

Clinical Effectiveness of an Aquatic Exercise Program on Those with Visual Impairments: A Protocol Study

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INTRODUCTION


- Mobility deficit is one of the most commonly reported physical disabilities in the United States
 - Commonly associated with chronic health conditions - including visual impairment (VI)
- VI impacts equilibrium, balance, coordination, and posture
 - Predisposition to a sedentary lifestyle and associated sequelae
- Previous studies have indicated the benefits of physical activity for individuals with VI

BACKGROUND

- Aquatic therapy is an evidence-based and skilled practice of physical therapy in an aquatic environment
 - Used for varying injuries and maintenance of health-related fitness
 - Ample studies have indicated benefits in diverse populations
- Interventions in aquatic therapy
 - Balance training
 - Aerobic capacity
 - Endurance training
- Few studies evaluating aquatic therapy and VI



PURPOSE

- The purpose of this study is to:
- Evaluate if individuals with VI can participate in and tolerate an 8 week aquatic exercise program
 - Determine if significant differences will be noted in:
 - Strength
 - Endurance
 - Cardiovascular fitness
 - Quality of life
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PARTICIPANTS

- Up to 20 participants will be recruited for this study using a sample of convenience
- Potential participants will be clients of Northeast Sight Services (NESS) in Exeter, PA
 - NESS serves the blind and visually impaired in Luzerne, Wyoming, Wayne, and Pike counties in Northeast PA



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<https://business.backmountainchamber.org/list/member/northeast-sight-services-exeter-879>

OUTCOME MEASURES


- 30 Second Chair Stand Test
 - Lower extremity strength
- Six Minute Walk Test
 - Endurance
- Modified Borg Dyspnea Scale
 - Shortness of breath
- Borg Rating of Perceived Exertion
 - Exertion
- SF-36 Questionnaire
 - Quality of life
- All outcome measures are valid and reliable

ACADEMY OF AQUATIC PHYSICAL THERAPY PROGRAMS




<https://aquaticpt.org/>

INCLUSION AND EXCLUSION CRITERIA

- Inclusion:
 - English speaking
 - 30 to 80 years of age
 - Diagnosis of visual impairment
 - Alert and oriented to person, place, situation and date
 - Exclusion:
 - Current rigorous exercise program
 - High fever or other COVID-19 symptoms
 - Severe cardiovascular cardiopulmonary disease
 - Pregnancy or recent childbirth
 - Major neurological impairments
 - Open wounds
 - Incontinence
 - Uncontrolled seizure disorders
 - Serious fear of water
 - Uncontrolled high blood pressure
 - Hearing impairments
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EXERCISE FRAMEWORK

Program	Examples
10 minute warm up	Marches, Jumping Jacks
20-25 minute strengthening exercises	Forward Straight Leg Kicks, Butt Kicks
15-20 minute aerobic exercises	Walking, Side Steps
10 minute cooldown	Lower Extremity Stretches

- Goal: complete 10 repetitions of strengthening and aerobic exercises
 - Once goal is achieved, progress to increased repetitions or resistance
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DATA ANALYSIS

- Paired T-tests for parametric data
 - SF-36, Six Minute Walk Test, 30 Second Chair Stand
- Wilcoxon test for non parametric data
 - Modified Borg Dyspnea Scale, Borg Rating of Perceived Exertion Scale

PHYSICAL THERAPY IMPLICATIONS

- If an aquatic exercise program is well tolerated and shown to be effective for those with VI:
 - Viable treatment method for this population
 - Promoting wellness through the use of an aquatic exercise program

IMPLICATIONS FOR FUTURE RESEARCH

- Future researchers can collaborate with groups such as NESS to expand research into aquatic therapy for individuals with VI
 - Larger sample sizes
 - Separate groups by diagnosis



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REFERENCES

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