Understanding the Shoulder Anatomy

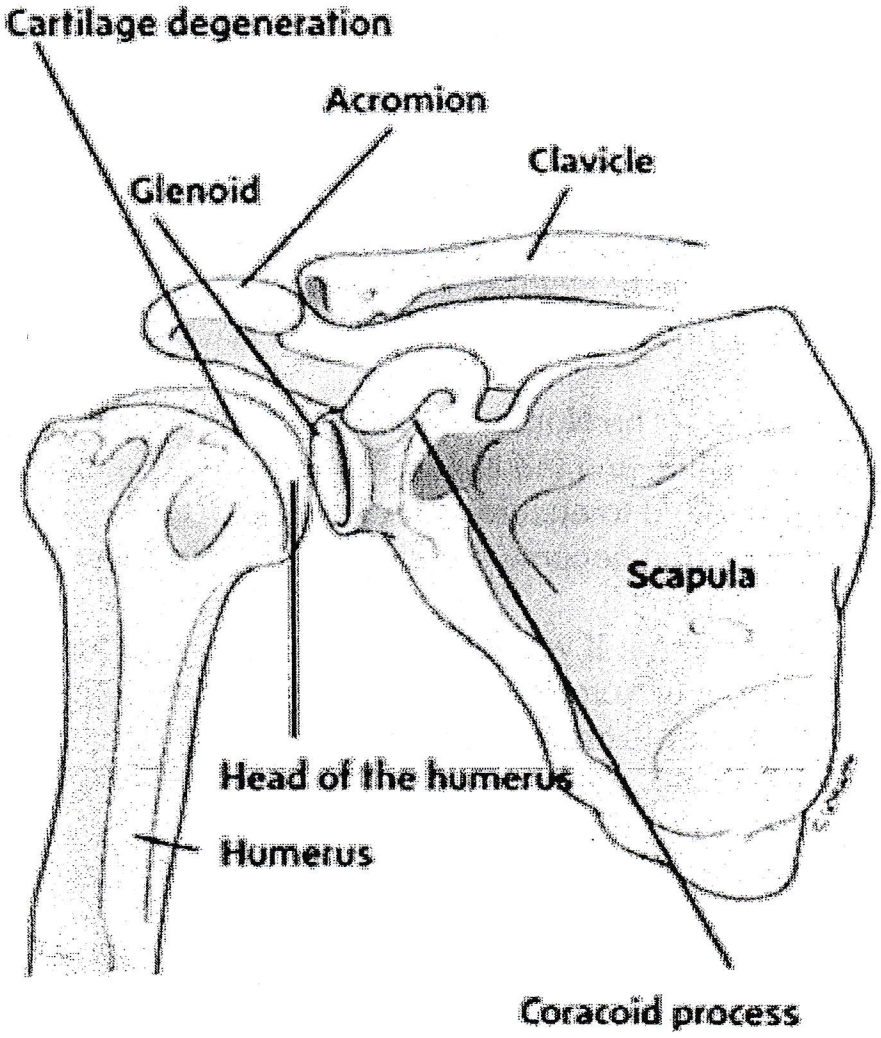
The shoulder joint allows your arm to move in a large range of motion, in all directions: forwards, backwards, sideways and rotation. The upper end of the humerus (arm) bone ends in a ball shape and fits onto the saucer-shaped socket called the glenoid.

The glenoid is part of the scapula (shoulder blade).

The rotator cuff muscles surround the shoulder joint and help to stabilize the shoulder.

The surfaces of the humerus and glenoid are lined with cartilage which acts as cushioning and allows the bones to move easily over each other.

Thickened tissue called capsule also encloses the shoulder providing stability.



What is Shoulder Replacement Surgery ?

During surgery, the skin, muscles, and capsule of the shoulder are cut and the joint is opened. The head of the humerus bone is removed and replaced with a rounded metal head on a stem inserted into the shaft of the humerus. The other side of the joint may be replaced with a smooth plastic shell that is curved to fit smoothly with the humerus implant. When both sides of the shoulder joint are replaced it is called a total shoulder arthroplasty. If only the humerus is replaced it is called a hemi-arthroplasty.

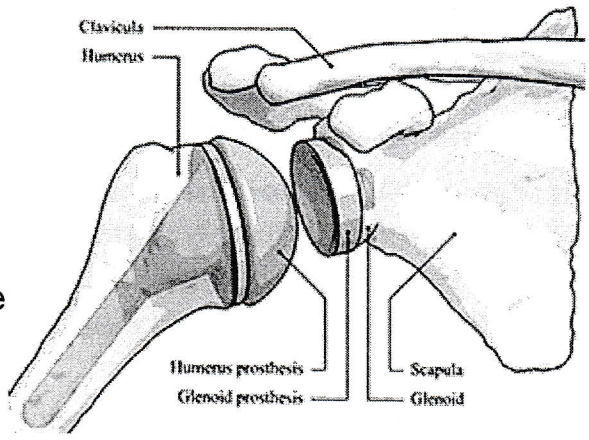
Goal of Shoulder Replacement Surgery

The primary goal of shoulder replacement surgery is to decrease pain. Degeneration of the cartilage or bone and weakening of the muscles, often due to arthritis, can cause severe pain and stiffness in the shoulder joint. Shoulder replacement removes damaged bones and cartilage and provides smooth working surfaces. It may also improve function of the shoulder.

Types of Shoulder Surgery

Total Shoulder Arthroplasty (Replacement)

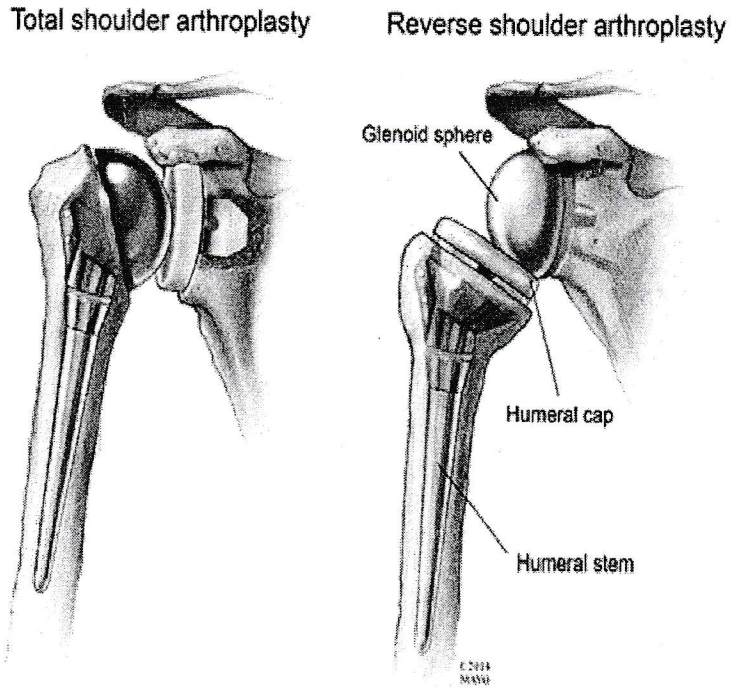
– A metal stem is placed into the humerus bone of the arm. It has a rounded end which sits on top of the stem and allows the humerus to move smoothly in the shoulder joint. A rounded plastic shell is placed on the other side of the joint (glenoid). It's curved to fit the rounded metal humerus piece.



Reverse shoulder arthroplasty (replacement) –

The reverse shoulder arthroplasty is mainly used in patient who have severe rotator cuff weakness or degeneration, severe trauma or require revision surgery.

The rotator cuff muscles are no longer able to hold the shoulder joint stable. After removing the ball of the humerus, a metal stem with a curved plastic shell is inserted in the humerus bone. A metal base plate is inserted with screws into the glenoid (scapular) side of the shoulder joint.



Exercise Guide for Total Shoulder Arthroplasty Rehabilitation Protocol

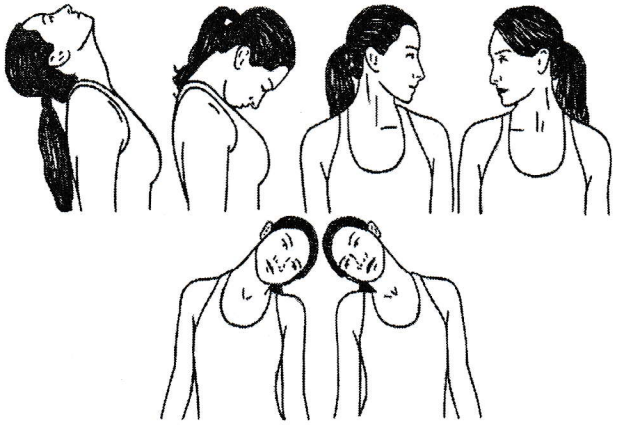
Phase I (Protection): 0-2 Weeks after Surgery

Perform the 5 exercises in this Phase for the next 3 weeks.

Exercises should be done 3 times a day with your sling removed, and your elbow at your side.

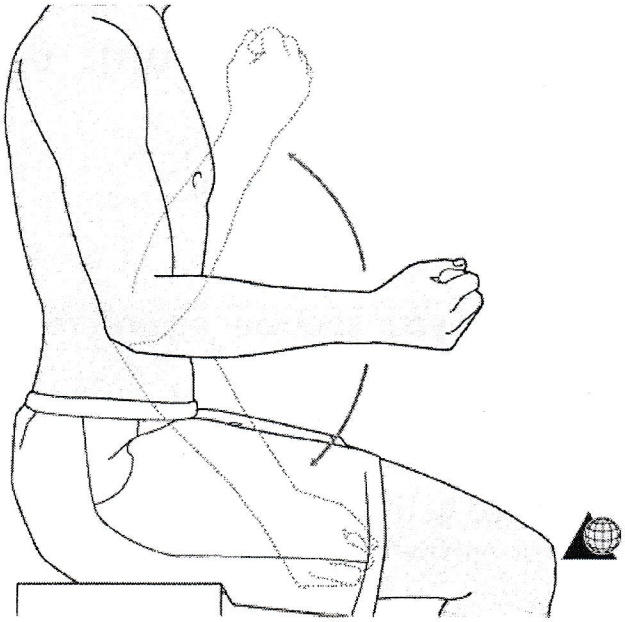
1. Neck:

Start with your chin tucked down. Move your head forward and back, then return to the starting position. Turn your head from side to side. Tilt your head from side to side. Repeat each movement 10-20 times.



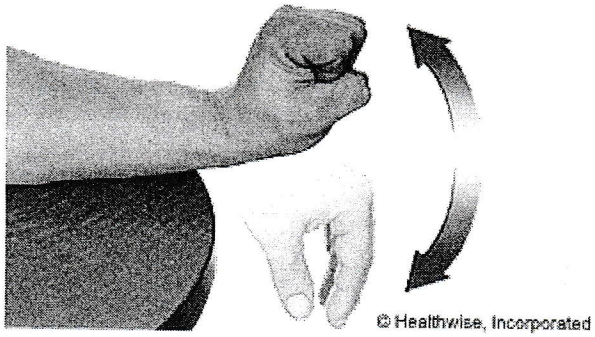
2. Elbow:

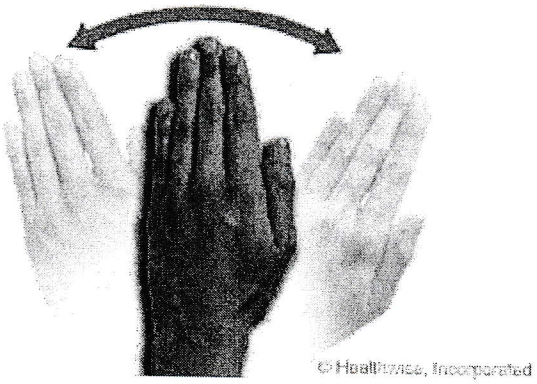
In a sitting or standing position, gently bend and straighten your elbow fully. Repeat 10-20 times.



3. Wrist:

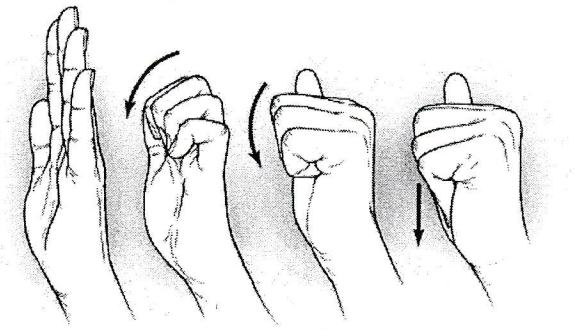
Support your forearm on a table or the arm of a chair. Bend your wrist up and down, then side to side. Repeat each movement 10-20 times.

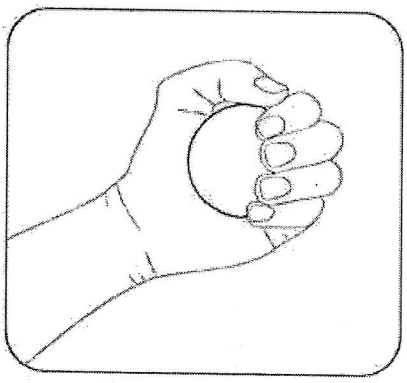




4. Hand:

In a sitting or standing position, gently bend and straighten your elbow fully. Repeat 10-20 times.





POWER GRIP
Squeeze the ball with your fingers and thumb

5. Pendulums:

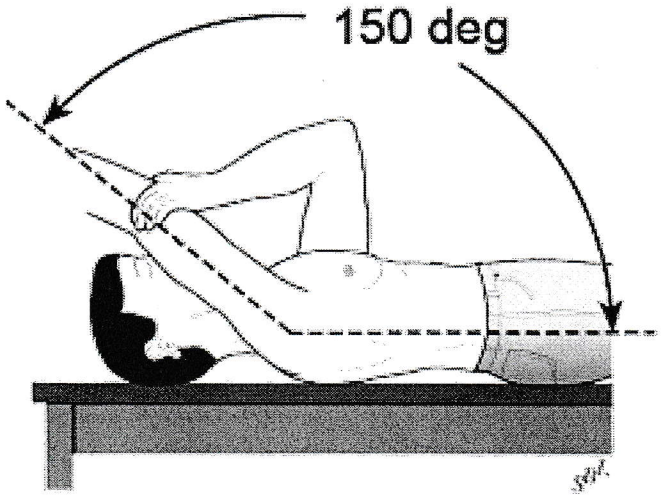
Bend forward and support your non-operated arm. Relax your operated shoulder and arm. Gently move your arm in a circular motion. Do this in both the clockwise and counter-clockwise directions. You may gradually make bigger circles as you recover, but increase the size of the circles only if there is minimal pain. Repeat 10-20 circles in each direction.

Active Assisted Range of Motion:

These exercises involve using your unaffected arm to assist in moving you operated arm. Do not attempt to move you operated arm by itself>

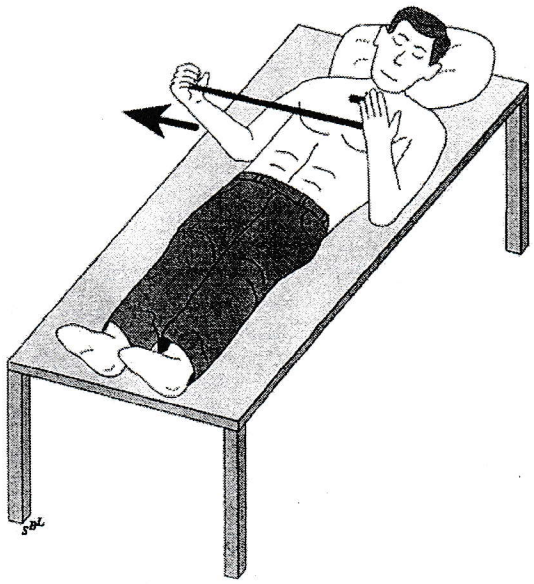
1. Forward Elevation:

Use the force of your operated arm with the help of your non-operated arm to gently lift your operated arm forward. This exercise may be performed standing, sitting or lying down. Hold at the top for 5 seconds, and then return to the starting position. Repeat the movement 10-20 times.



2. External Rotation:

Use the force of your operated arm with the help of your non-operated arm, or a stick or cane, to gently turn your operated arm away from your body, keeping your elbow at your side. Do not force the arm past 30 degrees of external rotation. Hold at the end of the range for 5 seconds. Repeat the movement 10-20 times.



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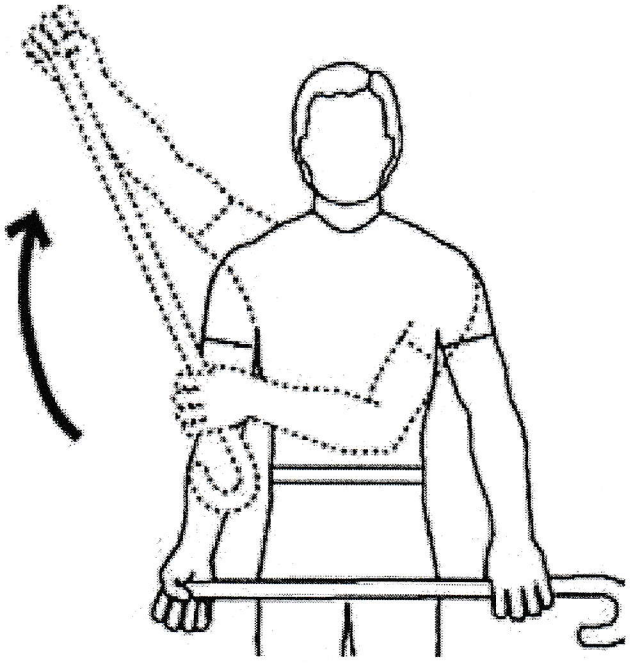
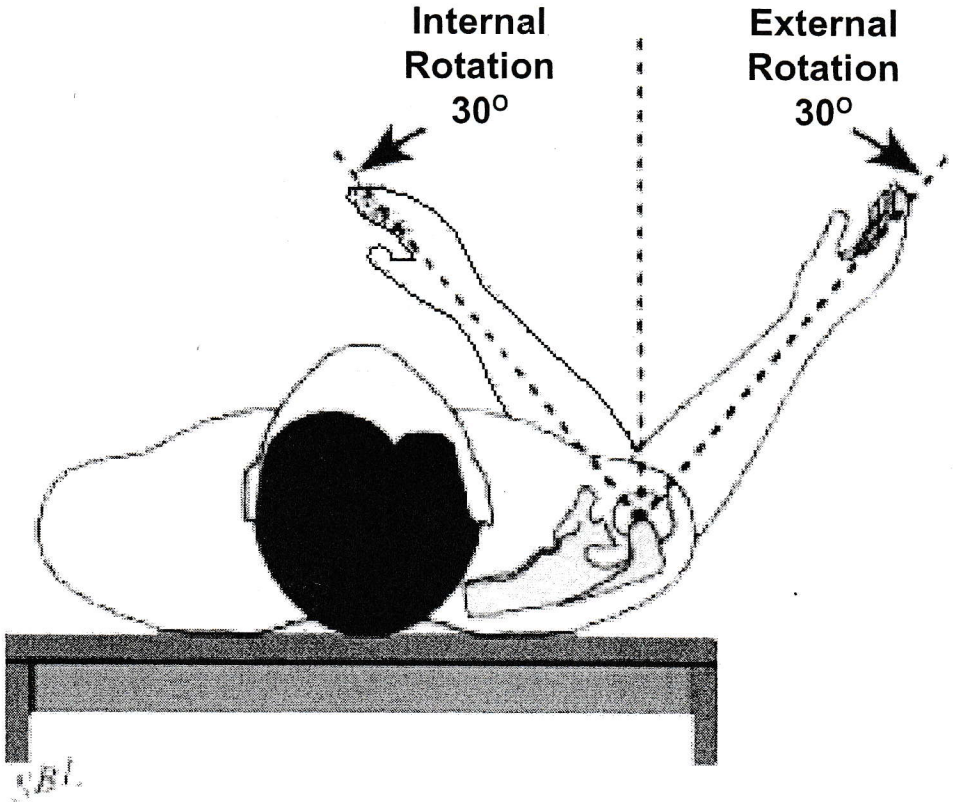
3. Abduction:

Use the force of your operated arm with the help of your non-operated arm, and/or a stick, to gently raise your operated arm to the side, away from your body. Hold each time for 5 seconds. Repeat the movement 10-20 times.



Phase II (Controlled Motion): 2-6 Weeks after Surgery

Exercises in this Phase should be done 3 times a day. The force should be gentle and cause minimal pain. External rotation is restricted to 30°.



Active Range of Motion

These exercises involve moving the operated arm without assistance from the non-operated arm.

1. Forward Elevation:

Gently lift your operated arm forward. This exercise may be performed standing, sitting, or lying down. Hold each time for 5 seconds. Repeat the movement 10-20 times.

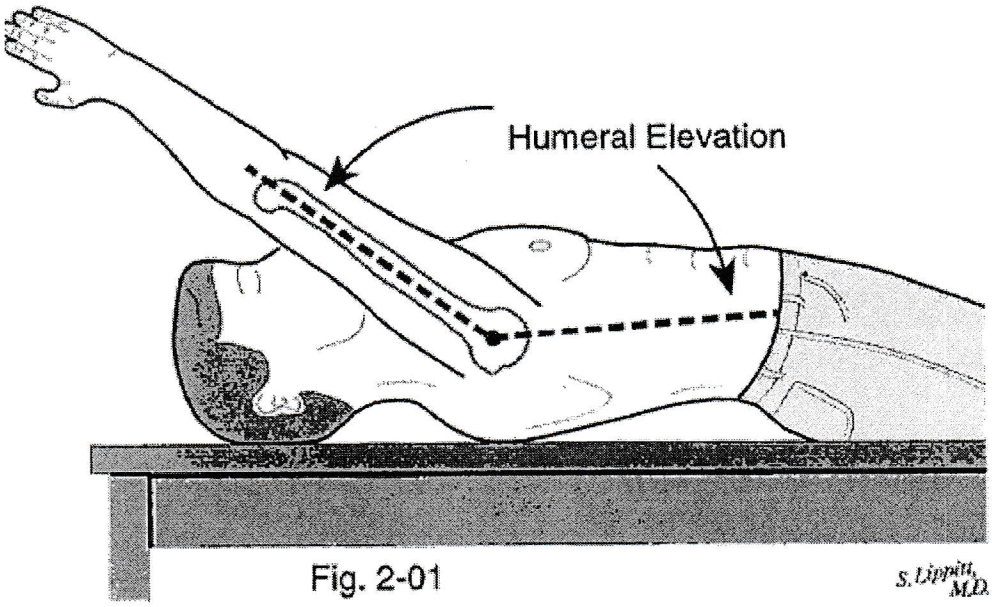
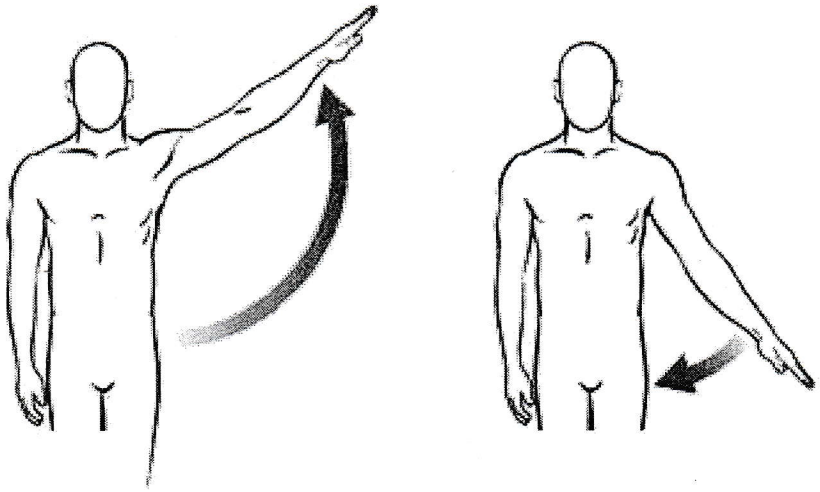


Fig. 2-01 S. Lippin, M.D.

2. Abduction:

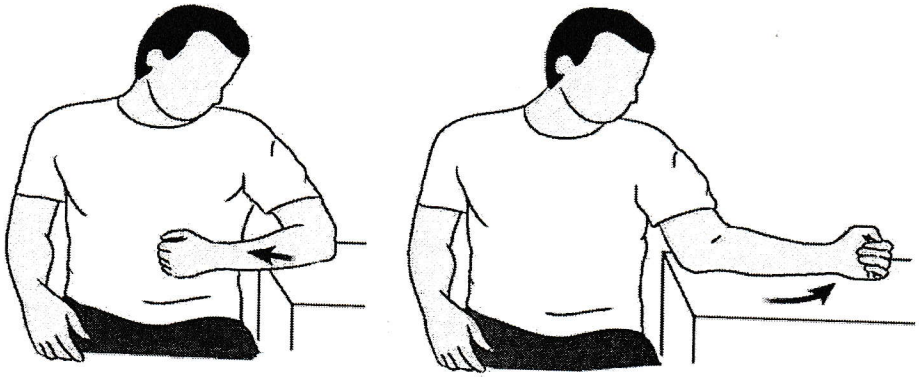
Gently lift your operated arm to the side. Hold each time for 5 seconds. Repeat the movement 10-20 times.



Shoulder abduction Shoulder adduction

3. External Rotation:

Gently turn your operated arm away from your body. Do not force the arm past 30°. Hold each time for 5 seconds. Repeat the movement 10-20 times.

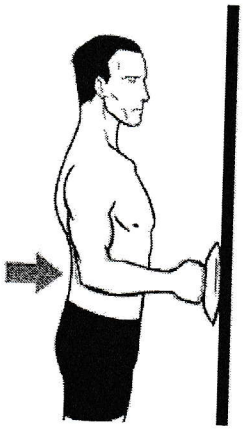


Isometric Strengthening

These exercises are performed by contracting the appropriate shoulder muscles and pushing the arm against a fixed object, such that no actual movement of the arm occurs. If needed for comfort, you may place a pillow between your arm and the fixed object. No resisted internal rotation is allowed for 6 weeks after surgery.

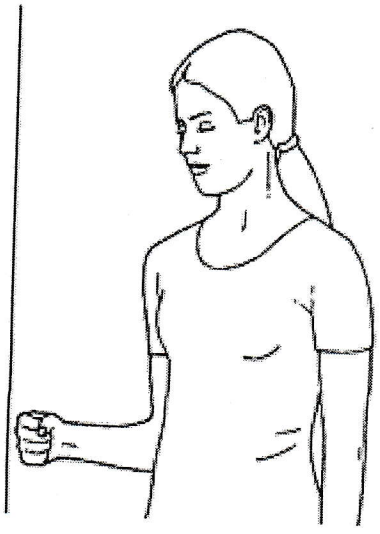
1. Forward Elevation:

Keeping your elbow at your side, close your hand into fist and push it forward against a door or wall. Hold for 5 seconds. Repeat each contraction 10-20 times.



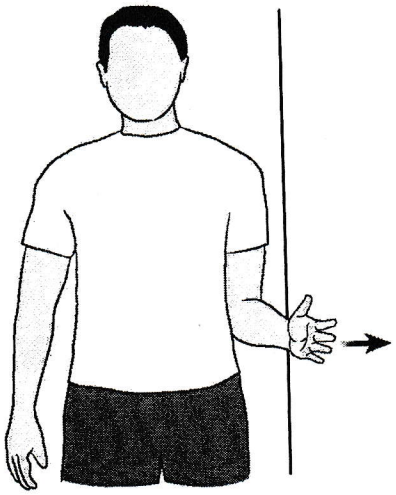
2. Abduction:

Keeping your elbow at your side, push the side of your elbow outward against a door or wall. Hold for 5 seconds. Repeat each contraction 10-20 times.



3. External Rotation:

Keeping your elbow at your side, push the side of your elbow outward against a door or wall. Hold for 5 seconds. Repeat each contraction 10-20 times.



Phase III (Progressive Motion): 6-8 Weeks after Surgery

You may discontinue the use of your sling. Arm extension and internal rotation movements can begin now. Progress of external rotation beyond 30 degrees may also begin. Exercises in this phase should be done 3 times a day.

Active Range of Motion

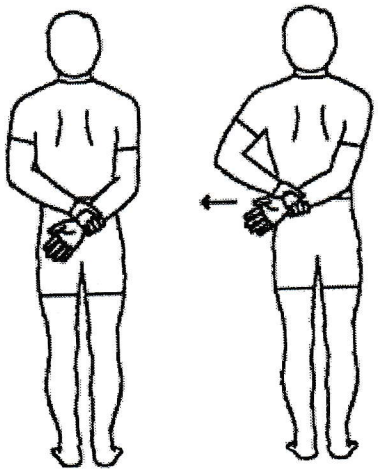
Continue to perform the first 3 Active Range of Motion exercises in Phase II.

1. **Forward Elevation**
2. **Abduction**
3. **External Rotation**

In addition, perform the internal rotation exercise below.

4.Internal Rotation with Hand Behind Back

Gently turn your operated arm inward and behind your back. Hold for 5 seconds, and then return to starting position. Repeat the movement 10-20 times.



Isometric Strengthening

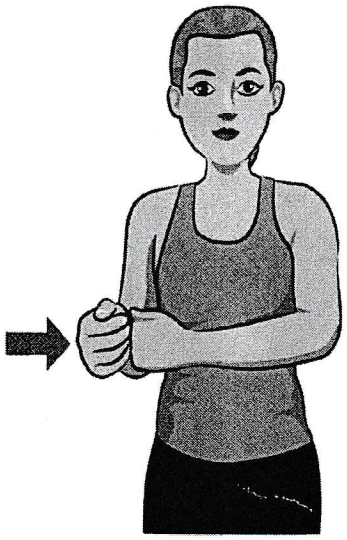
Continue to perform the first 3 isometric exercises in Phase II:

1. **Forward Elevation**
2. **Abduction**
3. **External Rotation**

In addition, perform the internal rotation exercise below.

4. Internal Rotation:

Keeping your elbow at your side and your thumb upward, press your palm inward against your opposite hand. Hold for 5 seconds. Repeat each contraction 10-20 times.



End Range Passive Range of Motion

Follow the same instructions as for the Active Range of Motion Exercises, but the force applied will be assisted at the end-range in a controlled fashion by your therapist.

Phase IV (Strengthening & Function)

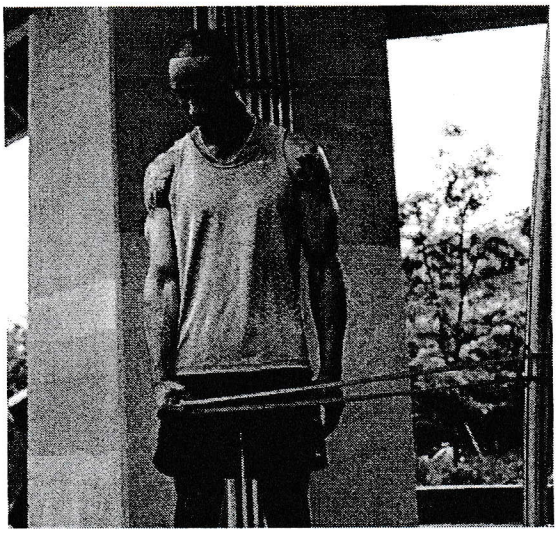
Exercises in this Phase should be done 3 times a day.

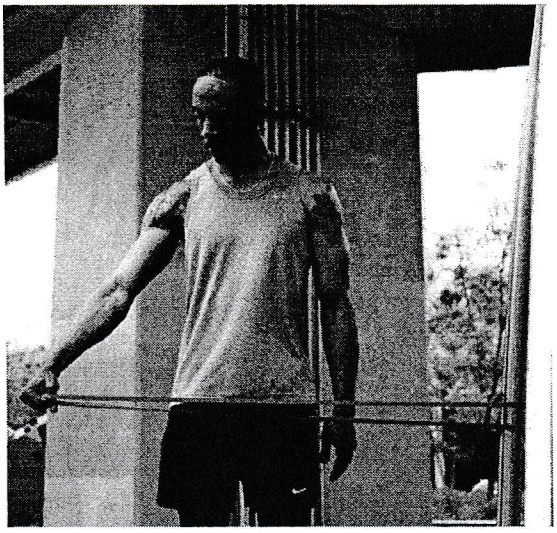
Dynamic Strengthening

The resistance (elastic bands or weights) should begin very low and gradually progress, as tolerated.

1. Forward Elevation in the Scapular Plane:

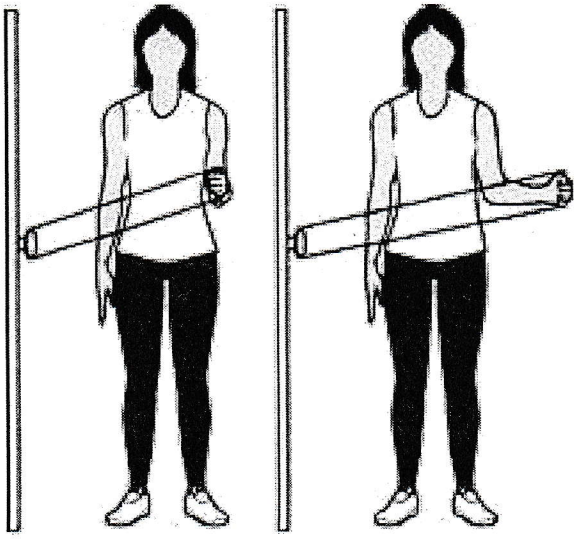
Lift your operated arm to shoulder level against resistance. Keep the plane of your arm movement about 30 degrees in front of the plane of your body. Keep your thumb facing upward during the movement and concentrate on keeping your shoulders down. Hold for 5 seconds, then slowly lower. Repeat the movement 10-20 times.





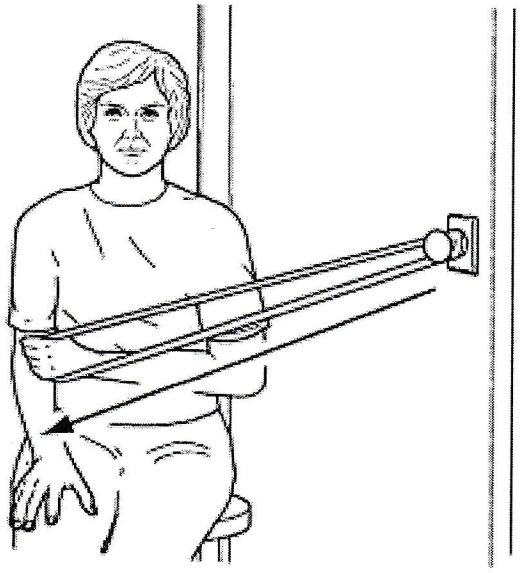
2. External Rotation

Keep your elbow at your side and flexed to 90 degrees. Rotate your arm outward against resistance. Hold for 5 seconds, then slowly lower. Repeat the movement 10-20 times.



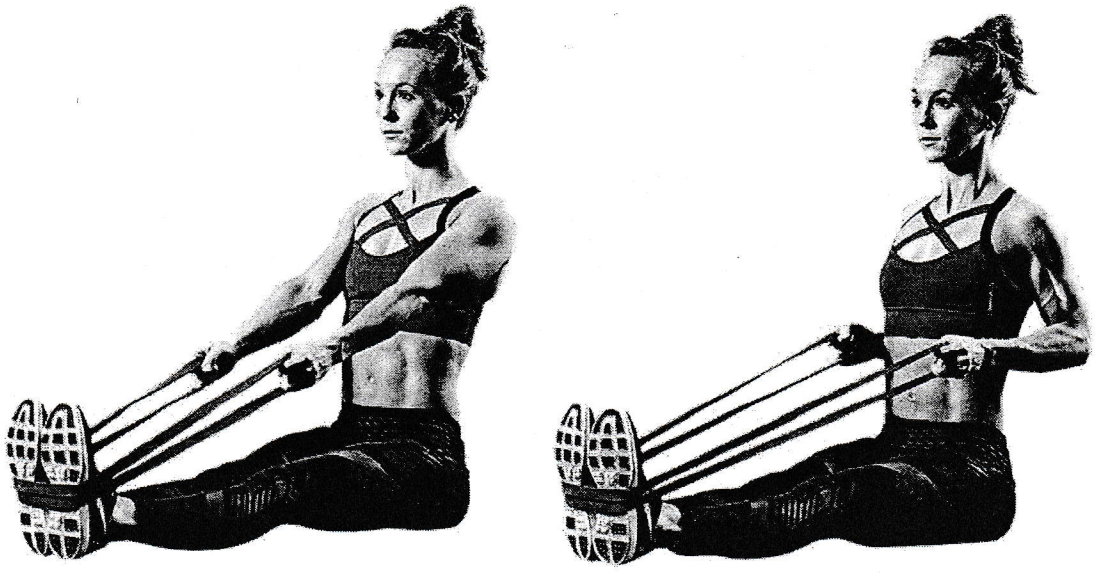
3. Internal Rotation:

Keep your elbow at your side and flexed to 90 degrees. Rotate your arm inward against resistance. Hold for 5 seconds, then slowly lower. Repeat the movement 10-20 times.



4. Seated Row:

Pull your arms backward against resistance while concentrating on keeping your shoulders down and squeezing your shoulder blades together. Hold for 5 seconds. Repeat the movement 10-20 times.



Functional Exercises

These exercises may be added to the protocol by your therapist to incorporate your specific work and/or sport functional demands.