

Aquatic Therapy: Flooding the Rehab Scene

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Aquatic therapy is being used more frequently in the rehabilitation process. It is greatly beneficial for patients with osteoarthritis (OA), lower extremity disorders and low back pain. By utilizing the three major properties of water, patients can manage their pain, increase range of motion and improve function on land. These three properties are Archimedes principle, Pascal's law and viscosity.

Archimedes' Principal¹ simply indicates there is an upward thrust on an object submersed in water, equal to the weight of the dispersed fluid. Buoyancy, an upward thrust opposite to gravity, is related to the depth of the water and affects weight bearing. For example, weight bearing for a woman standing in water up to the C7 spinal level is at 8%. The more a person moves toward shallow water, the greater their weight bearing. Therefore, exercises can be progressed eventually to land-based therapy once a greater weight bearing tolerance is reached. This works especially well for low back pain patients who are often limited in their weight-bearing tolerance. The buoyancy reduces the compression on the load bearing joints and spinal segments in the patient with degenerative joint disease (DJD).

Patients with fibromyalgia can also enjoy the benefits of water therapy. The combination of warm water and buoyancy encourages muscle relaxation and increased perfusion during slow and controlled movements. During aquatic therapy, muscle spasms can be significantly reduced resulting in decreased pain levels, increased ROM and functional movements usually not tolerated in an initial land-based program.

Pascal's law² describes the relationship between hydrostatic pressure and an immersed object. The liquid's pressure is equal on all sides of an object. This works well for controlling effusion in an injured extremity and allows them to exercise more comfortably. Deeper water is ideal for applying this treatment.

Viscosity, the final property, describes friction of molecules and the created resistance to flow. For example, fast movement is impaired by viscosity. Initial exercises may be implemented at slower speeds to allow ROM. Speed is increased to add a resistance and (concentric) strength training component to the exercise.

The diagnoses previously discussed are just the tip of the iceberg for aquatic therapy utilization. There have been many wonderful studies on aquatic therapy and the treatment of: spinal cord injury (SCI), patellofemoral pain syndrome (PFPS), pediatrics, athletes, cardiopulmonary dysfunction, and osteoporosis³. The three principals of water can be used independently or in a progression to aid the recovery of those patients who present with pain patterns associated with these diagnoses. As a result, overall function, flexibility, stability and

¹ The Columbia Encyclopedia, Sixth Edition. 2001-05

² *The Columbia Electronic Encyclopedia*, 6th ed. Copyright © 2005, Columbia University Press.

³ Stepaneck D. Osteoporosis and Aquatic Therapy. *GeriNotes*, Vol 9. No.1

sense of well-being are greatly increased. So if the opportunity presents itself, discuss with your therapist about getting your patient to “dive into” aquatic therapy.