The Surfer’s Shoulder

Dr. Aimee Perreira, MD
University of Hawaii, Department of Orthopaedic Surgery

Dr. David Rovinsky, MD, FACS, FAAOS
Bone and Joint Center, Kauai Medical Clinic

Gregory F. Kolber, MBA
# Table of Contents

I. Basic Anatomy...............................................................................................................3
II. Prevention of Injury.......................................................................................................3
III. Common Problems
   A. Instability............................................................................................................3
   B. Impingement Syndrome....................................................................................4
   C. Rotator Cuff Tears.............................................................................................6
   D. AC Joint Separations.........................................................................................8
   E. AC Joint Arthritis...............................................................................................9
   F. Adhesive Capsulitis..........................................................................................11
   G. Clavicle Fractures...........................................................................................12
IV. Physical Therapy Exercises
   A. Range of Motion.............................................................................................13
   B. Shoulder stretches..........................................................................................14
   C. Rotator cuff strengthening..............................................................................19
   D. Special exercises for instability.......................................................................20
V. References.................................................................................................................24
VI. Recommended Articles.............................................................................................24
I. Basic Anatomy
The shoulder is a ball and socket joint with a huge range of motion. The size of the ball is very large relative to the size of the socket – like a golf ball on a tee. It is the muscles around the shoulder – the rotator cuff – that help keep the shoulder in the socket. In order for the ball to remain in the center of the socket throughout the full range of motion, all of the rotator cuff muscles must fire in a coordinated fashion with equal strength. If the rotator cuff muscles are out of balance, then the ball will glide around the socket and not stay centered during range of motion – this can be painful.

II. Prevention of Injury
The best thing you can do to prevent injury is to keep your shoulders loose and strong. Stretching the shoulders regularly will help maintain a full range of motion. Doing regular rotator cuff strengthening exercises 3 times per week will also help to prevent injury. Sample exercises are illustrated below. Finally, for surfers over 40, it is important to listen to your body. There is a difference in the pain we feel from muscle soreness and from our joints. Respect the signals from your shoulder joint! It is important to rest and stretch the shoulder as needed to maintain shoulder health – especially if you want to keep surfing for life. Do not neglect shoulder pain that persists more than 2 months. You may have a shoulder problem that needs care from a medical professional.

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the

III. Common Problems

A. Instability
The freedom of motion of the shoulder joint comes at a price – more freedom means less inherent stability. The most common problem for younger surfers is a dislocated shoulder. Typically this happens when the arm is twisted up and back and the shoulder comes out the front. The sooner the shoulder is put back into the joint, the easier it is to do.

One common method is to have another surfer place their bare foot into the armpit of the injured surfer. the next step is to grab the
injured arm around the wrist and pull gently but firmly. This will cause some pain initially, but once the ball glides back into the socket, there will be a sense of tremendous relief.

For younger surfers, the most common associated injury is a torn labrum. The labrum (Latin for lip) is a rim of cartilage that surrounds the cup (glenoid) and adds stability to the joint. Dislocating the shoulder will rip a section of the labrum off of the glenoid. The ball (humeral head) may rebound back into the edge of the glenoid and create a dent in the humeral head bone – this is known as a hill-sachs lesion.

Initial treatment for shoulder dislocation is immobilization in a sling or shoulder immobilizer. After the pain settles down, then physical therapy exercises to regain range of motion and strengthen the rotator cuff are begun. Surfing should not resume until the shoulder has full range of motion without pain and the rotator cuff muscles have recovered their strength. Typically, this takes 2-3 months of hard work with physical therapy.

In younger surfers, even after healing and rehabilitation of the rotator cuff it is not unusual to have another dislocation. If a patient has multiple dislocations, then surgery is recommended. Surgery can be done open or arthroscopically and the type of surgery depends on the pathology. Usually the torn labrum needs to be repaired. Occasionally if there are multiple dislocations, a repair or imbrication of the shoulder capsule is necessary. Return to surfing may take 3-6 months.

In older surfers (over age 50), a shoulder dislocation may be accompanied by a rotator cuff tear. Initial treatment is typically physical therapy, but surgery is often necessary to restore full function.

B. Impingement Syndrome
Impingement Syndrome occurs when there is abnormal contact between the rotator cuff muscles and the roof of the shoulder (acromion). Normally, a sac of tissue (bursa) sits on top of the rotator cuff, allowing the muscles to glide smoothly as the shoulder moves in different directions. When the arm is raised, the space between the rotator cuff and acromion becomes smaller. There is usually enough room in the shoulder joint for this to occur without pain. With repetitive
paddling or overhead motion, irritation and damage to the rotator cuff can occur and the bursa can swell. This decreases the space in the shoulder and compresses the rotator cuff muscles, causing pain.

A subtype of impingement that can be seen in young surfers is called internal impingement. This occurs as a result of imbalanced forces in the shoulder capsule, which is a fibrous structure connected to the labrum that surrounds the joint. In some people, the front area of the capsule is loose, or unstable, and the back part is excessively tight. This results in an imbalance of forces across the joint, especially with overhead activities like paddling. Abnormal contact between the rotator cuff muscles and the back part of the capsule occurs, damaging the rotator cuff, capsule, and labrum and ultimately causing pain.

Surfers with impingement syndrome will usually notice a slow onset of shoulder pain that is worse with paddling. Pain due to impingement with the acromion is often felt in the front of the shoulder and is worse when the arm is raised in front of the body. Pain due to internal impingement is usually felt in the back of the shoulder and worse when the arm is brought back and over.

Most of the time, impingement syndrome will get better with rest, stretching, and strengthening exercises. Treatment focuses on stretching the back part of the capsule to loosen it up and strengthening the rotator cuff and shoulder blade muscles to increase stability and balance out forces (see exercises below). Rest from repetitive overhead activities, such as paddling, is a key component of initial treatment. It is important to avoid aggravating factors which can cause further damage and injury, like rotator cuff tears. During this period of rest, it is important to stretch regularly to prevent the shoulder from getting stiff.

Medications like ibuprofen can help decrease the pain due to inflammation. Alternating heat and ice therapy can also provide some relief. Occasionally, a steroid injection into the joint can be done to decrease inflammation and persistent pain. Strengthening exercises are started once the initial period of pain gets better, usually after 1-2 weeks of rest and stretching. Surfing can be resumed once pain is absent and shoulder motion and strength have been regained, usually after 4-6 weeks.

Most of the time, pain will resolve with dedicated stretching and strengthening. Occasionally, surgery is recommended to remove the tissue irritating the rotator cuff and to make more space by shaving off part of the acromion. This can be done with an open incision or with an arthroscope. Outcome is favorable about 90% of the time.
Rehabilitation after surgery includes the same stretching and strengthening exercises, and surfing can usually be resumed after 2-3 months.

C. Rotator Cuff Tears – Full Thickness and Partial Thickness

Surfers place tremendous demands on their rotator cuff and are especially at risk for cuff tears. The rotator cuff is made of 4 muscles that work together to provide stability and motion to the shoulder joint. These muscles become tendons that attach to the bones of the shoulder joint - the shoulder blade (scapula) and the humerus. The muscles move the bones by pulling on the tendons and this allows smooth movement of the shoulder. Injury to any 1 of the 4 tendons will cause weakness, abnormal movement, and pain.

Rotator cuff injury is a continuum beginning with impingement and progressing to a cuff tear. The cuff tendons have areas of low blood supply, making healing more difficult after injury. As a result, the tendons degenerate with time. This is why most tears occur in late middle age. Repetitive trauma from overuse and excessive overhead activity can accelerate the process. Older surfers may have shoulder problems for some time, and a specific injury or load will tear the tendon. After the injury, shoulder weakness occurs and it can be difficult to raise the arm.

Rotator cuff tears can also occur after excessive force or acute trauma, such as a fall or shoulder dislocation. This occurs more commonly in younger surfers and is associated with sudden pain and weakness. Pain from rotator cuff tears is usually worse with overhead activities and with reaching behind the back. Most people cannot sleep on their affected side due to pain. The severity of weakness depends on how much of the tendon is torn. A partial tear can cause mild weakness. A complete tear may make it impossible for the person to lift their arm, but someone else will be able bring their arm through a normal range of motion for them. In general, the greater the tear, the more weakness it causes.

A rotator cuff tear can be seen on an MRI, which creates pictures of the shoulder in slices and shows tendons and muscle well. Sometimes it can reveal how large the tear is and where it is located within the
tendon. Although it is expensive, this test is usually ordered because it helps identify the problem and guides treatment.

Initial treatment focuses on decreasing pain and inflammation. This includes rest, anti-inflammatory medications like ibuprofen or aspirin, heat and ice therapy, and range of motion exercises. If pain is severe, a steroid injection can be given, but this can also affect the ability of the tendon to heal and is used with caution. Later, exercises that strengthen the rotator cuff and scapula stabilizers will be started to improve control of the shoulder joint and retrain the muscles to coordinate movement.

Definitive treatment depends on age, activity level, how large the tear is, and how long ago it occurred. Small, partial tears are usually given a period of rest to allow the cuff to heal on its own. If pain and weakness persist after 6-8 weeks, surgery is an option. Tears involving 25-50% of the tendon are usually treated with arthroscopic or open debridement and repair of the tendon. If it is >50%, the tear is usually completed during surgery and then the tendon is repaired as a unit. A complete tear, where the tendon ruptures from the bone, will not heal on its own and surgery is almost always recommended. Exceptions include elderly patients and chronic, old tears. Surgical repair is not usually successful in these groups due to poor tendon quality and blood supply.
After surgery, rehabilitation can be a slow process, and full recovery can take up to 6 months. Physical therapy is used for the first 2-3 months and starts with gentle range of motion and passive movements (where someone moves your arm for you). Too much too soon can lead to re-tearing the tendon and need for another operation. Active movements (where you use your muscles to move your arm) usually start 3-4 weeks after surgery. After about 6 weeks, strengthening exercises with light weights can be started. Exercises focus on improving the strength and control of the rotator cuff and shoulder blade muscles to help the shoulder move smoothly and keep the ball of the humerus firmly in the socket (see program below). Surfing is not usually allowed until 3 months after surgery once the muscles and tendons have had time to recover.

D. Acromioclavicular Joint Separations

A shoulder separation is a relatively common injury in surfers and occurs in the acromioclavicular joint, which is where the shoulder blade and the collarbone connect. The AC ligament hold these bones together. Two other ligaments, the coracoclavicular ligaments, hold the clavicle down by attaching it to a bony knob on the scapula called the coracoid process.

The most common mechanism of injury is a fall directly onto the shoulder. AC separations are graded from mild (grade I) to severe (grade III). The grade depends on which ligaments are damaged. A grade I injury is a sprain, or stretch, of the AC ligament. There is usually only mild pain and tenderness over the AC joint, but no gross deformities. A grade II separation is a tear of the AC ligament and a sprain of the coraclavicular ligament. There is usually intense pain and swelling over the AC joint. In grade III injuries, both the AC and coracoclavicular ligaments are torn. A popping sensation may be felt with shoulder movement. These are very painful and cause a noticeable bump on the front of the shoulder.
Treatment for grade I and II injuries is often nonsurgical and consists of a short period of rest in a sling followed by rehabilitation. Range of motion exercises are started as pain subsides, and the arm is kept below shoulder level at first. Once stretching exercises can be done with minimal to no pain, strengthening exercises for the rotator cuff and shoulder blades are started. Usually, pain disappears within 3 weeks for grade I tears, and surfing can be resumed. For grade II separations, healing can take up to 6 weeks, and up to 12 weeks for grade III separations. Surfing is allowed as pain permits.

The treatment of grade III separations is controversial, but surgery is usually done for athletes like surfers to restore shoulder stability and function. Surgery often involves using a screw and sutures to realign the shoulder and allow the ligaments to heal. The screw is usually removed 6-8 weeks after surgery.

Rehabilitation is longer for surgically treated tears, and a physical therapist assists with exercises initially. Range of motion exercises are started 4 weeks after surgery and begin with passive movements, where the arm is moved by the therapist so the muscles stay relaxed. Active therapy starts 6-8 weeks after surgery and uses muscle power. Isometric exercises are started initially. Weights are added after about 3 months, as the joint heals and the shoulder becomes stronger. Surfing can be resumed when strength is improved and the ligaments have healed, usually after 3 months.

Long term outcomes after AC separations show that many people, whether they have had surgery or not, develop AC joint arthritis and eventually require surgery or another operation. This process can take years to develop or it can happen within 1-2 years of the injury. It is critical to maintain rotator cuff and shoulder blade muscle strength to help the shoulder move smoothly during surfing activities and prevent further degeneration of the shoulder joint.

E. Acromioclavicular (AC) Joint Arthritis
Surfing requires a significant amount of overhead activity and places stress on the shoulder. Because of this, surfers are prone to AC joint arthritis, which is the wearing down of the cartilage between the acromion and clavicle. Normally, cartilage is on the...
ends of both bones, and it provides a smooth surface for the bones to glide against each other as they move. The AC joint does not move very much—only enough for the shoulder to move freely. Over time, however, the amount of shoulder movement and overhead motion accumulates and can lead to AC joint arthritis.

Surfers may develop this common condition at a younger age than most people, because of the increased demands they place on their shoulder and AC joints. Trauma to the AC joint after a fall can also lead to earlier AC joint arthritis. Typically, pain and tenderness over the front of the shoulder and AC joint is noticed. Crossing the arm over the chest usually makes the pain worse as this movement compresses the joint. Clicking and snapping might also occur with shoulder movement.

Early treatment involves rest and taking an anti-inflammatory medication like ibuprofen or aspirin. If pain continues, a lidocaine and cortisone shot can be injected into the joint to provide some temporary relief. Once the pain subsides, shoulder range of motion exercises should be started to prevent stiffness, followed by rotator cuff and shoulder blade muscle strengthening. Surfing is allowed as symptoms permit.

If non-surgical therapy does not provide pain relief, surgery can be done. Usually, a resection arthroplasty is performed, either open or closed. This involves taking off the last 1/2 inch of the clavicle to prevent the bones from rubbing against each other. Scar tissue eventually fills in the empty space, and symptoms improve. After surgery, shoulder range of motion exercises are started. Gradually, passive range of motion and stretching are added after about 2 weeks, followed by active motion at 4-6 weeks. After 6 weeks, strengthening exercises are started to strengthen the cuff muscles and shoulder blade. Surfing can be resumed once muscle strength has returned, usually after 8 weeks.
E. Adhesive Capsulitis
“Frozen shoulder”, or adhesive capsulitis, is a painful shoulder condition characterized by severe loss of motion. It involves the shoulder capsule, a watertight sac that seals the joint. Normally, this structure is loose in order to allow a wide range of motion. In frozen shoulder, inflammation in the joint causes the capsule to scar down, making it difficult and painful to move.

The cause is unknown, but thought to be related to an overactivation of the body’s defense system (an autoimmune reaction). The onset can happen suddenly, often after an injury, or can arise slowly without warning. Other causes linked to this condition include a period of shoulder immobilization, bursitis, rotator cuff tears, or impingement.

Major symptoms are shoulder pain and stiffness. Restricted motion is the hallmark of the condition, either when the individual or another person tries to move the shoulder. This is in contrast to a rotator cuff tear, in which there is normal motion when someone else moves the shoulder, but weak or absent motion when the individual attempts to move it. Rotator cuff tears usually are not painful with passive range of motion, whereas frozen shoulders are painful with any motion.

The normal course of a frozen shoulder has 3 stages. Stage one is the “freezing” stage. It is characterized by a slow onset of pain and stiffness and can last 6 weeks to 9 months. Stage two, the “frozen” stage, is marked by a decrease in pain, but continued stiffness. This stage is typically 4-9 months. Stage 3, the “thawing” stage, is the period where the shoulder motion slowly returns to normal and can last from 5-26 months.

Treatment focuses on decreasing pain and restoring motion, and it is generally a long, frustrating process. Ninety percent of cases get better without surgery, but this may take months to years. Aspirin and ibuprofen can help with the pain and inflammation, but physical therapy is the most critical component in regaining motion. Heat, massage, ultrasound, ice, and electrical stimulation are sometimes used by the therapist to relax the muscles. Diligent stretching is essential (see shoulder stretches below), and a shoulder pulley can help with this. Cortisone injections can also be...
very effective in decreasing inflammation and pain, allowing more intense stretching and movement.

If progress is slow, a “manipulation under anesthesia” can be done to get results more quickly. It involves a surgeon aggressively stretching the shoulder and breaking up the scar tissue while the patient is asleep under general anesthesia. Motion returns faster than with non-surgical methods, but surgery also adds the risk of fracture or nerve injury. Diligent stretching and exercises must still be continued, and this procedure may need to be repeated more than once.

If both physical therapy and manipulation techniques fail to improve shoulder motion, an arthroscopic or open release can be done. This procedure allows the surgeon to remove scar tissue and release any tight ligaments or capsule. After surgery, daily stretching is continued. Stretching and continuous movement will prevent the scar tissue from reforming. Strengthening exercises are not usually started for 4-6 weeks after the operation. Once pain-free shoulder range of motion is regained, consistent stretching and rotator cuff muscle strengthening exercises should be continued and are key in preventing the problem from recurring. Surfing can be resumed once pain and stiffness resolve and shoulder strength is regained. The time frame varies for each case and can take weeks to months.

F. Clavicle Fractures

Collarbone (clavicle) fractures are common and occur most often in men under 30, usually as a result of a direct blow to the point of the shoulder during a sports activity. Pain, swelling, and deformity occur over the fractured area. Arm movement makes pain worse, because it causes the broken bones to rub against each other. A sling, ice, and pain medication will help decrease the pain initially.

Most clavicle fractures occur in the middle area, where the bone is the weakest. The treatment for these types of fractures is not black and white, and the decision for surgery depends on a variety of factors. Most middle clavicle fractures can be managed without an operation, but there are a few definite reasons for surgery: if the bone is exposed (an open fracture), if there is a scapula fracture on the same side (a floating shoulder), or if the nerves or blood vessels that travel under the clavicle are injured (very rare). Recent research has also shown that fractures with bone fragments that are completely separated or in many pieces will have a better chance to heal and regain arm function if surgery is done. These types of fractures are being operated on more frequently now, especially in athletes like surfers.
Fractures without a lot of separation usually do well without surgery. A sling is used most commonly at first to support the arm, but it can be removed once the pain subsides (usually after 1-2 weeks). Activities are resumed as pain allows, but some recommend avoiding overhead motions and heavy lifting for the first 4 weeks to prevent the bone fragments from separating more. The fracture will usually heal after 6-8 weeks, and a large bump will develop as part of the healing process. This usually gets smaller with time. The full motion and strength is usually regained quickly if range of motion and muscle-strengthening exercises are done, and surfing can be resumed after shoulder strength returns.

There are many different techniques to fix clavicle fractures if surgery is decided upon. The most common method is with an incision over the collarbone and placement of a metal plate and screws to realign the broken bones. Typical risks of surgery are infection, injury to nerves or vessels, failure of the bone to heal, or are anesthesia-related. Numbness over the chest is common after surgery and will improve with time. The plate can be removed after healing if it is prominent or bothersome but this is not usually necessary. With or without surgery, pain will usually get better after 1-2 weeks. With nonsurgical treatment, surfing can be resumed once the fracture has healed, usually after 8-12 weeks. If surgery is done, surfing and sports activities are usually not allowed until 3 months after the operation. Most fractures do well, and full function and strength return within a year.

IV. Physical Therapy Exercises

A. Range of Motion
Range of motion refers to the amount of mobility about the shoulder. Movement is broken down into 6 different types: forward flexion, extension, abduction, adduction, internal rotation, and external rotation. Forward flexion, or anterior elevation, is measured with the arm at the side (zero degrees) and raising it forward.
0-160 degrees is normal. Extension, or posterior elevation, is measured with the arm at the side and lifting it back. 0-60 is normal. Abduction is measured with the arm at the side and lifting it out. 0-180 degrees is normal. Adduction is measured with the arm at the sides and moving it in towards the opposite side. 0-45 degrees is normal. Internal rotation is measured with the arm at the side, the elbow bent, and the fingers pointing straight ahead (zero degrees). The hand is brought towards the stomach. 0-70 degrees is normal. Another way of measuring internal rotation is to reach the thumb up the back and note how high up it can reach. A level in the middle of the back is normal, and it should be the same as the other arm. External rotation is measured with the elbow bent and the arm at the side, and the fingers pointing forward. The hand is moved out to the side. 0-60 degrees is normal.

Range of motion can be decreased in a variety of shoulder injuries. Stretching exercises are key to improving shoulder mobility.

B. **Shoulder Stretches**

Regular stretching exercises are key to restoring shoulder motion and flexibility. Exercises should be done for 10-15 minutes 2-3 times a day. Each stretch should be held for at least 15-30 seconds.

1. **Posterior shoulder stretch**

   - Hold the elbow of your injured arm with your opposite hand.
   - Use your hand to pull your injured arm gently up and across your body. You will feel a gentle stretch across the back of your injured shoulder.
   - Repeat 2 to 4 times.

2. **Up-the-back stretch**

   - Put your hand in your back pocket and let it rest there to stretch your shoulder.
With your opposite hand, hold your affected arm (palm outward) behind your back by the wrist. Pull your arm up gently to stretch your shoulder.

To progress, put a towel over your opposite shoulder. Put the hand of your injured arm behind your back and hold the back end of the towel. With the other hand, hold the front end of the towel in front of your body. Pull gently on the front end of the towel to bring your hand farther up your back. You should feel the stretch in the front and back of your shoulder.

3. Overhead stretch

Standing about an arm's length away, grasp on to a solid surface, such as a countertop, a doorknob, or the back of a sturdy chair.

With your knees slightly bent, bend forward with your arms straight, lowering your upper body and letting your shoulders stretch.

As your shoulders are able to stretch farther, you may need to take a step or two backward.

Hold for at least 15 to 30 seconds then stand up and relax. If you had stepped back during your stretch, step forward so you can keep your hands on the solid surface. Repeat 2 to 4 times.

4. Pendulum swing

If you have pain in your back, do not do this exercise.

While holding onto a table or the back of a chair with your good arm, bend forward a little and let your injured arm hang straight down.

This exercise does not use the arm muscles. Rather, use your legs and your hips to create movement that makes your arm swing freely.
Using the momentum from your hips and legs, guide the slightly swinging arm back and forth like a pendulum (or elephant trunk), then in circles that start small (about the size of a dinner plate) and gradually grow larger each day as pain allows.

- Do this exercise for 5 minutes, 5 to 7 times each day even while your shoulder is still tender from an injury or surgery.

- As you have less pain, try bending over a little farther to do this exercise. This will increase the amount of movement at your shoulder.

5. **Wall climbing**

   a. **To the side**

   Avoid any movement that is straight to your side, and be careful not to arch your back. Your arm should stay about 30 degrees to the front of your side.

   - Stand with your side to a wall so that your fingers can just touch it at an angle about 30 degrees toward the front of your body.

   - Walk the fingers of your injured arm up the wall as high as pain permits. Try not to shrug your shoulder up toward your ear as you move your arm up.

   - Hold that position for a count of at least 15 to 20. Walk your fingers back down to the starting position. Repeat at least 2 to 4 times, trying to reach higher each time.

   **B. To the front**

   During this stretching exercise, be careful not to arch your back.

   - Face a wall, standing so your fingers can just touch it.

   - Keeping your shoulder down (don't shrug up toward your ear), walk the fingers of your injured arm up the wall as high as pain permits.
Hold that position for at least 15 to 30 seconds. Slowly walk your fingers back down to the starting position.

Repeat at least 2 to 4 times, trying to reach higher each time.

6. **Doorway stretch**

- Stand in a doorway with one foot straddling the threshold and your hands on the door jamb, elbows at your side.
- Shift your weight onto the forward foot until you feel a pull in your shoulder and chest.
- Exhale and actively stretch for two seconds using the door jamb as your assistant.
- Release the pressure, then repeat 10 times.
- Repeat in these three positions 1) elbows at your waist, 2) upper arms parallel to the floor, 3) reaching as high as you can.
- If your range is restricted by joint tension or pain, go as high as you can, increasing your range as you are able.

C. **Rotator Cuff Strengthening**

Strengthening exercises are started gradually after the stretching exercises can be done without pain. In the case of surgery, these exercises are not usually started until 6-8 weeks after the operation. Each exercise should be done for a total of 3 sets. Light dumbbells can be used for extra resistance as strength improves.

1. **Arm raise to the side**

During this strengthening exercise your arm should stay about 30 degrees to the front of your side.

- Slowly raise your injured arm to the side, with your thumb facing up. Raise your arm 60 degrees at the most (shoulder level is 90 degrees).
- After holding the position for 3 to 5 seconds, lower your arm back to your side. If you need to, bring your "good" arm across your body and place it under the elbow.
as you lower your injured arm. Use your good arm to keep your injured arm from dropping down too fast during the downward motion.

■ Repeat 8 to 12 times.

■ When you first start out, don't hold any additional weight in your hand. As your strength improves, you may use a 1 lb to 2 lb (0.5 kg to 1 kg) dumbbell or a small can of food.

2. Shoulder flexor and extensor exercise

These are isometric exercises. That means you contract your muscles without actually moving.

■ Push forward (Flex): Stand facing a wall or doorjamb, about 6 in. (15.2 cm) or less back. Hold your affected arm against your body. Make a closed fist with your thumb on top and gently push your hand forward into the wall with about 25% to 50% of your strength. Don't let your body move backward as you push. Hold for 5 seconds. Repeat 8 to 12 times.

■ Push backward (Extend): Stand with your back flat against a wall. Your upper arm should be against the wall, with your elbow bent 90 degrees (your hand straight ahead). Push your elbow gently back against the wall with about 25% to 50% of your strength. Don't let your body move forward as you push. Hold for 5 seconds. Repeat 8 to 12 times.

3. Internal rotator strengthening exercise

■ Begin by tying a piece of elastic exercise material, such as surgical tubing or Thera-band, to a doorknob.

■ Stand or sit with your shoulder relaxed and your elbow bent 90 degrees. Your upper arm should rest comfortably against your side. You can squeeze a rolled towel between your elbow and your body for comfort and to help keep your arm at your side.

■ Hold one end of the elastic band in the hand of the affected arm. Rotate your forearm toward your body until it touches your belly.
Keep your elbow and upper arm firmly tucked against the towel roll or the side of your body during this movement.

- Repeat 8 to 12 times.

4. **External rotator strengthening exercise**

- Begin by tying a piece of elastic exercise material, such as surgical tubing or Thera-band, to a doorknob. (You may also hold one end of the band in each hand.)

- Stand or sit with your shoulder relaxed and your elbow bent 90 degrees. Your upper arm should rest comfortably against your side. You can squeeze a rolled towel between your elbow and your body for comfort and to help keep your arm at your side.

- Hold one end of the elastic band with the hand of the affected arm.

- Start this exercise with your forearm across your belly. Rotate the forearm out away from your body, keeping your elbow and upper arm tucked against the towel roll or the side of your body until you begin to feel tightness in your shoulder.

- Repeat 8 to 12 times.

5. **Scapular strengthening exercises**

The scapula stabilizes the shoulder from the back side, and it is one of the main bones of the shoulder joint. When the scapula does not move well, the rotator cuff muscles are strained. This can lead to shoulder problems like impingement, rotator cuff tears, and frozen shoulder. The scapular exercises below can help maintain or improve strength around the shoulder blade to help with rotator cuff function.

A. **Wall push-ups**

This exercise is best done with your fingers moderately turned out, rather than straight up and down.

- Stand facing a wall, about 12 in. to 18 in. (30 cm to 45 cm) away.

- Place your hands on the wall at shoulder height.

- Slowly bend your elbows and bring your face to the wall, keeping your back and hips straight.

- Push back to the starting position.
■ Repeat 8 to 12 times.

■ When you can do this exercise against a wall comfortably, you can try it against a counter. You can then slowly progress to the end of a couch, then to a sturdy chair, and finally to the floor.

B. Arm reach

■ Lie flat on your back. This exercise is a very slight motion that starts with your arms raised (elbows straight, arms straight).

■ From this position, reach higher toward the sky or ceiling, keeping your elbows straight. All motion should be from your shoulder blade only.

■ Relax back to the starting position.

■ Repeat 8 to 12 times.

C. Retraction

For this exercise, you will need elastic material, such as surgical tubing or a thera-band.

■ Put the band around a solid object, such as a bedpost, at about waist level. Each hand should hold an end of the band.

■ With your elbows at your sides and bent to 90 degrees, pull the band back to move your shoulder blades toward each other. Return to the starting position.

■ Repeat 8 to 12 times.

■ If you have good range of motion in your shoulders, try this exercise with your arms lifted out to the sides, with your elbows at a 90-degree angle. Raise the elastic band up to about shoulder level. Pull the band back to move your shoulder blades toward each other. Return to the starting position.

D. Special Exercises for Shoulder Instability

Strengthening the rotator cuff and upper back muscles increases the stability of the shoulder and decreases inflammation. Exercises can be done with thera-bands, hand weights, or cable pulleys at home, at a gym, or with a physical therapist. Below are a list of additional exercises or variations of exercises in section C that can be done to
improve shoulder stability and strength. Each exercise should be done without pain for 3 sets of 20 repetitions. If 20 reps cannot be done without pain, weight or resistance should be decreased.

1. **Internal Rotation**
   - Hold a small ball or towel between arm and side and slowly rotate forearm across body.
   - Return to start and repeat.

2. **External Rotation**
   - *Hold a* small ball or towel between arm and side while holding a weight or band.
   - Slowly rotate forearm away from side.
   - Return to start and repeat.

3. **Scapular Elevation, Shrugs**
   - Stand with arms at side in straight standing posture, shrug or raise shoulders up towards ears. Briefly hold, return to start and repeat.
   - A hand weight can add difficulty.
   - Secondly, pull shoulder blades or scapula together in the back, hold, and then relax shoulders forward.

4. **Scapular Protraction**
   - Lie on back holding a hand weight.
   - Keep elbows straight push hands up towards the ceiling, hold, return to start and repeat.

5. **Shoulder Extension**
   - *Lie on stomach and with arm hanging off the side of the bed.*
   - Hold a hand weight and slowly raise your arm up until it is level with side and next to body, hold, slowly return to start and repeat.
6. **Shoulder Flexion**

- While standing holding a hand weight or resistance tubing, slowly raise arm overhead, hold, slowly return to start and repeat. Motion should be pain free.
- Avoid shrugging the shoulder.

7. **Scapular Retraction**

- Anchor tubing to a fixed object and hold ends of tubing in each hand.
- Squeeze and pinch your shoulder blades together, pulling your arms back.
- Hold, slowly return to start and repeat.

8. **Shoulder Extension**

- Anchor tubing to fixed object and hold ends of tubing in each hand.
- Slowly pull hands down to the side while squeezing shoulder blades together.
- Hold, slowly return to start, and repeat.

9. **Horizontal Abduction**

- With a hand weight, lie on stomach, and start with the arm hanging down.
- Keep the elbow straight, slowly raise arm up and out from side.
- Hold, slowly return to start and repeat.
- With a band, hold one end in each hand in front of body.
- Keep elbows straight, pull arms apart, or out to the side at shoulder height.
10. **Scapular Retraction and External Rotation**

- If using a weight, lie on stomach, with arm out to the side hanging down with elbow bent at 90 degrees. Upper arm should be supported by the bed.

- Turn and rotate arm towards the ceiling while keeping the elbow bent at 90.

- Squeeze the shoulder blades together, hold, slowly return to start.

- If using a band, bend each elbow at 90 degrees at shoulder height and squeeze shoulder blades together.

- While squeezing shoulder blades, raise hands above shoulder height as shown. Hold, slowly return to start and repeat.

11. **Scapular Retraction and Elevation**

- Hold one end of the band in each hand at shoulder height.

- Squeeze and pinch shoulder blades together and while keeping both arms straight slowly raise arms overhead. Try to keep thumbs in a ‘thumbsup’ position.

- Hold, slowly return to start and repeat.

12. **Horizontal Adduction**

- With weights, lie on back holding weights with elbows bent.

- Slowly raise arms towards ceiling straightening elbow. Hold, slowly lower and repeat.

- With bands anchored behind, slowly push arms out in front straightening elbows.

- Hold, slowly bend elbows and repeat.
V. References:

VI. Recommended Articles: