

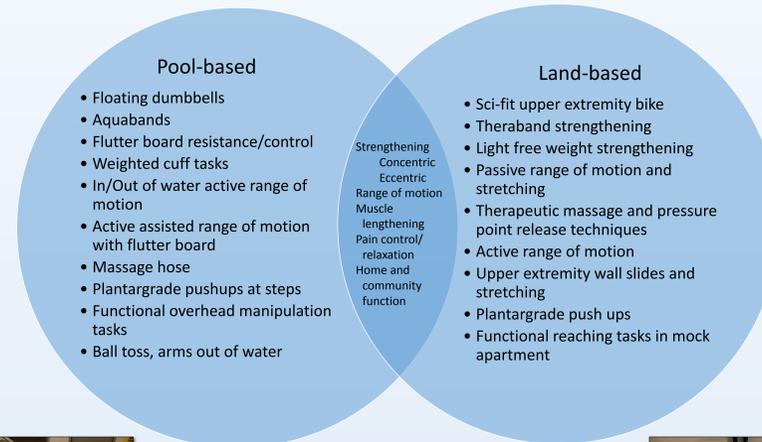
The Use of Aquatic Therapy in Rehabilitation for a Patient Following Complicated Reverse Total Shoulder Arthroplasty: A Case Report

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Background and Purpose

- According to the Aquatic Physical Therapy Section of the American Physical Therapy Association¹, aquatic physical therapy is the evidence-based and skilled practice of physical therapy in an aquatic environment by a physical therapist, and includes interventions designed to improve or maintain:
 - function
 - aerobic capacity/endurance conditioning
 - balance, coordination and agility
 - body mechanics and postural stabilization
 - flexibility
 - gait and locomotion
 - relaxation
 - muscle strength, power, and endurance
- Reverse Total Shoulder Arthroplasty (rTSA) is designed specifically for the treatment of glenohumeral (GH) arthritis when it is associated with irreparable rotator cuff damage, among other complex circumstances.²
- A typical protocol will progress from joint protection, passive range of motion, and isometric strengthening to moderate strengthening and active range of motion. There is little published on the implementation of a pool environment on rTSA rehabilitation.
- These patients have a higher risk of dislocation and must avoid GH extension past neutral, combined GH extension- internal rotation-adduction, and overworking of the deltoid, as it is now the primary muscle for upper extremity elevation.
- The goal in performing an rTSA is to restore “some basic shoulder function” in the GH joint and eliminate pain.³ Normal/full motion is not an expected outcome.
- The purpose of this case report was to report upon the outcomes of aquatic therapy on the biomechanical and functional retraining of a patient following a rTSA.

Interventions

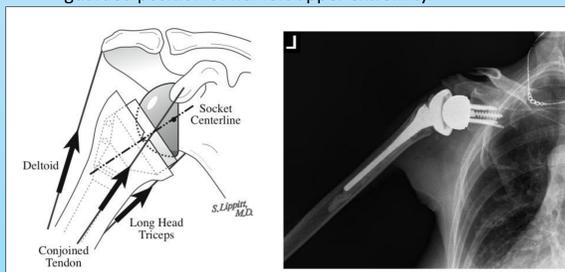


Discussion

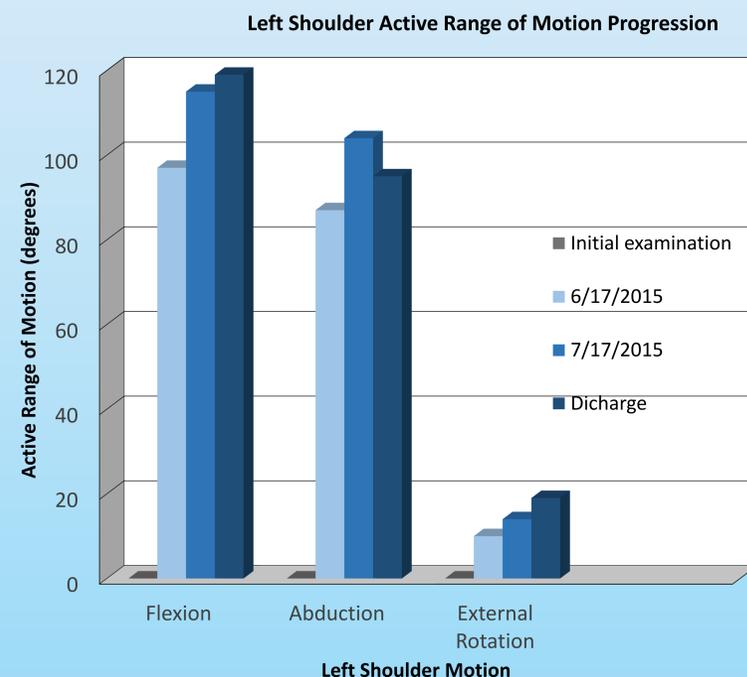
- This patient improved mechanically and functionally during her episode of care and those improvements can be seen in her increased active range motion, increased strength, decreased pain, decreased activity limitations, and decreased participation restrictions.
- She missed a few treatment sessions when her husband passed away, taking time to grieve and be with her family, but returned to therapy with what she described to be “an emotional weight off my shoulders”.
- Pool therapy may have delivered relaxation and psychological benefits to this patient with cognitive and emotional stressors during her care.⁵
- Assistance with early mobility and strengthening may have been provided through the principles of water. A 2015 study by Kelly et al was able to yield that shoulder elevation in the water at slower speeds resulted in a significantly lower activation of the rotator cuff and synergistic muscles⁶. – potentially beneficial to patient who now rely on the extra work of deltoid muscle for upper extremity elevation.
- The aquatic principles may have also aided the patient in regaining function in her new shoulder and decreasing post-surgical pain. A 2015 systematic review by Goehring et al⁷, showed clinically significant differences in pain, function, and quality of life in favor of aquatic therapy for rehabilitation of total knee and total hip arthroplasty. An opportunity exists for similar studies focused on upper extremity joint replacement rehabilitation.
- The injection of muscle relaxer into her problematic shoulder and arm muscles may have been the pivotal co-treatment.
- The patient’s confidence, attitude and mobility were notably improved in her first visit following the injection.
- The management and resolution of her painful muscular shortening and spasm through the injection was believed to be key in the outcomes and satisfaction she was able to achieve.
- Future studies on aquatic therapy in joint replacements, particularly procedures involving the upper extremity, would be beneficial to the evidence-based treatment of our actively aging, longer-living population.

Patient Case Description

- 68 year old female
- Referred to outpatient therapy 8-weeks status post left rTSA, following inpatient stay on site.
- Relevant clinical findings at initial examination were:
 - Unable to demonstrate left shoulder active range of motion
 - 2-/5 resisted isometric strength for left shoulder abduction and flexion
 - Palpable increased tightness and spasm with pain in left bicep, deltoid and pectoralis minor
- She presented with an inability to recruit and activate any left GH elevation, as well as heightened pain response and associated anxiety, compensating with scapulothoracic (ST) elevation and maintaining a highly guarded position of her left upper extremity.



Outcomes



- While range of motion was her principal outcome measure, the patient also met all long-term pain and functional goals.
- Task-related, patient goals included cleaning her floors, hanging up her clothes in the closet, carrying shopping and grocery bags, fastening her seatbelt, driving, and putting the dishes away.

References

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