

THE EFFECTS OF AQUATIC REHABILITATION ON POSTURAL BALANCE IN INDIVIDUALS POST-STROKE: A SYSTEMATIC REVIEW

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ABSTRACT

Introduction: Aquatic rehabilitation is a therapeutic intervention performed in water that may incorporate aerobic and strengthening exercises designed to improve physical functioning. Due to the properties of water, aquatic rehabilitation may be an appropriate intervention to address postural and balance deficits following a stroke event. **Objective:** The purpose of this systematic review was to analyze the quantitative effects of aquatic based therapeutic interventions on postural control and balance in individuals following a stroke. **Methods:** PubMed and Embase databases were searched, using terms related to aquatic therapy, postural balance, and individuals with stroke. Articles included were limited to publications within the past 10 years, peer-reviewed articles, and articles in the English language. Articles were screened by title, abstract, full text and duplication. Inclusion criteria encompassed human participants at least six months post-stroke, aquatic rehabilitation, balance assessments, and studies obtaining results measuring postural control, balance, or equilibrium. Exclusion criteria included articles in a previous systematic review and meta-analysis. Quality of the articles was assessed using the PEDro Scale. **Results:** Six articles were selected for the systematic review. The average PEDro score was 6 with a range from 4 to 8. Five articles demonstrated quantitative information showing beneficial effects for balance based on implementation of aquatic therapy interventions as compared to placebo or control-based interventions, while the remaining article showed no statistical difference between the groups. **Conclusion:** The findings of this systematic review indicate that aquatic rehabilitation may be an effective intervention for individuals experiencing deficits of postural control and balance following stroke. Possible limitations within this review include the small sample sizes and variability in the aquatic therapy interventions utilized within the various studies.

Key words: aquatic rehabilitation, stroke, postural deficits, balance deficits

INTRODUCTION

A stroke occurs due to a limitation of blood supply to the brain, potentially resulting in widespread damage and deficits in functional activities. In addition to an array of other deficits, individuals recovering from a stroke often demonstrate symptoms associated with decreased postural control and balance, which places them at higher risk for falls. Aquatic rehabilitation is a therapeutic intervention performed in water that may incorporate aerobic and strengthening exercises designed to improve physical functioning. Aquatic rehabilitation offers a safe alternative to traditional land-based physical therapy by using the properties of water. While each of the properties of water influence performance of exercise and functional activities, buoyancy, density, and specific gravity have specific effects on postural control and balance [1]. The property of buoyancy reduces the effects of gravity, allowing the participant to move more freely than on land [1]. Additionally, the properties of density and specific gravity further assist in supporting body weight and also increase the “fall time”, which may be helpful in training fall recovery [1]. Based on the properties of water and the effects on the human body, aquatic rehabilitation may be an