

AQUA RESEARCH REVIEW

IS EXERCISING IN WATER THE ANSWER TO THE PLYOMETRIC DILEMMA?

Title: 'Comparison of Aquatic and Land Plyometric Training on Strength, Power and Agility'

Authors: Dawn T. Gulick, Christina Libert, Meghan O'Melia and Laura Taylor.

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PLYOMETRIC MOVEMENTS are typically thought to be associated with land exercises. These moves are explosive in nature and if performed incorrectly can compromise joints with the force of the exertion. Water exercise provides a unique environment that cushions joints and decreases joint compression, raising the question of whether the aquatic environment is the solution to the plyometric dilemma, i.e. how to perform explosive movements in a safe manner. The findings of this study seek to answer this question.

Purpose: The purpose of this research was to compare land and water exercises using plyometric movements. The study was designed to examine the implications to fitness and joint stability.

Methods, experiment and data collection: Forty-two subjects were randomly assigned to one of three groups: control, land and aquatic. There were 24 female and 18 male participants ranging in age from 24.5 to 28 years old. Each subject had no prior formal plyometric training and no known lower extremity injuries.

Each participant's strength, power and agility was evaluated before and after the experiment. Strength was assessed by using a maximal isometric contraction of the quadriceps muscle, power was assessed via a vertical jump test and agility was assessed via a T-run.

The experiment was broken down into two phases, the initial phase consisting of four sets of 120 foot-contacts per session and the second phase consisting of five sets of 180 foot-contacts per session. These foot-contacts were defined as the number of actual times the foot came into contact with the ground. Each of these phases lasted six weeks, meeting twice a week.

Results:

Strength: The findings were significant. The land and water groups both increased strength, but the water group actually made a greater gain. The control group also

showed an improvement but the most significant progress was found in the water exercise group.

Power: The findings were again significant, although the improvement discovered was smaller. The land and water groups demonstrated progress, with the water group gaining the most power. The control group did not make any significant changes in this area.

Agility: There were no significant differences between the groups with respect to agility. This was attributed to the nature of plyometric movements and the extreme force needed to perform the moves. A note for future research would be to add a significant portion for stretching into the phases and then check for agility changes.

Discussion: This research is yet another feather in our swimming caps! The researchers found that the buoyancy of the water decreased the time spent in contact with the ground. Therefore these participants landed with a lower load, but had faster transition times resulting in improved power output and strength.

The buoyancy makes the plyometric movements possible for all kinds of participants. We know that the aquatic environment is wonderful and now we have yet another form of exercise to explore. Caution should be exercised if contemplating putting some plyometric moves into a class routine as they are still very explosive and difficult to perform. Advanced participants, however, may find them productive and fun. Keep your explosive moves plyometrically safe! ■

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Jodi Frank, PhD, CTRS

Jodi Frank has been in the American fitness industry for over 20 years. She has multiple US National Certifications and degrees in the field of sports, recreation and exercise sciences. Her classes have ranged from senior strength and conditioning, water fitness and performance cycling, to outdoor adventure and numerous studio programs. Jodi frequently presents at conventions both in the US and internationally.