Aquatic Treadmill Training Enhances Strength and Lean Mass Gains When Combined with Resistance Training

Brad S. Lambert, Nicholas P. Greene, Alex Carradine, Dustin Joubert, John S. Green (FACSM), Stephen F. Crouse (FACSM)

Purpose:
This study was conducted in order to explore the differences in soreness, inflammation, muscle-mass gain and loss of body fat between resistance training alone, with land treadmill aerobic exercise and resistance training with underwater treadmill aerobic exercise.

Method:
Forty-seven healthy, sedentary volunteers participated in this study. Subjects were tested twenty four hours before and after initial acute exercise. As well as twelve weeks later for VO2max, body composition, and strength. Subjects were randomized into three groups: Resistance Training, Resistance Training Plus Land Treadmill (LTM), and Resistance Training Plus Underwater Treadmill (ATM). ATM or LTM exercise occurred immediately following resistance training sessions and in isolation on a third day during the week. After training, baseline tests were repeated. A 3x2 mixed model ANCOVA with repeated measures was used to examine changes in body composition, strength, and VO2max.

Results:
There was a benefit in almost every aspect to resistance training plus underwater treadmill. The underwater treadmill reduced soreness, body fat and inflammation. While also improving muscle mass and strength performance. Results also show that with resistance training plus underwater treadmill blood pressure was lower than if resistance training plus land treadmill was used.

Conclusion:
Concurrent resistance training plus underwater treadmill elicits greater increases in lean mass and strength than resistance training alone or resistance training plus land treadmill. In combination with resistance training, the novel use of resistance training plus underwater treadmill running may benefit those who desire both aerobic fitness and maintenance of strength and muscle mass. These results challenge the view that training for both strength and endurance are universally incompatible.