

# **Aquatic therapy in management of musculoskeletal dysfunction - An effective Rehabilitation tool in fascial tissue mobilization, pain & injury management: A Review**



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## **ABSTRACT**

Aquatic Therapy (AT) is the application of therapeutic exercise in water. Its benefits include pain modulation; musculoskeletal rehabilitation, conditioning and training. It speeds the physical recovery process allowing early movement and improves mental well-being.

## **BACKGROUND**

Water provides buoyancy and viscosity. Buoyancy aids the patient's movement while resisting gravity. Impact is minimal. Viscosity, produces 3-dimensional resistance to all movement. It's a lot harder to exercise in water than on land while, and water substantially lowers the chances of further injury or pain. Temperature and pressure of the water also assist with circulation and relaxation of muscles. Compression by the water helps to reduce edema in tissues. Early movement is crucial to rehabilitation success and AT promotes that. Evidence to show that lack of movement promotes the development of additional cross-links in fascial tissue, which leads to a decrease in its elastic properties.

## **Aquatic Therapy benefits in Clinical Rehabilitation**

The evidence exists to support AT in the management of connective tissue injury and rehabilitation. It known that- mechanical tensile stimulation can significantly improve stem cell proliferation activity in the fascia connective tissue. Pressure exerted by water could have similar effect since water has the capacity to exert three-dimensional (multi-planar) forces on objects moving in it. The eccentric component of these forces is highly effective in enhancing production and strength of these connective tissues through the process of mechanotransduction, microcirculation and growth differentiation factor/hormonal response. [1,2]. Water three dimensional characteristic can be very effective on the body's "fascial net" which architecture design response according to the direction of strain loading applied. Connective tissue is a highly adaptive. The fibroblast within the tissue is able to adjust its matrix remodeling capacity so the overall tissue architecture will response to the load demands [1]. AT enhances muscular, proprioceptive and endurance activities. The body "fascial net is richly enervated with sensory nerves, including proprioceptive receptors, multimodal receptors and nociceptive nerve endings. Evidence existing shows that an increase in local proprioception significantly lowers myofascial pain.

## **CONCLUSION**

AT offers patients a global exercise program for cardiovascular conditioning, flexibility, strength, muscle endurance, muscular relaxation and post exercise recovery methods. Combining AT with standard, land-based therapy shortens the disability period.

## **References:**

1. Khan KM and Scott A. Mechanotherapy: How physical therapists' prescription of exercise promotes tissue repair. Br J Sports Med 43: 247-252, 2009.
2. Kjaer, M., Langberg, H., et al. From mechanical loading to collagen synthesis, structural changes and function in human tendon. Scandinavian Journal of Medicine & Science in Sports 19, 500e510.

