

HydroWorx Used to Treat Knee Osteoarthritis

Acute Aquatic Treadmill Exercise Improves Gait and Pain in People with Knee Osteoarthritis



Roper JA, Bressel E, Tillman MD. Department of Health, Physical Education and Recreation, Utah State University, Logan, UT; Department of Applied Physiology and Kinesiology, University of Florida, Gainesville, FL.

Purpose:

To examine the **acute effects of aquatic and land treadmill exercise on gait kinematics** as well as the **level of disease-specific and movement related pain for individuals with osteoarthritis.**

Method:

Participants had to be over 35 years of age, able to walk a city block (without the use of an ambulatory assistive device), and walk up stairs in a reciprocal manner. Each participant **completed three exercise sessions on an aquatic treadmill and on a land treadmill.** The three exercise sessions in each condition were separated by at least 24 hours and completed within one week. The order of exercise mode was randomly assigned and separated by one rest week. **The amount of walking for each exercise bout was 20 minutes and consisted of four 5-minute stages at 0° incline.** Each of the four stages required differing increments of speeds. These increments in speed were intended to achieve a moderate to somewhat hard rating of perceived exertion as evidenced in previous work using aquatic treadmills. Participants performed the aquatic treadmill exercise at a water depth equal to the xiphoid process. The same protocol was completed for the land treadmill exercise in the same room.

Results:

The angular velocity gain score during stance for **left knee extension was improved by 38% after aquatic treadmill exercise.** Similarly, during swing the gain scores for angular velocity were also greater for **left knee internal rotation and extension**

by 65% and 20%, respectively. During stance, the joint angle gain score for **left hip flexion was 7.23% greater after land exercise.** During swing the angular velocity gain score for **right hip extension was significantly greater for aquatic exercise by 28%.** Only the joint angle gain score for left ankle abduction during stance was significantly higher after land exercise. No other joint angle gain scores for either stance or swing were significantly different for either condition. **Perceived pain was 100% greater following land than aquatic treadmill exercise.** Step rate and step length were not different between conditions.

Conclusion:

An acute training period on an **aquatic treadmill positively influenced joint angular velocity and arthritis related joint pain.** Acute aquatic treadmill exercise may be useful as a conservative treatment to improve angular speed of the lower extremity joints and pain related to OA.



800.753.9633 | www.hydroworx.com