

Misericordia University

Misericordia Digital Commons

Student Research Poster Presentations 2026

Student Research Poster Presentations

2026

Clinical Effectiveness of an Aquatic Exercise Program on Those with Visual Impairment

Mikayla Calitis
Misericordia University

Haley McMenimen
Misericordia University

Isabella Bernitsky
Misericordia University

Amelia Gansz
Misericordia University

Karol Bialek
Misericordia University

Follow this and additional works at: https://digitalcommons.misericordia.edu/research_posters2026



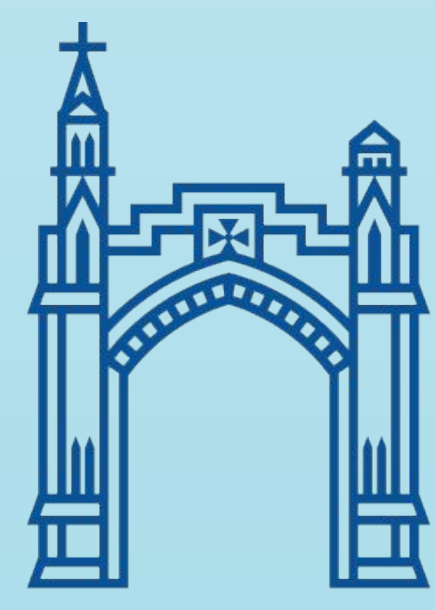
Part of the [Physical Therapy Commons](#)

Recommended Citation

Calitis, Mikayla; McMenimen, Haley; Bernitsky, Isabella; Gansz, Amelia; and Bialek, Karol, "Clinical Effectiveness of an Aquatic Exercise Program on Those with Visual Impairment" (2026). *Student Research Poster Presentations 2026*. 8.

https://digitalcommons.misericordia.edu/research_posters2026/8

This Poster is brought to you for free and open access by the Student Research Poster Presentations at Misericordia Digital Commons. It has been accepted for inclusion in Student Research Poster Presentations 2026 by an authorized administrator of Misericordia Digital Commons. For more information, please contact mcech@misericordia.edu.



Clinical Effectiveness of an Aquatic Exercise Program on Those with Visual Impairment

Mikayla Calitis, Haley McMenimen, Amelia Gansz, Karol Bialek, and Isabella Bernitsky
Primary Investigator: Dr. Maureen Rinehimer PT, PhD, MS, MHS

INTRODUCTION

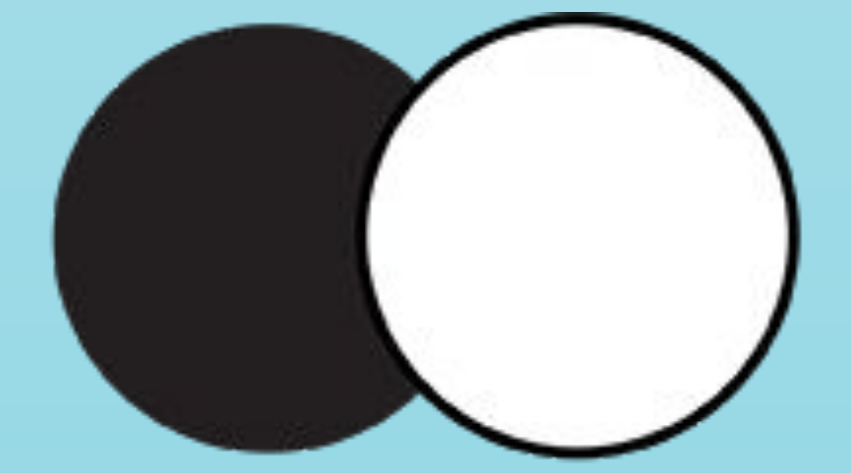
- 2.2 billion people worldwide have diagnosed visual impairments
- Visual impairments are linked to:
 - Developing a sedentary lifestyle
 - Decreased balance, coordination, strength, and quality of life
 - Gait deviations
 - Increased risk of falls and injury
- Limited research in this population

HYPOTHESIS

There will be a significant difference in balance, lower extremity strength, cardiovascular fitness, endurance, gait, and self reported quality of life.

BACKGROUND

- Land based exercises can be challenging for this population
- Aquatic exercise is used as an alternative to land based exercise due to:
 - Buoyancy
 - Hydrostatic pressure
 - Drag
- Pilot Study (Rinehimer et al., 2022)
 - 8-week aquatic exercise program
 - Ohio State Protocol
 - Program was tolerated well
 - Aquatic exercises was effective in improving in LE strength, cardiovascular endurance, and quality of life



NORTHEAST SIGHT SERVICES

Since 1918

OUR VISION IS CLEAR: SIGHT LOSS SUPPORT & PREVENTION™

Category	Exercises
Warm-Up (5 min)	Walk/Jog • March • Jumping Jacks • UE/LE stretch
Strengthening (20-25 min)	Trunk Twist • Pelvic Curls • Karate Kicks • Bicycle Crunches • Wall Pushups • Straight Leg Kicks (front/side/back) • Butt Kicks • Knee Extension • Donkey Kicks • Heel/Toe Raises • Squats (wall/jump)
Aerobic (15-20 min)	Walk (fwd/back/side) • Bicycle Kicks • Flutter Kicks • Breaststroke Kicks • Treading
Cooldown (5 min)	Free Swim

METHODS

- Population
 - 8 participants from Northeast Sight Services
- 8-week exercise program
 - 2x/week, 1 hour sessions
- Misericordia University Anderson Pool
 - Temp: 83-85°F
- Pre- & Post-Test data collection
- Outcome Measures
 - Muscle Strength - Muscle Dynamometry
 - Balance - BERG
 - Fall Risk - 30s STS
 - Gait - Zeno Walkway
 - Quality of Life - SF-36

PT IMPLICATION

- Safe physical activity for the visually impaired population
 - Decreased fall risk
- Aquatic exercise for other populations
- Improved confidence with larger movements
- Health literacy with participants and future patient
 - Frequent, consistent vital sign screening
- Application of sighted guide techniques & clear verbal instructions
- Further research needed

Recruitment (Flyers shared with NorthEast Sight Services and Masonic Village)

Assessed for eligibility and completion of informed consents (n=10)

Participants excluded due to exclusion criteria or unavailability (n=1)

Participants meeting inclusion criteria (n=9)

Completion of demographic form (n=9)

Assign participant numbers and conduct pre-test data collection (n=9)

8-week aquatic exercise intervention (n=9)

Withdrew from study / Lost to follow-up (n=1)

Conduct post-test data collection (n=8)

Data analysis via paired t-test (n=8)

REFERENCES & GRATITUDE

Thank you Dr. Maureen Rinehimer!
Thank you NESS!

