



# Treating the Post-Surgical Shoulder Patient in the Pool

By Jessica Bufete, DPT with Lynda Huey, MS

When it comes to treating injuries or post-surgical patients in the pool, we have a good grasp on what to do with the lower body and the low back. However, it can sometimes be challenging to create a full treatment session for people who are rehabilitating their shoulders. Shoulder patients can benefit from aquatic therapy just as much as everyone else, but as instructors and therapists we have to be a little more creative.

The first step in treating any post-surgical shoulder patient is to know the type of surgery performed, any precautions, and if the individual is following a certain protocol from his/her doctor. Common surgeries include arthroscopic debridement (cleaning out), labral repair, rotator cuff repair, and shoulder replacement. General exercise precautions may include no active range of motion (ROM), no resistance, or no strengthening exercises until four to six weeks post-surgery after being cleared by the surgeon. Movement precautions may include no shoulder flexion above 90 degrees, no shoulder abduction above 45 degrees, or avoidance of excessive external or internal rotation. Generally after six weeks, the patient will be cleared to start active-assisted and active ROM for the shoulder.

## ROM Exercise Levels

**Passive ROM:** therapist moves the joint for the individual

**Active-assisted ROM:** Individual is assisted in the movement by the therapist or a piece of equipment

**Active ROM:** Individual completes the movement on his/her own without additional assistance

**Resistive ROM:** Individual completes the movement against resistance (i.e. from the therapist or piece of equipment)

## Phase 1 or Protected Motion Phase

Phase 1 generally lasts from one to six weeks following surgery. Patients need to have complete closure of their incision site prior to entering the pool to avoid possible infection. This may mean waiting 2 weeks before getting started with aquatic physical therapy. If cleared by their doctor, patients can perform passive ROM in the pool with a therapist.

The first 6 weeks involves the most limitations and precautions from surgeons. These limitations are in place to ensure good healing of the tissues and to avoid re-injury. Make sure you are familiar with these precautions and able to follow them. Passive shoulder ROM is best performed in a supine position with the use of a buoyancy belt or noodles to support the body.



A therapist can then passively move the patient's shoulder within a pain-free range while immersed in the water. Even though there is no active motion at the shoulder in Phase 1, you can hold the patient's shoulder still and have him perform active ROM of the wrist and elbow to help increase blood flow and reduce stiffness.

## Phase 2 or Moderate Protection Phase

Phase 2 will begin at six to eight weeks following surgery when the patient is cleared to start active assisted and active

ROM for the shoulder. If the patient has been completing only passive therapy on land, this is a good time to start in the pool.

Active Assisted ROM involves the patient using their muscles to move the shoulder joint but requires the assistance of a therapist or piece of equipment. This allows for movement throughout the available range but with less strain. The natural buoyancy of the water also acts as "assistance" when moving the shoulder under the surface of the water. Typical equipment used in the pool includes noodles, buoyant hand bars, and buoyancy cuffs.

The patient can rest his/her hand on the piece of equipment and glide across the water surface to work on horizontal abduction/adduction and shoulder external/internal rotation. Holding a noodle in the hand of the affected side and pushing with the other hand into external rotation can mimic wand external rotation that is typically performed in land therapy.



Placing the hand of the affected side on the equipment or the side of the pool while squatting down in the water provides a passive stretch into shoulder flexion and abduction (see photo on next page.)

Patients should avoid pushing down on the buoyant equipment as this can cause excessive muscle strain. The patient can be placed in various water depths depending on his/her available ROM, moving deeper to allow for more shoulder flexion and abduction ROM.





Active ROM can be started earlier in the pool than on land due to the buoyancy of the water, which makes it easier to lift the shoulder with less compensation and pain. Active ROM should always be completed within a pain-free range and with close monitoring for substitution patterns. Patients struggling with shoulder flexion and abduction often compensate with scapular elevation (lifting the shoulders) and spinal extension (arching the back). Closely watch the patient's form and teach him/her how to self-monitor to avoid creating bad habits while properly regaining healthy movement patterns.

Active ROM can begin with the patient braced against the side of the pool to stabilize the trunk. Movements will take place through all planes of motion and will initially be performed with the shoulder lower than 90 degrees. Movements include:

- Abduction/adduction
- Flexion/extension
- External/internal rotation
- Elbow flexion/extension
- Circumduction

Movements focusing on shoulder extension and scapular movement, such as rows, can be completed away from the wall to improve mobility. As the patient progresses, he/she can complete active shoulder flexion and abduction above 90 degrees by breaking the surface of the water. Focus on good shoulder mechanics while returning to full ROM.

### Phase 3 or Progressive Strengthening Phase

The patient is often cleared to start resistance exercise by twelve weeks after surgery. Strengthening in the water can be more efficient than on land due to the 3-dimensional resistance that allows us to work both the antagonist and agonist muscles. For example, opening the arm out laterally targets the external rotators, while pulling the arm back in medially targets the internal rotators.

As you begin adding resistance exercises, start with the least amount of resistance, gradually increasing the resistance as able. If the patient feels pain, slow the movement or reduce the amount of resistance.

Shoulder external/internal rotation strengthening works well with a water fan paddle that can be opened or closed to allow for more resistance. These paddles are also great for practicing tennis or golf swings to prepare for eventual return to sport. Small buoyancy cuffs can be placed on the wrists for shoulder circles, shoulder flexion/extension, and shoulder abduction/adduction. This does two things: 1) it assists in active ROM up to the surface of the water; 2) it provides concentric strengthening while pulling the arm back down under the water. Watch the patient closely for scapular elevation (shoulder blade lifted) and for upper trapezius compensation as he/she works to bring the buoyancy cuff under the water. Help the patient focus on stabilizing the shoulder first and use the lower trapezius, rhomboids, and latissimus dorsi to pull the cuff down. To progress, use larger buoyancy cuffs or buoyant hand bars. Next, move to deeper water. In deeper water, the patients may need to brace themselves against the side of the pool to stabilize.

Once the patient has achieved pain-free shoulder flexion and abduction greater than 90 degrees, you can add wrist weights for further strengthening. Start with one pound and progress gradually. These can also be worn while using the resistance bells for all exercises.

Higher level stretching can be done with the use of a buoyancy belt. Patients can hold onto the side of the pool and float up into a prone position to work on shoulder flexion.



Facing the center of the pool while holding onto the pool wall in a vertical position with both hands works well as a pectoral stretch. The squat stretch used earlier can be progressed by placing the hand on a higher surface outside of the pool, such as a box.



When rehabilitating a post-surgical shoulder patient, keep in mind the main goals of gaining full pain-free shoulder ROM and minimizing substitution patterns. As the therapist, be diligent in enforcing proper form and scapular mechanics. Do not progress a patient unless they can complete the movement pain-free and with good form. Follow the surgical protocol and respect the patient's symptoms. With these principles, your patient will progress to a point where he/she can regain strength and return to full function. ●

### Authors



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