Do 2–3 sets of 10 repetitions on each side.
- Now take the pipe to the back of your body as far as you can and come back
- Repeat it 5 times.



4. Reverse fly

- Hold a dumbbell in each hand.
- Stand with your feet shoulder-width apart, knees slightly bent.
- Engage your core and bend forward at the waist. Keep your back straight. Your arms will be extended.
- Raise your arms away from your body. Focus on squeezing your shoulder blades together. Stop when you get to shoulder height.
- Slowly return to the starting position and repeat.
- Do 3 sets of 10 repetitions.



5. Sleeper stretch

- Lie on the affected side. If you have no injury or pain, choose a side to start with. Your shoulder should be stacked underneath you.
- Bring your elbow straight out from your shoulder and bend this arm, so your fingers are pointing toward the ceiling. This is the starting position.
- Gently guide this arm toward the floor using the unaffected arm. Stop when you feel a stretch in the back of your affected shoulder.



- Hold this position for up to 30 seconds.
- Do 3 repetitions before changing sides.

6. Chest expansion

- Stand tall with your feet together.
- Hold the end of a towel or exercise band in each hand, with your arms in front of your body.
- Use the towel or band to help move your shoulder blades together and open your chest.
- Hold this pose for up to 30 seconds.
- Repeat 3–5 times.



7. Child's Pose

- Kneel on an exercise mat. Make sure your body is upright.
- Slowly crawl your hands forward until your arms are extended in front of you. Keep your gaze downward.
- Lower your torso onto your thighs and your forehead on the ground.



Active Self-Mobilization Techniques:

Shoulder Internal Rotation

Find a place to anchor your band so it will not let go and place your shoulder through the band. Make sure the band is applying a backwards force to the shoulder as you pull your arm into internal rotation using a strap/ scarf/ towel with the opposite arm. Repeat this for 12 times and hold this position for 5 seconds and release.



Inferior glide- shoulder self-mobilization

Sitting with elbow supported on a solid surface so shoulder is positioned out to the side at an 80-degree angle. Attach a weight to a TheraBand and slide over shoulder. TheraBand should be positioned just lateral to the acromion process (bony prominence).



Posterior glide with external rotation

You may need help with this setup. First laying at the edge of a surface (bed, couch, table) then place your elbow on another surface. You will want the elbow higher in altitude than your shoulder by an inch or two.

Also, the elbow should be lower (toward the feet) than the shoulder by 2-3 inches. A strap will go on the arm just below the shoulder joint. Make sure, it is comfortable and not pinching anything or making the arm cold or numb. Add a weight to the strap, usually 6-10 pounds causing a downward pull.

Then slowly rotate the arm back (up) until tight, slowly oscillate in the tight range a few times then rest and repeat. This should never be painful or uncomfortable. Repeat 30 times. Complete 1 Set.



You can also hold a weight in your hand to stabilize your shoulder but if its too much you can just omit it.



GHJ posterior glide (Adduction)

Secure a Thera band behind you on your shoulder level or little high up in armpit, pull arm across chest. Rotate hips towards band for bigger stretch. Repeat this 12 times & hold 5 seconds.



Passive Mobilization techniques

Shoulder mobilization is commonly used in clinical practice. It is applied in cases where the ROM is restricted. These glides are only given by trained practitioners such as Physiotherapists or Physical therapist. These glides are very useful in frozen shoulder cases.

Glenohumeral distraction

Distraction is usually applied during initial treatment to reduce pain and general mobility.

Position of the patient: The patient is in a supine lying position and the shoulder is in a resting position.

Hand placement:

- The therapist's hand is placed in the axilla with the thumb distal to the joint margin anteriorly and fingers posteriorly.
- The other hand supports the lateral part of the humerus.

Mobilizing force:

The therapist moves the hand in the axilla laterally to distract the humerus. Distraction is sustained for a few seconds.



Glenohumeral caudal glide (resting position)

It is given to increase abduction or correct the humerus positional fault if it is superior to normal.

Patient Position:

Supine lying and the arm in the loose pack position. The therapist supports the arm between the trunk and the elbow.

Hand placement:

- One hand of the therapist is placed in the axilla to give distraction (grade 1).
- The therapist's other hand(webspace) is kept just below the acromion process.

Mobilizing force:



The force is applied on the head of the humerus in the inferior direction, through the hand which is placed superiorly. This glide is given to improve flexion and internal rotation of the shoulder.

GH Posterior glide, (resting position)

Position of patient: Supine lying while keeping the arm in resting position.

Position of the therapist and hand placement:

- The therapist stands at the side of the patient's affected shoulder.
- The distal aspect of the arm is grasped against the trunk of the therapist to give grade one distraction to the shoulder joint.
- Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force.

Mobilizing force

The head of the humerus is glided posteriorly.



GH Anterior glide (Resting position)

Indications

To increase the extension of the shoulder with external rotation.

Position of the patient:

Prone lying at the edge of the bed, the limb is in resting position. Acromion is stabilized by placing the towel underneath.

Position of the therapist with hand placement

- The patient's arm is supported on the therapist's thigh and the therapist stands on the top of the table and places one hand over the arm to give distraction at GH joint.
- Mobilizing hand's ulnar border is placed just next to the posterior angle of the acromion.

Mobilizing force

It is applied to the humeral head in the anterior direction.



Medications

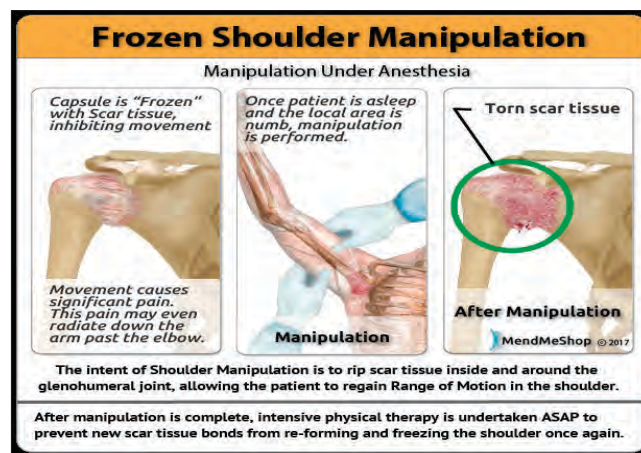
To treat the pain and reduce your joint inflammation, your doctor may recommend an anti-inflammatory medication like aspirin, ibuprofen, or naproxen sodium. A steroid injection to your shoulder joint may also help.

Home Care

Placing an ice pack on your shoulder for 15 minutes at a time several times per day can help to decrease pain. If you're working with a physical therapist, the exercises can be done at home. Your physical therapist will provide instructions on the types of exercises you must do, how often to do them, and when to push yourself harder. Most people with a frozen shoulder can improve their condition without surgery.

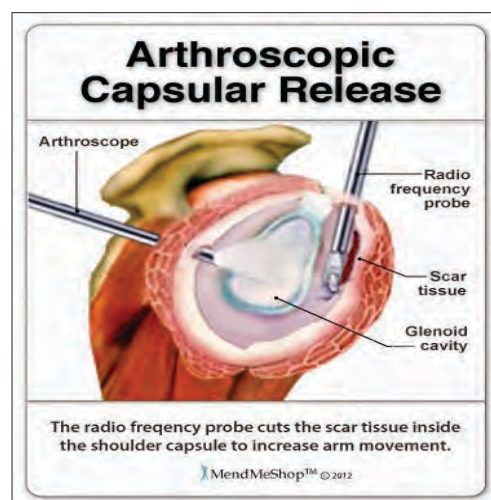
Surgery

If physical therapy doesn't improve your condition, surgery is an option. From a surgical standpoint, your options are to manipulate the shoulder and put it through a full range of motion under a general anesthetic to help break up any adhesions.



After manipulation is done, intense physiotherapy is required to prevent the formation of new scar tissue.

Another option is arthroscopic surgery. This type of surgery involves making a small cut in your shoulder and using a camera called an "arthroscope" to remove scar tissue or release it. This allows the shoulder to recover its lost motion. If your frozen shoulder is the result of an injury, surgery is usually more successful if it's performed within a few weeks of the injury.



Surgery is usually done on an outpatient basis. Your stitches will most likely be removed after 10 days. Postoperative physical therapy is usually required as well. Many patients have their full range of motion back within three months.

Your physical therapy will begin 3-4 days after surgery. The physical therapist will guide you in your shoulder rehabilitation program.

Rehabilitation after the Surgery:

Day 1 to 1st week: During the first 24 to 72 hours after the surgery, your shoulder will be tender, swollen & painful.

1. Apply ice pack for 20-minute periods throughout the day. Cold Compress slows nerve and tissue function reducing the swelling that blocks blood vessels from doing their job.



2. Physiotherapist to perform capsular mobilizations to patient.

Glenohumeral mobilization:

The head of the humerus is convex, and the glenoid fossa is concave. The patient's position is a loose pack position. The therapist will distract the shoulder and move the shoulder in 55-degree abduction and 30-degree horizontal adduction.

Glenohumeral distraction

Indications

Distraction is usually applied during initial treatment to reduce pain and general mobility. The patient's position is in a supine lying position and the shoulder is in a resting position. The therapist's hand is placed in the axilla with the thumb distal to the joint margin anteriorly and fingers posteriorly. The other hand supports the lateral part of the humerus. The therapist moves the hand in the axilla laterally to distract the humerus. Distraction is sustained for a few seconds.



Glenohumeral caudal glide (resting position)

Indications

To increase abduction or correct the humerus positional fault if it is superior to normal.

The patient's position is in a supine lying and the arm in the loose pack position. The therapist supports the arm between the trunk and the elbow. One hand of the therapist is placed in the axilla to give distraction (grade 1) The therapist's other hand(web-space) is kept just below the acromion process. The force is applied on the head of the humerus in the inferior direction, through the hand which is placed superiorly.

GH posterior glide, resting position

Indications

To improve flexion and internal rotation of the shoulder.

The patient's position is in a supine lying while keeping the arm in a resting position. The therapist stands at the side of the patient's affected shoulder. The distal aspect of the arm is grasped against the trunk of the therapist to give grade one distraction to the shoulder joint. Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force. The head of the humerus is glided posteriorly.



GH posterior glide (progression)

Indications

For increasing horizontal adduction. For increasing posterior gliding when flexion approaches 90 degrees.

Patient Position: The patient's position is in a supine lying position, shoulder flexion up to 90 degrees and internal rotation with elbow flexion. The scapula is supported by placing a towel roll beneath it. The therapist places one hand over the proximal humerus for applying grade 1 distraction. Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force.

Mobilizing force

The head of the humerus is glided posteriorly.



GH anterior glide (Resting position)

Indications

To increase the extension of the shoulder with external rotation.

The patient's position is in a prone lying at the edge of the plinth, the limb is in a resting position. Acromion is stabilized by placing the towel underneath. The patient's arm is supported on the therapist's thigh and the therapist stands on the top of the table and places one hand over the arm to give distraction at GH joint. Mobilizing hand's ulnar border is placed just next to the posterior angle of the acromion. Force is applied to the humeral head in the anterior direction.



Scapulothoracic Mobilization

Scapulothoracic mobilization is performed when there is dysfunction of the scapulothoracic articulation (e.g., restriction of upward rotation or lateral glide). Mobilizations that are commonly used include medial/lateral glides, superior/inferior glides, upward and downward rotation, and diagonal patterns.



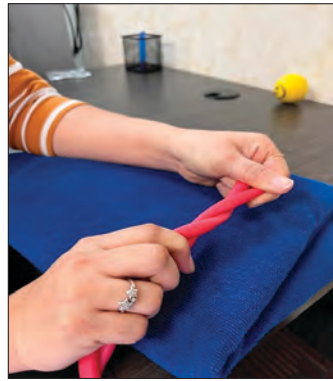
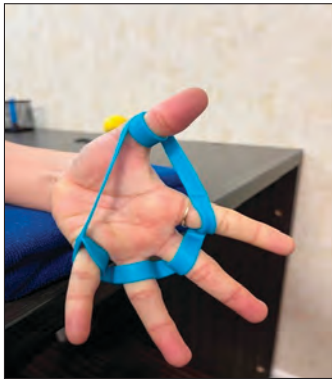
Patient position- typically, the patient is lying side-lying with the involved side up and the arm resting on the therapist's arm. Hand contacts for these glides are the inferior angle of the scapula and the acromion. Direction and magnitude of force depend upon the technique being utilized and the desired amount of motion.

3. Physiotherapist to perform passive physiological movements as required to assist with regaining ROM.
4. You will start exercises in the recovery room. Remember: The key to keeping your motion is early movement. Use the good arm to help keep the injured arm moving.
5. Move your fingers and wrist often.

Hand squeezes or grip strengthening: Using a small soft rubber ball or soft sponge, squeeze your hand. When in the shower, you can use a sponge filled with water. Do this for 3-5 sets of 10-20 repetitions each day. If this is too easy, later in the rehab course you can use a hand gripper.

Wrist range of motion: Roll your wrist in circles for 30 seconds after each round of grip exercises.





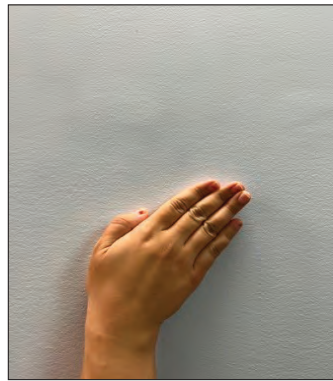
Wrist AROM



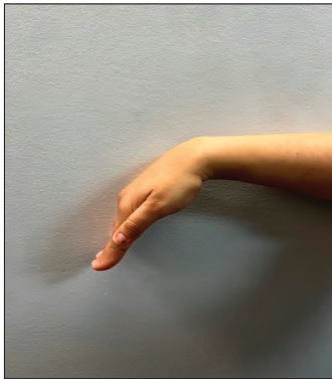
Radial Deviation



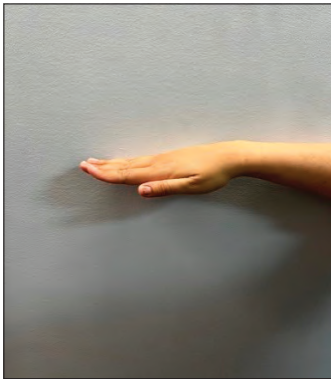
Neutral Wrist



Ulnar deviation



Wrist Flexion



Neutral Wrist



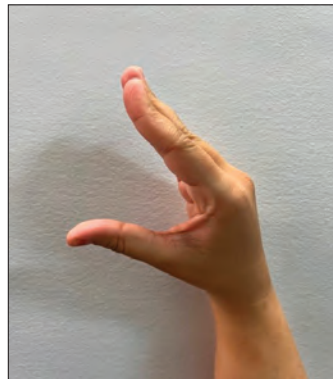
Wrist Extension



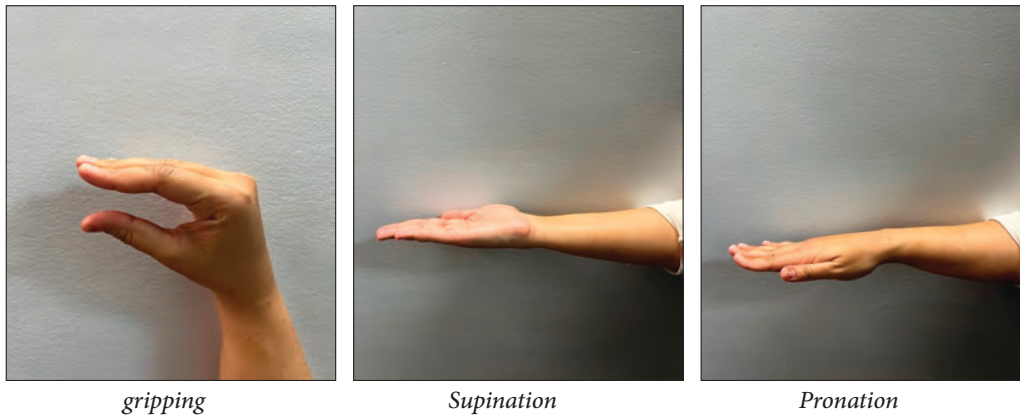
1st digit Abduction



Opposition



MCP Flexion



- 6. Continue gripping exercises, elbow, wrist, and hand exercises at least three times each day – 15 Reps.
- 7. Elbow range of motion: Turning your palm inward, towards your stomach, flex and extend the elbow as comfort allows.



Gripping Exercise



Elbow Flexion

- 8. You may have to wear an arm sling for at least 1 week, taking arm out often 5 - 7 times a day for elbow ROM.



The following exercises should be done every day for the first week post-op, to maintain blood flow and help to prevent blood clots.

Week 2-6: Continue with exercises mentioned above as directed.

- Physiotherapist to perform capsular/joint mobilizations to patient.
- Physiotherapist to perform passive physiological movements as required to assist with regaining ROM.
- Progress AAROM exercises as required; encourage proprioceptive rich exercises. e.g., wall walking, table slide and pendulum exercises.
- Ensure continuation of home exercise program.

Exercises to do during 2- 6 weeks

Pendulum Exercise: Holding the side of a table with your good arm, bend over at the waist, and let the affected arm hang down. Swing the arm back and forth like a pendulum. Then swing in small circles and slowly make them larger. Do this for a minute or two at a time, rest, then repeat for a total of 5 minutes, 3 times per day.



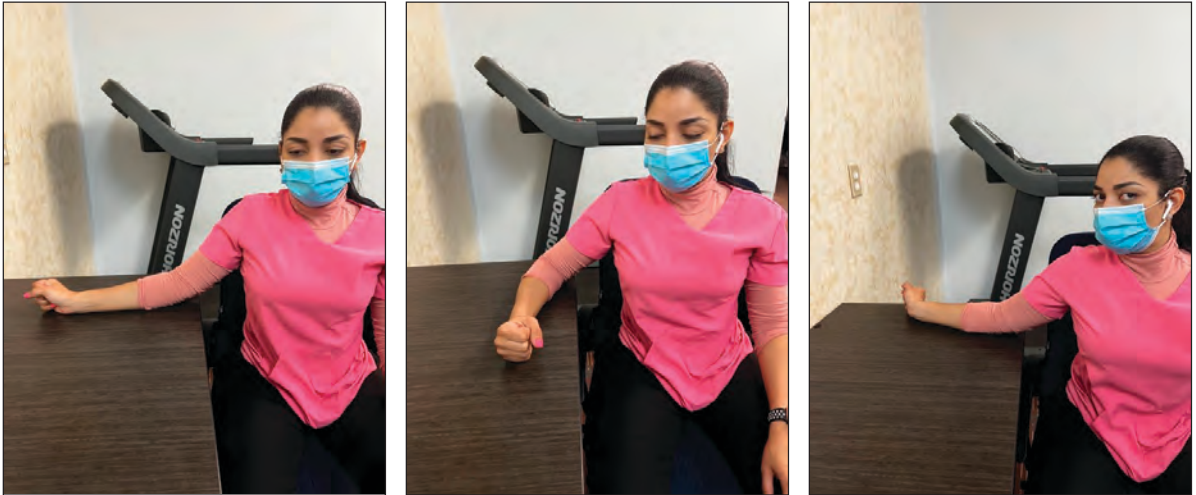
Wall Walking: Stand facing a blank wall with your feet about 12 inches away. “Walk” the fingers of the affected hand up the wall as high as comfort allows. Mark the spot and try to go higher next time. Do at least 10 repetitions, 3 times per day. When more comfortable and stronger (not before three weeks) do this exercise sideways, with the affected side facing the wall. Do not let the hand drop down from the wall- walk your fingers down as well as up. Dropping the arm will strain the repair and be painful. If having weakness on the way down, feel free to use the other arm to help.



Supported Shoulder Rotation (Assisted)

- Keep elbow in place and shoulder blades down and together. Slide forearm back and forth, as shown. You can also perform this exercise using a stick or cane to assist your arm outwards (keeping your elbow at your side).
- Repeat 10 times per session.

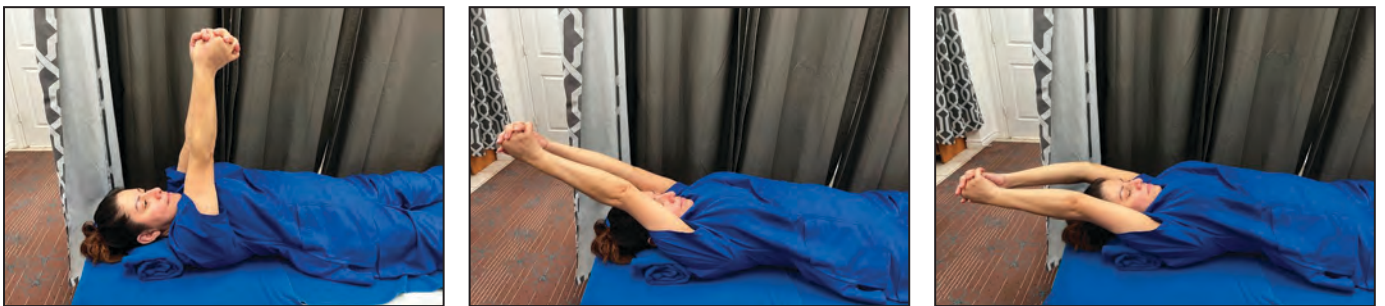
- Do 3 sessions a day.



Shoulder Forward Elevation (Assisted)

This exercise can be done either lying down (A) or sitting down (B). Clasp hands together and lift arms above head. Keep your elbows as straight as possible. Maintain the elevation for 10-20 seconds, then slowly lower your arms.

Slowly increase the elevation of your arms as the days progress, using pain as your guide. Repeat 10-20 times per session. Do 3 sessions a day.



Shoulder Internal Rotation (Assisted)

Use your other hand or a towel to help bring your involved hand behind your back and across to the opposite side.

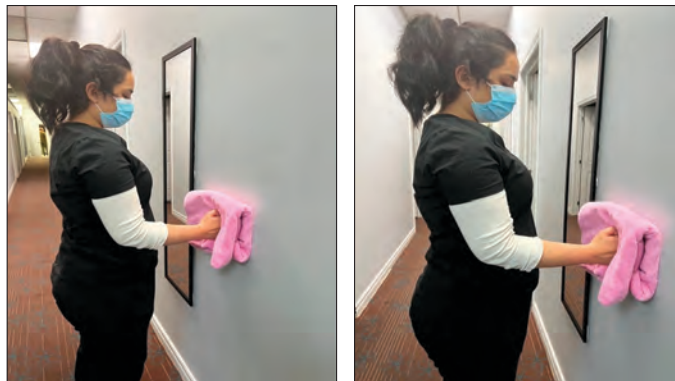
Repeat 10 times per session. Do 3 sessions a day.



Isometric Exercises

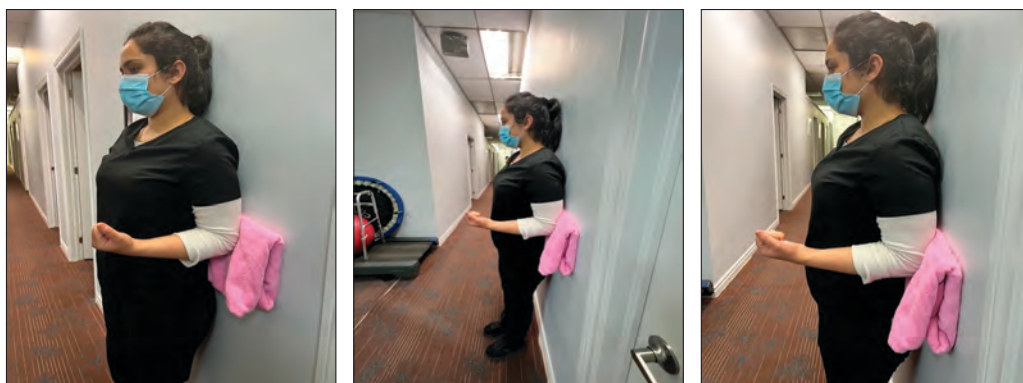
Isometric exercises are performed by simply contracting your muscles without any other movement. Isometrics can be a part of a regimen designed to help you regain normal shoulder range of motion (ROM), strength, and functional mobility.

Shoulder Flexion: Stand facing a wall. Elbows flexed to 90 degrees and held close to body. Gently push your fist forward into the wall. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



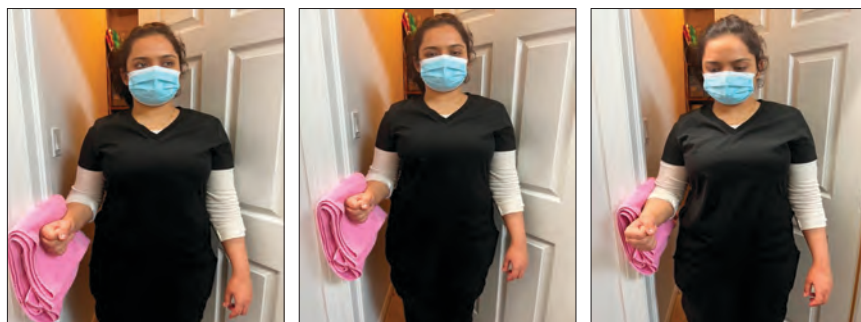
Shoulder Extension (Isometric)

- Stand with your back against the wall and arms straight at your sides. Keeping your elbows bent at 90 degrees, push your arms back into the wall. You can put a towel in between your elbow and the wall. Hold for 5 seconds, and then relax.
- Repeat 5-10 times per session.
- Do 3 sessions a day.



Shoulder External Rotation (Isometric)

- Stand with the involved side of your body against a wall. Bend your elbow 90 degrees. Push the back of your hand slowly into the wall. Hold for 5 seconds, and then relax.
- Repeat 10 times per session.
- Do 3 sessions a day.



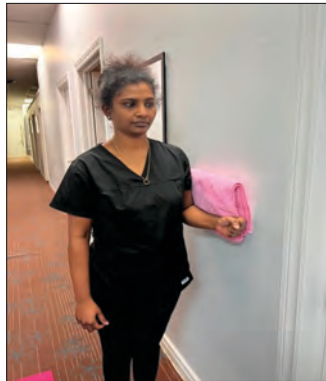
Shoulder Internal Rotation (Isometric)

- Stand at a corner of a wall or in a door frame. Place your involved arm against the wall around the corner, bending your elbow 90 degrees. Push the palm of your hand into the wall. Hold for 5 seconds, and then relax.
- Repeat 10 times per session.
- Do 3 sessions a day.



Abduction

- Sit or stand with involved arm against the wall, elbow flexed 90°.
- Place a small towel roll between arm and body.
- Push elbow out to the side against wall.
- Keep arm at side.
- Press as hard as you can without pain or discomfort.
- Hold for 5 seconds.



6-12 WEEKS

Goal: AROM to at least pre-operative level by 12 weeks.

- Continue with capsular/joint mobilizations/passive physiological movements in physiotherapy as required; keep to a minimum to ensure patient builds self-efficacy.
- Patient to continue their mobility/stretching program.
- Progress proprioceptive work through continued closed kinetic chain exercises e.g., weight bearing through arms in 4-point kneeling.
- Progress rotator-cuff controlled movement and strengthening work e.g., rotation control in prone 90/90 with or without dumbbell.
- Progress rotator cuff exercises above shoulder height as pain allows e.g., shoulder press, resisted elevation.

12 + weeks

Goal: Achieve full AROM, strengthening through range, commence return to activity/sport.

- Strengthening exercises as required for the upper limb and shoulder girdle function specific.
- Sports specific rehabilitation incorporating proprioceptive exercises and entire kinetic chain.
- Enhance rotator cuff power through range; include plyometrics and force production work as function dictates.
- Advise patient regarding self-management stretches and return to full functional activities; they must continue their home exercise program for up to 12 months.

Food & Nutrition

One of the main reasons of frozen shoulder is related to inflammation. It stands to reason that anything that works in an anti-inflammatory capacity will produce benefits, helping you heal more quickly.

Foods to be taken

- Increase intake of anti-inflammatory foods such as fruits and vegetables, oily fish (which contain high levels of omega-3 fatty acids), nuts, seeds, and certain spices, such as ginger, garlic, turmeric.



- Vegetables like cauliflower, broccoli, brussel sprouts, cabbage, cress, sweet potatoes are all loaded with antioxidants that can help rid the body of harmful compounds.



- Fruits like berries, pineapples, red grapes are well regarded for their anti-inflammatory properties. They contain proteolytic enzymes which in turn help to reduce inflammation.



- Foods rich in probiotics (yogurt, kombucha, kefir, etc)



- Take 2 tablespoons of flax seed powder daily.



- Use ginger, garlic and turmeric, liberally in cooking.



- Take magnesium rich food and supplements to relax muscles. Avoid if you have kidney problems.



- Try a spoonful of sesame seeds soaked overnight.



- Bromelain is an enzyme found in pineapple. It is an anti-inflammatory and alleviates pain and stiffness.



Foods to be avoided

Simple carbohydrates and fats, such as saturated fats and trans fats.



To combat stiffness, avoid food, drink with caffeine.



Avoid meat, butter, cheese and milk or take in moderation as that will increase inflammation.

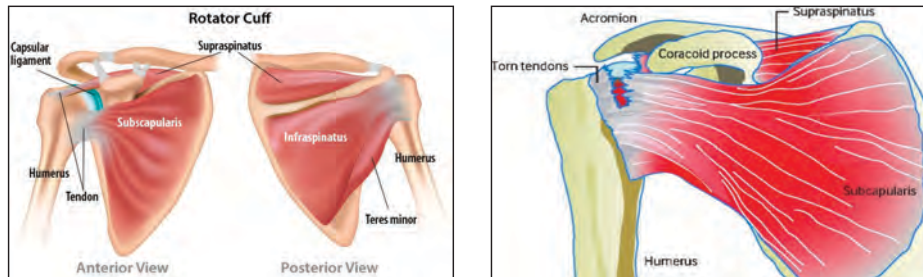


CHAPTER 3: ROTATOR CUFF TEAR

What is a Rotator cuff?

A rotator cuff is a group of muscles and tendons that stabilize the shoulder and allow for its extensive range of motion. The rotator cuff is made up of four muscles that join as tendons in your shoulder to form a thick covering at the top of the humerus (the bone in the upper arm). Each muscle originates on the shoulder blade (scapula) and connects to the humerus. It includes Subscapularis, Infraspinatus, Supraspinatus, Teres minor.

Anatomy of Rotator cuff:



Supraspinatus:

Origin: Supraspinous fossa

Insertion: Superior facet of the greater tubercle

Nerve supply: Suprascapular nerve (C5)

Function: Abducts the humerus.

Infraspinatus:

Origin: Infraspinous fossa

Insertion: Middle facet of the greater tubercle

Nerve supply: Suprascapular nerve (C5- C6)

Function: externally rotates the humerus

Subscapularis:

Origin: Subscapular fossa

Insertion: Lesser tubercle

Nerve supply: Upper and lower subscapular nerve (C5-C6)

Function: Internally rotates the humerus

Teres minor:

Origin: Middle half of lateral border

Insertion: Inferior facet of the greater tubercle

Nerve supply: Axillary nerve

Function: Externally rotates the humerus

Sometimes, shoulder pain can come without any apparent reason. Due to repetitive stress and postural negligence, we might get rotator cuff tears and shoulder injuries. When this happens, different structures around your rotator cuff may become compromised.

In rotator cuff injury a person can feel pain and weakness in lifting his arm and it may cause difficulty in basic activities such as lifting reaching or sleeping.

Differential Diagnosis:

Some associated condition of rotator cuff tear is as below...

- Rotator cuff tear
- Rotator cuff tendonitis
- Shoulder impingement
- Shoulder bursitis
- Shoulder labrum tear
- Shoulder separation

Cause:

- Either a substantial injury to the shoulder or progressive degeneration or wear and tear of the tendon tissue.
- Repetitive shoulder motions, as previously discussed, can place a strain on your rotator cuff. Repetitive shoulder motions with your arm above your head are prevalent in sports, including baseball, softball, tennis, volleyball, rowing, swimming, and weightlifting. You may suffer the same tension on your rotator cuff if you work in a vocation like painting or construction.
- Rotator cuff tears become much more likely beyond the age of 40. When the tendons in your rotator cuff wear down, your body can usually heal them over time. However, as we age, the blood flow to the area declines, making it more difficult for our bodies to repair.
- Muscle weakness and bad posture: Poor posture and a sedentary lifestyle raise the risk of heart disease.
- Construction jobs: Occupations such as carpentry or house painting require repetitive arm motions, often overhead, that can damage the rotator cuff over time.
- Family history: There may be a genetic component involved with rotator cuff injuries as they appear to occur more commonly in certain families.

Risk Factors:

- Performing overhead tasks
- Repetitive stress to your shoulder joint, as in throwing and racquet sports
- Contact sports
- Sitting with a rounded shoulder posture
- Failing to maintain general physical fitness

Symptoms:

The pain associated with a rotator cuff injury may:

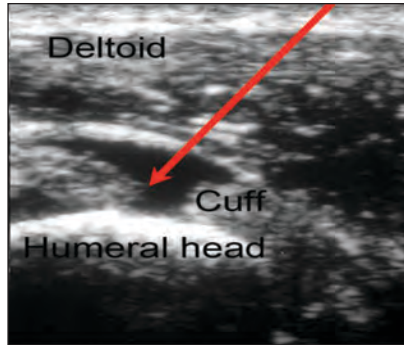
- Be described as a dull ache deep in the shoulder
- Disturb sleep
- Make it difficult to comb your hair or reach behind your back
- Be accompanied by arm weakness

Diagnosis:

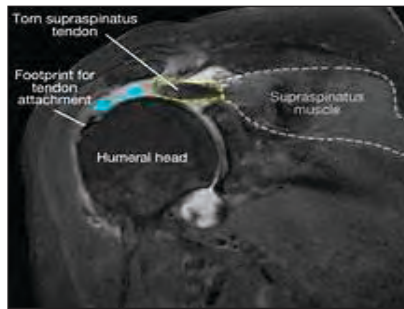
X-rays. Although a rotator cuff tear won't show up on an X-ray, this test can visualize bone spurs or other potential causes for your pain such as arthritis.



Ultrasound. This type of test uses sound waves to produce images of structures within your body, particularly soft tissues such as muscles and tendons. It allows dynamic testing, assessing the structures of your shoulder as they move. It also allows a quick comparison between the affected and healthy shoulders.



Magnetic resonance imaging (MRI). This technology uses radio waves and a strong magnet. The images obtained display all structures of the shoulder in detail. The quality of the images depends greatly on the quality of the equipment used.



Common complications after surgery:

- Complex regional pain syndrome
- Fracture
- Nerve injury
- Superficial infection
- Stiffness
- Venous thromboembolism

Prevention:

- If the previous injury of rotator cuff, then daily shoulder strengthening exercises can help prevent future injury.
- Along with the front muscles of the chest, shoulder, and upper arm, the Back of the shoulder and around the shoulder blade muscles are also equally important to optimize shoulder muscle balance.

Treatment:

Conservative treatment Approach (RICE protocol):

Rest- Besides the obvious of not making your injury even worse, there are 2 reasons for resting is important after suffering a rotator cuff injury. First, it protects your injured tendon, muscles, and ligaments from further damage such as a complete tear of the rotator cuff, and secondly, it allows your body's natural defense mechanisms to kick in and start the natural repair process.



Ice- Any person who has taken a basic first aid course knows that the first thing you do after someone sustains a muscle or tendon injury is apply ice. Ice immediately numbs the area and helps control pain. The application of ice decreases the amount of blood flow to the injured area and helps decrease swelling. If you don't have any ice packs, a bag of frozen vegetables will do the trick. To decrease the chances of tissue and skin damage, it's recommended that you only apply ice for 15 minutes.



Compression- Applying pressure, compression aids in the reduction of inflammation plus it can provide temporary pain relief. All that is required is an elastic bandage that gets wrapped up and around your shoulder region. How do you know if the bandage is too tight? You will feel a throbbing sensation in your shoulder if the bandage is wrapped too tight. When this happens, re-wrap the bandage with less pressure.



Elevation- Although this step does not apply to a rotator cuff injury but is more so directed towards limbs and injuries that are below heart level. Elevating your arm, or leg above heart level can also decrease swelling and inflammation.



Injections

If conservative treatments haven't reduced your pain, your doctor might recommend a steroid injection into your shoulder joint, especially if the pain is interfering with your sleep, daily activities, or physical therapy. While such shots are often temporarily helpful, they should be used judiciously, as they can contribute to the weakening of the tendon and may lower the success of surgery if this is eventually needed.

Contrast bath

All you do is have one bucket of hot water (must be as hot as you can handle on your skin) and one bucket of cold water. Place a towel or good size rag in each bucket. Start with the hot towel and place it over the shoulder (do not squeeze or wring out the towel). Leave the towel there until it starts to cool and is no longer burning (usually around 30 seconds). Throw it back in the hot bucket and grab the cold towel. Place this over your shoulder for about 30 seconds.

Throw that back in the cold bucket and continue to repeat this process until you've gone through it at least 6-7 times. Do this 3 times per day, morning, noon, and night for best results. It's also advisable to do this outside due to the amount of water that gets spilled and the mess it makes.

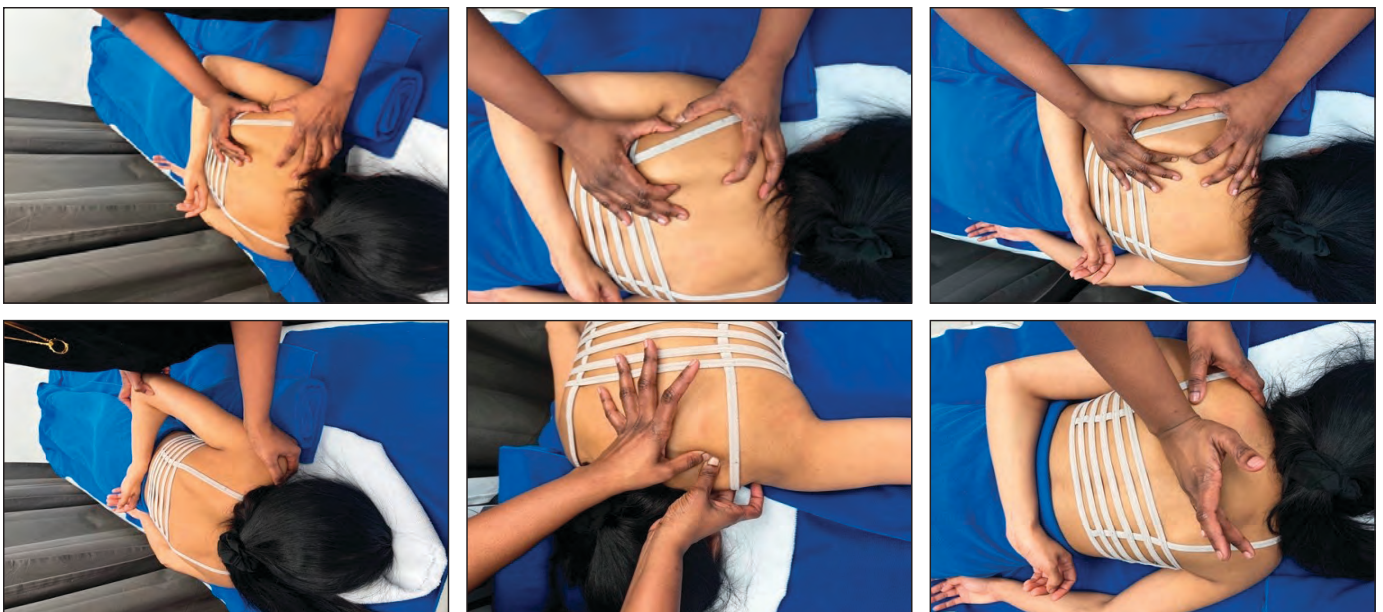
Massage Therapy

Soft-tissue therapies such as Remedial Massage are recommended to assist the rehabilitation process for many rotator cuff injuries. Remedial Massage can reduce the recovery time by increasing blood circulation to the affected area and allowing lymph to return to the heart for re-circulation. Remedial massage may also help by reducing the severity of any scar tissue that has been left behind at the site of injury. Regular massage after surgery can also help to reduce scar tissue but just make sure the incision is fully healed first and has become a scar.

Massage to the area of the shoulder and axilla can have therapeutic benefits which are balancing the muscles that influence the shoulder joint such as muscles surrounding the shoulder, specifically rotator cuff muscles. It is suggested that lymphatic drainage techniques may assist in reducing swelling and facilitating recovery by increasing the rate of absorption of the excessive synovial fluid.

Trigger Points:

A Remedial Massage Therapist may also be able to provide some relief by deactivating trigger points in the Infraspinatus muscle. There is a specific place on the back of the shoulder blade that radiates pain into the shoulder joint and down the front or side of the arm. Many people find that work on this trigger point can substantially reduce their shoulder pain issues. It is certainly worth a shot as it doesn't take long to locate and release this trigger point.



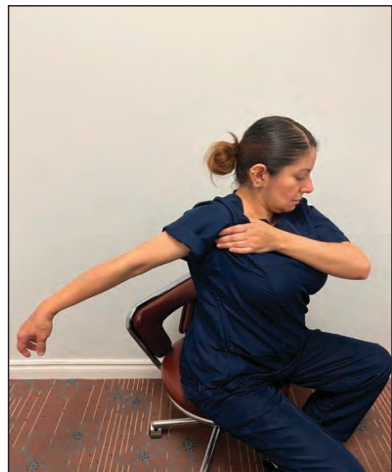
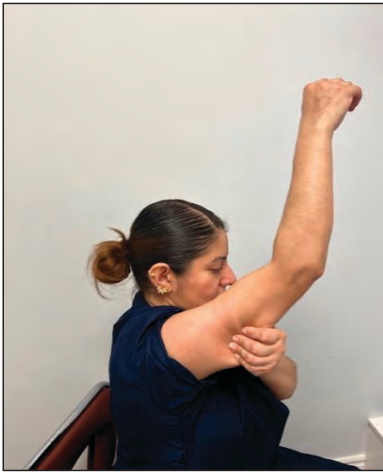
Self-Massage

Massage therapy is a great option for rotator cuff injuries because it helps to decrease inflammation and pain in the area, release scar tissue, loosen tight and tense muscles and increase range of motion in the shoulder girdle. Massage the Area. It's best to use a circular or figure 8 motion with your massage to activate the oil properties and quickly release the inflammation.

You can also hold firm pressure on tender areas for 30 seconds each. Remember to breathe in and out through your nose with sound. Breathing with sound will help to activate the vagus nerve and further reduce the pain.

- Use your opposite hand to massage your affected shoulder and arm.
- Focus on any sensitive areas.
- Gently move your affected arm as you massage your shoulder and arm.





You can try using a ball to massage trigger points around the shoulder.



You can use any of the following essential oil or combination of them mentioned below. But always remember to dilute your essential oils appropriately with a nice plant-based carrier oil such as coconut oil, olive oil, jojoba oil, almond oil, and many more.

Some of the essential oils that are good for rotator cuff injury:

1. Eucalyptus essential oil:

It might remind you of vapor rub, but it has a cooling effect that helps to relieve soreness in joints, like chronically inflamed shoulders.



2. Lavender essential oil

It is very soothing, it acts like a mild sedative, working to calm the nervous system.

When applied to the tendonitis in your shoulder, it helps to relieve the pain directly by calming the nerves.



3. Peppermint essential oil

It might be confused with wintergreen but is a different species of mint that can help relieve the pain and inflammation associated with shoulder injuries. With this type of injury, the tissues might be inflamed.

Peppermint oil helps to cool those inflamed tissues, reducing the pain.

4. Rosemary essential oil

It has anti-inflammatory and analgesic properties to quiet your angry shoulder.

It's even said to be more effective than acetaminophen in reducing the pain in your inflamed shoulder.



5. Wintergreen essential oil:

It helps to reduce both pain and inflammation. You can simply apply it topically to the affected shoulder. Use caution, as you don't want to get wintergreen in your eyes. It will burn. The active molecule in wintergreen essential oil is closely related to over-the-counter anti-inflammatory medications.



Castor Oil. Castor oil is one of the effective natural remedies for rotator cuff tears that works wonders. The active compound in castor oil, ricinoleic acid has been found to impose beneficial anti-inflammatory and pain-reducing properties which help in overcoming the problems associated with this condition.



Turmeric. Turmeric is yet another one of the amazing rotator cuff natural remedies that do work. The primary reason behind the same is because turmeric is loaded with beneficial anti-inflammatory properties which have beneficial impacts in faster and better recovery of the inflammation and the pain that one is enduring.



Epsom salt. Epsom salt is yet another of the effective remedy for the rotator cuff that provides beneficial impacts. The primary reason is because of the presence of the magnesium sulfate in it which imposes beneficial impacts in helping with the inflammation and even getting rid of the pain that one often tends to experience.



Physiotherapy treatment:

Rotator Cuff Physical Therapy protocol has been developed for the patient following a rotator cuff surgical procedure. This protocol will vary in length and aggressiveness depending on factors such as:

- Size and location of the tear
- Degree of shoulder instability/laxity before surgery
- Acute versus chronic condition
- Length of time immobilized
- Strength/pain/swelling/range of motion status
- Rehabilitation goals and expectations

Early passive range of motion is highly beneficial to enhance circulation within the joint to promote healing. The protocol is divided into phases. Each phase is adaptable based on the individual and special circumstances. The overall goals of the surgical procedure and

rehabilitation are to:

- Control pain, inflammation, and effusion
- Regain normal upper extremity strength and endurance
- Regain normal shoulder range of motion
- Achieve the level of function based on the orthopedic and patient goals.

Return to activity requires both time and clinical evaluation. To return to normal or high-level functional activity safely and most efficiently, the patient requires adequate strength, flexibility, and endurance. Functional evaluation including strength and range of motion testing is one method of evaluating a patient's readiness to return to activity. Return to intense activities following a rotator cuff repair require both a strenuous strengthening and range of motion program along with a period to allow for tissue healing. Symptoms such as pain, swelling, or instability should be closely monitored by the patient.

The goal of gentle stretching and strengthening is to stimulate the cells to lay down collagen along the lines of stress, forming normal strong tendons. The combination of a good warm-up, gentle stretching, strengthening below the limits of pain, icing after working out, and anti-inflammatory medication has been consistently shown to speed recovery time in the strongest possible fashion.

Shoulder stretches to improve Range of Motion:

The main benefit of stretching the shoulder is to reduce the risk of injury to the muscles and joints and to improve the range of motion.

1. Cross-arm stretch

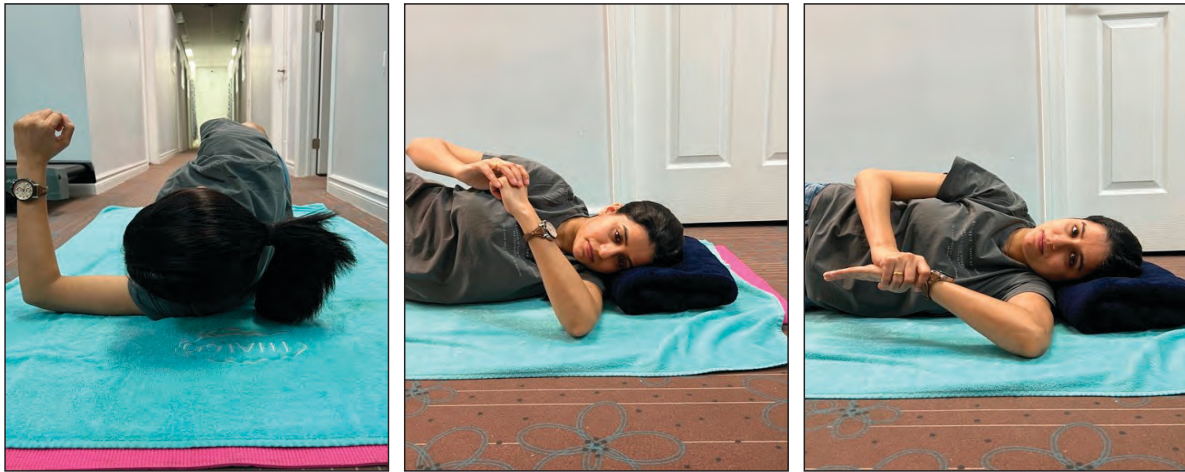
The cross-arm stretch targets the rotator cuff muscles. You should feel a good stretch in the rear shoulders. To perform the “crossover arm stretch”:

1. Straighten the arm on the side you want to stretch
2. Use your other hand or forearm to pull the straight arm across toward your torso
3. Find a comfortable but challenging level of resistance
4. Hold it for about 15 seconds
5. Swap sides and repeat a few times a day if possible.



2. Sleeper stretch

It's an excellent way to work internal rotation for the shoulder. This stretch is often recommended when dealing with a shoulder injury or during rehab. While you can do this stretch on both sides for general health, if you have an injury, the emphasis should be on the affected side.

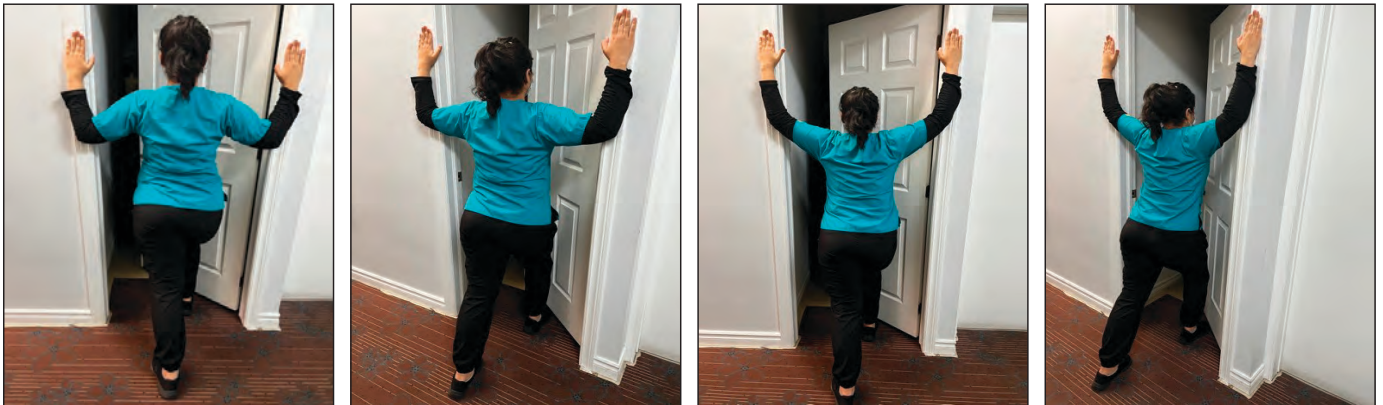


3. Doorway stretch

The doorway stretch allows you to stretch each side of your chest individually, which helps if one side is tighter than the other. This stretch helps to open the pectoralis muscles in your chest and increases the range of motion in your shoulders.

To perform the doorway, stretch:

1. Find a solid and stable doorway
2. Hold your arms horizontal to your body with your elbow bent at 90 degrees
3. Place your arm against the door frame
4. Slowly and carefully lunge forward with your body to stretch the arm back behind yourself
5. Find a comfortable but challenging level of resistance
6. Hold it for about 15 seconds
7. Swap sides and repeat a few times a day if possible.



4. Chest expansion

Chest expansion is a good way to stretch your back muscles, open your chest, and increase the range of motion in your shoulders. It can also help expand your lungs to receive oxygen better.



5. Child's Pose

Commonly known as a yoga move. Child's Pose is a good way to open the shoulder joint into flexion (forward bending) and to stretch your latissimus dorsi, muscles. Your lower back can also benefit from this pose.



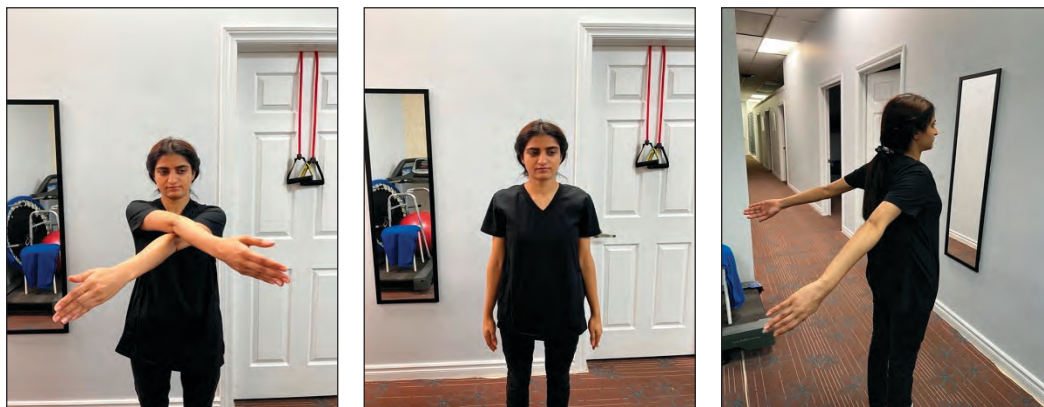
Shoulder mobility Exercises:

It helps build strength and mobility in shoulder muscles and the joint. These exercises may also help prevent tightness and subsequent injury.

Before starting any exercises, spend 5 to 10 minutes warming up with dynamic upper body stretches such as arm circles, arm swings, and spinal rotations. Warming up this way is great for increasing blood flow to a specific area, which also helps with overall performance.

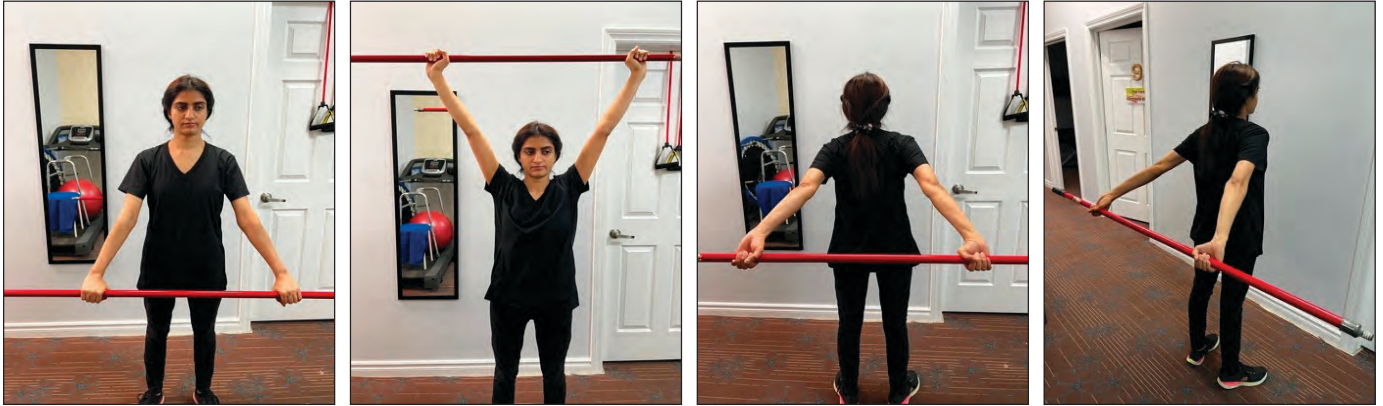
1. Standing arm swings

This is a great dynamic exercise that helps to increase blood flow to the shoulder joint. Doing this exercise as part of a warmup before performing upper body exercises can improve mobility and flexibility in your shoulders and upper back.



2. Shoulder pass-through

The shoulder pass-through exercise helps to increase joint mobility while still engaging the surrounding muscles of the shoulder. This exercise requires holding a long stick, like a broomstick or PVC pipe. Hold the pipe with both hands, elbows should be straight. Try taking the pipe above your head as shown in the picture. If you can take it further towards your back, you can try doing that without eliciting any pain. If not return to starting position.



3. High-to-low rows

High-to-low rows challenge the upper back and thoracic muscles, which provide a lot of stability to the shoulder joint. This exercise requires a resistance band. You can also do this exercise at the gym using a cable machine.



4. Reverse fly

Like the high-to-low rows, the reverse fly exercise targets the upper back and thoracic muscles that provide a lot of stability to the shoulder joint. This exercise requires a set of light dumbbells.



5. Rotation with dumbbell

Rotation with a dumbbell allows you to warm up the shoulder for overhead and throwing motions. This is standard practice for most athletes who extend their arms overhead and externally rotate during their sport.



Mobilization of Rotator Cuff for Repair

- Mobilization is often required for massive tear.
- Simply closing extensive tear will not suffice if atrophied muscles are not contracting adequately and if excessive tensions placed on repaired cuff cause reinjury.
- Repair of good quality rotator cuff tissue is important in achieving an optimal result.
- Repairing attenuated, scarred, frayed, or fibrillated cuff tissue contributes to the risk of failure, no matter how well tear closure is performed.

Glenohumeral mobilization:

The head of the humerus is convex and the glenoid fossa is concave. The patient's position is a loose pack position. The therapist will distract the shoulder and move the shoulder in 55-degree abduction and 30-degree horizontal adduction.

Glenohumeral distraction

Indications

Distraction is usually applied during initial treatment to reduce pain and general mobility. The patient's position is in a supine lying position and the shoulder is in a resting position. The therapist's hand is placed in the axilla with the thumb distal to the joint margin anteriorly and fingers posteriorly. The other hand supports the lateral part of the humerus. The therapist moves the hand in the axilla laterally to distract the humerus. Distraction is sustained for a few seconds.



Glenohumeral caudal glide (resting position)

Indications

To increase abduction or correct the humerus positional fault if it is superior to normal.

The patient's position is in a supine lying and the arm in the loose pack position. The therapist supports the arm between the trunk and the elbow. One hand of the therapist is placed in the axilla to give distraction (grade 1) The therapist's other hand (webspace) is kept just below the acromion process. The force is applied on the head of the humerus in the inferior direction, through the hand which is placed superiorly.

GH posterior glide, resting position

Indications

To improve flexion and internal rotation of the shoulder.

The patient's position is in a supine lying while keeping the arm in a resting position. The therapist stands at the side of patient's affected shoulder. The distal aspect of the arm is grasped to give grade one distraction to the shoulder joint. Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force. The head of the humerus is glided posteriorly.



GH posterior glide (progression)

Indications

For increasing horizontal adduction. For increasing posterior gliding when flexion approaches 90 degrees.

Patient Position: The patient's position is in a supine lying position, shoulder flexion up to 90 degrees and internal rotation with elbow flexion. The scapula is supported by placing a towel roll beneath it. The therapist places one hand over the proximal humerus for applying grade 1 distraction. Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force.

Mobilizing force

The head of the humerus is glided posteriorly.



GH anterior glide (Resting position)

Indications

To increase the extension of the shoulder with external rotation.

The patient's position is in a prone lying at the edge of the plinth, the limb is in a resting position. Acromion is stabilized by placing the towel underneath. The patient's arm is supported on the therapist's thigh and the therapist stands on the top of the table and places one hand over the arm to give distraction at GH joint. Mobilizing hand's ulnar border is placed just next to the posterior angle of the acromion. Force is applied to the humeral head in the anterior direction.



Scapulothoracic Mobilization

Scapulothoracic mobilization is performed when there is dysfunction of the scapulothoracic articulation (e.g., restriction of upward rotation or lateral glide). Mobilizations that are commonly used include medial/lateral glides, superior/inferior glides, upward and downward rotation, and diagonal patterns.

Patient position- typically, the patient is lying side-lying with the involved side up and the arm resting on the therapist's arm. Hand contacts for these glides are the inferior angle of the scapula and the acromion. Direction and magnitude of force depend upon the technique being utilized and the desired amount of motion.



Kinesiology Tapping:

Kinesiology tape is constructed of fine, breathable, stretchable material, usually cotton or a cotton blend. Its elasticity does not overly restrict the area of application, and it is designed to provide just enough pressure and support to facilitate strength in the muscles and tissues.

This tape adheres to the skin with a medically approved, water- and sweat-proof adhesive. It comes in latex-free and hypoallergenic varieties for people who may be allergic to latex. The tape can usually stay in place for three or four days even while showering or exercising.

Positive results are reported to be felt within 24 hours for many users of kinesiology tape.



Benefits:

- Create Spaces in Joints
- Stimulate Bruise and Contusion Recovery
- Prevent and Relieve Muscle Spasms and Cramping
- Accelerate Muscle Recovery
- Guarantee Comfort
- Reduce Risk of Injury
- Move Freely
- Improve Muscle Tone and Strength

Decreased Pain: By gently applying pressure, kinesiology tape helps to disrupt and dissipate pain.

Increased Circulation and Decreased Inflammation: The tape can help remove congestion while allowing efficient circulation of oxygenated blood and lymphatic fluids. Circulation flushes out irritants, thereby reducing inflammation and chemical buildup and fostering a speedy recovery.

Improved Posture and Muscle Support: Taping areas that wear away from correct posture can help gently support proper posture.

Proper taping also enables weak muscles to function efficiently, reduces pain and fatigue, and protects against cramping, over-extension, and over-contraction.

Improved Athletic Performance: By supporting unstable joints and delivering slight pressure to “sleeping” muscles, taping can prompt higher performance. Unlike other assistive devices that can lead to dependence on them for stability and support, kinesiology tape trains the body to become independent and efficient.

Supported endogenous analgesic system: The tape enables the body’s own healing mechanisms to work in the recovery process. (“Endogenous” means “internal,” and “analgesic” means “relieving pain.”)

Rehabilitation protocol after surgery for rotator cuff tear:

Rotator Cuff Physical Therapy Phase 1

Week 1-3

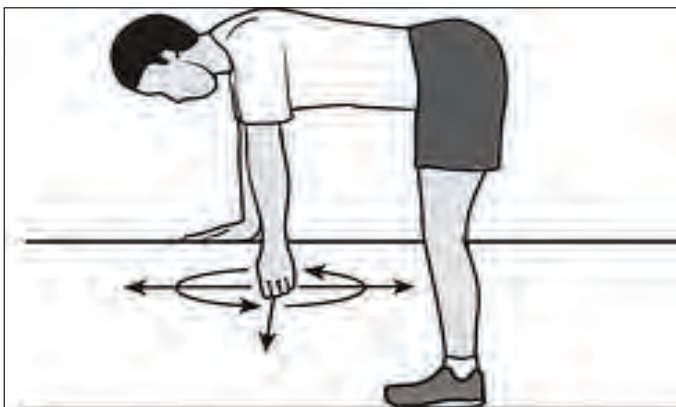
Rotator Cuff Exercise Goals

- Promote healing of repaired rotator cuff
- Control pain and inflammation
- Gradual increase of ROM
- Independent in HEP

ROM

Gradual increase passive ROM in scapular plane pendulum exercises.

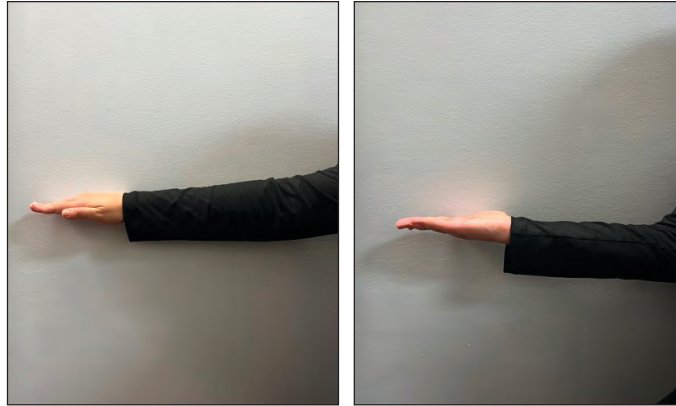
Pendulum Exercise: Holding the side of a table with your good arm, bend over at the waist, and let the affected arm hang down. Swing the arm back and forth like a pendulum. Then swing in small circles and slowly make them larger. Do this for a minute or two at a time, rest, then repeat for a total of 5 minutes, 3 times per day.



Elbow (flexion /extension) range of motion

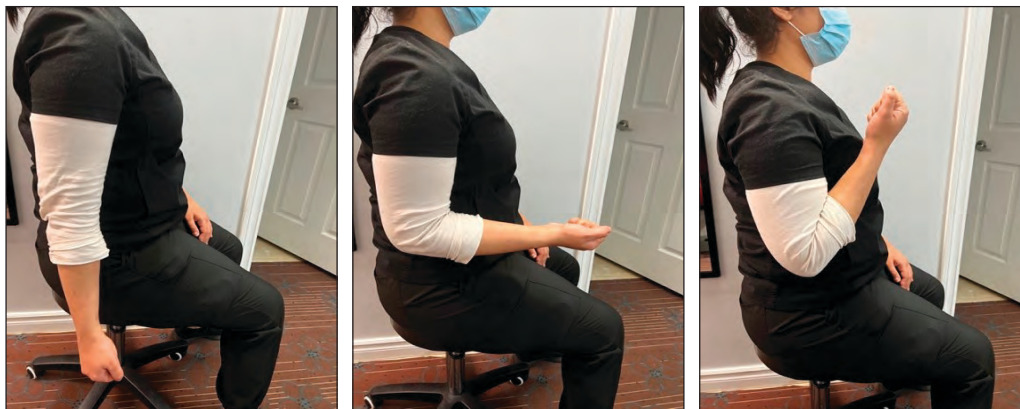
Turning your palm inward, towards your stomach, flex and extend the elbow as comfort allows or using your other hand to support your affected hand.

Elbow AROM



A. Pronation

B. Supination

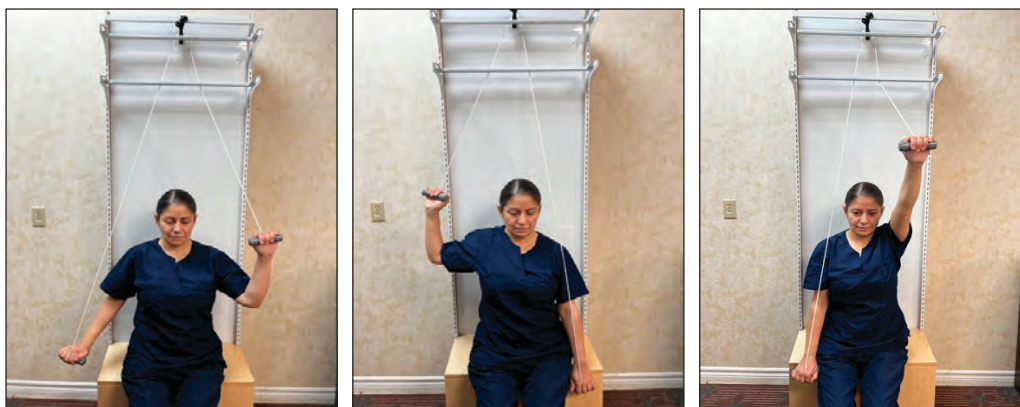


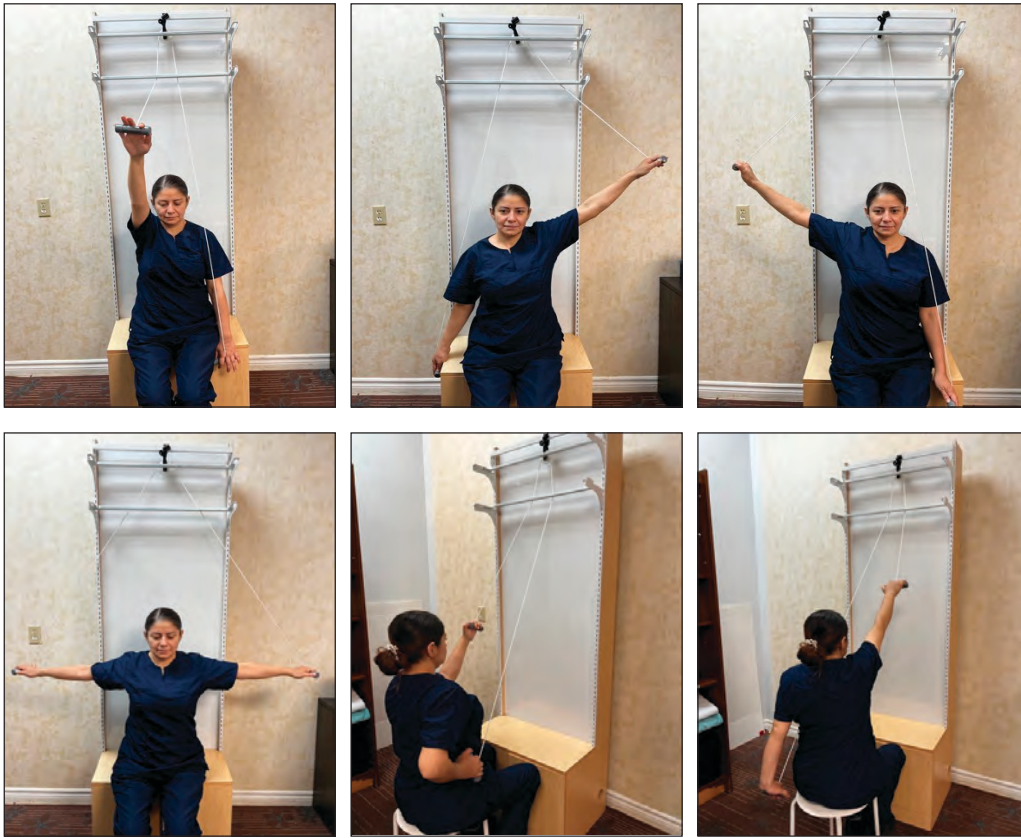
A. Elbow Extension

B. Elbow 90 degrees Flexion

C. Elbow Flexion

Initiate rope/pulley week 3-4 post-operation: This kind of exercise is active assisted exercise where you use a rope and pulley system to perform various motion on the affected shoulder. You use your good hand to pull and stabilize the affected side. Try to do these motions slowly and with good sitting posture as shown in the pictures below

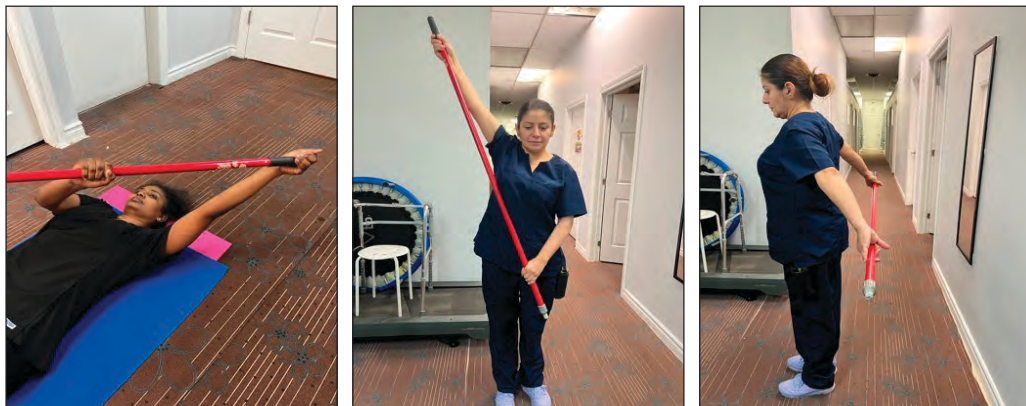
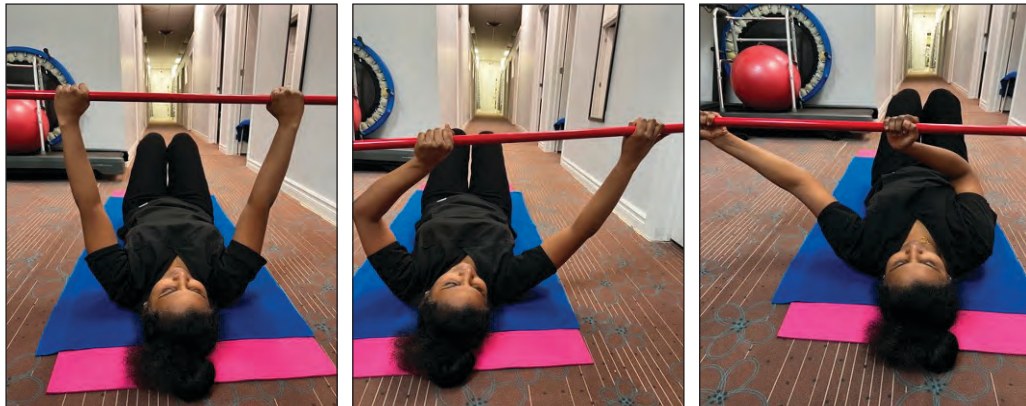
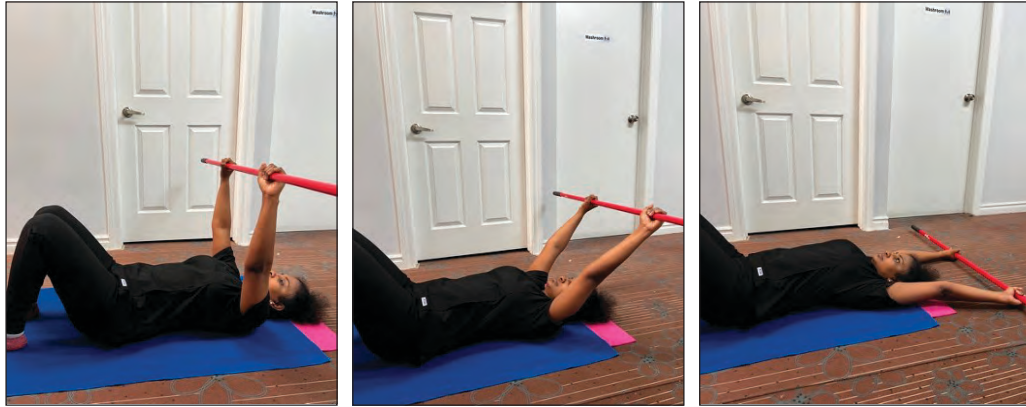




Wand Exercises

Wand exercises are active assisted exercises which can be done with the help of your good shoulder. Initiate passive external rotation wand exercise week 3-4 not to exceed 45° or external rotation at 45° abduction.



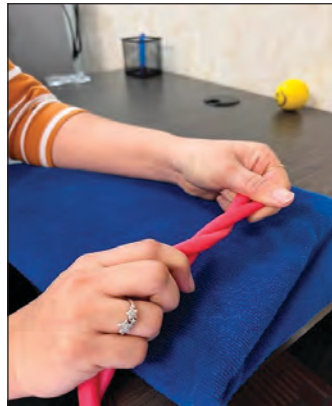
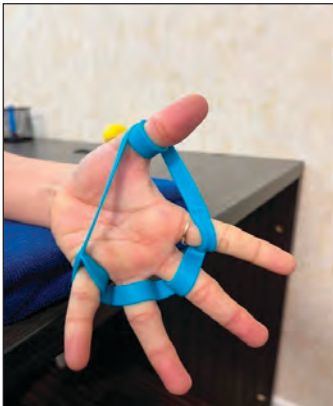
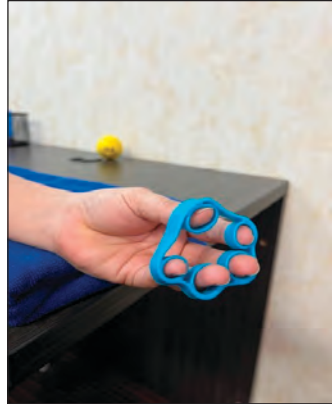
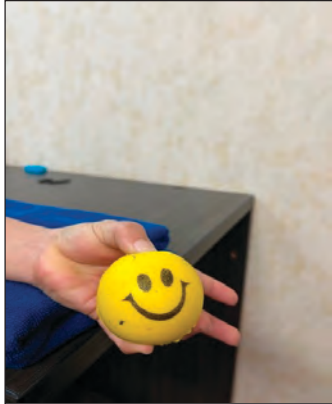
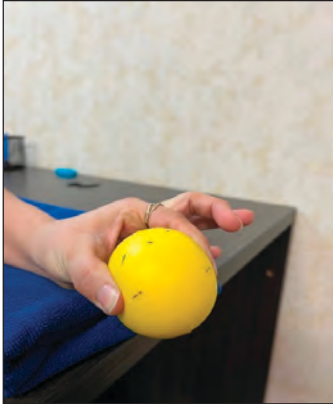


STRENGTH

- NO Active Shoulder flexion or abduction allowed in the first 3 weeks.
- Grip strengthening with putty or ball.



- Move your fingers and wrist often.



BRACE

Brace for 3 weeks and can be removed to perform exercises mentioned above.



MODALITIES

Electrical stimulation and ultrasound as needed.

Transcutaneous electrical nerve stimulation (TENS). Use of a small battery-operated device that reduces pain by blocking nerve impulses.

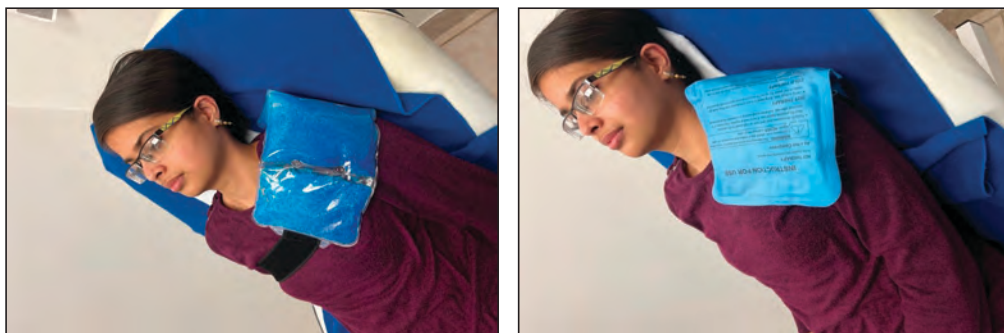


Ultrasound Therapy

Sound waves are transmitted to the shoulder using an ultrasound therapy machine, a qualified physical therapist applies vibrating circular motions to the affected area. The machine's settings can be changed to adjust the depth and intensity. The process is believed to be therapeutic, enhancing healing and decreasing pain.



Ice is used first, right when you get your injury to decrease pain / swelling and inflammation. Use it for 15-20 minutes.



Phase 2: Week 3-6

Rotator Cuff Exercise Goals

- Control pain and inflammation
- Initiate light Rotator Cuff muscle contraction
- Gradual increase in ROM
- Initiate light scapular stabilizer contraction

ROM

- Gradually increase passive range of motion as needed.
- Initiate Grade I-II joint mobilization
- Continue Pendulum exercise with weight
- Elbow (flexion/extension) range of motion
- Continue doing Rope/Pulley (flexion/abduction/scaption) Wand activities in all planes
- Initiate gentle posterior capsule stretching
- Initiate gentle Internal rotators stretching

STRENGTH

- Continue grip strengthening as needed
- Initiate submaximal isometrics at week 4
- Initiate supine active range of motion exercises without resistance
- Initiate scapular stabilizer strengthening-active assisted shrugs shoulder retraction.

Isometric Exercises

These exercises are designed to maintain muscle tone. It is important to note that in each isometric exercise no motion is allowed i.e., motion is resisted and prevented by the good arm or an immovable object such as door jamb or a wall.

External Rotators:

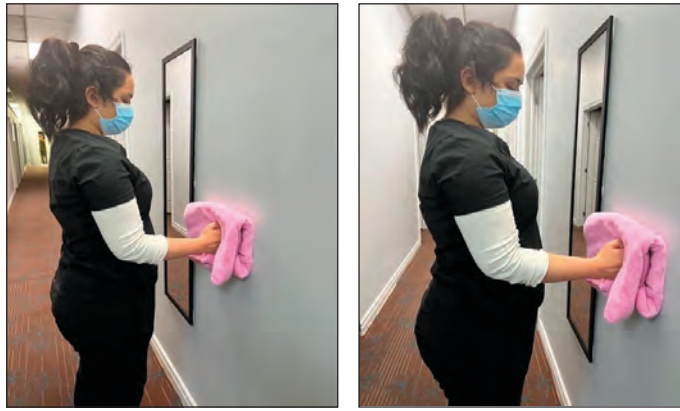
Lying on back, elbow flexed to 90 degrees and held close to the body. Grasp wrist of operated arm with good hand, attempt to move operated hand outward while resisting motion with the good hand. Do not allow the operated arm to move.



Internal Rotators: Lying on back, elbow flexed to 90 degrees and held close to the body. Grasp wrist of operated arm with good hand, attempt to move operated hand inward while resisting motion with the good hand. Do not allow the operated arm to move.

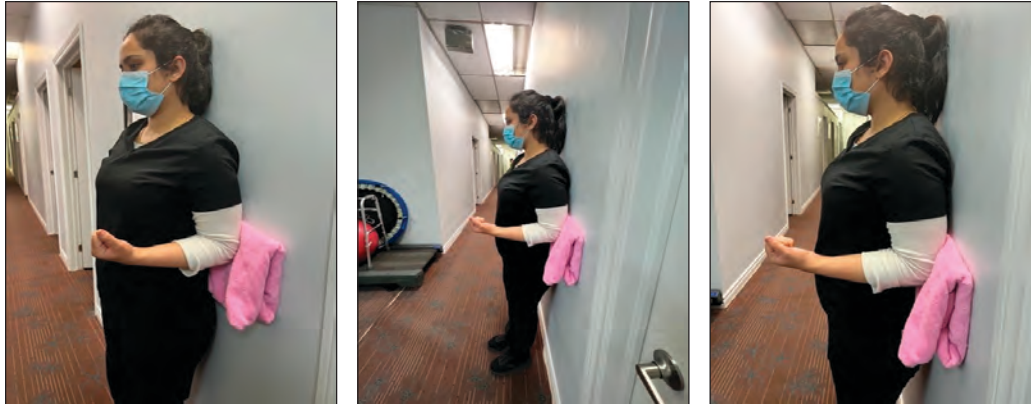


Shoulder Flexion: Stand facing a wall. Elbows flexed to 90 degrees and held close to body. Gently push your fist forward into the wall. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



Shoulder Extension (Isometric)

- Stand with your back against the wall and arms straight at your sides. Keeping your elbows bent at 90 degrees, push your arms back into the wall. You can put a towel in between your elbow and the wall. Hold for 5 seconds, and then relax.
- Repeat 5-10 times per session.
- Do 3 sessions a day.



Shoulder External Rotation (Isometric)

- Stand with the involved side of your body against a wall. Bend your elbow 90 degrees. Push the back of your hand slowly into the wall. Hold for 5 seconds, and then relax.
- Repeat 10 times per session.
- Do 3 sessions a day.



Shoulder Internal Rotation (Isometric)

- Stand at a corner of a wall or in a door frame. Place your involved arm against the wall around the corner, bending your elbow 90 degrees. Push the palm of your hand into the wall. Hold for 5 seconds, and then relax.

- Repeat 10 times per session.
- Do 3 sessions a day.



Abduction

- Sit or stand with involved arm against the wall, elbow flexed 90°.
- Place a small towel roll between arm and body.
- Push elbow out to the side against wall.
- Keep arm at side.
- Press as hard as you can without pain or discomfort.
- Hold for 5 seconds.



- Progressive shoulder isotonic exercises at 8 weeks, low weights, high reps
- Grade III-IV GH and scapular mobilizations at 8 weeks
- Posterior scapular stretching at 8 weeks
- General upper extremity strengthening at 10 weeks

BRACE

Discharge brace at week 3-4

MODALITIES

Ice 15-20 minutes or as needed.

Phase 3: Week 6-12

Rotator Cuff Exercise Goals

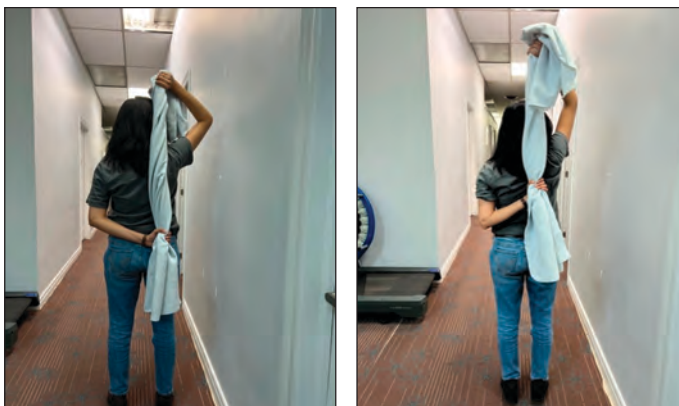
- Minimize pain and swelling

- Reach full ROM
- Improve upper extremity strength and endurance
- Enhance neuromuscular control
- Normalize arthrokinematics

ROM

- Full ROM Continue all ROM from previous phases
- 10–12-week Posterior capsule stretching
- Initiate Grade II-IV joint mobilization as needed
- Rope/Pulley (flexion, abduction, scaption)
- Towel stretching Wand activities in all planes as discussed earlier.

Towel stretch: Grasp a three-foot-long towel with both hands behind your back and hold it in a horizontal position. Use your good arm to pull the affected arm upward to stretch it. You can also perform an advanced version of this exercise with the towel draped over your good shoulder. Grasp the bottom of the towel with the affected arm and pull it toward the lower back with the unaffected arm. Do these 10 to 20 times a day.

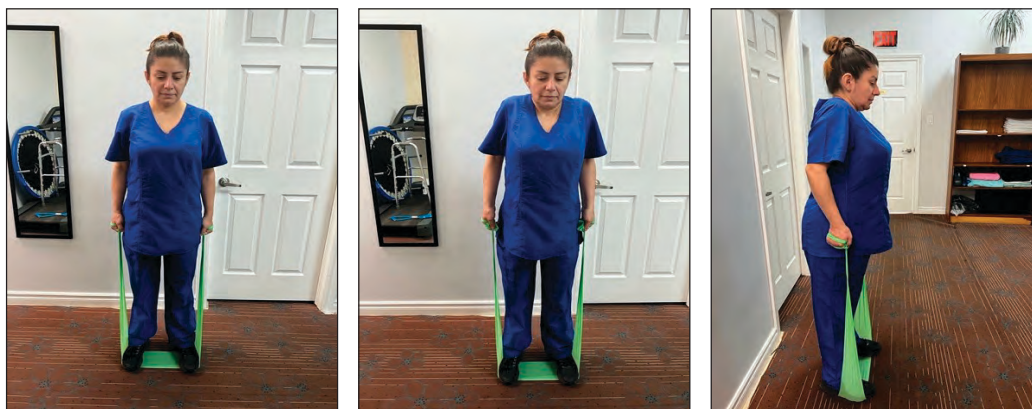


STRENGTH

Continue with all strengthening from previous phases increasing resistance and repetition.
Manual rhythmic stabilization exercises at 90° flexion.

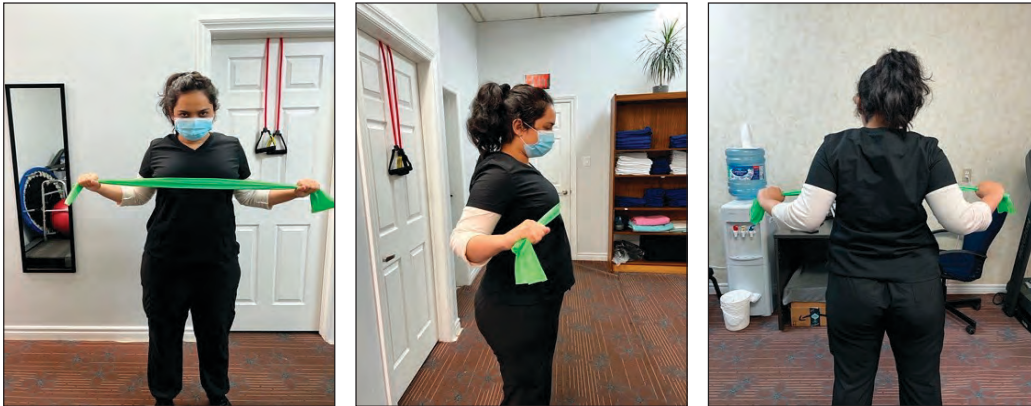
Shoulder shrugs with resistance

Stand on a resistance band and loop it around your both hands as shown in the picture given below. Now try to lift your shoulders up towards the ceiling and hold for 2-3 seconds then relax. Repeat this for 10-15 times. You can also do this exercise holding a dumbbell on both the hands.



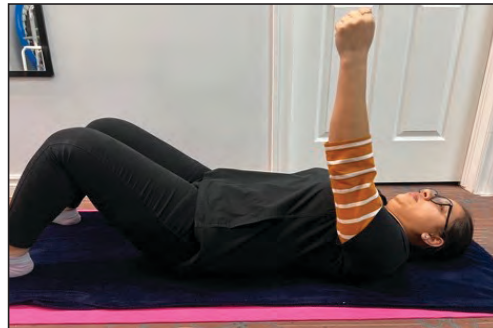
Shoulder retraction with resistance.

Begin with band looped around your hands, with a length of band between your hands about a shoulder-width apart. Squeeze your shoulder blades together, gently stretching the band between your hands. Hold and slowly return. Keep your back and neck straight.

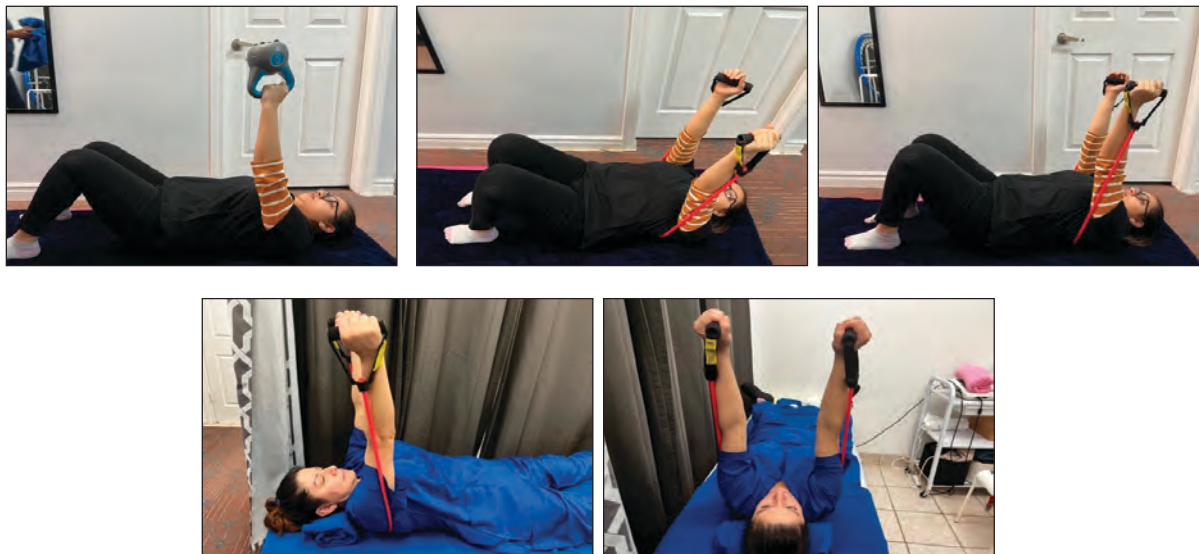


Supine punches with resistance:

For the scapular punch exercise, lie on your back and lift your arm, with the elbow straight, in front of your body until your fist point toward the ceiling. Then, move your fist toward the ceiling. As your fist move, feel your shoulder blade gliding along your ribs. Hold the extended position for approximately one second and return to the starting position.



You can do the same exercise with some kind of resistance using a kettle bell, weights or a resistance band as shown in the picture below.



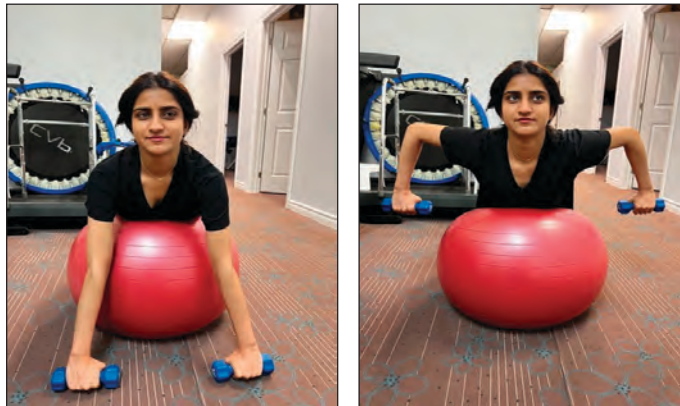
Prone shoulder extension:

Lay flat face down, arms resting at your sides, palms facing inward. Raise your arms off the ground as far as possible, squeeze your shoulder blades. Hold at the top for 2 seconds, then slowly return to the starting position. Lower your arms and repeat for 10 times.



Prone rowing:

Lay on your stomach on a medicine ball or a table with your arm hanging in front of you, with dumbbell in hand and elbow straight. Slowly pull the dumbbell up, bending at the elbow, squeezing your shoulder blades together until the upper arm is parallel to the ground. Hold at the top for 2 seconds, then slowly return to the starting position.



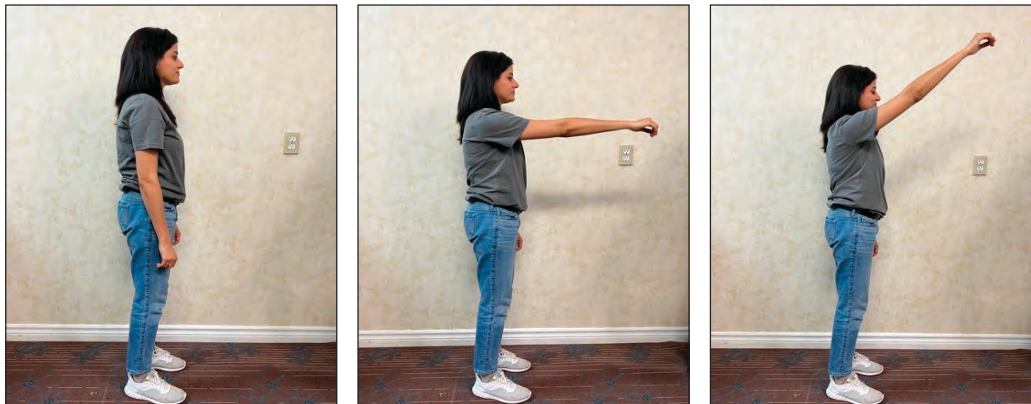
Prone External Rotation with abduction.



- Initiate forward flexion, scaption, empty can.

Forward Flexion

Stand straight with your hands by your side and shoulders in relaxed position. Raise your arms in front of you up until it doesn't elicit any pain. Hold the maximum position for 5 seconds and return back to starting position. Repeat it for 10 times.



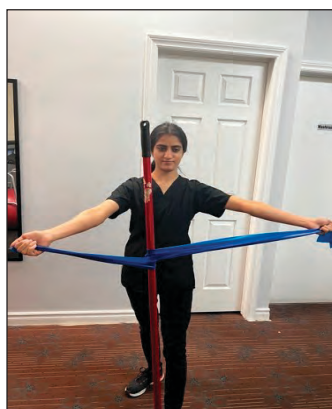
Scaption/ Resisted Scaption

Scaption is the action of lifting your arms from your sides and bringing them forward at a 30- to 45-degree angle. Building scapular strength can improve stability in your shoulder joint and reduce the risk of injury. The arms move through the scaption plane with the thumbs on top.



Resisted scaption

Loop a resistance band to a pole or something stationary. Stand in front of it and hold both the ends of the resistance band with both of your hands. Make sure you are standing with good posture. Leading with your thumb, lift your arm diagonally up as far as you can towards your ear. Slowly lower your arm back down to the start position. Keep your elbow straight throughout the movement. Repeat this for 10 times.



Empty Can Exercise:

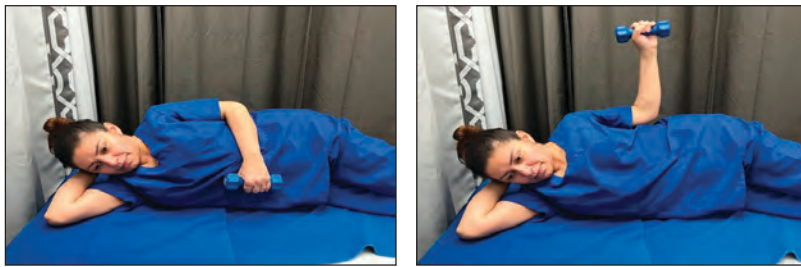
The empty can/ full can exercise involves taking your arms out to the side (abduction) on about a 45-degree angle and turning your thumbs down (pronation) or as if you are pouring a can out and then turning the can upwards (supination) this exercise is done with weights being held and repeating the pronation and supination action.



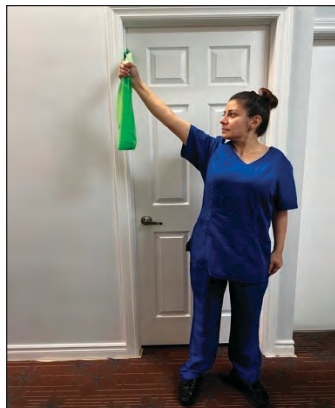
Side lying external rotation.

Start position: Lie on your side with your elbow bent to 90 degrees and resting on your trunk.

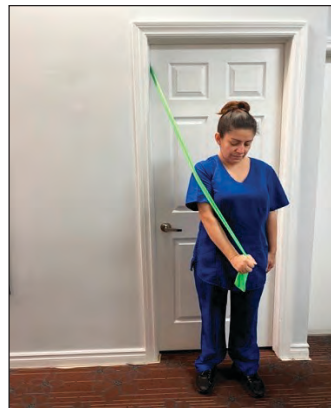
Action: Externally rotate your shoulder by lifting the dumbbell upwards and ensuring your elbow remains in contact with your trunk. Return to the starting position. Keep your shoulder blade set backwards throughout the exercise.



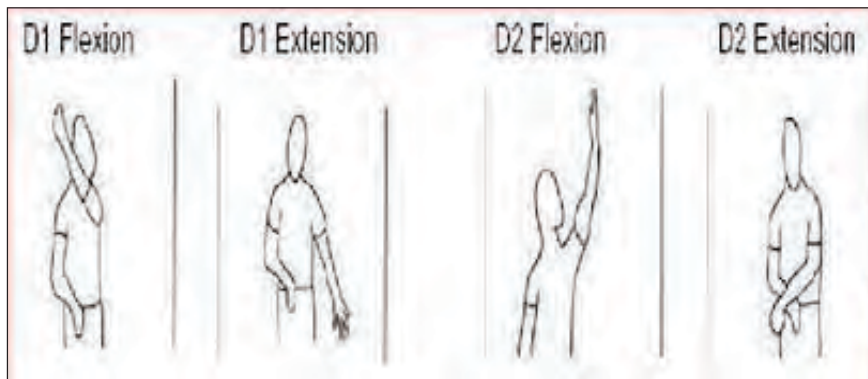
Initiate D1/D2 patterns supine then standing



D2 Flexion



D2 Extension



Push-up progression



MODALITIES

Ice 15-20 minutes after your exercise session.

Food and Herbs good for Rotator cuff repair

Most rotator cuff tears don't fully heal on their own, and that could mean months of pain and sitting on the sidelines. To speed up the healing process, the first thing you can do is to take nutritional supplements to reduce the inflammation caused by the tear.

Arnica

Arnica is a plant (Arnica Montana) in which the flower is harvested and used to reduce swelling and decrease pain. Studies have shown it to be helpful in arthritis, muscle, joint pain, and bruising. It can be taken orally or placed on topically.



Turmeric or Curcumin

This spice is the main component of curry powder. It has also been shown to have anti-inflammatory effects in the body. Curcumin is a fat-soluble supplement, so taking this with a meal will help the absorption into your body.



Boswellia

This supplement is a gum resin taken from a tree. It has been used in Traditional Chinese Medicine to treat swelling for thousands of years. Boswellia speeds up healing by improving blood circulation.



Bromelain (Protease)

This is also known as 'pineapple extract' and helps support the immune system and decrease inflammation. Bromelain appears to work by decreasing the receptors in immune cells that cause inflammation. Bromelain (Protease) needs to be taken on an empty stomach to avoid its breakdown while in the stomach.



Omega-3 fatty acid

This is an essential fatty acid. Our bodies do not make this fatty acid and it is necessary for normal body functions. Omega-3 fatty acids are known to decrease pain, decrease swelling, lower triglycerides and be heart healthy.

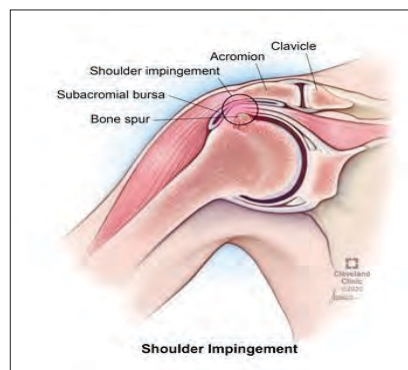
CHAPTER 4: IMPINGEMENT SYNDROME

Impingement syndrome describes a condition in which the tendons of the rotator cuff of the shoulder are pinched as they pass between the top of the upper arm (humerus) and the tip of the shoulder (acromion). The rotator cuff is a group of four muscles and bones that share a common tendon.

It tends to hurt more with overhead activities. It is even more likely if you are between the ages of 35 and 55. Impingement syndrome is one of the most common shoulder problems. As such, it is referred to by many different names: Rotator cuff tendonitis, rotator cuff bursitis, subacromial impingement syndrome, rotator cuff impingement syndrome, subacromial bursitis, and even several others.

What is impingement syndrome?

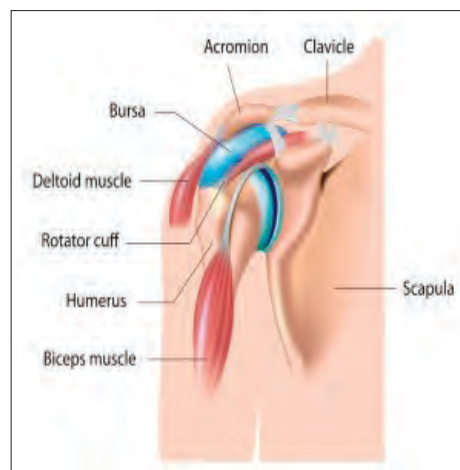
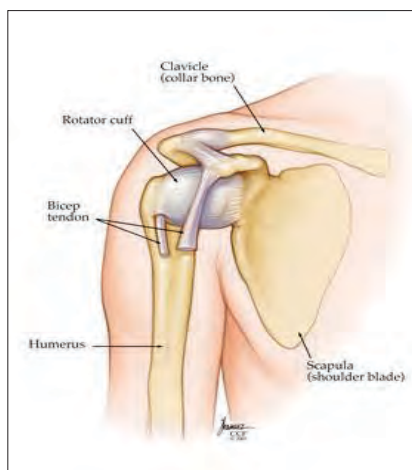
Impingement syndrome is a shoulder problem that consists of age- or activity-related degeneration of the rotator cuff tendons and subsequent inflammation and swelling of the overlying subacromial bursa. It is almost always associated with some functional problem of the shoulder. The most common associated dysfunction is a reduction in shoulder range of motion. Mostly this is a reduction in your motion that allows you to place your hand behind your back (internal rotation). These two issues, the inflamed tissue, and the shoulder dysfunction tend to promote one another, maintaining the pain until they are corrected.



Impingement syndrome often occurs alone but it can also develop because of almost any shoulder problem. This is part of the reason that shoulder issues can often be so challenging to diagnose. Since impingement syndrome exists along with the primary problem, the symptoms of many shoulder problems are simply those of impingement syndrome. As a result, they are often very similar and therefore often difficult to differentiate.

Anatomy:

A rotator cuff is a group of four tendons that develop from four muscles originating on the shoulder blade. The tendons combine to form the rotator cuff as they progress towards and ultimately insert on the upper part of the humerus. When these rotator cuff muscles contract, they shorten. This then pulls on the rotator cuff tendons, which move the arm.



Subacromial Bursa

Lying between the rotator cuff and the bone resting on the top of your shoulder (acromion) is the subacromial space. Within this space, sits the subacromial bursa. When not inflamed, the bursa is a thin filmy tissue. It serves to protect the rotator cuff from getting irritated as we lift our arms. The bursa rests on the top of the rotator cuff and extends down the arm some. Inflammation of this bursal extension is responsible for the commonly noted odd location of pain on the side of the upper arm.

Causes and Risk Factors:

Many people who have this problem, have bones that are shaped in such a way that they simply have less space within the joint than most other people. Even slight swelling of the tendons or bursa can cause symptoms. Other factors that increase the risks of developing impingement syndrome of the shoulder are:

- Injuries to the shoulder joint
- Activities such as tennis, swimming, baseball, and football that involve repetitive movements of the arm and shoulder.
- Age. People who are 50 or older are more likely to develop impingement syndrome than younger people.
- Bone spurs may develop from wear and tear on bones. This rough spot of bone irritate the surrounding tissue causing swelling.

Symptoms:

Pain, tenderness, and an inability to move the shoulder joint fully and normally are typical symptoms of impingement syndrome. Often, an injury sets off a circle of inflammation, swelling, more pressure on the tendons and bursa, and more pain.

Other symptoms include:

- Pain or weakness when your arm is raised above your head or out away from the side of the body
- Catching or grating of the muscles when you rotate or raise your arm
- Not being able to sleep at night on the affected side because of the pain
- Pain and tenderness in the front of your shoulder.
- Pain that moves from the front of your shoulder to the side of your arm.
- Pain when reaching behind your back, like reaching into a back pocket or zipping up a zipper.
- Shoulder and/or arm weakness and stiffness.

Differential Diagnosis:

- Cervical radiculopathy or stenosis
- Labral tears
- Shoulder instability
- Osteoarthritis
- Rheumatoid arthritis
- Rotator cuff tear

Prevention:

- Increase your training gradually, at a reasonable rate. Do not do too much too soon.
- Balance your muscle training train every upper body push exercise with a pull exercise, i.e., if you do a push-up, do some rows; if you do an overhead press, do some pull-ups.
- Maintain good posture, i.e., chest expansion, shoulders back, and shoulder blades stable.
- Keep small amounts of unavoidable inflammation under control with rest and ice.
- Athletes who need to perform overhead throwing motion should use sound throwing mechanics to prevent injury.

Diagnosis:

- Physiotherapy assessment and examination

- X-ray- to rule out arthritis and may show the rotator cuff injury. There may be bone spurs or changes in the normal outline of the bone where the rotator cuff normally attaches.



- MRI and ultrasound- show tears in the rotator cuff tendons and inflammation in the bursa.



Common complications after Shoulder impingement surgery:

- Infection
- Nerve injury
- Frozen shoulder
- Chondrolysis
- Head/ Neck Injury

Physiotherapy Examination:

During the examination, your therapist will assess your shoulder for range of motion, strength, and signs of shoulder instability. In addition, he or she will perform specific physical examination tests to check the function of your biceps.

Yergason test:

Yergason test requires the patient to place the arm at his or her side with the elbow flexed at 90 degrees and supinate against resistance. The test is considered positive if the pain is referred to the bicipital groove.



Neer's test:

Neer's Impingement sign is elicited when the patient's rotator cuff tendons are pinched under the coracoacromial arch. The test is performed by placing the arm in forced flexion with arm fully pronated. The scapula should be stabilized during the maneuver to prevent scapulothoracic motion. Pain with this maneuver is a sign of subacromial impingement.



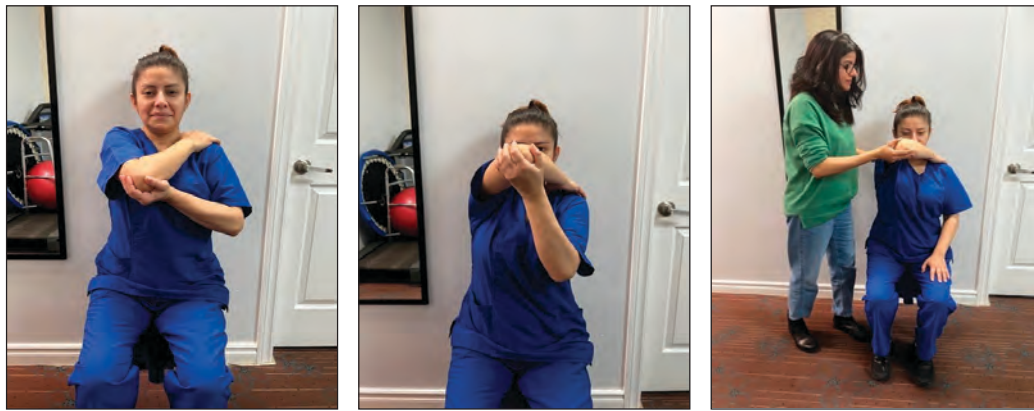
Hawkin's test:

The patient flexes the elbow to 90 degrees while the physician elevates the patient's shoulder to 90 degrees and places the forearm in a neutral position. With the arm supported, the humerus is rotated internally. The test is positive if bicipital groove pain is present.



Yocum test

In this test, you place one hand on your opposite shoulder and raise your elbow without raising your shoulder.



Cross-arm test

In this test, you raise your arm to shoulder level with your elbow flexed at a 90-degree angle. Then, keeping your arm in the same plane, you move it across your body at chest level. The physiotherapist may gently press your arm as you reach the end range of motion.



Jobe's test (Empty can test)

The physiotherapist stands to your side during Jobe's test and slightly behind you. They raise your arm out to the side. Then, they move the arm to the front of your body and ask you to keep it elevated in that position while they press down on it.



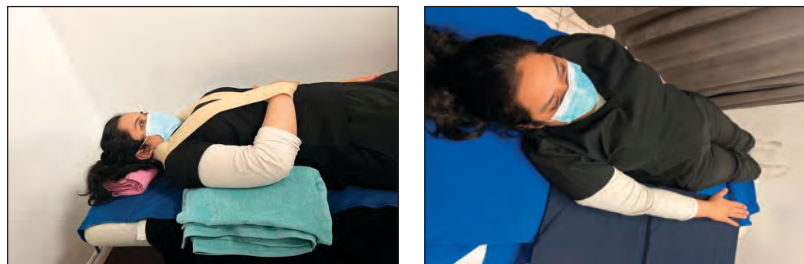
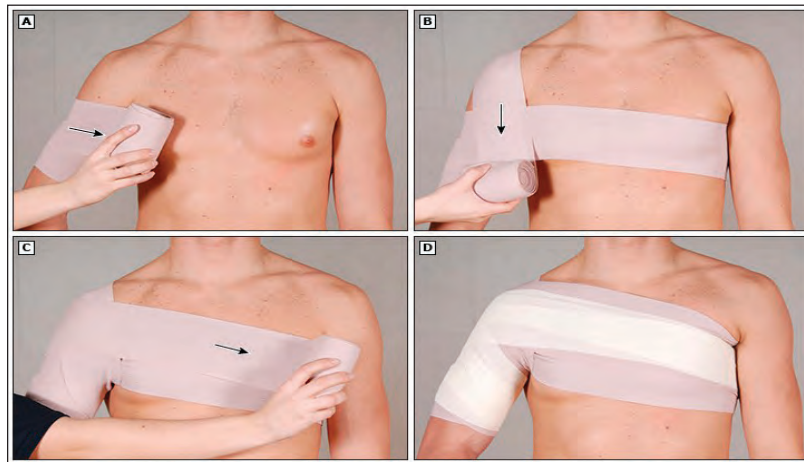
All these tests aim to decrease the amount of space between the soft tissues and bone. The tests can gradually become more intense as the physiotherapist's examination moves along.

Treatment:

Conservative treatment Approach (RICE protocol):

- The RICE protocol can be beneficial, which includes rest, ice, compression, and elevation of the affected shoulder.

Ice should be applied to the shoulder for 20 minutes once or twice a day. (A bag of frozen peas or corn also works well).



- Anti-inflammatory medications may also be used, and over-the-counter medications like ibuprofen may be recommended.
- Steroid injections can also be used to reduce inflammation.

Non-operative shoulder rehabilitation protocol:

Phase 1: Maximal protection – Acute phase

Goals

- Relieve pain and swelling
- Decrease inflammation
- Retard muscle atrophy
- Maintain/increase flexibility
- Patient education & avoidance of aggravating activities

Active rest

- Eliminate any activity that causes an increase in symptoms (i.e., throwing, tennis, volleyball).

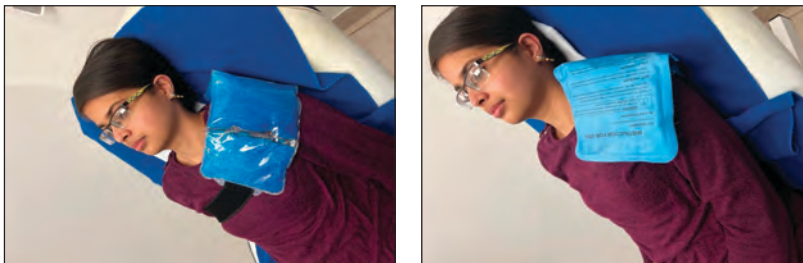
Joint Mobilizations:

- Inferior and posterior glides to the GH joint in scapular plane.

- Goal is to establish balance in the glenohumeral joint capsular.

Modalities

Cryotherapy: Apply ice pack for 20-minute periods throughout the day. Cold Compress slows nerve and tissue function reducing the swelling that blocks blood vessels from doing their job.



Transcutaneous electrical stimulation (TENS), high-voltage galvanic stimulation (HVGS)

Use of a small battery-operated device that reduces pain by blocking nerve impulses.



Strengthening Exercises:

- Rhythmic stabilization exercises for ER/IR
- Rhythmic stabilization drills Flex/Ext
- Isometrics (ER, IR, Abd)

Scapular strengthening

- Retractors
- Depressors
- Protractors

Postural Exercises:

- Strengthen scapular muscles (depressors, retractors & protractors)
- Stretch pectoralis minor (corner stretch)
- Wall circles

Rhythmic stabilization exercises for ER/IR:

These essentially are alternating isometric contractions. The rhythmic stabilization drills for internal and external rotation patient will lie supine with the arm at 90- 100 degrees of abduction and neutral rotation. The therapist will put little resistance force with his/ her hands and the patient has to resist any motion. The therapist will apply resistance alternatively on both sides of patient's hand to facilitate co-contraction of the anterior and posterior rotator cuff musculature. Patient should not be pushing harder or softer, just meeting

the therapist resistance. As they do well and stabilize with minimal movement, the therapist can progress the speed and resistance.

Rhythmic stabilization drills Flexion/Extension

Rhythmic stabilization drills may also be performed with the patient supine and arm elevated to approximately 90-100 degrees and 10 degrees of horizontal abduction. The rehabilitation specialist employs alternating isometric contractions in the flexion & extension planes of motion. As the patient progresses, the drills can be performed at variable degrees of elevation such as 45 degrees and 120 degrees.



Isometrics – submaximal (contraction of muscles not to the maximum level)

- External rotation
- Internal rotation
- Abduction
- Biceps
- Deltoid (anterior, middle, posterior)

Isometric exercises are performed by simply contracting your muscles without any other movement. Isometrics can be a part of a regimen designed to help you regain normal shoulder range of motion (ROM), strength, and functional mobility.

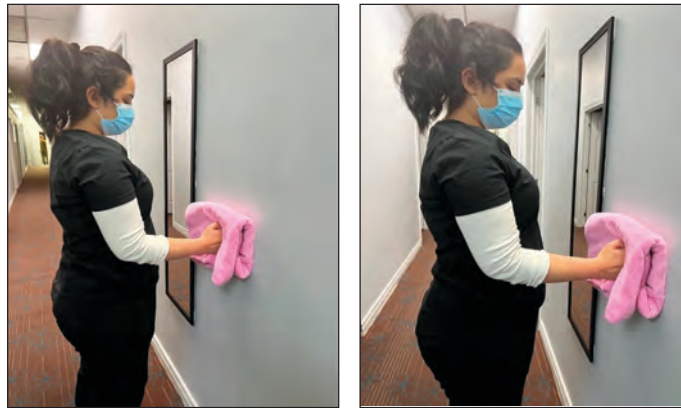
External Rotators: Lying on back, elbows flexed to 90degrees and held close to the body. Grasp wrist of affected arm with good hand and attempt to move affected hand outwards, resisting motion with the good hand. Do not allow the affected arm to move.



Internal Rotators: Lying on back, elbows flexed to 90degrees and held close to the body. Grasp wrist of affected arm with good hand and attempt to move affected hand inwards, resisting motion with the good hand. Do not allow the affected arm to move.



Anterior Deltoid: Stand facing a wall. Elbows flexed to 90 degrees and held close to body. Gently push your fist forward into the wall. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.

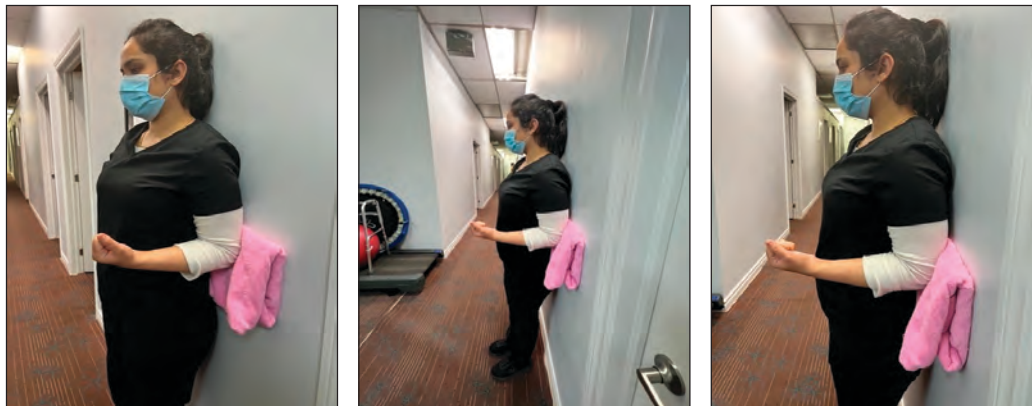


Middle Deltoid: Stand close to a door jamb, elbows flexed to 90 degrees and held close to the body. Attempt to move elbow out to side against the wall. Hold for 5 seconds, and then relax. Repeat 10 times per session. Do 3 sessions a day.



Shoulder Extensors (Isometric)

- Stand with your back against the wall and arms straight at your sides. Keeping your elbows bent at 90 degrees, push your arms back into the wall. You can put a towel in between your elbow and the wall. Hold for 5 seconds, and then relax.
- Repeat 5-10 times per session.
- Do 3 sessions a day.



Shoulder External Rotation (Isometric)

- Stand with the involved side of your body against a wall. Bend your elbow 90 degrees. Push the back of your hand slowly into the

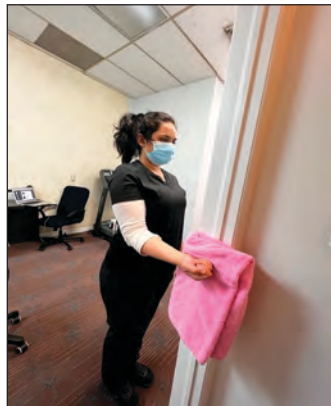
wall. Hold for 5 seconds, and then relax.

- Repeat 10 times per session.
- Do 3 sessions a day.



Shoulder Internal Rotation (Isometric)

- Stand at a corner of a wall or in a door frame. Place your involved arm against the wall around the corner, bending your elbow 90 degrees. Push the palm of your hand into the wall. Hold for 5 seconds, and then relax.
- Repeat 10 times per session.
- Do 3 sessions a day.



Abduction

- Sit or stand with involved arm against the wall, elbow flexed 90°.
- Place a small towel roll between arm and body.
- Push elbow out to the side against wall.
- Keep arm at side.
- Press as hard as you can without pain or discomfort.
- Hold for 5 seconds.



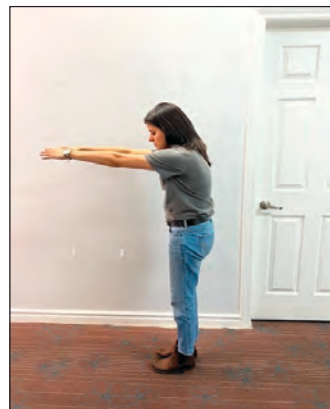
Scapular strengthening

Retractors: Scapular Squeeze

Stand with arms at your side and try to squeeze your shoulder blades together. Hold for the position for 5 seconds and then relax. Perform about 10 repetitions.



Protractors: With the shoulder in 90 degrees of abduction, brings the arms forward as if to hug someone. The scapulae begin to slide laterally and then anteriorly along the thorax, this is protraction.



Scapula Push and Pull/ Protraction- Retraction

Place your arms out horizontally in front of your body. Extend your arms forward and backward in the horizontal plane by slowly moving your shoulders only. Perform about 10 repetitions.

Depressors: Start with sitting or standing in good upright posture, hands are relaxed in neutral position. Take a deep breath in this will take your shoulder go up and when you exhale try to do it with your mouth so that you empty your lungs fully when you do that your shoulders go do along with your scapula. This is called scapular depression.



SCAPULAR DEPRESSION

While standing in neutral spine, with elbow of affected arm fully extended and palm on ball. Slowly draw shoulder blade down towards floor, palm will push into ball. Hold, slowly relax.

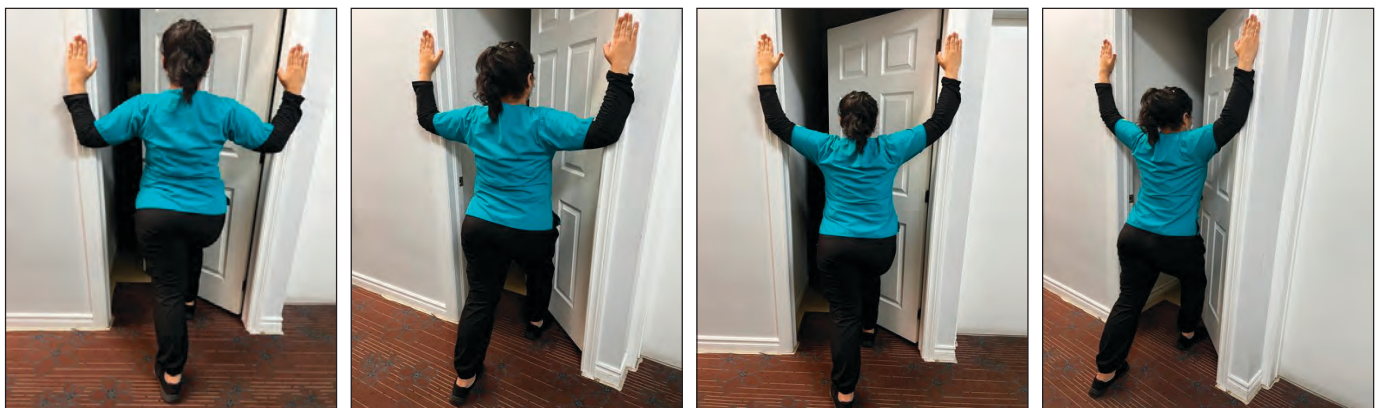


Postural Exercises:

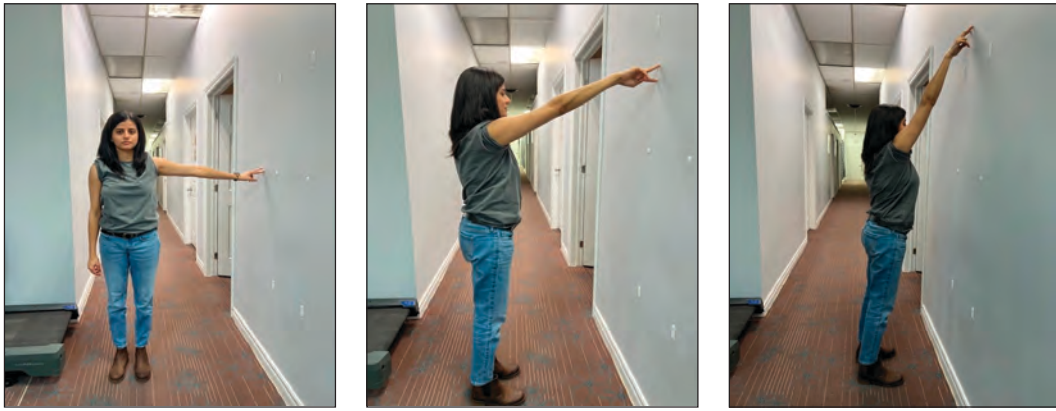
- **Strengthen scapular muscles** (depressors, retractors & protractors) same as explained above.
- **Stretch pectoralis minor** : The doorway stretch allows you to stretch each side of your chest individually, which helps if one side is tighter than the other. This stretch helps to open the pectoralis muscles in your chest and increases the range of motion in your shoulders.

To perform the doorway, stretch:

1. Find a solid and stable doorway
2. Hold your arms horizontal to your body with your elbow bent at 90 degrees
3. Place your arm against the door frame
4. Slowly and carefully lunge forward with your body to stretch the arm back behind yourself
5. Find a comfortable but challenging level of resistance
6. Hold it for about 15 seconds
7. Swap sides and repeat a few times a day if possible.



- **Wall climbs:** Stand facing a blank wall with your feet about 12 inches away. “Walk” the fingers of the affected hand up the wall as high as comfort allows. Mark the spot and try to go higher next time. Do at least 10 repetitions, 3 times per day. When more comfortable and stronger (not before three weeks) do this exercise sideways, with the affected side facing the wall. Do not let the hand drop down from the wall- walk your fingers down as well as up. Dropping the arm will strain the repair and be painful. If having weakness on the way down, feel free to use the other arm to help.



Patient education and activity modification

- Regarding activity, pathology, and avoidance of overhead activity reaching, and lifting activity

Criteria for Progression to Phase 2

- Decreased pain and/or symptoms
- Increased ROM
- Painful arc in abduction only
- Improved muscular function

Phase 2: Motion phase – subacute phase

Goals

- Re-establish non-painful ROM
- Normalize arthrokinematics of shoulder complex
- Normalize muscular strength
- Maintain reduced inflammation and pain

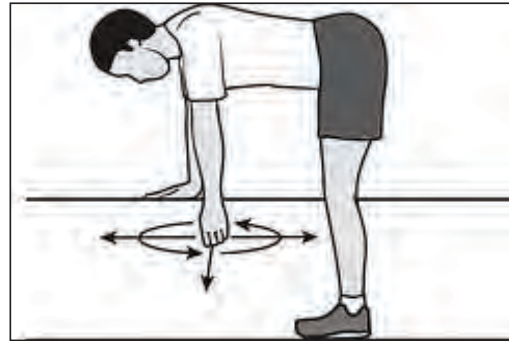
Range of Motion:

- Bar exercises
- Flexion
- External rotation at 90° of abduction
- Internal rotation at 90° of abduction
- Horizontal abduction/adduction at 90°
- Rope and pulley

Range of motion

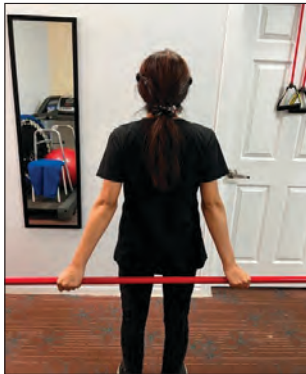
• Pendulum exercises:

Perform this exercise first. Relax your shoulders. Stand and lean over slightly, using your good hand at the edge of a table or anything which can support your weight. Allowing your affected arm to hang down. Swing the arm in a small circle about a foot in diameter. Perform 10 revolutions in each direction, once a day. As your symptoms improve, increase the diameter of your swing, but never force it. When you're ready for more, increase the stretch by holding a light weight (three to five pounds) in the swinging arm.



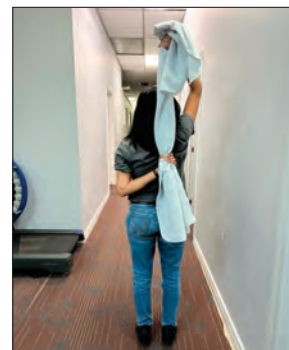
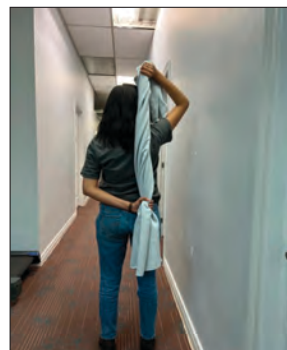
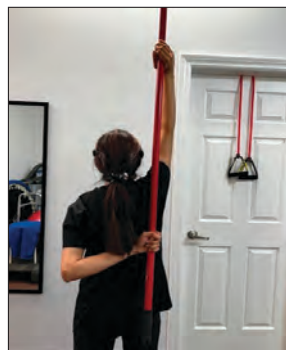
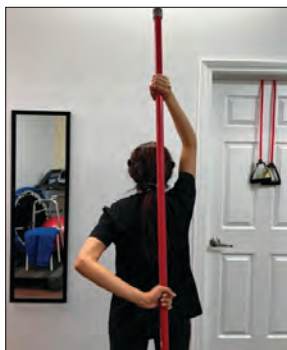
Bar Exercises:

Wand exercises are active assisted exercises which can be done with the help of your good shoulder.

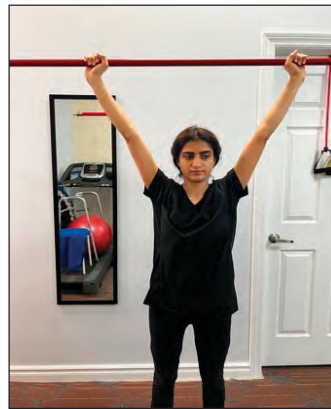


Internal rotation with a stick or a towel:

1. Take a towel or a broom stick in the hand of the arm you are not stretching and bring it up and over your shoulder where it is behind you. Grab the towel or the stick's other end behind you near the middle of your back with the arm you want to stretch.
2. With the arm on top, pull upwards until you feel a stretch in the arm on the bottom.

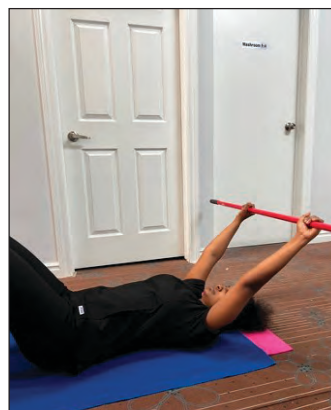


Shoulder Flexion: Stand straight with your shoulder in neutral position holding a broom stick in your hands in front of you. Now slowly lift the stick taking the shoulders up with control. When reach up to the maximum limit where you can feel the pain stop it right there hold the position for 5 seconds and come back to original position. Repeat this for 10-15 times. 2 sets a day.



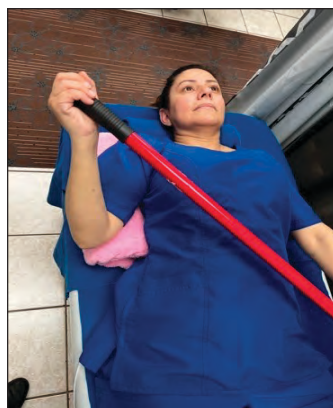
Shoulder flexion in supine lying:

You can also do the same exercise in lying position as shown in the picture below.



Shoulder external rotation:

Passive external rotation is performed with the patient lying supine and the normal arm using a stick to passively externally rotate the affected arm. Note that a towel is placed under the elbow of the affected arm to facilitate the exercise. Repeat it for 10-15 times. Do 2 sets a day.

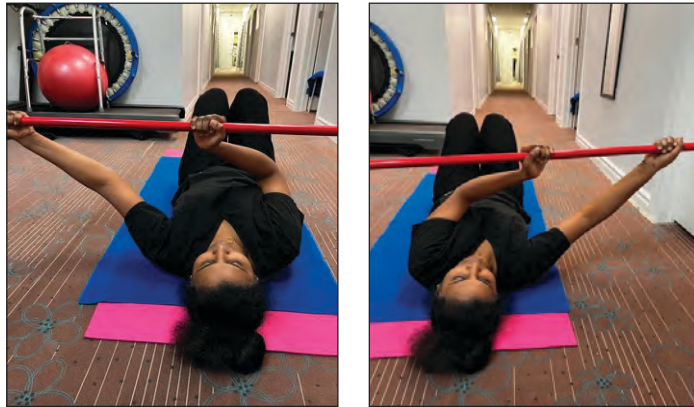


A: Starting position.

B: Ending position.

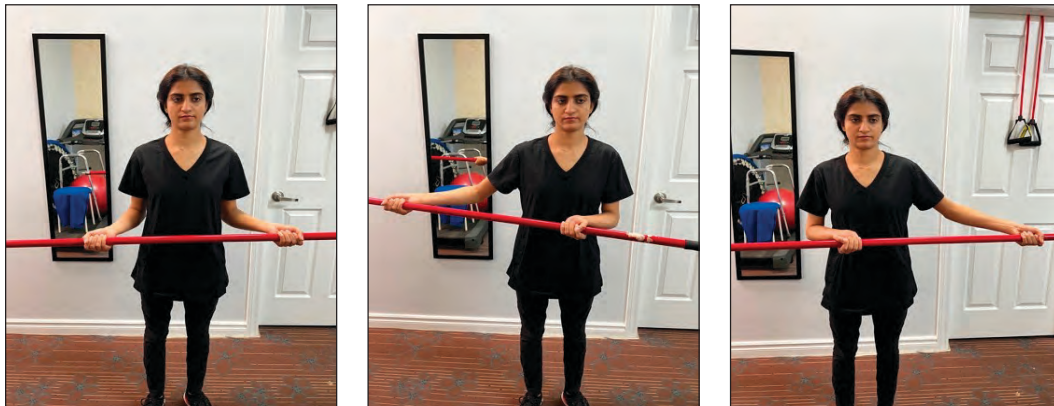
Another Variation:

Lie down on your back on a firm surface with back straight and knees flexed. Hold a broom stick up in front of you with an underhand grip. Now push the good hand towards the affected shoulder slowly come back to neutral position and do the same movement for the other side. Repeat it for 10-15 times. Do 2 sets a day.



Shoulder External Rotation in standing:

You can do the same exercise explained above in standing also. Hold the broom stick in front of you with elbows flexed to 90 degrees. Now now push with the good hand towards the affected shoulder with elbows fixed to your body. This will rotate your shoulder externally. Repeat it for 10-15 reps and do it on both the sides.



Shoulder Flexion:

This exercise can be done in supine lyine or standing position. Hold a broom stick stongly with your good hand and with you affected hand just grab the other end. Now push the stick with you good hand lifting the affected shoulder up infront of you. Reach the maximum limit without eliciting any pain and hold it there for 5 seconds, come back to original position. Repeat it for 10-15 times. Do 2 sets a day.



Active-assisted ROM – limited symptom-free available range

Rope/pulley exercises:

Shoulder pulley exercises are one of the best ways to gently strengthen weak shoulders, recover after shoulder surgery or injury, and relieve conditions such as bursitis, arthritis, and frozen shoulder syndrome.

Shoulder pulley for physical therapy is a simple cord with adjustable handles, attached to a pulley system and door anchor. Using a shoulder pulley for physical therapy will gradually increase your range of motion and strengthen your rotator cuff and other shoulder muscles.



Shoulder Forward Elevation (Assisted)

This exercise can be done either lying down (A) or sitting down (B). Clasp hands together and lift arms above head. Keep your elbows as straight as possible. Maintain the elevation for 10-20 seconds, then slowly lower your arms.

Slowly increase the elevation of your arms as the days progress, using pain as your guide. Repeat 10-20 times per session. Do 3 sessions a day.



Abduction (symptom-free motion): Using a T-bar for abduction.



Initiate inferior, anterior and posterior capsular stretching

Joint mobilization

- Grades 2,3,4
- Inferior, anterior, and posterior glides
- Combined glides as required

Glenohumeral Inferior Glide

Indications

To increase abduction or correct the humerus positional fault if it is superior to normal.

The patient's position is in a supine lying and the arm in the loose pack position. The therapist supports the arm between the trunk and the elbow. One hand of the therapist is placed in the axilla to give distraction (grade 1) The therapist's other hand(web-space) is kept just below the acromion process. The force is applied on the head of the humerus in the inferior direction, through the hand which is placed superiorly.



GH Anterior Glide

Indications

The patient's position is in a prone lying at the edge of the plinth, the limb is in a resting position. Acromion is stabilized by placing the towel underneath. The therapist places one hand over the arm to give distraction at GH joint. Mobilizing hand's ulnar border is placed just next to the posterior angle of the acromion. Force is applied to the humeral head in the anterior direction.

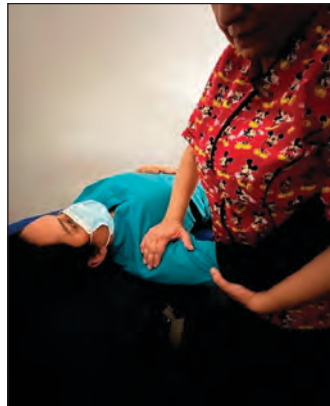
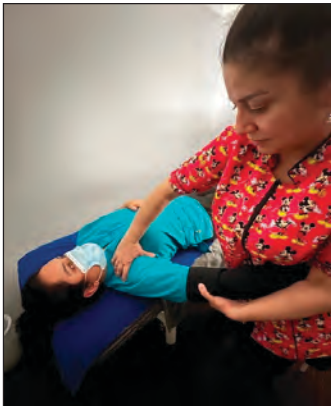


GH Posterior Glide

Indications

To improve flexion and internal rotation of the shoulder.

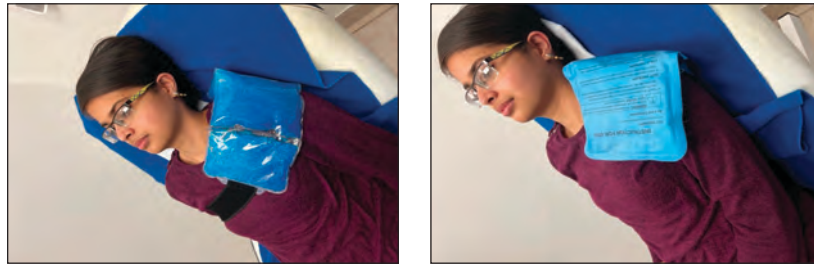
The patient's position is in a supine lying while keeping the arm in a resting position. The therapist stands with the back towards the patient, in between the arm and the trunk. The distal aspect of the arm is grasped against the trunk of the therapist to give grade one distraction to the shoulder joint. Another hand is placed over the joint (distal to anterior margin) to provide the mobilizing force. The head of the humerus is glided posteriorly.



Modalities

- Cryotherapy
- Ultrasound/phonophoresis

Cryotherapy: Apply ice pack for 20-minute periods throughout the day. Cold Compress slows nerve and tissue function reducing the swelling that blocks blood vessels from doing their job.



TENS (Transcutaneous electrical stimulation), High-voltage galvanic stimulation (HVGS).
 Use of a small battery-operated device that reduces pain by blocking nerve impulses.



Strengthening exercises

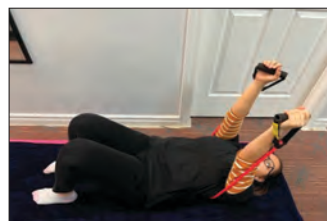
- Continue isometric exercises (as discussed in Phase 1)
- Initiate scapulothoracic strengthening exercises

Scapular punches:

For the scapular punch exercise, lie on your back and lift your arm, with the elbow straight, in front of your body until your fist points toward the ceiling. Then, move your fist toward the ceiling. As your fist moves, feel your shoulder blade gliding along your ribs. Hold the extended position for approximately one second and return to the starting position.



You can do the same exercise with some kind of resistance using a kettle bell, weights or a resistance band as shown in the picture below.



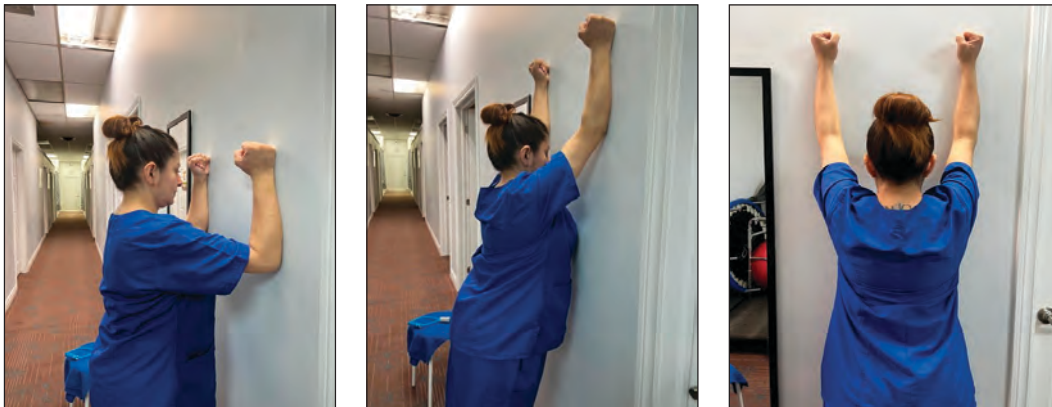
Rhythmic scapular stabilization

You can perform this exercise on a ball or on the floor with your knees bent. You will start with a light weight in your extended arm. Perform small circles in one direction for 30 seconds, then circles in the other direction for 30 seconds. Next, protract your arm (reaching up so your shoulder blade is off the floor/ball) and perform little circles in 30 second bouts clockwise and counterclockwise. You want to make sure the motion is slow and controlled.



Serratus Wall Slides:

Place your forearm and hands along a wall so that your elbows are bent, and hands point towards the ceiling. Next protract your shoulder blades and then slide your arms up the wall as shown in the picture. Then return to normal position and repeat 10 times. Hold for 2 seconds and complete 2 sets.



Prone I (Flexion end range):

Lying face down with your arms overhead, raise your arms upward and off the bed towards the ceiling. Repeat 10 times, hold for 2 seconds and complete 2 sets.



Prone T- Bilateral Thumbs Up:

Lie face down with your elbows straight and arms out to the side. Next set your scapula by retracting it towards your spine and downward towards your feet. Then slowly raise your arms towards the ceiling keeping your elbows straight the entire time as shown in

picture. Your thumbs should be pointed in the upward direction as your arm raises. Repeat 10 times, hold for 3 seconds and complete 2 sets.



Prone Rows:

Lying face down with your elbows straight hanging out of the bed to the side. Slowly, raise your arms upward while bending your elbows. Repeat 10 times, hold for 3 seconds and complete 2 sets.



Modified Plank Plus

Perform a plank on your knees and elbows as shown and sustain the hold. While holding, protract your shoulder blades forward to raise up a few more inches and then return to original position. Repeat 10 times, hold for 3 seconds and complete 2 sets.



Rhythmic stabilization (Ball on Wall)

Having the patient press ball against the wall. Ask the patient to move the ball up and down keeping elbows straight. You can also ask her to move it from side to side. The movement should be slow and controlled.



Criteria for Progression to Phase 3

- Painless active ROM.
- No shoulder pain or tenderness.
- Satisfactory clinical examination.

Phase 3: Intermediate Strengthening phase

Goals

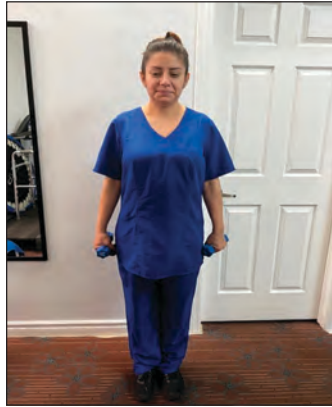
- Normalize ROM
- Symptom-free normal activities
- Improve muscular performance

Range of motion

- Aggressive L-bar active-assisted ROM in all planes
- Continue self-capsular stretching (anterior posterior)

Strengthening exercises

- Initiate isotonic dumbbell program

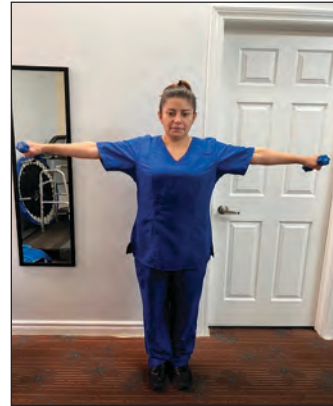
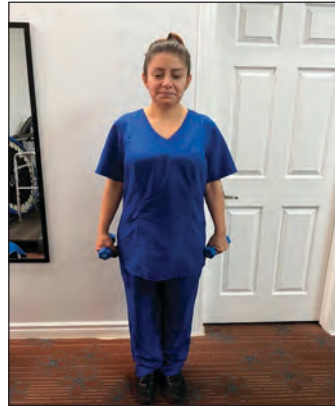


Reverse fly

- Hold a dumbbell in each hand.
- Stand with your feet shoulder-width apart, knees slightly bent.
- Engage your core and bend forward at the waist. Keep your back straight. Your arms will be extended.
- Raise your arms away from your body. Focus on squeezing your shoulder blades together. Stop when you get to shoulder height.
- Slowly return to the starting position and repeat.
- Do 3 sets of 10 repetitions.
- GH posterior glide, resting position

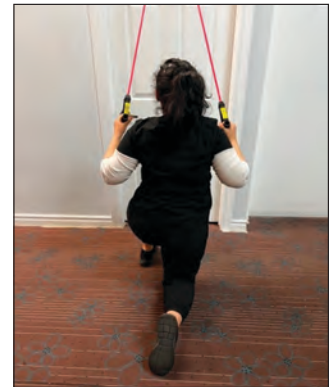
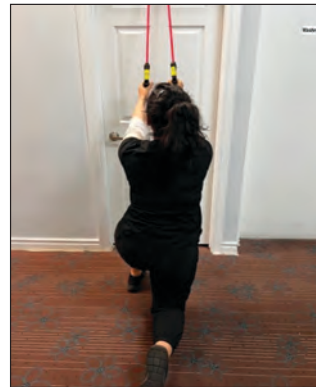


Abduction with dumbbells: Holding 0-5 lbs. weights, raise arms out to sides. Repeat 10-30 times. Do 1-2 sessions per day.



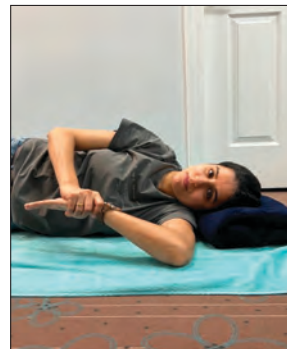
High-to-low rows:

- Secure a resistance band to a sturdy object above shoulder height.
- Kneel down on one knee and grab the band with the opposite hand. The other hand can rest at your side.
- Pull the band toward your body while keeping your torso and arm straight. Focus on squeezing the shoulder blades together.
- Return to the starting position and repeat.
- Do 2-3 sets of 10 repetitions on each side.



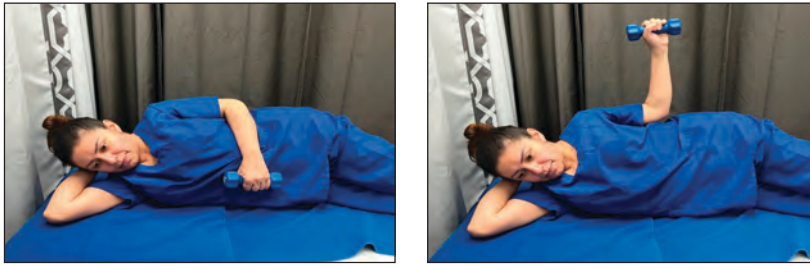
Sleeper stretch

- Lie on the affected side. If you have no injury or pain, choose a side to start with. Your shoulder should be stacked underneath you.
- Bring your elbow straight out from your shoulder and bend this arm, so your fingers are pointing toward the ceiling. This is the starting position.
- Gently guide this arm toward the floor using the unaffected arm. Stop when you feel a stretch in the back of your affected shoulder.
- Hold this position for up to 30 seconds.
- Do 3 repetitions before changing sides.



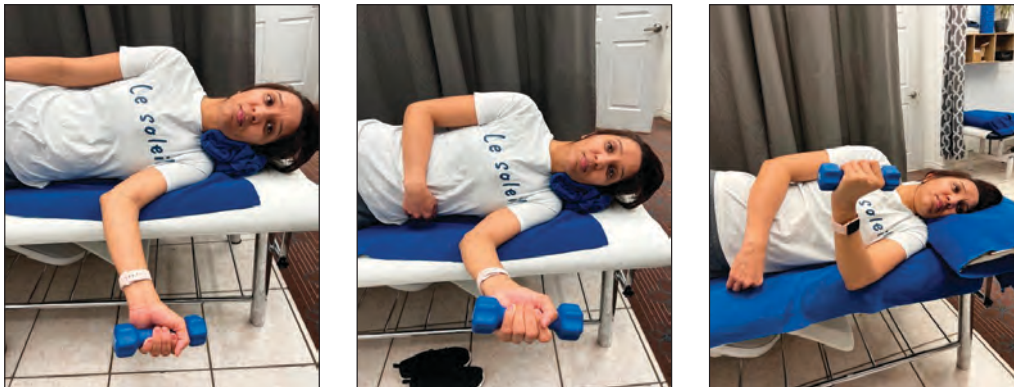
External Rotation (Side Lying)

Lie on a bed or a firm surface on your good side with neck supported using a towel roll or a small pillow. Holding 0-5 lbs. dumbbell, raise your arm towards ceiling. Keep elbow bent, tucked in, at your side. Repeat 30-90 times. Do 1-2 session per day.



Internal Rotation

For internal rotation now lie down on your side with your affected shoulder tucked under and elbows bent. You should come towards the edge of the bed, so that your forearm is hanging outside the bed. Holding a 0-5 lbs. dumbbell bring arm up towards body. Repeat 20-30 times. Do 1-2 sessions per day.



Prone Extension: Lie on your stomach with your affected shoulder hanging outside the bed to the side. Now bring your arms up towards the bed keeping your palm facing the floor.



If you are able to do this without having pain, you can try doing it with a small weight in hand as shown in picture

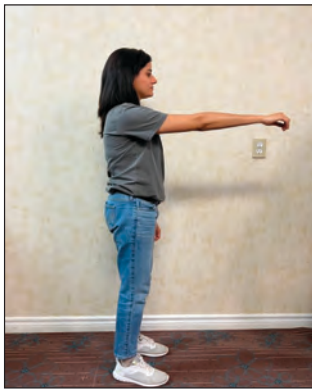
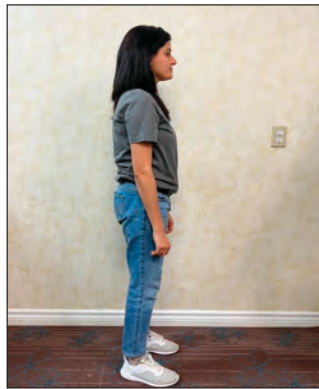


Horizontal abduction

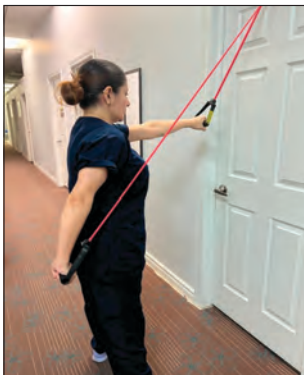


Standing

Flexion to 90 degrees

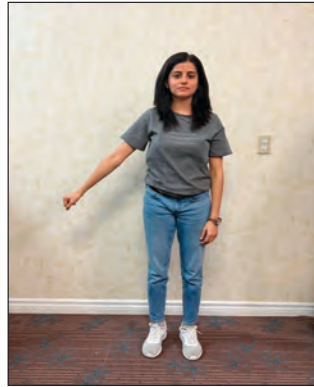


If you are able to raise your hand in front of you up until 90 degrees try doing it resisted flexion with weights or resistance band.



Supraspinatus: Supraspinatus does initial abduction.

Stand straight with shoulder in neutral position, try to raise your arms out to your sides.

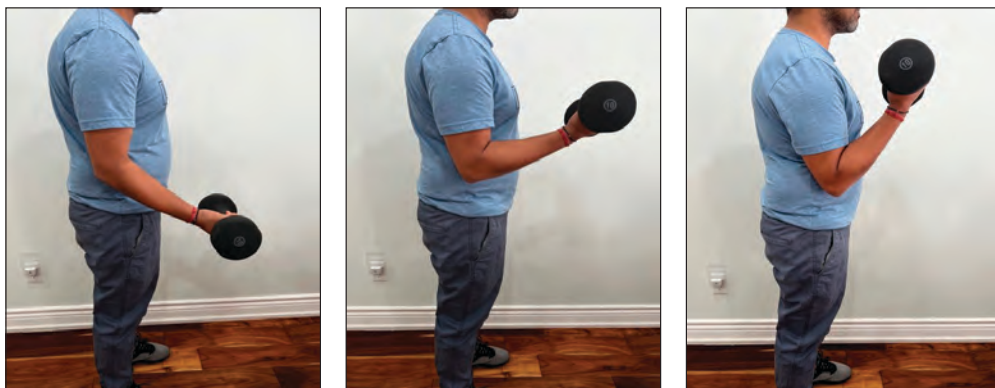


Wall pushups



- Biceps

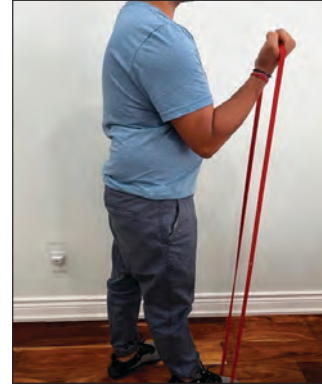
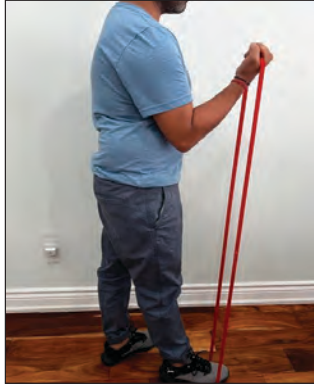
Hold your dumbbells (5 to 8 pounds) in your hands with your palm facing the ceiling. Bend your elbows and then straighten them. Do three sets of ten.



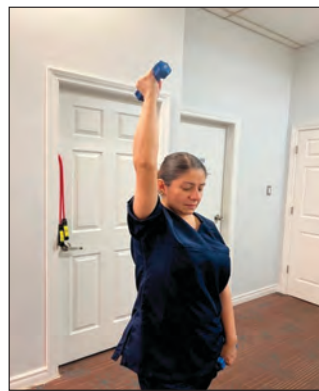
Resisted Elbow Flexion

1. Using your affected arm, hold one end of an elastic band in your hand.
2. Place the other end of the band under your foot on the same side of your body as your affected arm.
3. Slowly bend your elbow and bring your hand toward your shoulder. Your palm and the underside of your wrist should be facing up as you pull the band toward your shoulder. Count to 2 as you pull up.
4. Relax and slowly return to your starting position. Count to 5 as you return to the start.

5. Repeat 8 to 12 times.



• **Triceps**



Guideline for Progression to Phase IV:

- Full non-painful ROM
- No pain or tenderness
- Strength test fulfills criteria
- Satisfactory clinical examination

Phase IV - Return to Activity Phase

Goals: Unrestricted symptom free activity

Initiate Interval Sport Program:

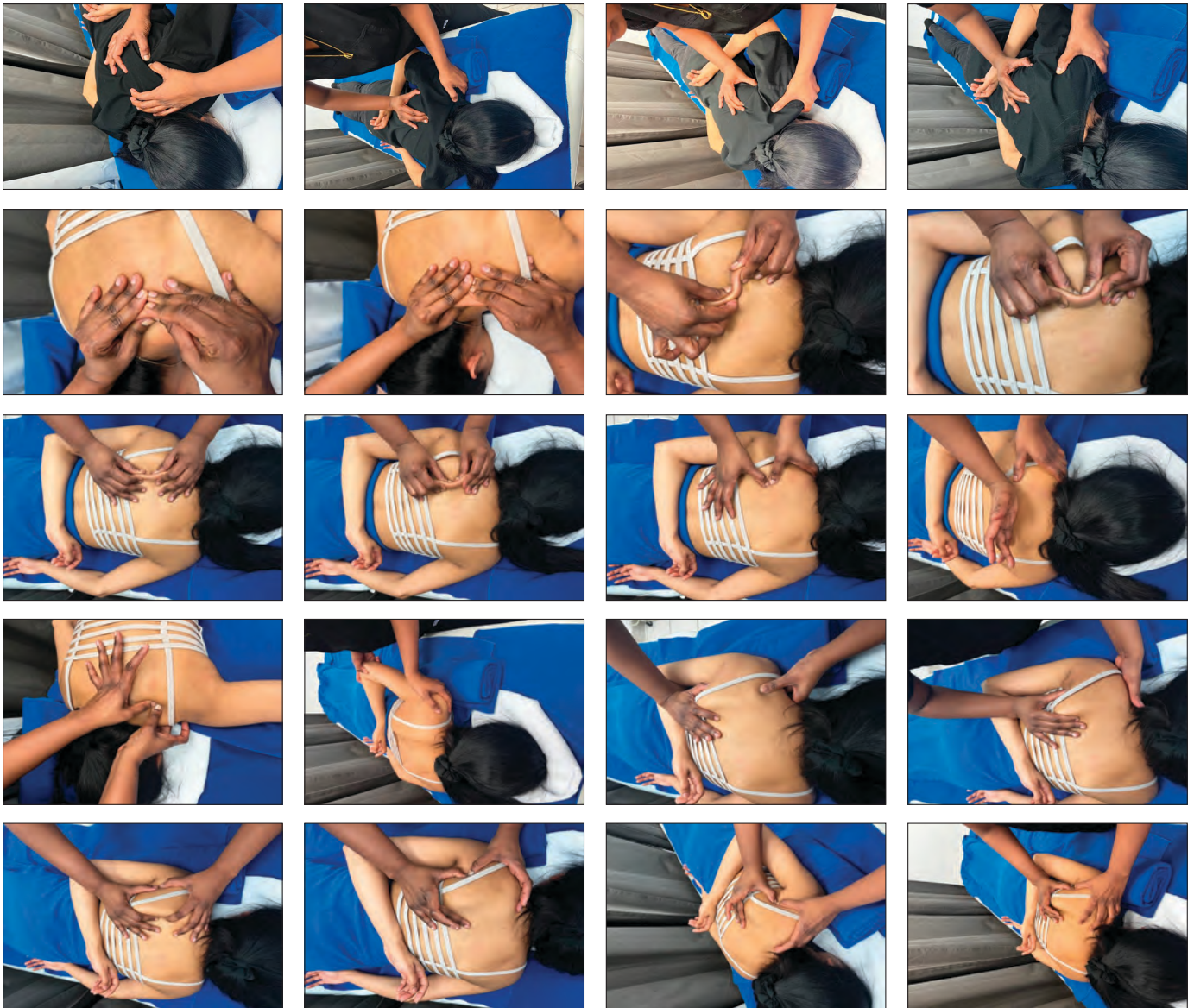
- Throwing
- Tennis
- Golf

Note: During your initial consultation, the physiotherapist will discuss your options and develop a customized treatment plan to address your shoulder impingement syndrome. If pain and dysfunction continue, surgery may be an option to provide the long-term correction.

Massage therapy

Remedial Massage is recommended to assist the rehabilitation process for many shoulder injuries. Shoulder impingement can affect athletes who swim, play tennis, or baseball as all these sports use frequent overhead repetitive motions. When a muscle or tendon is injured, it will form what's called an adhesion to protect the area from further damage. While helpful at first, adhesions can stiffen and

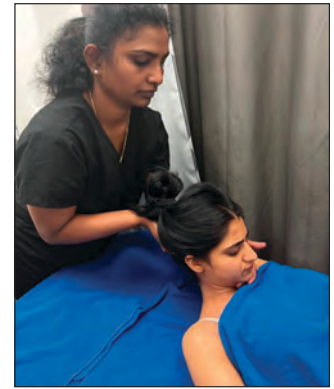
impede healthy healing. A massage therapist can utilize what's called friction therapy to gently break apart adhesions, reducing pain and stiffness as well as allowing tendons to heal stronger.



Myofascial Massage

To help restore range of motion, your massage therapist might also employ gentle stretching and myofascial release techniques. Myofascial release can loosen seized connective tissue around the impingement, significantly reducing discomfort and making movement easier. In some cases, myofascial release can also help an improperly aligned humerus rotate back into place. Myofascial release can be done during a physical therapy session or by a massage therapist.

During the treatment, you should expect the therapist to apply gentle pressure or sustained stretching to the shoulder joint and upper arm. The tight muscles will relax, and tension is released with repeated sessions. Over time, you'll notice that your range of motion has increased, there will be more shoulder function, and less pain.





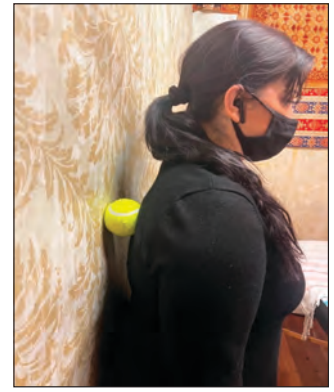
Self-Massage

If going to a massage therapist isn't possible you can perform self-massage at home. You might not be able to achieve a deep tissue massage at home but with practice, you'll find some relief. Rotator cuff self-massage is an effective technique to lessen shoulder pain and other associated shoulder injury symptoms.

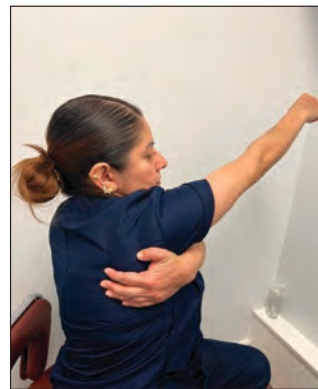
With self-massage techniques, it is important to only work into the muscles; stay away from bony areas and nerves. The rotator cuff muscles are small and relatively thin so a mild to moderate amount of pressure is sufficient. These muscles are present on the back side of the shoulder blades and comes in front to wrap around the shoulder joint. Now get a soft ball or a tennis ball and put it right under your shoulder blade. Just move the ball and look around tender spots to work on.

Start with your back flat against the wall and rotate 30 degrees towards the shoulder you wish to work. The rotator cuff muscles are thin and do not require significant amount of pressure. A softball is more effective. If you find a tender spot stay on that spot for little longer so that the ball sinks into it, press & hold. Work on that area for 2-5 minutes and hold the tight spot for 30 seconds.

Another thing you can do is keep the ball into these muscles and try to do some active range of motion. Again, press hold into that tight spot, reach up towards the ceiling keeping the pressure there and then rotate your thumb away from you. This helps to stretch out those rotator cuff muscles a little bit further.



One of the best spots to massage is over-the-shoulder blade. Aim to massage the upper inner corner of the shoulder blade just under the boney ridge. It's nearly impossible to reach this area without some help or the use of a massage tool. A massage gun can help you access this area and ultimately provide pain relief.

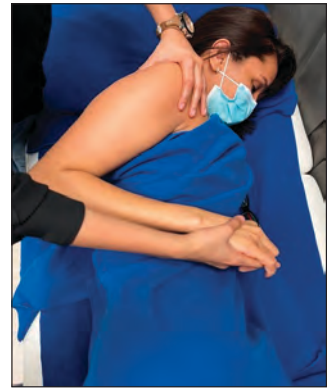


Trigger Point Therapy

Shoulder impingement causes trigger points to form in the rotator cuff muscles. These trigger points can linger even after the condition has resolved. With trigger point massage therapy, the massage therapist will apply sustained pressure on the spots to release the tension in the muscle resulting in pain relief. Trigger points may not be at the site of pain, so guidance from the trained therapist will aid in finding the correct locations in your body.

One common technique that is used is placing one hand behind your back, trying to move it up between your shoulder blades. You need to perform this stretch slowly due to tight rotator cuff muscles. Many people find relief with this trigger point therapy stretch for shoulder impingement. A handheld massager can make it easier to reach difficult areas in the shoulder and back.





Some of the essential oils that are good for shoulder impingement:

Ginger Oil: The properties of ginger essential oil make it an incredibly versatile ingredient when it comes to pain relief. Ginger essential oil helped reduce stiffness and pain intensity among patients with severe knee pain. A combination of ginger oil with carrier oil helps to reduce chronic shoulder pain. You can massage twice a week for five weeks with the oil mixture.



Bergamot oil: This essential oil is extracted from fruits (a type of citrus fruit) of a plant called Citrus bergamia. As a natural remedy, it has been used for various ailments like hypertension (high blood pressure), anxiety, depression, digestive problems, fever, oral health, and respiratory conditions. It's also effective to provide pain relief. It helps ease the symptoms of headaches, sprains, and muscle aches. It carries analgesic effects and is recommended in complementary medicine to ease tension in the body.



Wintergreen essential oil: This oil is helpful since it has a reputation for relieving pain in muscle tissues. It contains methyl salicylate, which acts like cortisone. It's good for tendonitis because it acts as a natural inflammatory. It's usually diluted in a carrier oil before

being directly applied to the affected area.



Chamomile essential oil: It is known for its pain-relieving ability and has compounds that are soothing to the skin and muscles.



Lavender essential oil: You might not think of this as one of the essential oils for tendon repair, but lavender oil has been used for centuries for headaches and contains a mild sedative, making it a viable option for impingement. Lavender oil has anti-inflammatory and analgesic properties. People who have undergone surgery for tendonitis can use lavender oil as a follow-up method by inhaling it directly from the bottle. Some people suggest that it affects them in the way a pain medication like morphine would.



Frankincense essential oil: This is oil that has analgesic and anti-inflammatory properties, making it a good oil for impingement. It is also considered an effective essential oil for relieving stress.



Eucalyptus essential oil:

It might remind you of vapor rub, but it has a cooling effect that helps to relieve soreness in joints, like chronically inflamed shoulders.



Castor Oil: Castor oil is one of the effective natural remedies for rotator cuff tears that works wonders. The active compound in castor oil, ricinoleic acid has been found to impose beneficial anti-inflammatory and pain-reducing properties which help in overcoming the problems associated with this condition.



Turmeric: Turmeric is yet another one of the amazing rotator cuff natural remedies that do work. The primary reason behind the same is that turmeric is loaded with beneficial anti-inflammatory properties which have beneficial impacts in faster and better recovery of the inflammation and the pain that one is enduring.



Epsom salt: Epsom salt is yet another of the effective remedy for the impingement that provides beneficial impacts. The primary reason is because of the presence of the magnesium sulfate in it which imposes beneficial impacts in helping with the inflammation and even getting rid of the pain that one often tends to experience.



Food & Nutrition

Inflammation aggravates rotator cuff impingement pain. Your diet contributes a lot to inflammation eat lots of refined sugars, alcohol, and saturated fat and you may make your pain more severe.

Instead, include foods rich in antioxidants, omega-3 fatty acids, and specific vitamins such as vitamins C and A to fight inflammation and encourage your body's immune system to function optimally.

Here are 10 foods to include in your diet every week to help relieve joint pain, including some you may choose to have every day.

Fatty fish

Fatty fish like salmon, mackerel, and herring is one of the best sources of omega-3 fatty acids. Omega-3s fight inflammation that irritates the rotator cuff more. Aim for two or three 4-6-ounce servings every week.



Cherries

Cherries contain compounds known as anthocyanins that reduce inflammation. Grab a handful of the fruit for snacking, or down an

occasional glass of tart cherry juice with no sugar added.



Green tea

Green tea contains many compounds, including antioxidants and polyphenols, that reduce inflammation and slow the cartilage destruction.



Avocados

Avocados are rich in heart-healthy monounsaturated fats and the carotenoid lutein, an anti-inflammatory compound. Each serving also has ample amounts of vitamin E, which may serve to boost the health of your connective tissue.



Dark leafy greens

Consume plenty of spinach, kale, bok choy, and Swiss chard. These veggies contain vitamins C, A, and K all of which act as antioxidants to protect you from free radicals. Free radicals are found in the environment, foods you eat, and pollution. They cause cellular damage, accelerate aging, and exacerbate the inflammation. Have a salad daily to reap the benefits of leafy greens.



Orange root vegetables

Carrots, sweet potatoes, and butternut squash contain carotenoids, which are powerful antioxidants that reduce inflammation.



Flaxseed

Flaxseed is another rich source of omega-3 fatty acids, particularly the type known as ALA, or alpha-linolenic acid. ALA is a boost to your health because it lowers your cholesterol and improves heart health.



Walnuts

Walnuts have a high ALA content, too. When you consume them, your body produces less C-reactive protein, a marker of inflammation.



Ginger

Ginger contains chemicals that work just like those found in some anti-inflammatory medications. Ginger is a key ingredient in Asian cuisine, but you can consume it as a tea or as an ingredient in baked goods.



Arnica

Arnica is a plant (Arnica Montana) in which the flower is harvested and used to reduce swelling and decrease pain. Studies have shown it to be helpful in arthritis, muscle, joint pain, and bruising. It can be taken orally or placed on topically.



Turmeric or Curcumin

This spice is the main component of curry powder. It has also been shown to have anti-inflammatory effects in the body. Curcumin is a fat-soluble supplement, so taking this with a meal will help the absorption into your body.



Boswellia

This supplement is a gum resin taken from a tree. It has been used in Traditional Chinese Medicine to treat swelling for thousands of years. Boswellia speeds up healing by improving blood circulation.



Bromelain (Protease)

This is also known as 'pineapple extract' and helps support the immune system and decrease inflammation. Bromelain appears to work by decreasing the receptors in immune cells that cause inflammation. Bromelain (Protease) needs to be taken on an empty stomach to avoid its breakdown while in the stomach.



Omega-3 fatty acid

This is an essential fatty acid. Our bodies do not make this fatty acid and it is necessary for normal body functions. Omega-3 fatty acids are known to decrease pain, decrease swelling, lower triglycerides and be heart healthy.



Calcium & Magnesium

Magnesium, especially when used in combination with calcium, may be helpful in treating your tendon tissue damage.



Vitamin C and E

Vitamin C is an amazing help when trying to remedy pain brought about by a muscle tear, common in the rotator cuff. It is a natural anti-inflammatory and antioxidant nutrient. Bell peppers, citrus fruits, strawberries, potatoes, broccoli, brussels sprouts, tomatoes, cantaloupe, cabbage, and spinach.

CHAPTER 5: OSTEOARTHRITIS OF SHOULDER

What Is Osteoarthritis?

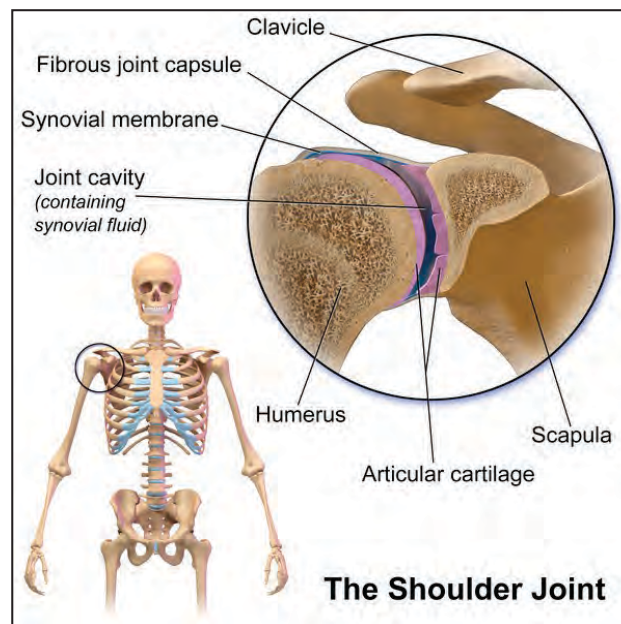
Osteoarthritis is also known as a degenerative joint disease occurs when the cartilage that covers the tops of bones, known as articular cartilage, degenerates or wears down. This causes swelling, pain, and sometimes the development of osteophytes bone spurs when the ends of the two bones rub together.

What Is Osteoarthritis of the Shoulder?

The shoulder is made up of two joints, the acromioclavicular (AC) joint and the glenohumeral joint. The AC joint is the point where the collarbone, or clavicle, meets the acromion, which is the tip of the shoulder blade. The glenohumeral joint is the point where the top of the arm bone, or humerus, meets the shoulder blade, or scapula. Osteoarthritis is more commonly found in the AC joint.

Anatomy of shoulder OA:

The glenohumeral joint forms where the head of the humerus fits into the glenoid fossa. Glenohumeral osteoarthritis (GH OA) is defined as progressive loss of articular cartilage, resulting in bony erosion, pain, and decreased function. The glenohumeral joint is the third most common large joint to be affected following the knee and hip.



Trauma precedes the condition in most cases, although the injury may have occurred years earlier. Injuries that are associated with the development of osteoarthritis include previous dislocation, humeral head or neck fracture, and large rotator cuff tendon tears and may also include detachments of the superior glenoid labrum from anterior to posterior (SLAP lesions).

It causes significant pain, functional limitation, and disability. The loss of shoulder function can lead to depression, anxiety, activity limitations, and job-performance problems.

Who Gets Shoulder Osteoarthritis?

Osteoarthritis most often occurs in people who are over age 50. In younger people, osteoarthritis can result from an injury or trauma, such as a fractured or dislocated shoulder. This is known as posttraumatic arthritis. Osteoarthritis may also be hereditary.

Symptoms of Shoulder Osteoarthritis

- Progressive, activity-related pain that is deep in the joint and often localized posteriorly.
- As the disease progresses, night pain becomes more common.

- For many patients, the pain is present at rest and interferes with sleep.
- In advanced cases, the stiffness creates significant functional limitations.
- Crepitus on ROM
- Joint effusion

Diagnosis:

- X-rays
- Blood tests, mainly to look for rheumatoid arthritis, but also to exclude other diseases
- Removal of synovial fluid, the lubricating fluid in the lining (synovium) of the joint, for analysis
- MRI scans

Treatment:

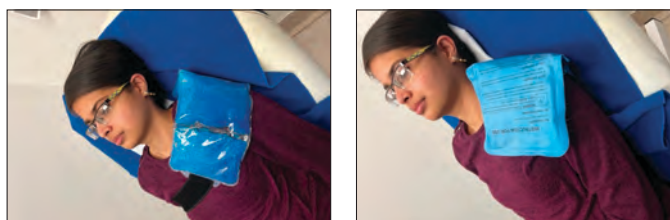
Conservative treatment:

Initial treatment should consist of pain management and reducing the inflammation. The mainstays of treatment have included rest and ice, nonsteroidal anti-inflammatory medications such as (NSAIDs), periodic local corticosteroid injections, and corticosteroid injections along the tendon sheath may be indicated.

Physiotherapy treatment:

This may start with isometric training if the pain is the primary issue progressing into eccentric training and eventually concentric loading as with other forms of tendon rehab. Stretching and strengthening programs are a common component of most therapy programs.

Hot and cold compresses. When the shoulder pain is acute the sooner cold is applied, the quicker you can reduce inflammation and achieve real pain relief. Ice is used first, to decrease pain / swelling and inflammation.



Heat comes later, to increase blood flow circulation and stimulate the body's healing response. Heat relaxes the scar tissue surrounding your shoulder joint capsule, making it more pliable and flexible while speeding up the natural healing response. Combining cold and warmth is a simple yet effective way to get immediate pain relief and promote long-term healing. This help reduce pain and swelling.



Transcutaneous electrical nerve stimulation (TENS). Use of a small battery-operated device that reduces pain by blocking nerve impulses.



Ultrasound Therapy

Sound waves are transmitted to the shoulder using an ultrasound therapy machine, a qualified physical therapist applies vibrating circular motions to the affected area. The machine's settings can be changed to adjust the depth and intensity.

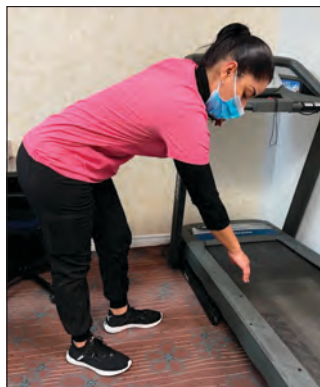
The theory is that during application, sound waves entering the damaged body tissues increase blood flow. It targets muscles, tendons, joints, and ligaments. The process is believed to be therapeutic, enhancing healing and decreasing pain.



Shoulder stretches to improve Range of Motion:

The main benefit of stretching the shoulder is to reduce the risk of injury to the muscles and joints and improve the range of motion.

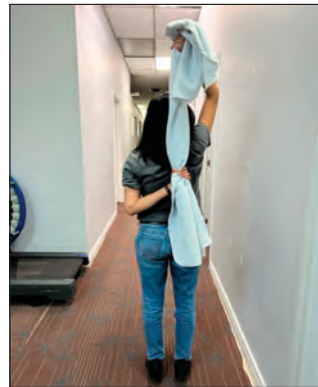
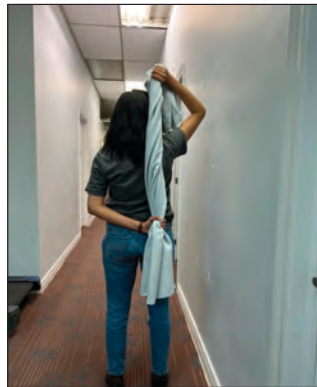
Pendulum stretch: Perform this exercise first. Relax your shoulders. Stand and lean over slightly, using your good hand at the edge of a table or anything which can support your weight. Allowing your affected arm to hang down. Swing the arm in a small circle about a foot in diameter. Perform 10 revolutions in each direction, once a day. As your symptoms improve, increase the diameter of your swing, but never force it. When you're ready for more, increase the stretch by holding a light weight (three to five pounds) in the swinging arm.



Overhead stretch: Supine position. Lie on your back with your legs straight. Use your unaffected arm to lift your affected arm overhead until you feel a gentle stretch. Hold for 15 seconds and slowly lower to start position. Relax and repeat.



Towel stretch. Grasp a three-foot-long towel with both hands behind your back and hold it in a horizontal position. Use your good arm to pull the affected arm upward to stretch it. You can also perform an advanced version of this exercise with the towel draped over your good shoulder. Grasp the bottom of the towel with the affected arm and pull it toward the lower back with the unaffected arm. Do these 10 to 20 times a day.



Chest expansion

Chest expansion is a good way to stretch your back muscles, open your chest, and increase the range of motion in your shoulders. It can also help expand your lungs to receive oxygen better.

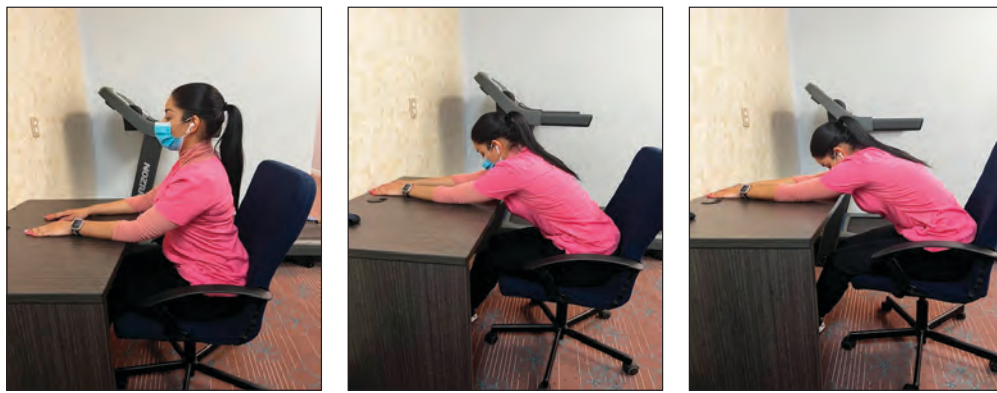


Child's Pose

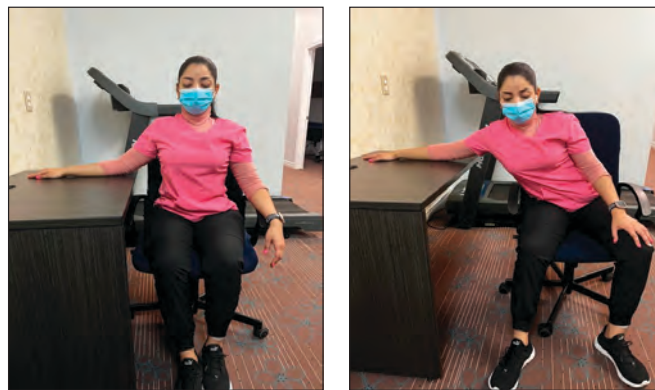
Commonly known as a yoga move. Child's Pose is a good way to open the shoulder joint into flexion (forward bending) and to stretch your latissimus dorsi, muscles. Your lower back can also benefit from this pose.



FLEXION STRETCH: Sitting upright on a chair or stool in front of a table. Slide forearm along the table, bending from waist until a stretch is felt. Hold this position for 30 seconds. Repeat it for 3-4 times. Do 1 session per day.



ABDUCTION STRETCH: With arm resting on table, palm up, bring head down towards arm and simultaneously move trunk away from the table. Hold for 30 seconds and come to original position. Repeat 1-4 times. Do 1 session per day.



EXTERNAL ROTATION

Keep palm of hand against door frame and elbow bent at 90 degrees. Turn body from the fixed hand until a stretch is felt. Hold 30 seconds. Repeat 1-4 times. Do 1 session per day.



Cross body stretch:

Lie on your back take one hand towards your other shoulder keeping your elbows bent. Now take the other hand and try to push the elbow towards the opposite side as shown in the picture. Feeling a stretch, hold it for 15-20 seconds then release.

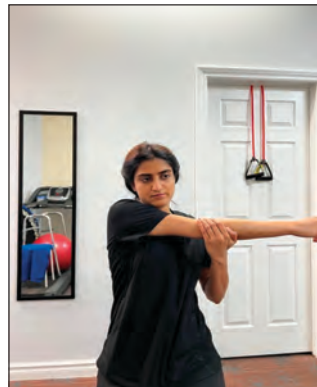


Cross-arm stretch

You should feel a good stretch in the rear shoulders.

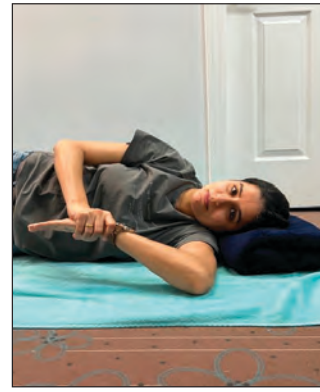
To perform the “crossover arm stretch”:

1. Straighten the arm on the side you want to stretch
2. Use your other hand or forearm to pull the straight arm across toward your torso
3. Find a comfortable but challenging level of resistance
4. Hold it for about 15 seconds
5. Swap sides and repeat a few times a day if possible.



Sleeper stretch

It's an excellent way to work internal rotation for the shoulder. This stretch is often recommended when dealing with rehab. While you can do this stretch on both sides for general health, if you have an injury, the emphasis should be on the affected side.

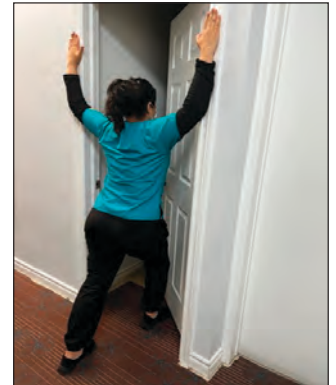
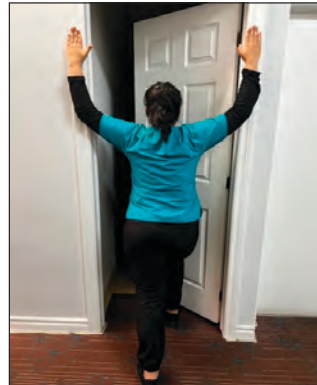
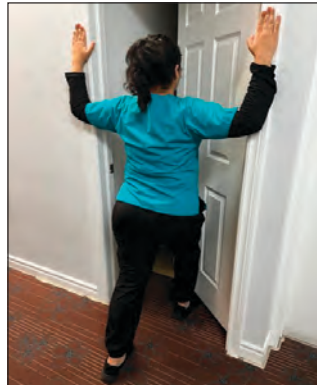
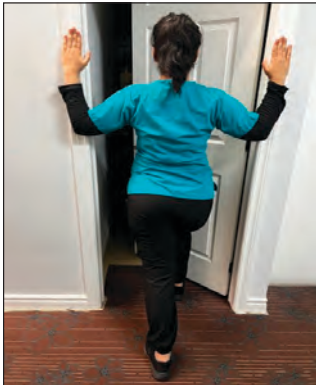


Doorway stretch

The doorway stretch allows you to stretch each side of your chest individually, which helps if one side is tighter than the other. This stretch helps to open the pectoralis muscles in your chest and increases the range of motion in your shoulders.

To perform the “doorway stretch”:

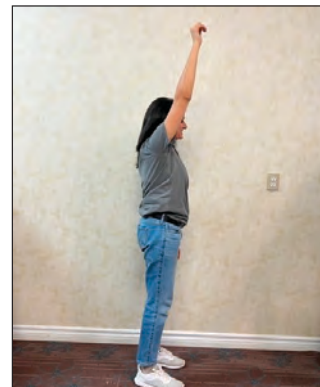
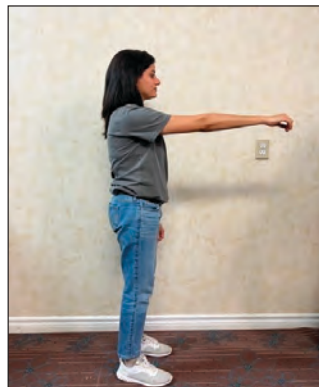
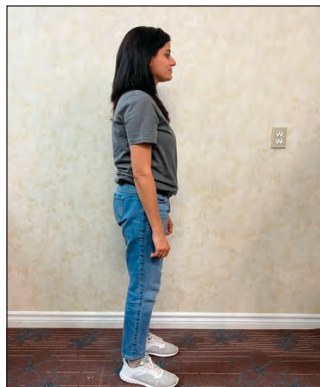
1. Find a solid and stable doorway
2. Hold your arms horizontal to your body with your elbow bent at 90 degrees
3. Place your arm against the door frame
4. Slowly and carefully lunge forward with your body to stretch the arm back behind yourself
5. Find a comfortable but challenging level of resistance
6. Hold it for about 15 seconds
7. Swap sides and repeat a few times a day if possible.



Shoulder mobility exercises:

Active range of motion: These exercises are active, they are done by you, using your own muscle strength and power with no external help. This helps to improve overall muscular function, strength, and range of motion around your shoulder.

Shoulder flexion: Bring arm forward and raising it straight, above your head. Then returning arm to the side.



Shoulder Extension/ Hyperextension: Bringing your shoulder back to normal from flexion is called Extension and taking it backwards keeping your elbows straight is called Hyperextension.



Shoulder Abduction/ Adduction: Moving arm away from the side and above head keeping elbow straight, is abduction and returning arm to the side is adduction.



Shoulder External Rotation

Stand against a wall. Raise your arm out to the side at shoulder level and bend your elbow to 90 degrees. Now bring the forearm downward keeping the elbows fixed to the wall so that palm faces the wall.



Shoulder Internal Rotation: Using the same position as external rotation mentioned above, just move your forearm up towards your head, keeping elbows fixed at the wall.



Shoulder elevation: Lifting your shoulders towards your ear is elevation.



1.Shoulder Neutral



2.Shoulder Elevation



1.Shoulder Neutral



2. Shoulder Elevation

Shoulder Depression: lowering shoulders toward hip is depression.



1.Neutral Shoulder



2. Depression



1.Neutral Shoulder



2. Depression

Shoulder protraction: With arm at shoulder level keeping elbows straight, reach forward as far as possible.



Protraction

Shoulder Retraction: Using same position draw arm and shoulder back as far as possible.



Retraction

Scapular Active Range of Motion



1. Neutral



2. Protraction

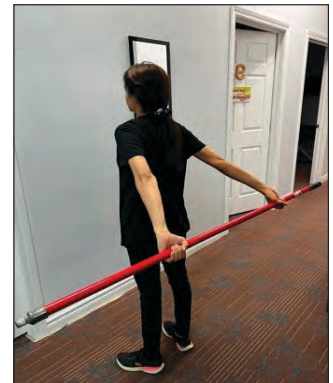
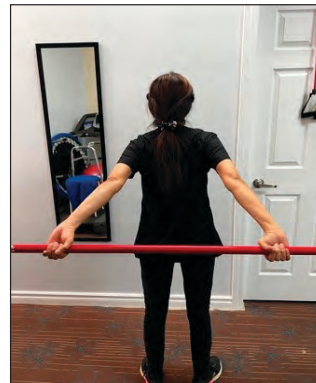


3. Retraction

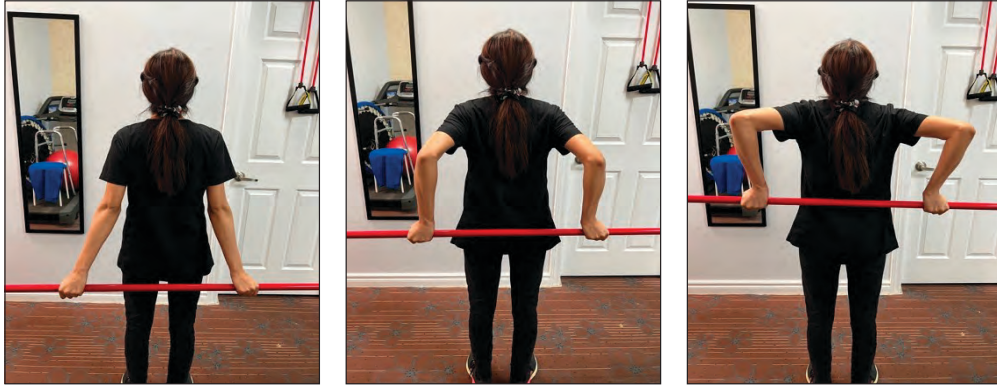
WAND EXERCISES

Shoulder pass-through

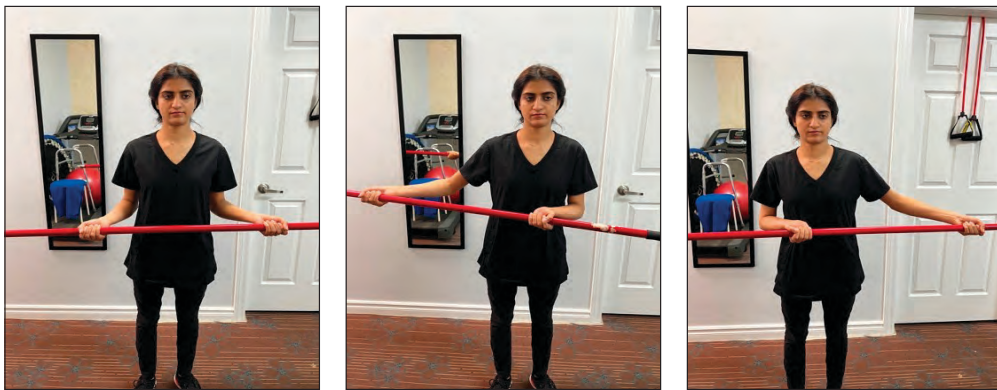
The shoulder pass-through exercise helps to increase joint mobility while still engaging the surrounding muscles of the shoulder. This exercise requires holding a long stick, like a broomstick or PVC pipe. Hold the pipe with both hands, elbows should be straight. Try taking the pipe above your head as shown in the picture. If you can take it further towards your back, you can try doing that without eliciting any pain. If not return to starting position.



Shoulder/ Scapular Elevation



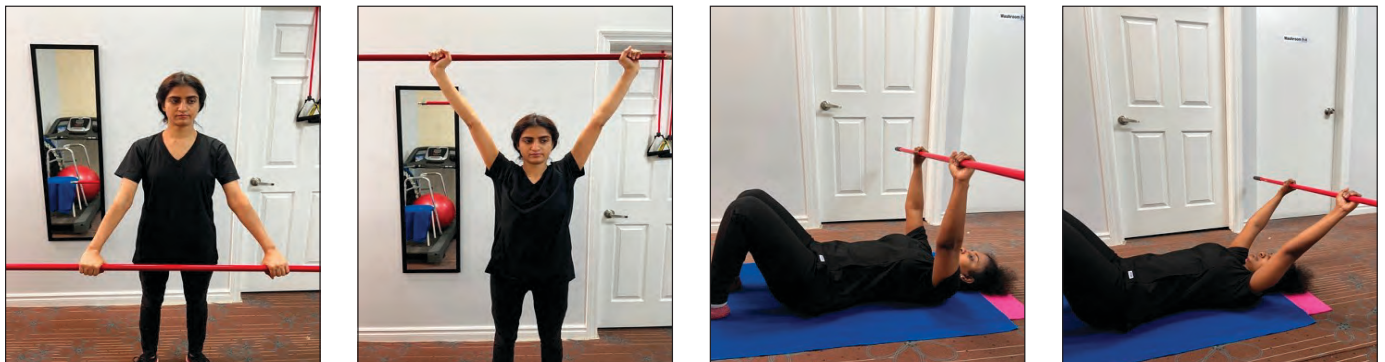
Shoulder External Rotation



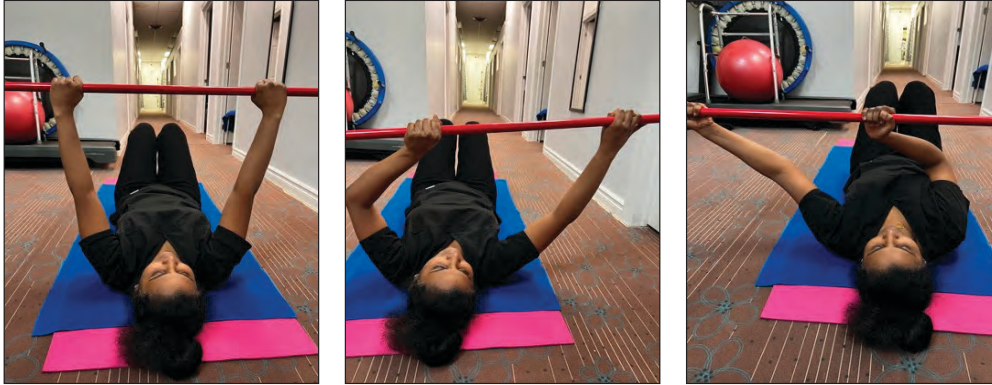
Shoulder Internal Rotation



Shoulder Flexion



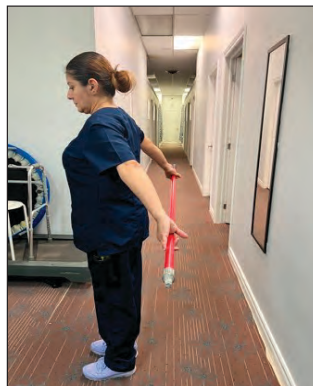
Shoulder External Rotation



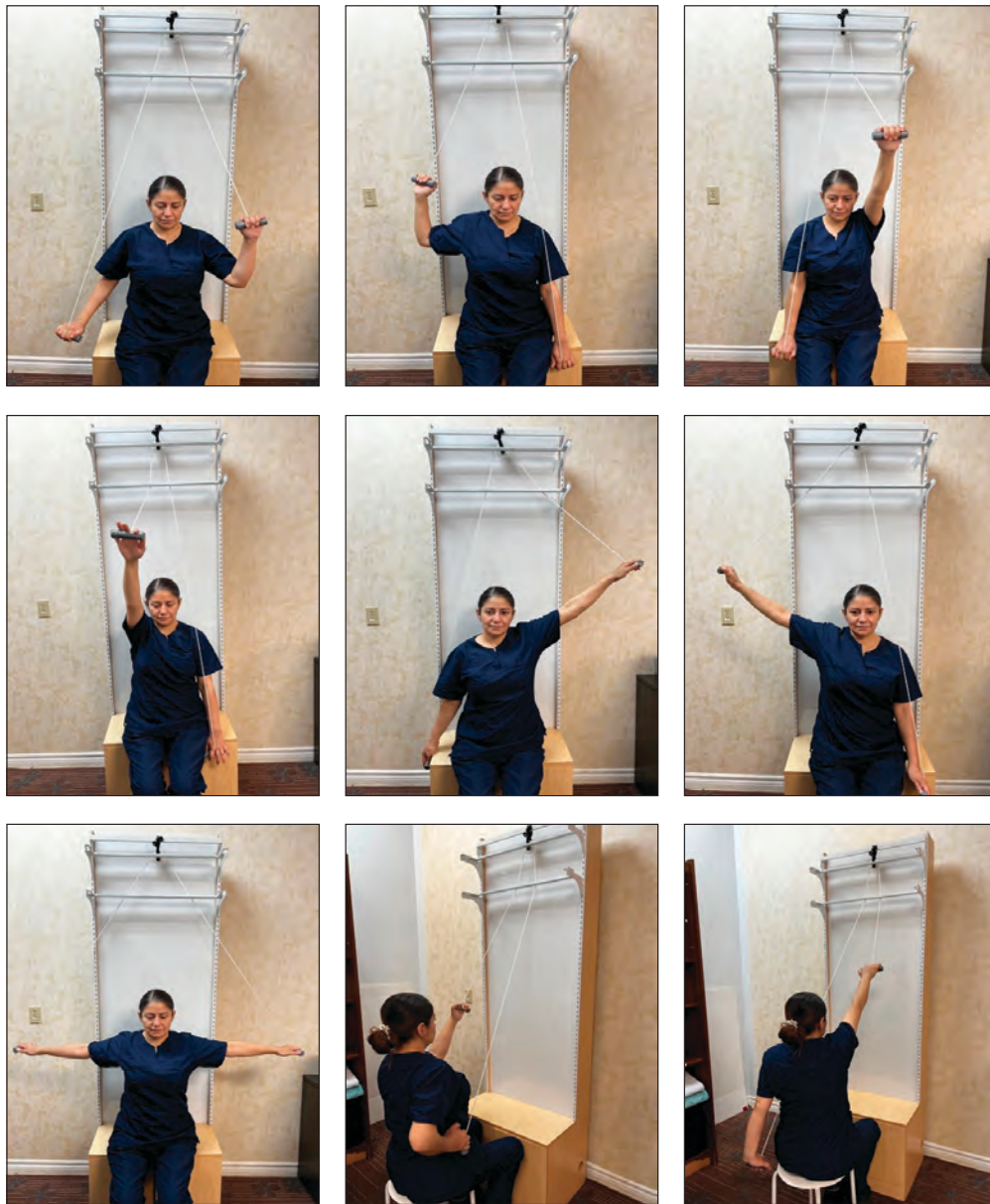
Shoulder Abduction



Shoulder Extension



Initiate rope/pulley week 3-4 post-operation: This kind of exercise is active assisted exercise where you use a rope and pulley system to perform various motion on the affected shoulder. You use your good hand to pull and stabilize the affected side. Try to do these motions slowly and with good sitting posture as shown in the pictures below;

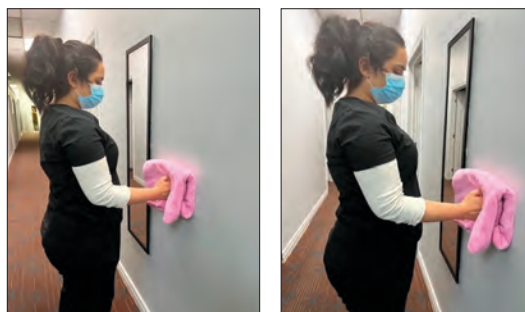


ISOMETRIC EXERCISES FOR SHOULDER JOINT

The next set of exercises are designed to maintain muscle tone. It is important to note that in each isometric exercise no motion is allowed, i.e., motion is resisted and prevented by the good arm or an immovable object such as door jamb or wall.

FLEXION

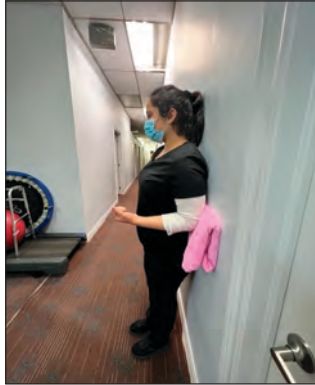
Stand facing a wall. Gently push your fist forward into a wall with your elbow bent. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



EXTENSION

Stand against a wall. Gently push your bent elbow back into a wall.

Repeat 10 Times. Hold 10 Seconds Complete 2 Sets.



ABDUCTION

Stand against a wall sideways with elbows bent at 90 degrees. Gently push your elbow out to the side into a wall. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



ADDUCTION

Stand or sit on a chair with elbows bent at 90 degrees with a towel roll between your elbow & trunk. Gently push your elbow into the side of your body like you are pressing on the towel roll without moving your hands. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



Internal Rotation

Standing close to a door. Elbows flexed to 90 degrees and held closed to body. Attempt to push hand inward against the door jamb. You can keep a towel in between your hands and the wall to make it comfortable for your hands. Repeat 10 times. Hold for 10 seconds.

Complete 2 Sets.

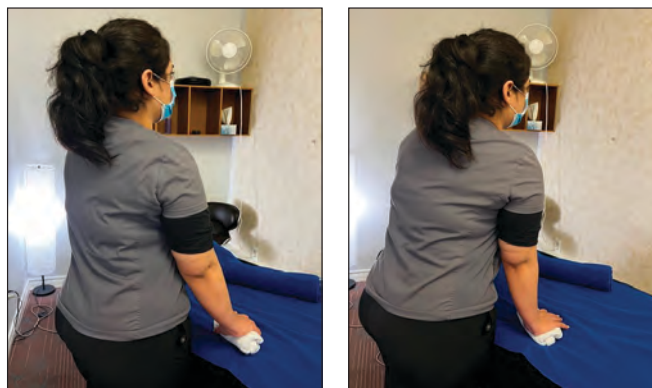


External Rotation: Standing close to a door. Elbows flexed to 90 degrees and held closed to body. Attempt to push hand outwards against the door jamb. You can keep a towel in between your hands and the wall to make it comfortable for your hands. Repeat 10 times. Hold for 10 seconds. Complete 2 Sets.



SCAPULAR DEPRESSION

While standing in neutral spine, with elbow of affected arm fully extended and palm on ball. Slowly draw shoulder blade down towards floor, palm will push into ball. Hold, slowly relax.



90/90 EXTERNAL ROTATION

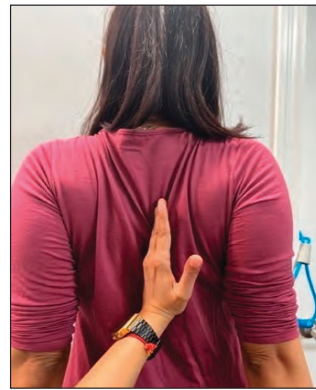
While standing in a doorway, place elbow at shoulder level (90 degrees) and the back of your hand flat against the wall. Press back into the wall with your hand while keeping your elbow flat for 3 seconds. Relax. Repeat.



STRENGTHENING EXERCISES:

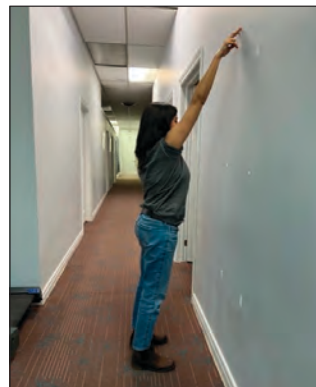
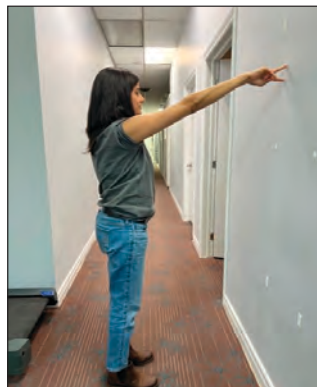
SCAP SETS

Pull your shoulders back, pinching the shoulder blades together. Do not let the shoulders come forward. Hold for 5-10 seconds. Repeat 10 times. Do 1 set daily.



Wall Crawl: It will improve range of motion and strengthens shoulder muscles

Stand in front of a wall, about an arms' reach away, so your fingers can just touch it. Using your affected arm, slowly crawl your fingers up the wall as high you can comfortably go. (Keep your shoulder down, without shrugging up toward your ear.) Hold for 15 to 30 seconds; then crawl back down. Repeat one or two more times, trying to reach higher each time.

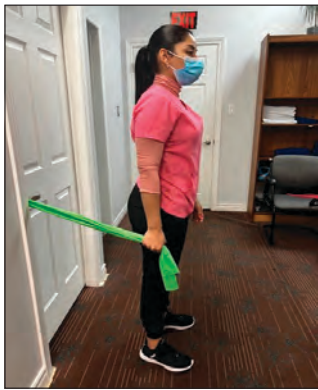


Tip: If you feel a twinge of pain or your shoulder tightens as you crawl your fingers up, pause for a second and focus on relaxing the shoulder muscle. You may be able to go a little higher once your shoulder is relaxed. If you feel a twinge again, you've reached your max range of motion. You can also crawl up sideways to strengthen your abductors.



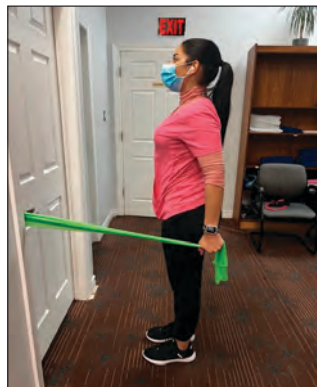
Resisted Shoulder Flexion

Secure a Thera band or a resistance band on a doorknob or somewhere stable. Stand in front of the door, keeping your back towards the door and arms by the side. Keeping one end of the band on your affected hand, pull arm upward and outward. Move shoulder in pain free range of motion. Repeat this for 10 times. Do 1-2 session per day.



Resisted Shoulder Extension

Using the same position now stand facing the door. Hold the band and pull arm at the back of your body. Be sure to keep elbow straight. Repeat this for 10 times. Do 1-2 session per day.



Resisted Shoulder Abduction

Stand sideways with a resistance band secured at a doorknob. Grab the band and start with arm across the body, now pull away from the side. Be sure to keep elbow straight. Move through pain free range of motion. Repeat this for 10 times. Do 1-2 session per day.



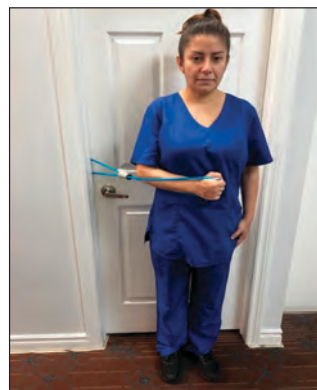
Resisted Shoulder Adduction

Stand sideways with a resistance band secured at a doorknob. Pull the band with the affected arm towards the buttock. Do not twist or rotate trunk. Repeat for 10 times. Do 1-2 session per day.



Resisted Internal Rotation

Stand in front of a door with a resistance band secured at a doorjamb. Bend your elbow in at side, using the band rotate your arm inwards across the body. Be sure to keep the forearm parallel to the floor. Repeat this for 10 times. Do 1-2 session per day.



Resisted External Rotation

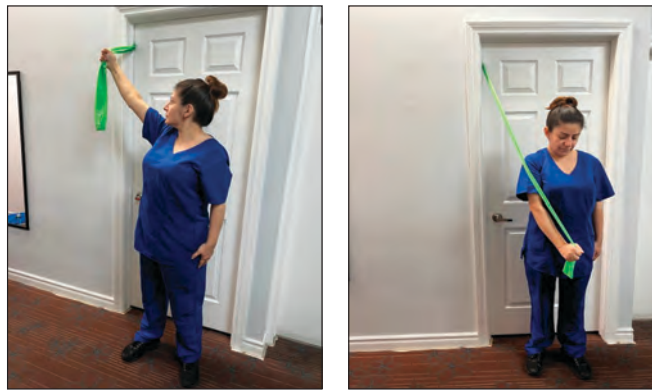
For external rotation the resistance band should be secured on the opposite side of the affected shoulder. Using the band, and keeping the elbow in at side, rotate the arm outwards away from the body. Be sure to keep the forearm parallel to the floor. Repeat this for 10 times. Do 1-2 session per day.



PROGRESSIVE RESISTED EXERCISES

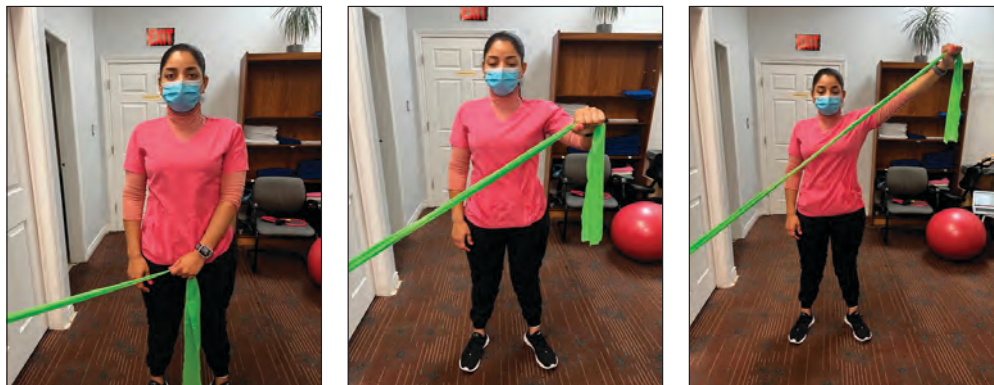
Resisted Diagonal Shoulder Movements:

Grasp tubing with arm above and behind you. Bring arm down across the body. Return slowly to starting position. Repeat 30-90 times per session. Do 1-2 sessions per day.



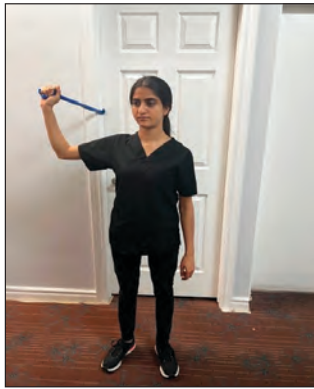
Resisted Diagonal Movement

Using tubing start with arm across body, palm facing backward. Pull arm across body and overhead, so palm now faces forward. Repeat 30-90 times per session. Do 1-2 sessions per day.



Strengthening Activities: Serving/ Throwing

With a Thera band secured at the back try to pull across body as though serving in tennis or throwing a ball. Repeat 30-90 times per session. Do 1-2 sessions per day.

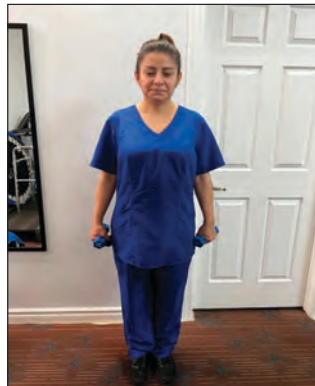


Supine forward flexion with dumbbells

Lie down straight on your back with dumbbells in both hands and lift both hands towards the ceiling. Hold the dumbbells at 90 degrees for 10-15 seconds. Repeat this for 15- 20 times. Do 1-2 session per day.



Abduction with dumbbells: Holding 0-5 lbs. weights, raise arms out to sides. Repeat 10-30 times. Do 1-2 sessions per day.



External Rotation (Side Lying)

Lie on a bed or a firm surface on your good side with neck supported using a towel roll or a small pillow. Holding 0-5 lbs. dumbbell, raise your arm towards ceiling. Keep elbow bent, tucked in, at your side. Repeat 30-90 times. Do 1-2 session per day.



Internal Rotation

For internal rotation now lie down on your side with your affected shoulder tucked under and elbows bent. You should come towards

the edge of the bed, so that your forearm is hanging outside the bed. Holding a 0-5 lbs. dumbbell bring arm up towards body. Repeat 20-30 times. Do 1-2 sessions per day.



Supraspinatus Strengthening

Raise your arm diagonally from hip to just below shoulder level. Keep your elbow straight and thumb pointing downwards. Repeat 10- 30 times per set. Do 1-2 sessions per day.



Scaption with External Rotation

Raise your arm diagonally from hip. Keeping elbow straight and thumb pointing up, raise your arm above head.



Ultrasound Therapy

Sound waves are transmitted to the shoulder using an ultrasound therapy machine, a qualified physical therapist applies vibrating circular motions to the affected area. The machine's settings can be changed to adjust the depth and intensity.

The theory is that during application, sound waves entering the damaged body tissues increase blood flow. It targets muscles, tendons, joints, and ligaments. The process is believed to be therapeutic, enhancing healing and decreasing pain.



Laser Therapy:



Massage Therapy

Osteoarthritis is commonly found in the shoulder as a result of “wear and tear.” While massage cannot reduce the inflammation from the inflamed joint, it can release muscle tension in the surrounding area, releasing pressure on the joint. Massage should not be done when arthritis is in an acute stage as the inflammation response is too high, and it may cause more pain than it resolves. It can relieve muscle strain, stress, and joint pressure, and can reduce nerve compression, which in turn reduces the spasms and contractions that cause pain. Massage uses soft tissue manipulation to help release muscle tension for better flexibility and pain relief.

Massage can help your shoulder move and function the way it was intended and therefore relieve stress and strain on the muscles and tendons and prevent future inflammation. A clinical massage therapist can help with the following:

- Decrease pain from Trigger Points
- Help increase range of motion by loosening shortened musculature
- Gently stretch the joint to increase range of motion
- Break up adhesions (scarred down muscle tissue) around the shoulder
- Encourage proper body mechanics through muscle and trigger point work
- Promote healing by using various techniques to increase circulation, shorten healing times.

MASSAGE TREATMENT PROCEDURE:

- Pain free rhythmic mobilization, rocking, shaking.
- Proximal to distal treatment
- MFR Myofascial Release Techniques
- Soothing Swedish tech – effleurage, stroking, petrissage to reduce hypertonicity
- Trigger Point treatment with deep muscle stripping and ischemic compressions
- Traction joint
- GTO to muscle crossing joint
- Joint play to shoulder joint

Massage therapists use the following techniques to increase the range of motion:

- Effleurage, which uses long, gliding strokes from the extremities inward at various levels of pressure.
- Petrissage, a technique that is rhythmic and may include kneading, skin rolling, lifting or a push-pull movement.

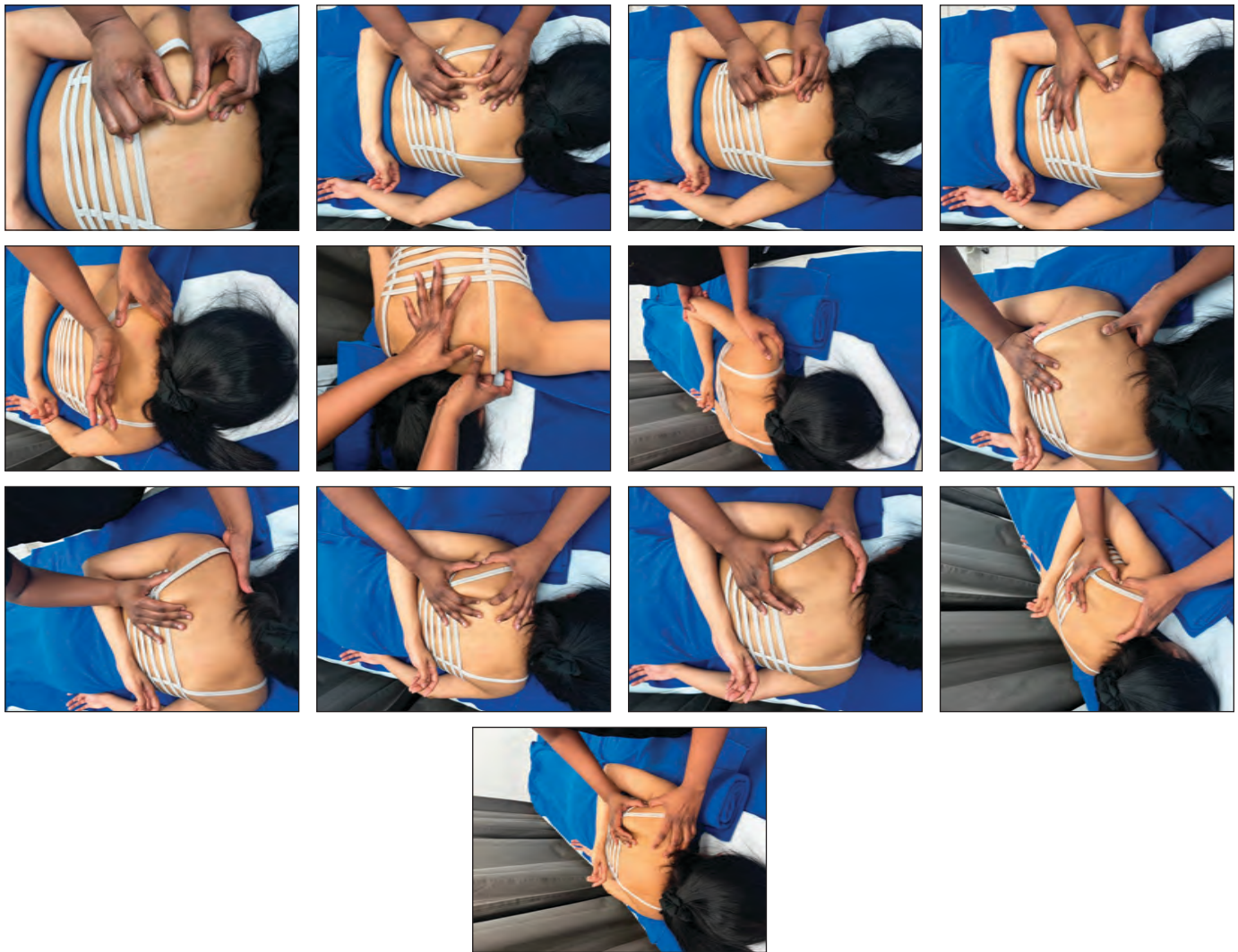
Diaphragmatic breathing

This is a simple technique to teach patients how to breathe into their stomachs as opposed to their chest and shoulders. Good diaphragmatic breathing encourages nervous system relaxation, pumps lymph up from the legs and abdomen, and relieves tension on neck muscles that are overworked in chest-breathers.

Massage in prone lying:

Working around the upper & lower traps and rhomboids can provide a good warm up. Pay particular attention to tender points over the muscle belly of the infraspinatus which is found on the back of the scapula below the spine of the scapula. Then start working little lower towards the armpit you can target Teres major and also massage the Latissimus Dorsi. In some patients its little challenging to put their hands on their back which externally rotates the shoulder and lifts the scapula. From there you can work under the scapula. You can hold the inferior border of scapula and with the other hand the glenohumeral joint and then perform some scapulothoracic mobilization.





Massage in supine lying:

With light pressure start with spreading the oil with long stroked from the distal to proximal arm and around the shoulder joint. Try to go underneath the scapula with one hand and put little pressure on the proximal humerus to open up the joint capsule. Now come little down towards the arm to focus more on Deltoid.

Lift the arm a little and put it in slight medial rotation that allows you to work on Biceps and other deeper structures in the arm. Do some Myofascial release here, focus on putting pressure through your thenar muscles which is below your thumb. Now try to approach the biceps tendon from the superior angle and rotate the distal arm with the other hand which help in opening up the muscle fibers.

Alongside working with biceps encourage the pecs to relax a bit by compressing it anteriorly and laterally with your hands and the dorsal aspect of the forearm and elbows. After finishing this you can bring the patient's arm overhead and put your thighs to rest the arm and it will be painful for the patient to put straight on the bed. In this position you can start working on the posterior aspect of the arm targeting the triceps and also the top parts of the deltoid. You can also do some myofascial release and joint capsule stretching in this position.





Trigger Points:

A Remedial Massage Therapist may also be able to provide some relief by deactivating trigger points in the Infraspinatus muscle. There is a specific place on the back of the shoulder blade that radiates pain into the shoulder joint and down the front or side of the arm. Many people find that work on this trigger point can substantially reduce their shoulder pain issues. It is certainly worth a shot as it doesn't take long to locate and release this trigger point.

CONTRAINDICATIONS

- Avoid heat hydrotherapy if inflammation is present.
- Caution when applying overpressure with late-stage Osteo Arthritis due to osteophytes.

Self-Massage

Self-massage is using your hands, tools, or objects to work on sore muscles and adhesions instead of seeing a licensed massage therapist or bodywork professional. Massage the Area. Given that you are consistently experiencing pain and discomfort around the shoulder, massaging the area has been found to have beneficial impacts in helping with the recovery effectively.

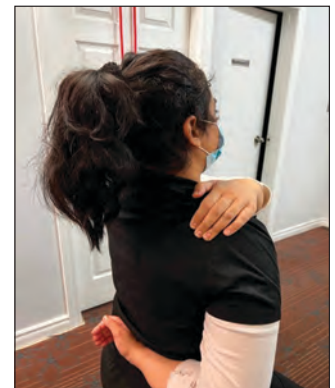
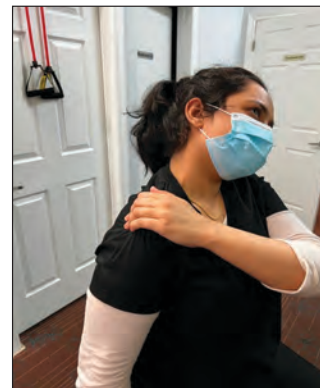
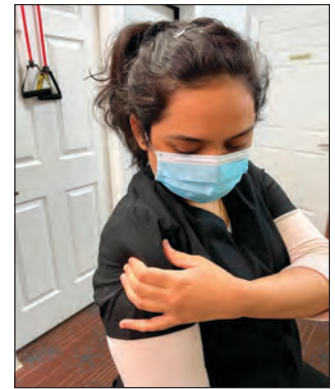
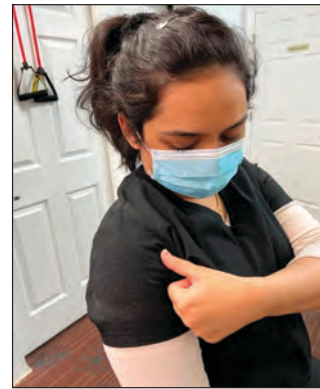
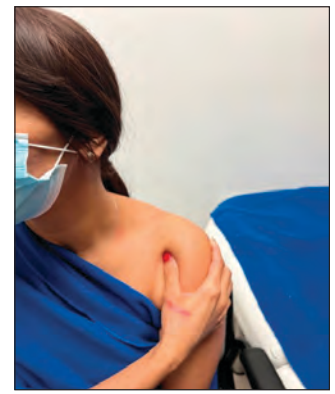
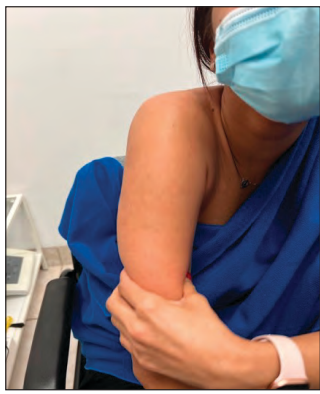
Start with some effleurage to warm up the area in front, sides and at the back of the shoulder. Once the area is nicely warmed up now start to focus on some muscle groups like the pecs which is present in front of your shoulder. Just middle three fingers and do some vibrations in circular motion. You will some redness and warmth in the area which normal that happens because of the increased blood supply. Once your done you want to do some work around your chest where is your pec major. You can start from the middle which is sternum and go diagonally to target both of the pecs. Now your front area must be pretty warmed up so start with some linear stripping. Which is again taking your middle three fingers pushing deep into your muscles starting from upper chest moving towards your shoulder joint.

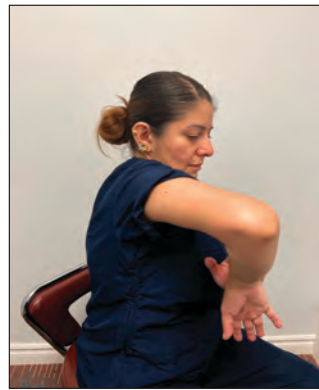
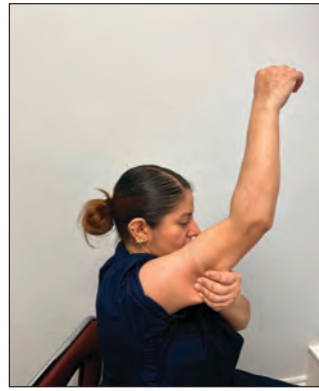
Now we going to focus on your back portion of your shoulder. When you come down from your neck towards your shoulder you going to feel a dip right at the top of your shoulder from there you go little bit down you are going to find the spine of the scapula. So, these two bones create a triangle where sits a muscle called your supraspinatus. This is where you really want to work. Just dig the tip of your fingers in that area and try to massage the muscle. You can also your knuckles to put deeper pressure. Once you are done with

this muscle you want to go down from the spine of the scapula you will feel a bumpy muscle in there that's your infraspinatus. You can use vibrations or linear stripping to work around that area. After targeting these two on the back of your shoulder now we will go on the sides and under your shoulders to focus on teres and lats. Once you find this area just grab the muscle belly and let your shoulder just drop. While moving your arms up and down work under your shoulders either with your fingertips or with your knuckles. Don't afraid to dig deeper as this area must be full of trigger points and knots.

Lastly, we are going to work on the last muscles your rotator cuff muscles which is your subscapularis. This is a muscle which is little tricky to reach, for this you need to take your thumb and dig deeper into your armpit. Try to grab the area one side with your thumb and on the back with your fingers and work around this area. This can be really sore as it is a sensitive area so do not try to push very hard. A great move is to bring your arm across your chest take your knuckle of the other hand press it inside your armpit and then stretch your arms away. This is a great pin and stretch for the subscapularis.

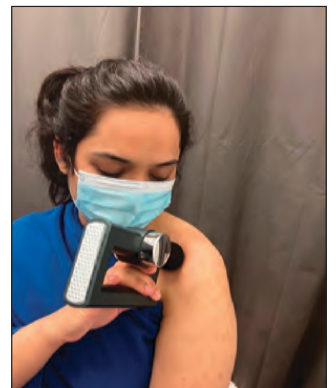
You can also hold firm pressure on tender areas for 30 seconds each. Remember to breathe in and out through your nose with sound. Breathing with sound will help to activate the Vagus nerve and further reduce the pain.





Electronic massage

You can also use an electronic massage tool to improve mobility and relieve tension. Focus on tender areas and trigger points. You can try moving the head of the massager at different parts of the shoulder to target the trigger points.



You can try using a ball to massage trigger points around the shoulder.



You can use any of the following essential oil or a combination of them mentioned below. But always remember to dilute your essential oils appropriately with a nice plant-based carrier oil such as coconut oil, olive oil, jojoba oil, almond oil, and many more.

Some of the essential oils that are good for osteoarthritis:

Chamomile oil:

Chamomile extracts have anti-inflammatory properties because they contain flavonoid compounds and have analgesic properties that can effectively reduce arthritic pain.



Pumpkin Seed oil:

Containing elements, vitamins and minerals that promote healthy bones and joints, as they contain magnesium, zinc, vitamin E and K. Pumpkins also contain high rates of carotenoids and Omega-3. Pumpkin seeds are rich in magnesium which improves our bone density and strengthens the bone joints. For women, pumpkin seeds have a promising effect by cutting off the risk of osteoporosis which makes the bones porous and delicate.

It is one of the most powerful vegan food that helps in reducing arthritis and rheumatism pain. The pumpkin seed oil is highly effective in treating joint pains. A regular massage with pumpkin seed oil can bring down the intensity of your joint pain.



Wintergreen essential oil: This oil is helpful since it has a reputation for relieving pain in muscle tissues. It contains methyl salicylate, which acts like cortisone. It's good for tendonitis because it acts as a natural inflammatory. It's usually diluted in a carrier oil before being directly applied to the affected area.



Chamomile essential oil: It is known for its pain-relieving ability and has compounds that are soothing to the skin and muscles.



Sweet Marjoram essential oil: This oil helps because it acts as a painkiller. A lot of people with tendonitis complain about dull aches, which may be relieved with this oil. Its compounds are said to help with joint stiffness and muscle spasms as well.



Lavender essential oil: You might not think of this as one of the essential oils for tendon repair, but lavender oil has been used for centuries for headaches and contains a mild sedative, making it a viable option for tendonitis. Lavender oil has anti-inflammatory and analgesic properties. People who have undergone surgery for tendonitis can use lavender oil as a follow-up method by inhaling it directly from the bottle. Some people suggest that it affects them in the way a pain medication like morphine would.



Peppermint essential oil: This oil has antispasmodic properties that can help with inflammation and arthritis. It is also calming so it can assist with aches and pains. Since it contains menthol, it's cooling and refreshing when applied.



Clary Sage essential oil: This is one of the essential oils for tendon pain because it has a relaxing impact and seems to work well as a massage oil for aching joints and muscles. It is commonly mixed with chamomile essential oil to relieve tension.



Helichrysum essential oil: Considered a good joint pain reliever since it has a significant number of anti-inflammatory compounds called sesquiterpene hydrocarbons. It also has relaxing properties and is known to reduce tissue tension around injury locations.



Rose geranium essential oil: This oil is thought to be a very good anti-inflammatory that can have the same effect as anti-arthritis medications.



Lemongrass essential oil: Known to soothe sore muscles, this essential oil has the potential to reduce symptoms of rheumatism and arthritis. Some tendonitis sufferers report that it reduces inflammation and pain.



Frankincense essential oil: This is oil that has analgesic and anti-inflammatory properties, making it a good oil for tendonitis. It is also considered an effective essential oil for relieving stress.



Fish oil: It has been shown to promote connective tissue healing. The use of this oil has the potential to improve stiffness and tendon strength.



Turmeric. Turmeric is yet another one of the amazing rotator cuff natural remedies that do work. The primary reason behind the same is that turmeric is loaded with beneficial anti-inflammatory properties which have beneficial impacts in faster and better recovery of the inflammation and the pain that one is enduring.



Epsom salt. Epsom salt is yet another effective remedy for the rotator cuff that provides beneficial impacts. The primary reason is the presence of the magnesium sulfate in it which imposes beneficial impacts in helping with inflammation and even getting rid of the pain that one often tends to experience.



Recipes for Essential Oils for Shoulder OA

Recipe 1

Mix three to four drops of Birch and Lemongrass oil in a carrier oil and massage onto the bicipital tendon. Wait a few minutes and lightly rub some peppermint oil over top to help the oils penetrate deeper into the skin. Putting a warm compress over the affected area can also help. Follow this process two to three times a day until you feel relief from the soreness.

Recipe 2

Mix 10 drops of Peppermint oil, five drops of Marjoram, five drops of Melaleuca, six drops of Rosemary, and two drops of Lemongrass essential oil with a carrier oil. Once it's well mixed, rub it on the affected tendon and then place a warm cloth over top. If the pain is severe, you can add a few drops of Helichrysum essential oil.

Tips and Warnings While Using Essential Oils

When using essential oils, it's important to dilute them in a carrier oil, such as coconut, olive, or jojoba oil to avoid causing any irritation to the skin. Even with a carrier oil, it's wise to do a patch test to make sure you don't have any kind of reaction. Most people use the underside of their arm, which is less visible.

Patch Test: A patch test allows you to see how your skin reacts to a substance before using it more widely. Here are the steps for performing a patch test:

- Wash your forearm with mild, unscented soap, and pat the area dry.
- Dab a few drops of diluted essential oil onto a patch of skin on your forearm.
- Place a bandage over the patch and keep the area dry for 24 hours.

If you notice any rash, irritation, or discomfort during the 24 hours, remove the bandage and wash your skin thoroughly with gentle soap and water. Don't use the essential oil if any reaction develops during the patch test.

If no irritation develops during the 24 hours, it's likely safe for you to use the diluted essential oil. However, a successful patch test doesn't mean that you won't develop an allergy or experience a reaction after future use.

Here are a few more essential oil tips:

- Coconut oil or olive oil is the best carrier oil to cover a large area
- Both hot and cold cloths can soothe as well as help oil penetrate deeper
- You can get pain relief by using just one oil
- If you apply oil then expose your skin to the sun, you can burn
- If you have an allergic reaction when using an essential oil, stop using the oil immediately

Aromatic plants have been used as the basis for herbal and botanical remedies for thousands of years.

Food & Nutrition

Many people find that making changes to their diet can help with osteoarthritis symptoms, which include pain, stiffness, and swelling. Some foods have anti-inflammatory capabilities which can help reduce symptoms while other foods may amplify them.

Including specific foods in the diet can strengthen the bones, muscles, and joints and help the body to fight inflammation and disease. People with osteoarthritis can try adding the following foods to their diet to ease their symptoms:

Vitamin C, Vitamin D, Omega 3, Beta carotene, Turmeric, garlic, ginger, olive oil, green leafy vegetables and nuts.

Vitamin C: Lack of vitamin C intake in the diet leads to the erosion of cartilage. Main food sources are tropical fruits such as guava, papaya, and pineapple. Citrus fruits such as oranges and grapefruit, cantaloupe, Strawberries, Kiwi, and raspberry.

Cruciferous vegetables such as flower, broccoli, turnips, Paprika and tomatoes.



Vitamin D: Protects cartilage from corrosion, reduces the likelihood of narrowing distances between joints. The body needs to be exposed to sunlight to take advantage of vitamin D found in seafood such as salmon, sardines, shrimp, eggs and vitamin D-fortified milk.



Beta-carotene: prevents and protects cartilage erosion. And the food sources are: sweet potatoes, Spinach, some cruciferous vegetables such as green cabbage and Greek lettuce. Pumpkins, cantaloupe, Parsley, Apricot, Mint leaves, tomatoes and Asparagus.



Omega-3 is found in high-fat fish such as salmon, tuna, sardines and mackerel. Omega-3 is an anti-inflammatory that prevents arthritis and cartilage erosion. 3-6 ounces of fish are recommended during the week to reduce the likelihood of arthritis and promote heart health.



Turmeric: Turmeric is an Indian food and contains a compound called curcumin, which studies have indicated is effective in reducing roughness and joint pain.



Camel's eye nut/Walnut: Walnuts are a great source of antioxidants, and they also contain plenty of useful minerals and vitamins. That includes protein, zinc, vitamin E, and fiber. Walnut oil might have ten times as many Omega-3 fatty acids as extra virgin olive oil, which is already on the list of osteoarthritis-preventing foods. Walnuts aren't the only nut with these benefits. Pistachios, almonds, pine nuts, and even peanuts are all equally good sources of these nutrients. Just remember to eat them in moderation, since they're also high in fat and calories.



Oils:

There are some types of oils that reduce inflammation in addition to fish oil such as virgin olive oil, which contains the substance “oleocanthal” that reduces cholesterol and reduces inflammation.



Broccoli

Contains sulforaphane, which scientists have proven slows the progression of osteoporosis, as well as rich in vitamins C, K and calcium.



Green Tea:

Green tea has many health benefits, including the ability to slow the progression of osteoarthritis. Whether you prefer cold or hot tea, green tea is loaded with antioxidants and anti-inflammatory properties that can help to reduce the speed at which cartilage is destroyed, as well as limit swelling and pain. Contains high levels of polyphenols that are resistant to any inflammation present in the body, especially arthritis.



Garlic:

Garlic contains a compound known as diallyl disulfide, which inhibits the growth of enzymes that cause osteoarthritis and other joint and cartilage disease. Garlic has many antioxidant and anti-inflammatory properties, as well, which makes it a superfood when it comes to arthritis.



Ginger: Like most of the foods on this list, ginger contains components that reduce inflammation and pain caused by osteoarthritis.



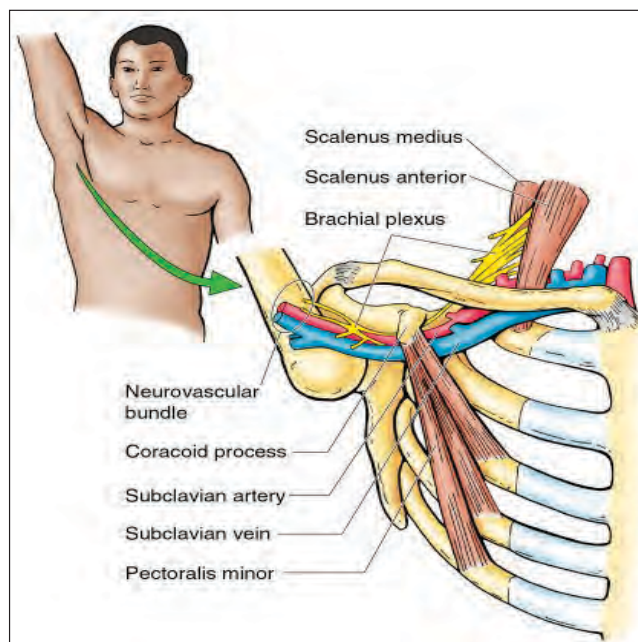
CHAPTER 6: THORACIC OUTLET SYNDROME

Definition:

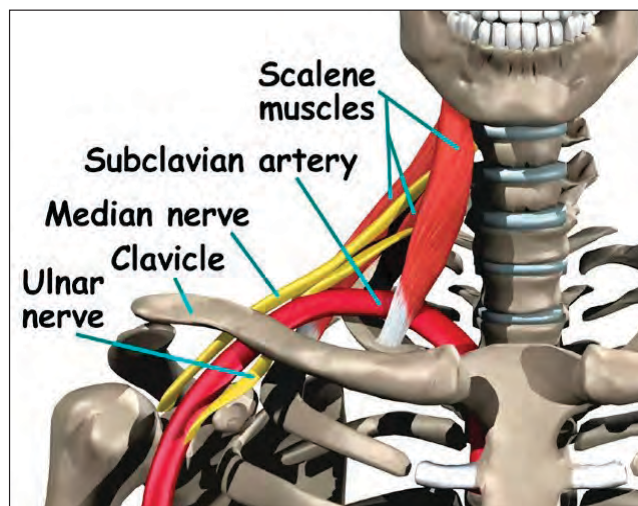
Thoracic Outlet Syndrome describes compression of the neurovascular structures as they exit through the thoracic outlet (cervico-thoracobrachial region). The thoracic outlet is marked by the anterior scalene muscle anteriorly, the middle scalene posteriorly, and the first rib inferiorly.

Anatomy of the Thoracic Outlet:

There are 3 components to the thoracic outlet extending from the neck to the front of the shoulder. The 1st component is the inter scalene triangle. Nerves exit the neck and pass between the two scalene muscles. Abnormalities of these muscles can contribute to compression or irritation of the nerves. The 2nd component of the thoracic outlet is called the costoclavicular space. This is the area between the collar bone and the first rib. Abnormalities of the first rib or an extra rib sometimes called a “cervical rib” can lead to irritation of the nerves or blood vessels. The 3rd component of the thoracic outlet is the area between the pectoralis minor muscle and the rib cage.



Nerves and Vessels:



Causes for the Thoracic Outlet Syndrome

Congenital Factors:

- Cervical rib
- Prolonged transverse process
- Anomalous muscles
- Fibrous anomalies (transvers costal, costo-costal)
- Abnormalities of the insertion of the scalene muscles
- Fibrous muscular bands
- Exostosis of the first rib
- Cervicodorsal scoliosis
- Congenital uni- or bilateral elevated scapula

Acquired Conditions:

- Postural factors
- Dropped shoulder condition
- Wrong work posture (standing or sitting without paying attention to the physiological curvature of the spine)
- Heavy mammaries
- Trauma
- Clavicle fracture
- Rib fracture
- A hyperextension neck injury, whiplash
- Repetitive stress injuries (repetitive injury most often from sitting at a keyboard for long hours)

Muscular Causes:

- Hypertrophy of the scalene muscles
- Decrease of the tonus of the trapezius, levator scapulae & rhomboids muscle.
- Shortening of the scalene muscles, trapezius, levator scapulae, pectoral muscles.

Signs and symptoms:

There are four categories of thoracic outlet syndrome and each present with unique signs and symptoms. Typically, TOS does not follow a dermatomal or myotome pattern unless there is nerve root involvement, which will be important in determining your PT diagnosis and planning your treatment.

1. Arterial TOS

- Young adult with vigorous arm activity
- Pain in the hand
- Claudication
- Pallor
- Cold intolerance
- Paresthesia's
- Signs & symptoms usually appear spontaneously

2. Venous TOS

- Younger men with vigorous arm activity
- Cyanosis
- Feeling of heaviness
- Paresthesia in fingers and hand (the result of edema)
- Oedema of the arm

3. True TOS

- Pain, paresthesia, numbness, and/or weakness
- Occipital headaches
- Signs & symptoms present-day and/or night
- Loss of fine motor skills
- Cold intolerance (possible Raynaud's phenomenon)
- Objective weakness
- Compressors: Signs & symptoms day>night

4. Disputed Neurogenic TOS

- Pain, paresthesia, and "feeling" of weakness
- Occipital headaches
- Nocturnal paresthesia that often wakes the patient
- Loss of fine motor skills
- Cold intolerance (possible Raynaud's phenomenon)
- Subjective weakness
- Releasers: Signs & symptoms night>day

Cause: Squeezing together of nerves that affects the neck and down the arm.

Compressors -A patient that experiences symptoms throughout the daytime while using prolonged postures resulting in increased tension or compression of the thoracic outlet. The most common aggravating postures are head forward with the shoulder girdles protracted and depressed or activities that involve working overhead with the arms elevated. These positions cause an increase in tension/compression (such as working overhead with elevated arms) that would increase tension or compression of the neurovascular bundle of the brachial plexus.

Releasers - Describes patients that often experience paresthesia at night that often wakes them up. It is caused by a release of tension or compression to a thoracic outlet, that restores the perineural blood supply to the brachial plexus, signaling a return of normal sensation. This is used as an indicator of a favorable outcome and resolution of symptoms.

Outcome Measures

- DASH (Disability of Arm Shoulder and Hand)
- SPADI (Shoulder Pain and Disability Index)
- NPRS (Numeric Pain Rating Scale)
- McGill Pain Questionnaire

Special Tests:

Elevated Arm Stress/ Roos test: the patient has arms at 90° abduction and the therapist puts downwards pressure on the scapula as the patient opens and closes the fingers. If the TOS symptoms are reproduced within 90 seconds, the test is positive.



Adson's test: the patient is asked to rotate the head and elevate the chin toward the affected side. If the radial pulse on the side is absent or decreased then the test is positive, showing the vascular component of the neurovascular bundle is compressed by the scalene muscle or cervical rib.



Implications: Subclavian artery is being occluded between anterior and middle scalene and pec minor muscles.

Wright's test: the patient's arm is hyper abducted. If there is a decrease or absence of a pulse on one side then the test is positive, showing the axillary artery is compressed by the pectoralis minor muscle or coracoid process due to stretching of the neurovascular bundle.

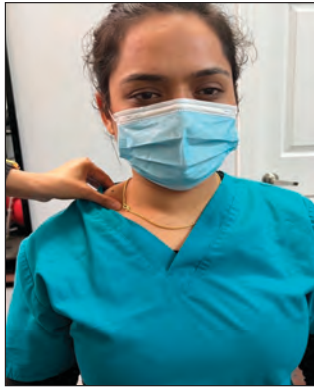


Cyriax Release test: the patient is seated or standing. The examiner stands behind the patient and grasps under the forearms, holding the elbows at 80 degrees of flexion with the forearms and wrists in neutral. The examiner leans the patient's trunk posteriorly and passively elevated the shoulder girdle. This position is held for up to 3 minutes. The test is positive when paresthesia and/or numbness (release phenomenon) occurs, including reproduction of symptoms.



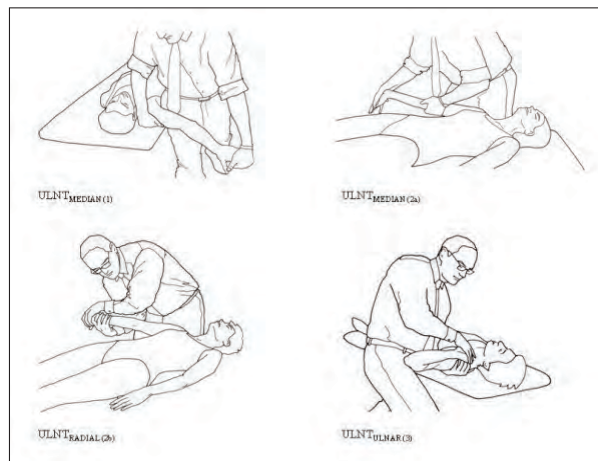
Supraclavicular Pressure test: the patient is seated with the arms at the side. The examiner places his fingers on the upper trapezius and thumb on the anterior scalene muscle near the first rib. Then the examiner squeezes the fingers and thumb together for 30 sec-

onds. If there is a reproduction of pain or paresthesia the test is positive, this addresses compromise to brachial plexus through scalene triangles.



Costoclavicular Maneuver: This test may be used for both neurological and vascular compromise. The patient brings his shoulders posteriorly and hyperflexes his chin. A decrease in symptoms means that the test is positive, and that the neurogenic component of the neurovascular bundle is compressed.

Upper Limb Tension test: These tests are designed to put stress on the neurological structures of the upper limb. The shoulder, elbow, forearm, wrist, and fingers are kept in a specific position to put stress on the nerve (nerve bias) and further modification in the position of each joint is done as a “sensitizer”.



Cervical Rotation Lateral Flexion: The test is performed with the patient sitting. The cervical spine is passively and maximally rotated away from the side being tested. While maintaining this position, the spine is gently flexed as far as possible moving the ear toward the chest. A test is considered positive when the lateral flexion movement is blocked.



Diagnostic test:

Electrodiagnostic evaluation and imaging:

- **Nerve conduction studies:** usually reveal decreased ulnar sensorial potentials, decreased median action potentials, and normal or close to the normal ulnar motor and median sensorial potentials. Vascular TOS can be identified with venography and arteriography.
- **Electromyography:** can provide useful information in the diagnosis of TOS. Cervical spine and chest x-rays are important in the identification of bony abnormalities.

Physical Therapy Management

Conservative management includes physical therapy, which focuses mainly on patient education, pain control, range of motion, nerve gliding techniques, strengthening, and stretching.

The aim of the initial stage is to decrease the patient's symptoms. This may be achieved by patient education, in which TOS, bad postures, the prognosis and the importance of therapy are explained.

Correcting sleeping positions

Some patients who sleep with the arms in an overhead, abducted position should get some information about their sleeping posture to avoid waking up at night. These patients should sleep on their uninvolved side or supine, potentially by pinning down the sleeves. The Cyriax release test may be used if a 'release phenomenon' is present. This technique completely unloads the neurovascular structures in the thoracic outlet before going to bed.



Encourage Diaphragmatic Breathing

The patient's breathing techniques need to be evaluated as the scalene and other accessory muscles often compensate to elevate the ribcage during inspiration. Encouraging diaphragmatic breathing will lessen the workload on already overused or tight scalenes and can possibly reduce symptoms.

How to do Diaphragmatic Breathing?

Sit comfortably, with your knees bent and your shoulders, head and neck relaxed.

Place one hand on your upper chest and the other just below your rib cage. This will allow you to feel your diaphragm move as you breathe. Breathe in slowly through your nose so that your stomach moves out against your hand. The hand on your chest should remain as still as possible. Tighten your stomach muscles, so that your stomach moves back in, as you exhale through pursed lips. The hand on your upper chest must remain as still as possible.



Physiotherapy Management:

Stage 1

Aim:

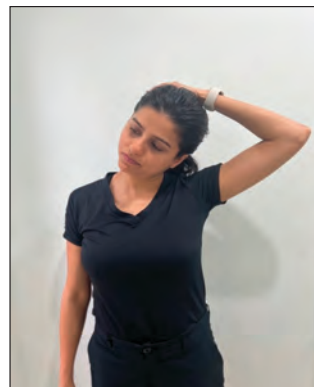
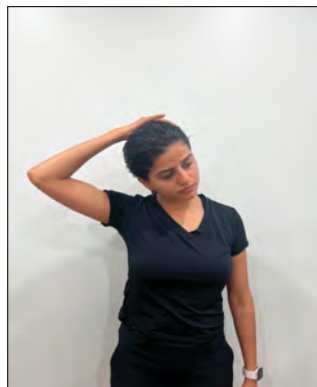
- Decrease patient's symptoms
- Improve posture
- Patient education
- To correct the patient's sleeping position

Exercises:

Posture correction exercises:

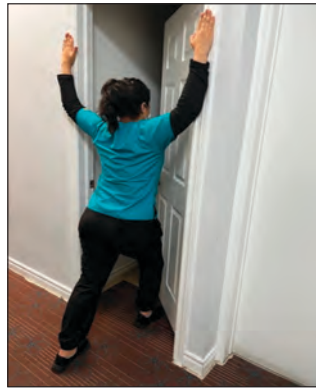
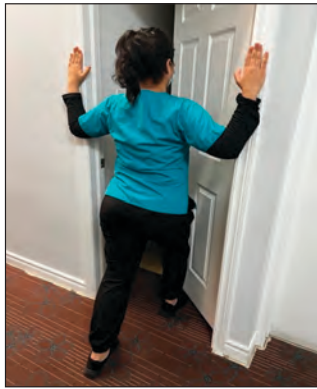
Neck stretch:

- Look straight ahead.
- Bend your right ear to your right shoulder, without looking down or looking up.
- Turn your chin down or up.
- Hold for 20 to 30 seconds.



Shoulder stretch:

- Start with your elbows or arms low or with your arms straight by your side.
- Lean your body weight forward until you feel a stretch in the front part of the shoulder or chest.
- Hold for 20 to 30 seconds.



Shoulder blade squeeze:

- Squeeze your shoulder blades together.
- As this exercise becomes easier, you can increase the number of squeezes. For example: Do 1 set of 10, 2 sets of 10, and 3 sets of 10.



Cyriax Release Maneuver:

- Elbows flexed to 90°
- Towels create a passive shoulder girdle elevation
- Supported spine and the head in neutral
- The position is held until peripheral symptoms are produced. The patient is encouraged to allow symptoms to occur if can be tolerated for up to 30 minutes, observing for a symptom to decrease as time passes.



The patient's breathing techniques need to be evaluated as the scalene and other accessory muscles often compensate to elevate the ribcage during inspiration. Encouraging diaphragmatic breathing will lessen the workload on already overused or tight scalene and can possibly reduce symptoms.

Scapular stabilization exercises:

Scapular Retraction (Shoulder Blade Squeezes):

- Relax head and neck.
- Stand with good posture and squeeze your shoulders back.
- Avoid shrugging shoulders. Keeps abs tight.
- Hold for 10 sec.
- Relax shoulder. Repeat 10 times.

Frequency: 1 set. Three times a day.

Goal: Increase strength of scapular stabilizing muscles.



External Rotation:

- Attach TheraBand to a stable object at waist level
- Roll shoulders back and down and maintain this position
- Place towel between elbow and side
- Slowly rotate hand AWAY from the abdomen
- Hold 3 sec. Repeat 12-15 times

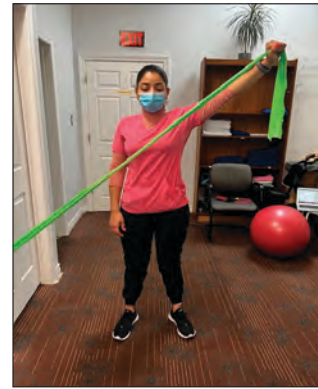
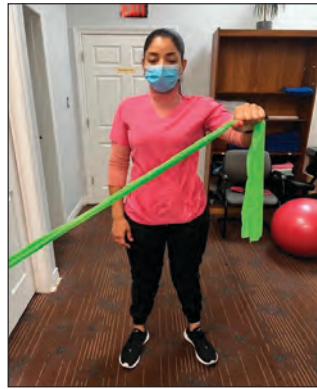


Frequency: 1 set. Three times a day.

Goal: Increase strength of scapular stabilizing muscles.

Shoulder Diagonals:

- Patient stands with TheraBand under their opposite foot
- While grasping TheraBand, bring your shoulders back and down With your hand at your opposite hip, slowly raise it up across your body, as if you are drawing a sword.
- Hold 3 seconds and repeat 12-15 times.

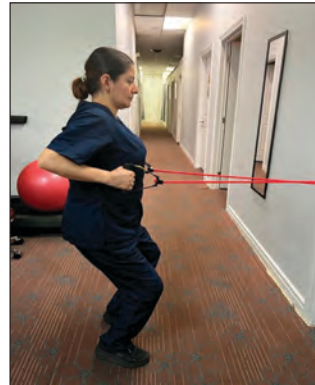
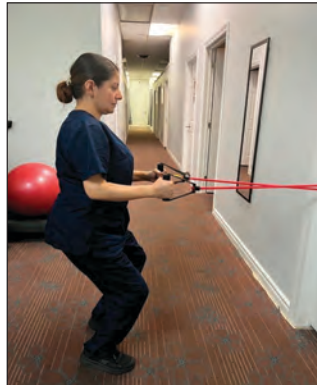


Frequency: 1 set. Three times a day.

Goal: Increase strength of rotator cuff muscles.

Horizontal Rows:

- Secure TheraBand around a stable object, like a pole
- Patient can either kneel or stand
- Grasp both ends of the TheraBand,
- Bring shoulders back and down
- Slowly pull elbows back, squeezing your shoulder blades together
- Hold 3 seconds and repeat 12-15 times.

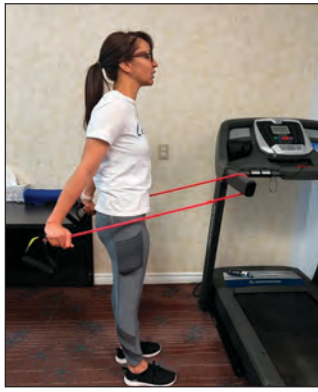
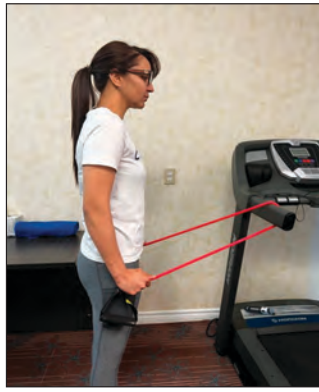


Frequency: 1 set. Three times a day.

Goal: Increase strength of rotator cuff muscles.

Shoulder Extension:

- Secure TheraBand around a stable object, like a pole
- The patient can either kneel or stand
- Grasp both ends of the TheraBand, bring shoulders back and down
- With arms extended, slowly pull hands straight down until even with your hips
- Hold 3 seconds and repeat 12-15 times.



Frequency: 1 set. Three times a day.

Goal: Increase strength of rotator cuff muscles.

Angel Wings:

- Stand with arms overhead
- Keeping elbows to the side, slowly lower arms
- Try to put your elbows into your back pockets
- Squeeze shoulder blades together
- Hold 10 sec. Repeat 10 times



Frequency: 3 sets. 1-2 times per day

Goal: Increase scapular strength

Note: If strengthening exercises become too easy, the repetitions should be increased until muscle

Active: Push with a plus:

- Start in a push-up position
- Hands shoulder-width apart
- Keep back and hips inline
- Push through your hands, keeping your elbows straight
- Return to starting position

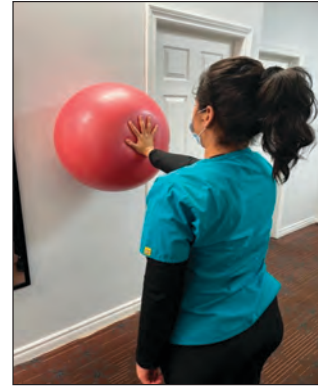
Frequency: 3 sets of 15 reps Three times per week

Goal: Improve shoulder strength/endurance



Physio ball Scapular Exercises:

- Stand with hand placed on physio ball against a wall
- Bring shoulders back and down
- Slowly roll your hand up and down over the ball
- Maintain shoulders back and down



Frequency: 3 sets of 15 reps Three times per week

Goal: Improve scapular strength

Physio ball Scapular Exercises:

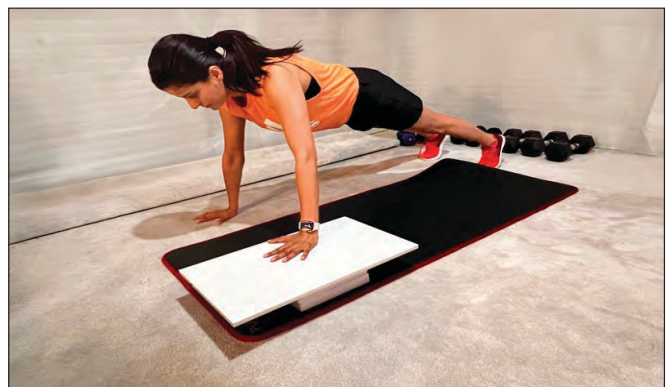
- Stand with hand placed on physio ball against a wall
- Bring shoulders back and down
- Slowly roll hand side to side over the ball
- Maintain shoulders back and down
- Same as above but move your hands left and right.

Frequency: 3 sets of 15 reps Three times per week

Goal: Improve scapular strength

Platform Walks:

- Start in a push-up position to the side of a short platform or aerobics step
- Slowly walk hands up onto the platform and off the other side
- Maintain push-up position



Frequency: 3 sets of 8-10 reps Three times per week

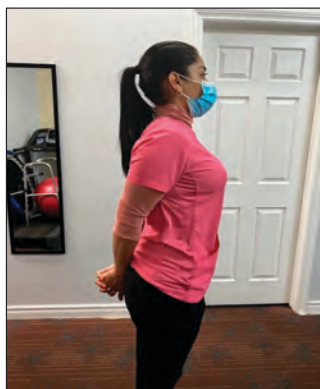
Goal: Improve scapular and shoulder strength

Exercises to Control the Humeral Head in Position:

Reverse shoulder stretch:

The reverse shoulder stretch is another move that opens up the chest and stretches the shoulders. It's also a great biceps stretch. It does require shoulder flexibility, so if you feel pain while trying to do this move, shorten the range of motion.

- Stand looking straight ahead, feet shoulder-width apart and arms by your sides.
- Clasp your hands behind your back with thumbs pointing towards the floor.
- Stand tall, open your chest and move your hands back and towards the ceiling. Stop when you feel a stretch in the shoulders and biceps muscles.
- Hold in this position for 20–30 seconds.
- Release the stretch and return hands to the starting position.
- Complete 2 sets, holding 20–30 seconds each, one to two times a day.



Prone I, T, Y:

The prone I, T, Y exercise helps strengthen the smaller stabilizing muscles in your shoulders and upper back.

- Lie on your stomach, forehead touching the ground, arms straight above your head with your hands in a thumbs-up position.
- Raise your arms as high as you can, pause, and then slowly lower them back down.



Prone “I”

- Now, move arms out into a “Y” position, raise them as high as you can, and then slowly lower them back down.



Prone “Y”

- Move arms out into a “T” position, raise them as high as you can, and then slowly lower them back down.



Prone “T”

- Now, move your hands into a “W” and raise them as high as you can, and then slowly lower them back down.



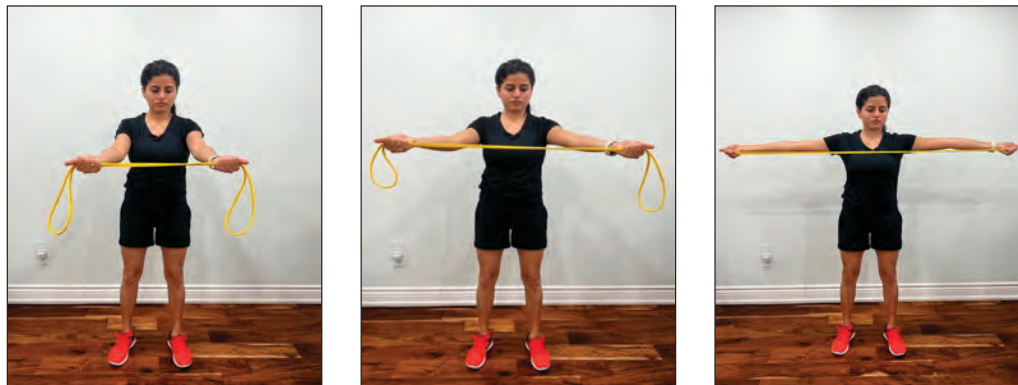
Prone “W”

- Complete 2 sets of 10 reps in each position, one to two times a day.

Band pull-apart:

The band pull-apart exercise opens up the chest and strengthens the muscles in your upper back and rear shoulders. You’ll need a resistance/exercise band — the level or strength of the band depends on your strength level.

- Stand upright with back straight, feet shoulder-width apart, and knees slightly bent.
- Hold the band with an overhand grip and your arms straight out in front of you.
- Slowly pull your hands apart by squeezing your shoulder blades together.
- Focus on the squeeze by imagining a small ball between your shoulder blades.
- Slowly return the band to the starting position.
- Complete 2 sets of 10–12 reps, one to two times a day.



Scapular wall slides:

Scapular wall slides help restore normal alignment of the scapula and improve flexibility in the shoulder muscles. They also train you to hold your shoulder blades back.

- Stand with your back against a wall, arms at your sides. Make sure your head, upper back, and glutes are in contact with the wall. Your feet will be slightly away from the wall.
- Raise your arms overhead and press them into the wall, palms will face out with knuckles touching the wall.
- Bend the elbows to 90 degrees, while keeping arms against the wall. This is the starting position.
- From this position, slowly slide your arms up the wall as high as you can go without your back, shoulders, elbows, or wrists coming off the wall.
- Pause at the top of the movement.
- Slowly lower your arms by sliding them down the wall to the starting position (elbows bent at 90 degrees). This movement is slow and controlled.
- Complete 2 sets of 10 reps, one to two times a day.



Exercises for Serratus Anterior Recruitment and Control:

Serratus Wall Slides:

Place your forearm and hands along a wall so that your elbows are bent, and hands point towards the ceiling. Next protract your shoulder blades and then slide your arms up the wall as shown in the picture. Then return to normal position and repeat 10 times. Hold for 2 seconds and complete 2 sets.



- **Plank (emphasizing protraction):** Start in a kneeling pushup with your hands shoulder distance apart. Push your hands into the ground and straighten your knees, pushing down into the balls of your feet to raise your body into a high plank position. Hold this position for 20 to 60 seconds, or if you can maintain proper form.



- **Straight arm plank (emphasizing protraction):** Start on all fours with wrists directly under shoulders, toes on the floor. Then, step one foot back and then the other as you engage your abs and straighten your legs. When you are raising one leg raise the opposite hand straight to engage your core more. You should form a straight line from shoulders to heels. Hold for 30 to 60 seconds.



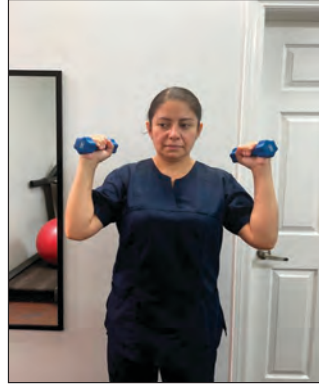
- **Incline shoulder raise:** Start on an incline bench. Using the muscles in your shoulders and back, slowly raise the dumbbells upwards and outwards until your arms are in line with your ears and they resemble the shape of a 'Y'. You should feel a small squeeze between your shoulder blades. Inhale. Gently lower the dumbbells to return to the starting position.



- **Flat shoulder raise**



- **Overhead shrug**



- **Push-up plus:** Start in a push-up position. Hands shoulder-width apart. Keep back and hips in line. Push through your hands, keeping your elbows straight. Return to starting position. Do 3 sets of 15 reps Three times per week.



- **Serratus anterior punch:** Start with raising a dumbbell towards the ceiling with elbows straight in line with shoulders. Now push more towards the ceiling as the shoulder protracts and comes in front, off of the floor.



- Dynamic hug



Stage 2

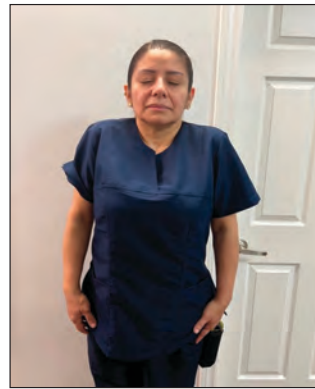
Aim:

- To relieve compression
- Reduce stiffness
- Restore the range of motion
- Activate scalene muscle

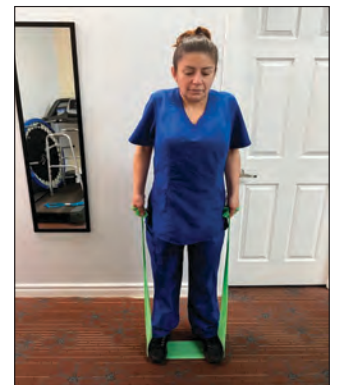
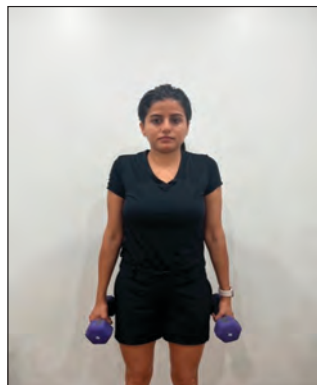
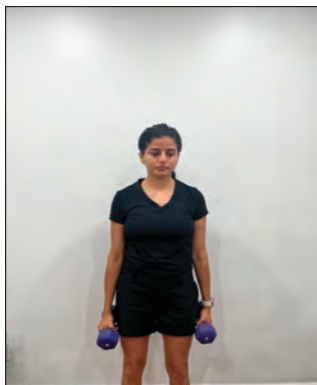
STRENGTHENING EXERCISES:

LEVATOR SCAPULAE

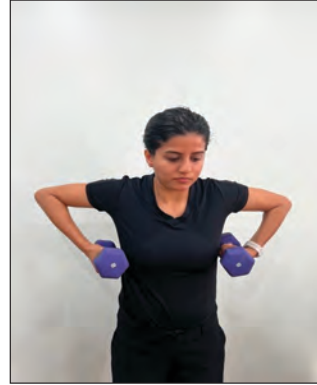
1.Shoulder Shrugs



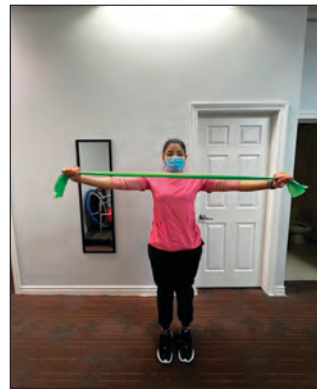
2.Resisted shoulder shrugs



3. Rowing



4. Horizontal abduction



4. Horizontal Abduction with External Rotation



5. Prone shoulder extension



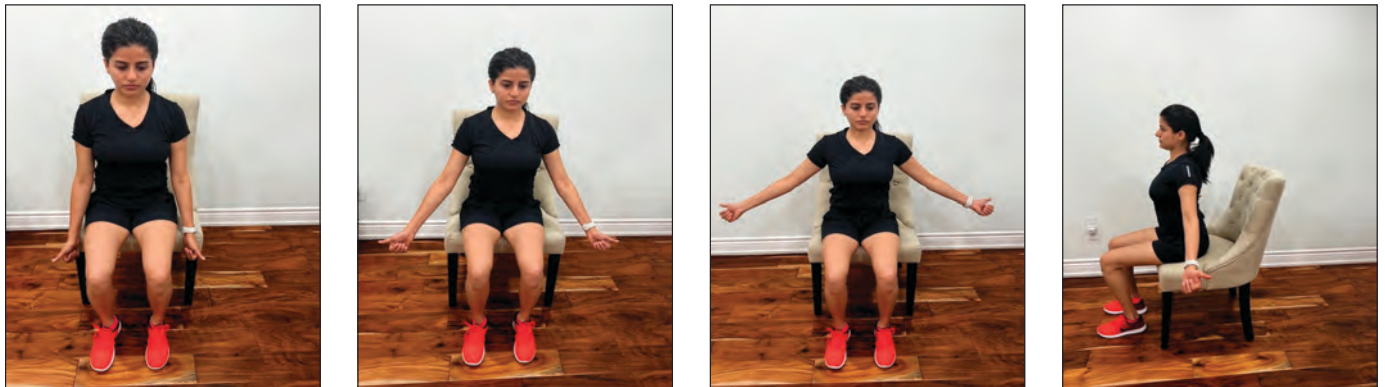
STERNOCLEIDOMASTOID

Wall angels: shoulders abducted, elbows extended, gradually brought back to sides, while retracting scapula.



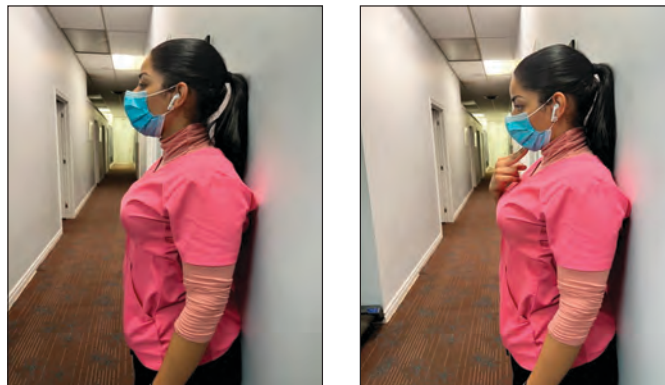
Bruegger exercise: Step1: Sit comfortably on a chair, back straight, chest up, head over the shoulders. Position hands at your sides palms facing inward.

Step 2: Press your shoulders down as if carrying heavy bags. Open fingers wide and rotate through the upper arm so the shoulders open, pointing your thumbs to the wall behind you. Release to neutral and repeat 10 times.



Chin tucks:

- Stand upright and look straight ahead with the ears directly over the shoulders.
- Place a finger on the chin.
- Without moving the finger, pull the chin and head straight back until a good stretch is felt at the base of the head and top of the neck.
- Hold for 5 seconds if possible.
- Bring the chin forward again to the finger.
- Repeat for a total of 10 times, or as tolerated.



Dead bug: Supine, knees, and hips bent, spine in a neutral position, maintain abdominal bracing as arms and legs for opposite ends are moved back and forth.



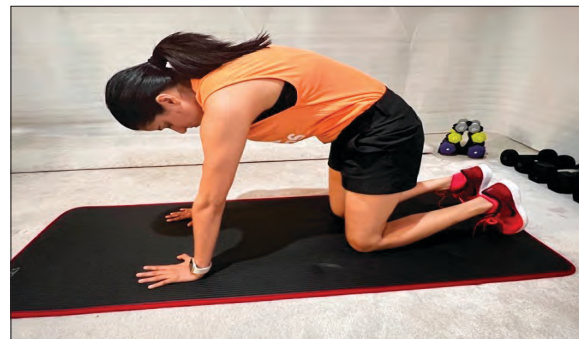
Quadruped: on hands and knees, spine in a neutral position, abdominal bracing, head neutral position, arms, and legs raised.



Upper back cat & camel: Come onto your hands and knees, making sure your hands are under your shoulders, your knees are under your hips and your back is in a neutral position.

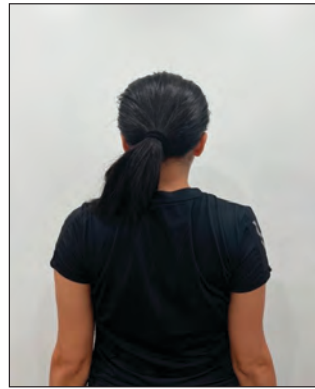
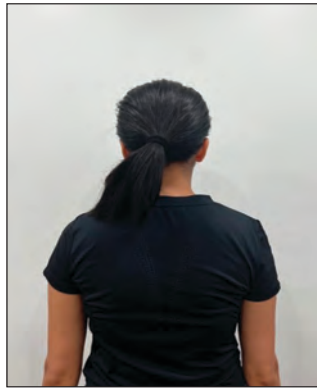
Cat: Sink your back down towards the floor and lift your head up at the same time, sticking your tailbone out to make a curve with your spine. Take a big breath out at the same time.

Camel: Tuck your head and tailbone in, arching through your spine as to mimic a camel hump. Take a big breath in at the same time.

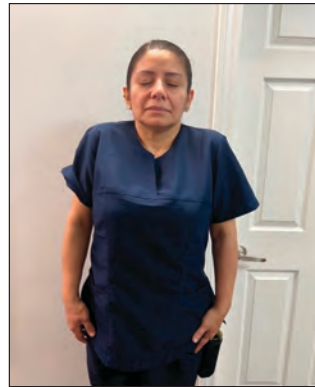


UPPER TRAPEZIUS: (This group of muscles opens the thoracic outlet by raising the shoulder girdle and opening the costoclavicular space)

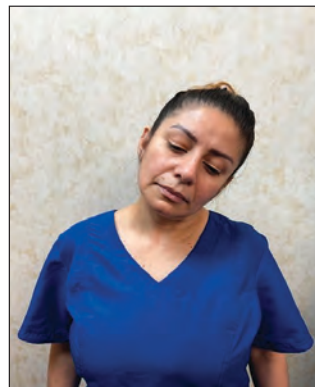
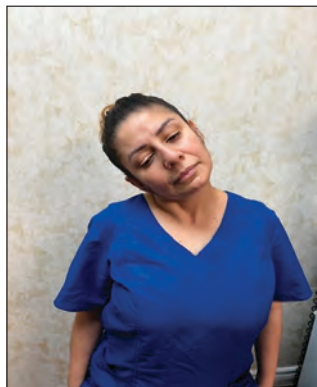
★ **Scapular Pinches:** Roll the shoulders back and pinch the shoulder blades together.



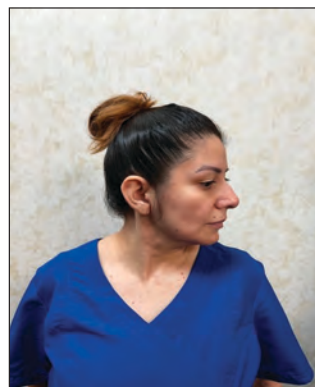
★ **Shoulder Shrugs:** Raise the shoulders up toward the ears, then lower them back down.



★ **Neck Side-Bending:** Tilt one ear toward the shoulder and hold briefly. Repeat on the opposite side.

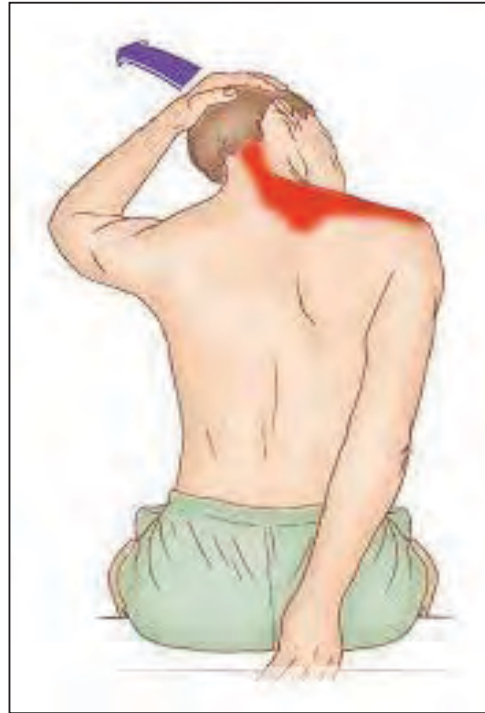


★ **Neck Rotation:** Look over one shoulder and pause briefly. Repeat on the opposite side.



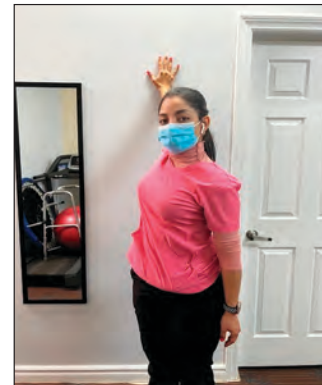
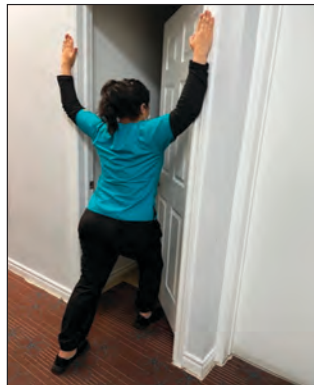
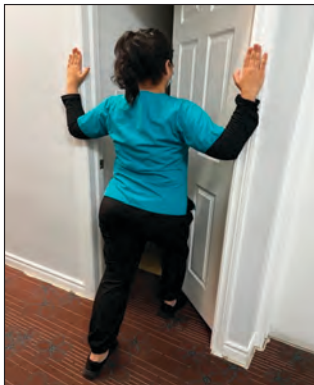
If you feel tight or sore in the upper trapezius after any of the above movement-oriented exercises, perform 1–3 reps of the following static stretch below, holding each rep for 30 seconds.

- ★ **Neck Side-Bending Rotation Stretch:** In a standing or seated position, place the right hand on top of the head and let the left armrest at the side. Gently pull the head toward the right shoulder with the right hand. Rotate the head down and look at the right hip. The stretch should be felt on the left side of the neck/shoulder area. Repeat on the opposite side.

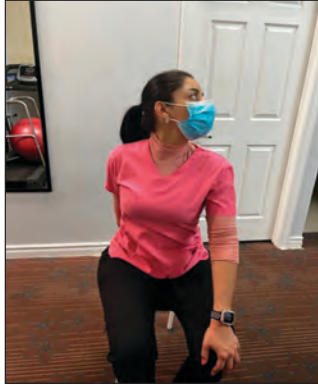


- **Stretching**

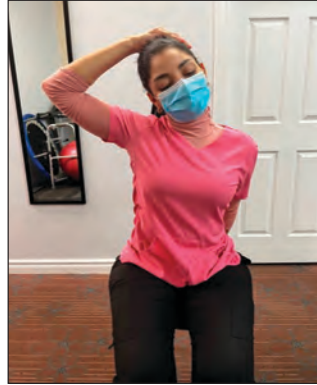
- ★ **Pectoralis Stretch**



★ **Scalene muscles** (These muscles close the thoracic outlet)



1. *Anterior Scalene*



2. *Middle Scalene*



3. *Posterior Scalene*

• **Postural correction exercises:**

★ **Scapular stabilization exercises:**

★ **Exercises to Control the Humeral Head in Position:**

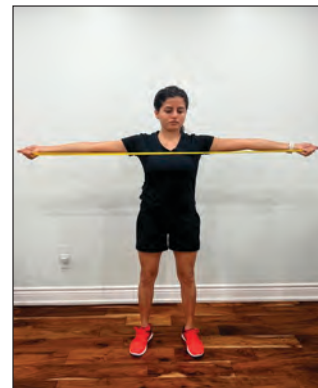
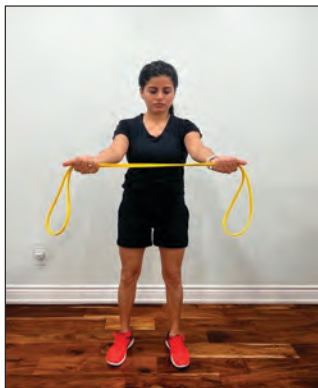
Scapular stabilization exercises:

Band pull-aparts

Stand holding a long band with both hands, about shoulder-width apart. There should be no tension in the band.

Pull band apart with both arms to sides as wide as possible, keeping them about shoulder height.

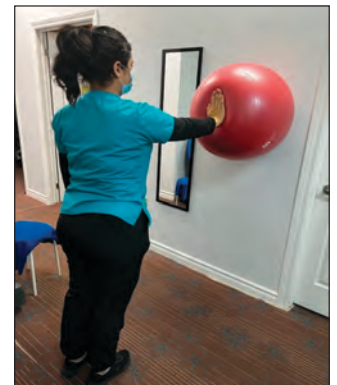
Slowly allow arms to come back together, controlling the pull of the band until hands return to starting position. Repeat. Do 2 to 3 sets of 15 to 20 repetitions with a light band.



Wall ball circles

Stand facing a flat wall and holding medicine ball in front of you, feet shoulder-width apart.

Press medicine ball up against the wall with one hand, flat palm about shoulder height off the ground. Don't let the ball drop. Using your palm only, roll the ball around in small circles both clockwise and counterclockwise. Do 2 to 3 sets and 12 to 15 repetitions on each arm in each direction.



Advanced stability ball pushups

Start in a pushup position with hands centered on a stability ball and feet about hip-width apart.

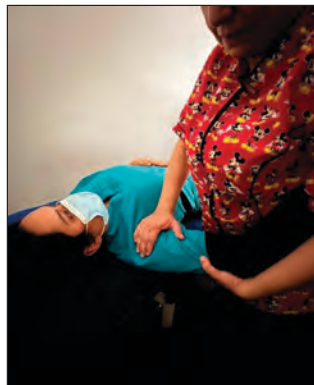
Keeping your core tight, inhale and lower yourself down to touch chest to ball.

On an exhale, stabilize the stability ball and press back to the starting position. Do 2 sets of 10 repetitions at body weight.



- Aerobic exercises in a daily home exercise program
- Repositioning of the shoulder girdle
- GH mobilization:

Posterior Glenohumeral Glide with Arm Flexion: The patient is supine. The mobilization hand contacts the proximal humerus avoiding the coracoid process. The force is directed posterolateral (direction of thumb).



Anterior Glenohumeral Glide with Arm Scaption: The patient is prone. The mobilization hand contacts the proximal humerus avoiding the acromion process. The force is directed anteromedially.



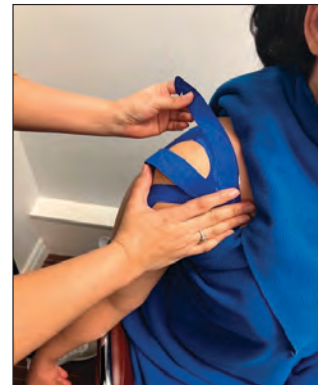
Inferior Glenohumeral Glide: The patient is supine. The stabilizing hand holds the proximal humerus, the humerus distal to the lateral acromion process. The mobilization hand contacts the axillary border of the scapula. Mobilize the scapula in a craniomedial direction along the ribcage.



Taping: Kinesiology tape is constructed of fine, breathable, stretchable material, usually cotton or a cotton blend. Its elasticity does not overly restrict the area of application, and it is designed to provide just enough pressure and support to facilitate strength in the muscles and tissues.

This tape adheres to the skin with a medically approved, water- and sweat-proof adhesive. It comes in latex-free and hypoallergenic varieties for people who may be allergic to latex. The tape can usually stay in place for three or four days even while showering or exercising.

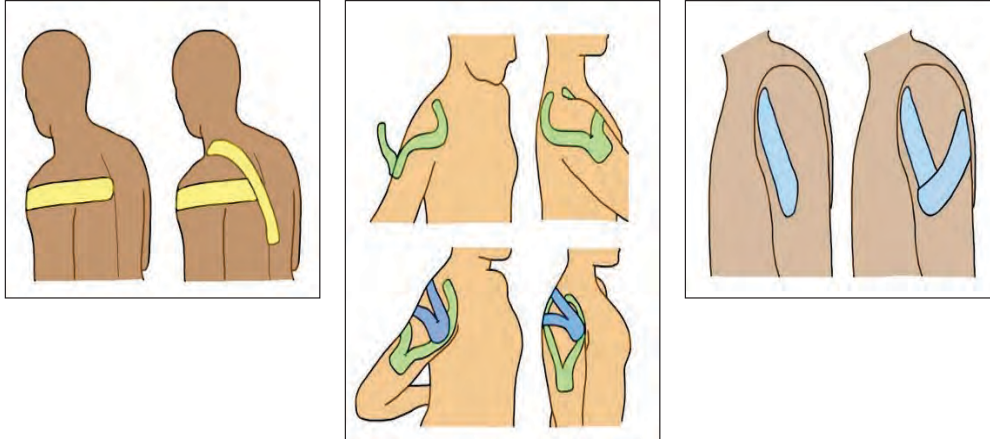
Positive results are reported to be felt within 24 hours for many users of kinesiology tape.



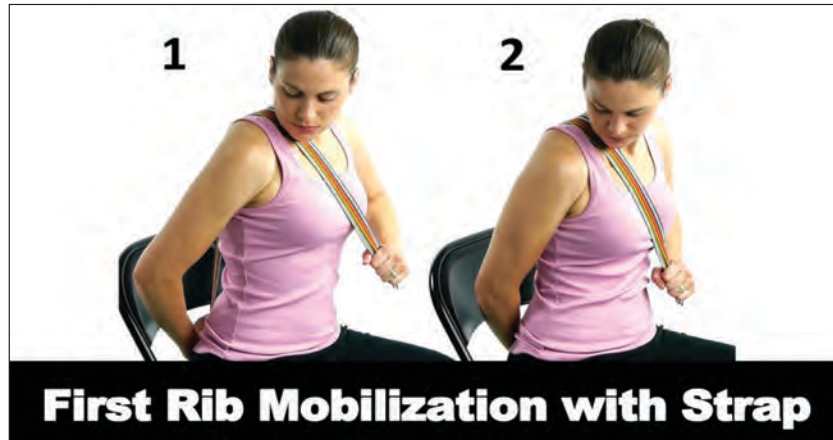
Benefits:

- Create Spaces in Joints
- Stimulate Bruise and Contusion Recovery
- Prevent and Relieve Muscle Spasms and Cramping
- Accelerate Muscle Recovery
- Guarantee Comfort
- Reduce Risk of Injury
- Move Freely

- Improve Muscle Tone and Strength



- **First rib mobilization:** Patient seated. A thin sheet strap is positioned around the first rib. Pull strap towards the opposite hip. Neck retracted contralateral lateral flexion and ipsilateral rotation. The ipsilateral head rotation emphasizes scalene stretch contralateral rotation emphasizes rib mobilization.



Massage Therapy:

Massage therapy is an excellent addition to most treatment plans for Thoracic Outlet Syndrome. The compression caused by the scalenes can be decreased by relieving those muscles of tension through direct massage. If the compression is costoclavicular, massage can also help to increase the space between the collar bone and the first rib. Along with stretching and some strategic mobilizations, mild cases of TOS can be treated by a massage therapist. The therapist will massage throughout the entire neck, shoulders, back, and arms in order to alleviate any associated tension, decrease problematic holding patterns, and otherwise treat contributing issues within those areas.

It's important to communicate throughout the session with your massage therapist. The therapist will need to know if certain movements or pressure in specific areas either relieves your symptoms or makes them worse as they go forward.

The protocol:

FIND THE FOCUS AREA: Begin by placing your hands on either side of the patient's spine, observing their breath, ask them to take a nice, deep breath.

Doing this will allow you to get a feel for which side of their body is holding most of the tension.

Try working the side by applying petrissage, light compressions, and some gentle jostling of the shoulder and arm. Begin with no more than a medium level of pressure.

Then work the opposite side applying the same opening techniques.



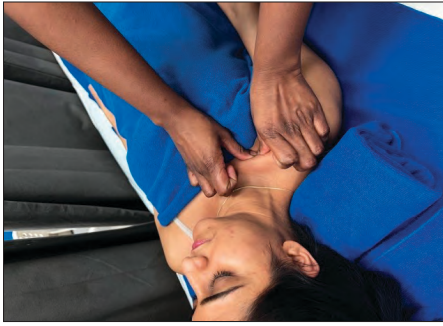
LOCATE BRACHIAL PLEXUS AND TRAPEZIUS

After that warm-up, locate the brachial plexus. It will be located close to the back of the neck and will attach just by the collar bone and near the scalene.

With supportive thumbs, pick up the trapezius muscle, while placing your fingers on the area near the client's collar bone.

Warm the traps and lateral neck using bilateral petrissage, slowly, allowing the tissue to "melt" under your fingers. Follow by spreading the chest and neck fascia, going slowly enough to allow the nervous system to acclimate to the new stimuli. Address the scalenes, superior and inferior aspects of the clavicle, and the general area of pectoralis minor.

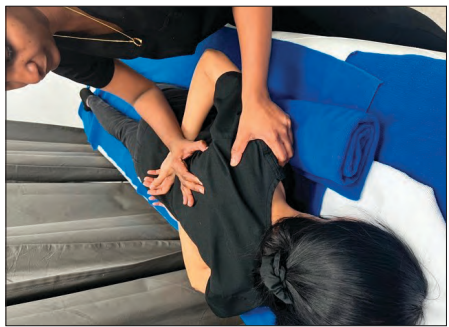
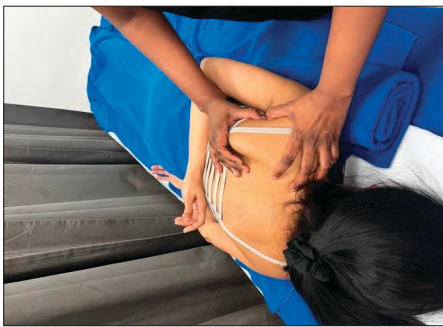






APPLY TRACTION TO THE SHOULDER JOINT

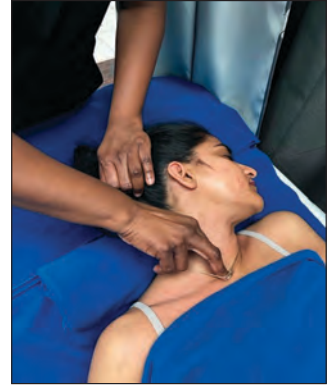
Bring their arm out and apply a traction to the shoulder joint, by pinning near the bottom of the scapula, and cupping the deltoid from the front. Try mobilizing the shoulder joint itself, as well as the tissues as they proceed distally down the arm.





FINISH WITH SCM WORK

End with some massage on their neck. Pinning techniques are particular effective here too. Ask the patient to make a fist with their hand while squeezing their inner bicep towards their pec. Then pin the top of their trap muscle with your forearm and ask them to lean their ear towards their opposite shoulder.





Self-Massage:

Start with sitting nice and tall and take nice and deep breath in and exhale through the mouth. Take a soft fist and put it right under the ear go in with your knuckle gently and your pressure will be in downward direction. Work your way down and you can add some active movements by flexing your neck laterally towards the opposite side and come back up. This is myofascial release. Keep on repeating this until you feel some kind of release.

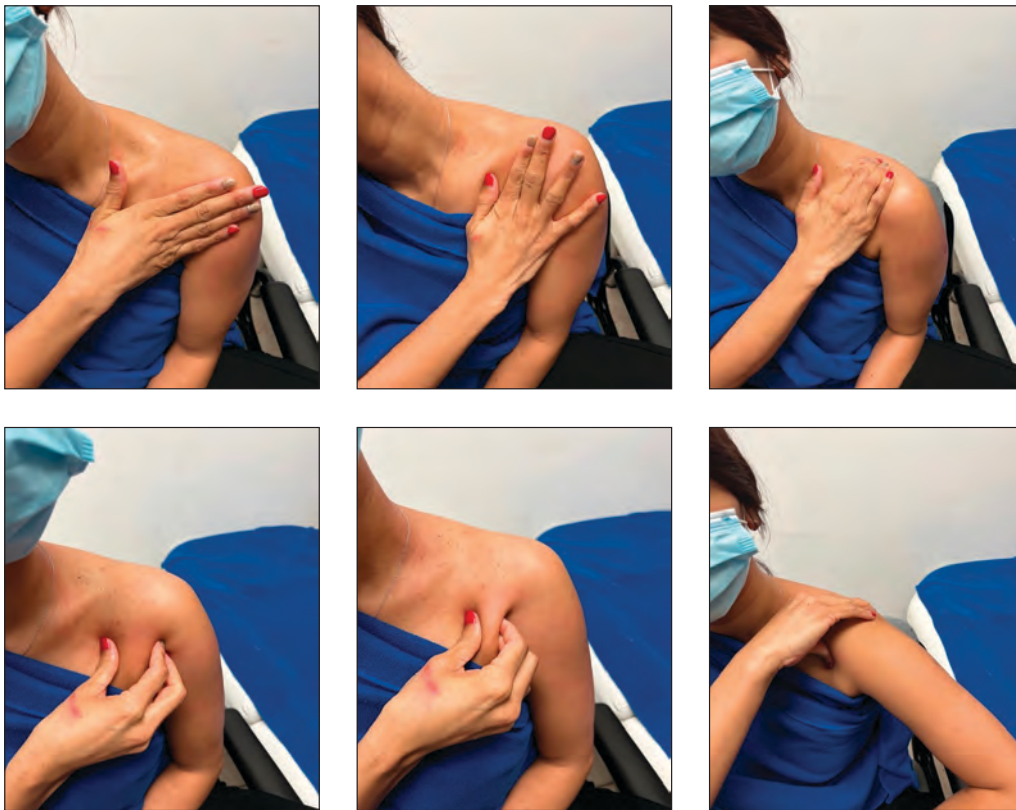
Now we are going to focus on the upper trapezius by grasping it with your forefingers and thumb, grab that big chunk of soft tissue on the top part of your shoulder and squeeze. Hold the squeeze for some time and take deep breaths if you want to add some active movements by flexing your neck to the opposite side and come back up and relax.



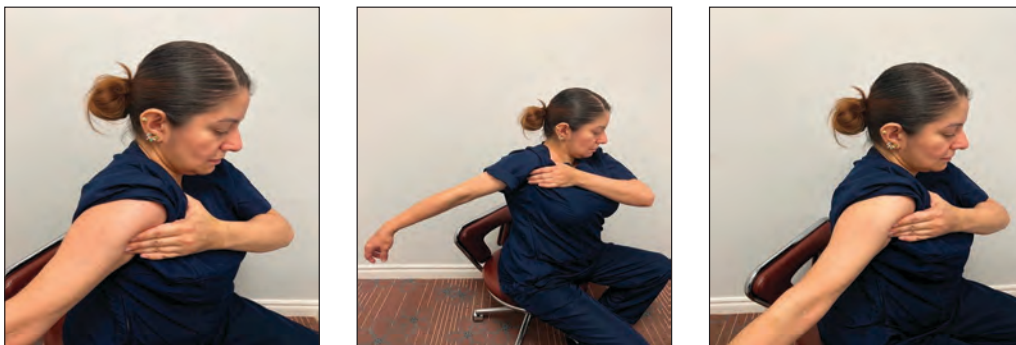
After finishing with traps move on to Sternocleidomastoid (SCM) which is the big muscle present in front of your neck when you rotate your neck to the opposite side. Grab that muscle with your lateral surface of your index finger and your thumb and squeeze gently. You can also massage it with your thumb in small circles. Again, grab the muscle and do some slow rotations like saying “NO” with your head.



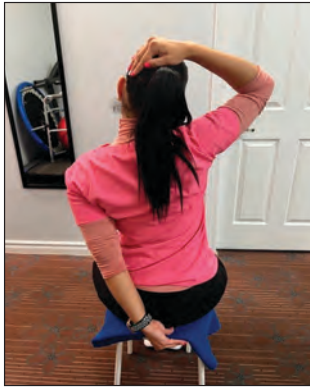
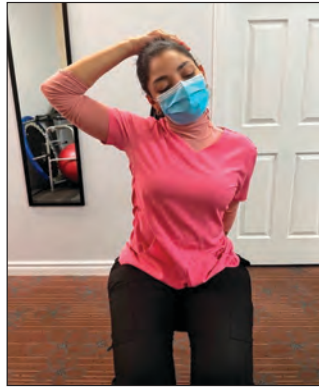
Target the pecs now, from your breastbone in the center try to locate the soft tissue with your fingers and push it outwards towards your shoulder. Nice and slow myofascial release. Just let your arm dangle by your side when you do this and breathe deeply. It opens your chest and feels really good. Do it again in the same motion slowly and gradually.



Now locate your pectoralis minor which is deep inside your pec major under your armpit. Go under your armpit with your four fingers and grab the chunk of soft tissue with your fingers and thumb and squeeze. If you feel tender release your pressure and while squeezing do slow circles with your arm. Do it for 5-10 circles depending upon how you feel and then relax.



Now, grab the chair with your hands on the side you are working and flex your neck slowly to the opposite shoulder to stretch the neck muscles. Take in deep breaths and relax and come back to normal position.



Some of the essential oils that are good for TOS:

1. Eucalyptus essential oil:

It might remind you of vapor rub, but it has a cooling effect that helps to relieve soreness in joints, like chronically inflamed shoulders.



2. Lavender essential oil

It is very soothing, it acts as a mild sedative, working to calm the nervous system.

When applied to the tendonitis in your shoulder, it helps to relieve the pain directly by calming the nerves.



3. Peppermint essential oil

It might be confused with wintergreen but is a different species of mint that can help relieve the pain and inflammation associated with shoulder injuries. Peppermint oil helps to cool those inflamed tissues, reducing the pain.

4. Rosemary essential oil

It has anti-inflammatory and analgesic properties to quiet your angry shoulder.

It's even said to be more effective than acetaminophen in reducing the pain in your inflamed shoulder.



5. Wintergreen essential oil:

It helps to reduce both pain and inflammation. You can simply apply it topically to the affected shoulder. Use caution, as you don't want to get wintergreen in your eyes. It will burn. The active molecule in wintergreen essential oil is closely related to over-the-counter anti-inflammatory medications.



Castor Oil. Castor oil is one of the effective natural remedies for rotator cuff tears that works wonders. The active compound in castor oil, ricinoleic acid has been found to impose beneficial anti-inflammatory and pain-reducing properties which help in overcoming the problems associated with this condition.



Turmeric. Turmeric is yet another one of the amazing natural remedies that do work. The primary reason behind the same is that turmeric is loaded with beneficial anti-inflammatory properties which have beneficial impacts on faster and better recovery of the inflammation and the pain that one is enduring.



Epsom salt. Epsom salt is yet another effective remedy for the TOS that provides beneficial impacts. The primary reason is the presence of the magnesium sulfate in it which imposes beneficial impacts in helping with the inflammation and even getting rid of the pain that one often tends to experience.



Food & Nutrition

Healthy diet cannot get rid of the symptoms of TOS, but it can help in reducing & controlling the pain in many ways.

- If you're overweight, your doctor may recommend a weight-loss program or specific diet to help relieve symptoms.
- Maintaining a healthy weight is important for reducing pressure on the joints.
- Remove inflammatory foods from your diet, including those with added sugar, processed oils, refined carbohydrates, artificial ingredients and chemicals, alcohol and even caffeine.



- Instead fill up on anti-inflammatory foods like green leafy vegetables, berries, wild-caught salmon and bone broth, nuts and seeds, good quality organic meats, fresh vegetables and spices, herbs & Omega 3 fatty acids.



- Avoid very hot or cold temperatures that might worsen symptoms like tingling and color changes in your hands.
- Quit smoking and avoid consuming too much alcohol.



It's important to address the root causes of any nerve pain, but most importantly, optimize your nutrition so that you can improve your nerve health.

Here are 10 different nutrients that you can consume through foods or supplementation that can optimize your nerve health.

1. Vitamin B12

This is important for the myelin sheath, which is surrounding the nerve. It's been shown that even high doses of vitamin B12 can potentially repair damaged nerves. Good sources of vitamin B12 are yogurt, fatty fish such as salmon, cod, and sardines.



2. Vitamin B6

We need vitamin B6 to be able to absorb vitamin B12. Rather than supplementing with B6, which can potentially cause damage to the nerves, you can get this through your foods. Good sources of vitamin B6 are tuna, salmon, chicken, and spinach.



3. Vitamin B1

This is important for our muscular system and nervous system. It also converts carbohydrates to energy in the form of ATP which is our energy source. This is something that we only get a small fraction of through the metabolism of it so this is something you could supplement with, in addition to getting it from foods. Good sources of vitamin B1 are navy beans, other forms of beans, green peas, and sunflower seeds.



4. Vitamin B2

This is necessary for the absorption of B6 and B12. Good sources of vitamin B2 are soybeans, spinach, almonds, and asparagus.



5. Antioxidants

This can be powerful to optimize the myelin sheath and prevent any damage to the nerve. Good sources of antioxidants are berries such as blueberries, blackberries, or raspberries, dark leafy greens, fatty fish, and walnuts.



6. Ginger

This can be a powerful anti-inflammatory agent. Try using a couple of teaspoons in hot water or you can incorporate it into salads, soups, and stews. It is very helpful for nerve inflammation and pain.



7. Omega 3

This is important in repairing the myelin sheath that the nerve is wrapped in. Good sources of Omega 3 are fatty fish, walnuts, and flaxseeds.



8. Water

We are made up of 70% water. All of our nerves, bones, ligaments, and connective tissue is inside of our lymphatic system which essentially is water. We want to make sure that we are well hydrated so that our nerves can function at their peak.



9. & 10. Magnesium and Potassium

Magnesium helps the nervous system to relax where potassium is helping to transmit those signals or messages efficiently. Good sources of potassium and magnesium are pumpkin seeds, quinoa, and fresh fruit.



Dr. Mahmoud Sous – Ph.D.

During the period of 1995-1999, I went to the medical school in Poland to research about the various methods of back pain treatment. After finishing my PhD, I took variety of courses including naturopath, acupuncture, and manual techniques. This gave me an idea that exercises, and massage could be helpful in treatment of chronic pain. But my findings didn't stop me here, I also worked as a naturopath practitioner in Canada where I got familiar about treatments with Chinese medicines, osteopath techniques and some other manual therapies which helps in pain management.

Fixing injuries requires an understanding of anatomy and biomechanics. That is why my research and treatment belong to the holistic approach of using different techniques and remedies for the treatment of back pain. In 1990, I realize that there are some complex spinal aspects and issues which leads to of back pain. So, from my case studies I formulated a guideline which is clear and easy to understand and will fix your issues.

My goal is to help people visualize how the body functions and what happens inside when you experience pain. Healing requires to focus on one's action because pain results due to faulty actions and movements. This thought motivated me to work on a book which will include all home remedies where people can treat themselves to fix their pain. I have included knowledge based on my clinical research using manual massage therapy, food habits, nutrition facts, heat, sauna, hydrotherapy, cold water treatments which overall helps in pain management. It gives me pleasure to introduce this book to the community where I have shared all my experienced treatment plans.



Priyanka Yadav (Physiotherapist)

I started my career in 2011, since then I have worked as a Physiotherapist in several clinics and hospitals in India. Working mostly in the Outpatient department made me realize that Physio's role is extremely crucial in the rehabilitation and recovery process of a patient. My desire to reach out to more people motivated me to work for this book. Have worked with Dr. Mahmoud on several research books on self-pain management. We have been constantly working on curating the best suited protocol for various Musculoskeletal conditions. Additionally, we have also included approaches with alternative medicine.

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