

Making a Splash with Aquatic Therapy

Helen A. Milligan, PT, DPT, PCS

NDSC Conference

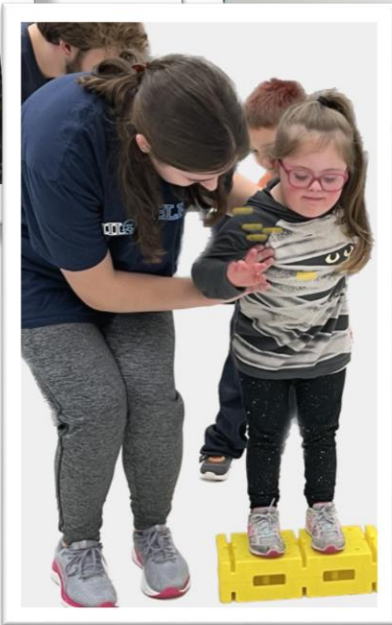
July 2023



No Conflicts of Interest



A little bit about me...



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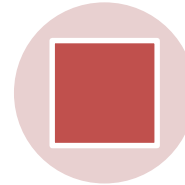


Goals of Presentation:

By the end of today you will:



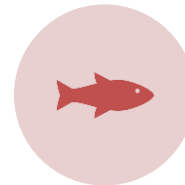
Explain how we learn new motor skills



Review the therapeutic properties of water



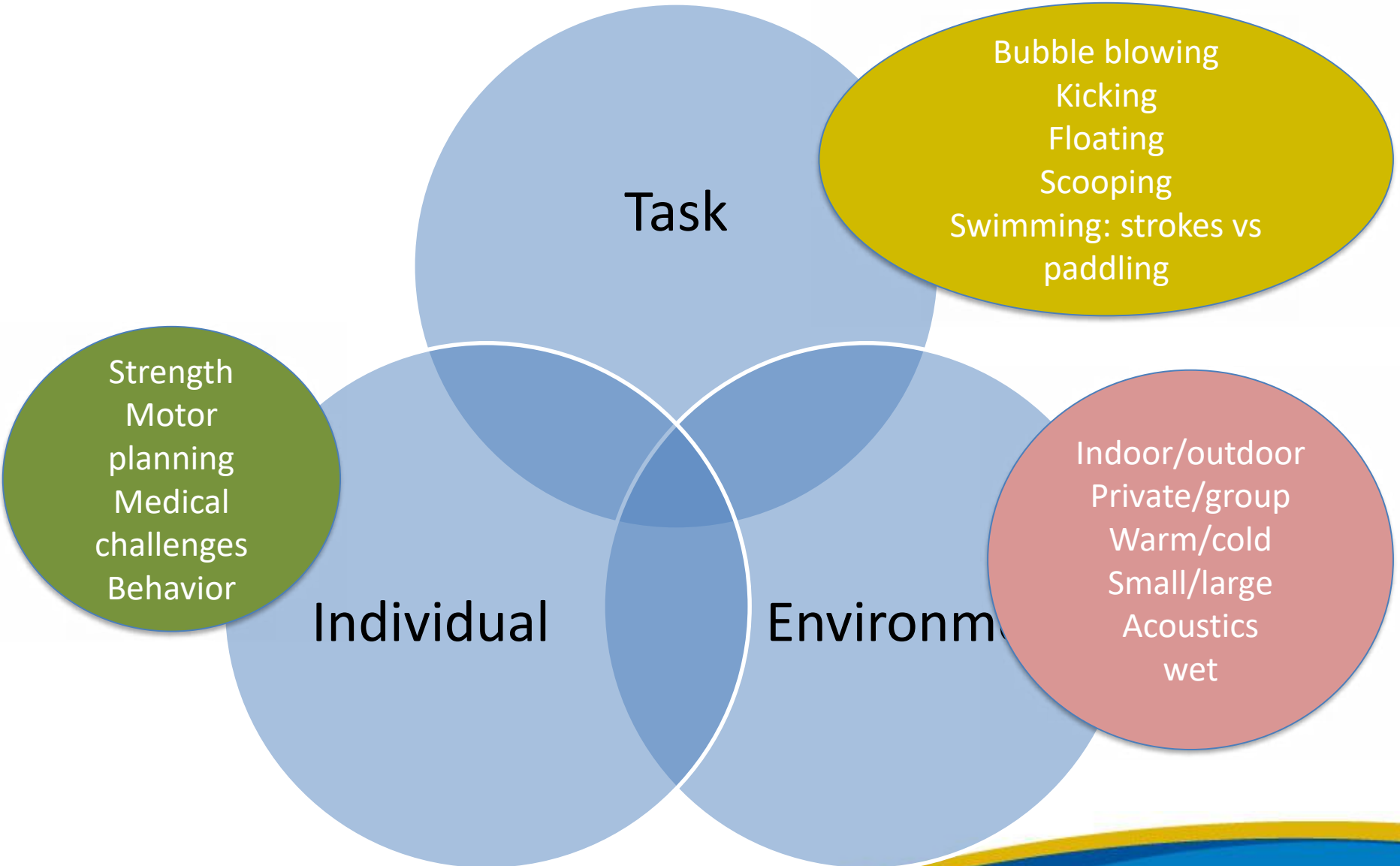
Be able to explain the benefits swimming for children with Down syndrome



Identify the goals of aquatic therapy and swimming



Be ready to do at least 3 activities to help with movement and water skills.



Task

Bubble blowing
Kicking
Floating
Scooping
Swimming: strokes vs
paddling

Strength
Motor
planning
Medical
challenges
Behavior

Individual

Environment

Indoor/outdoor
Private/group
Warm/cold
Small/large
Acoustics
wet

Properties of the Water

Buoyancy

Hydrostatic
Pressure

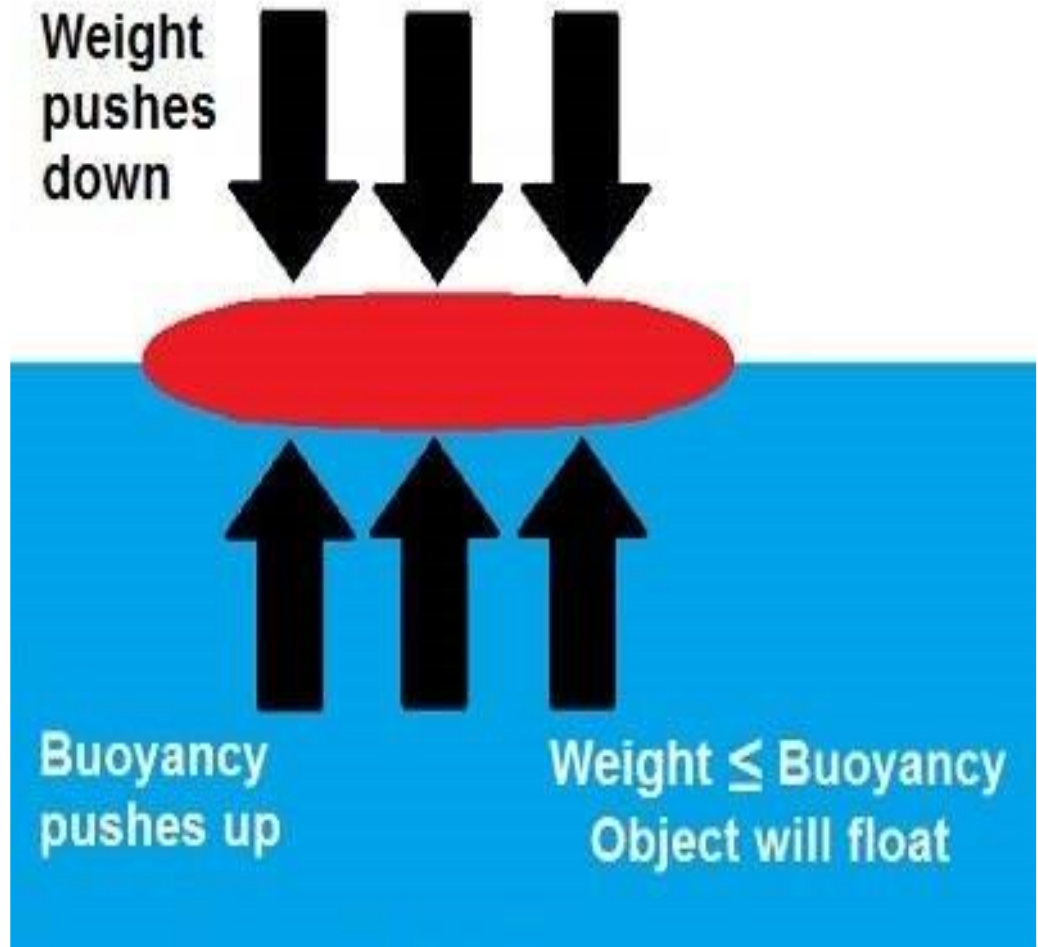
Viscosity

Flow

Temperature

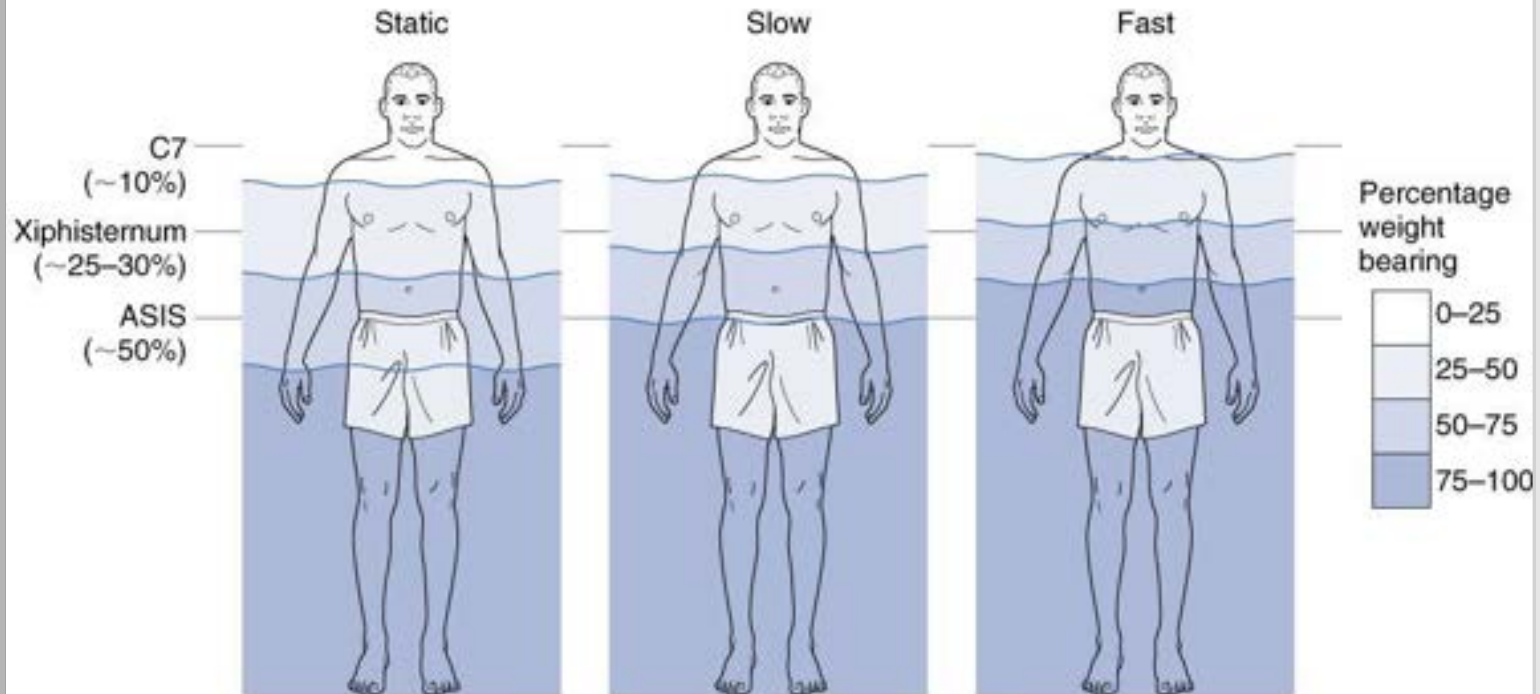
Refraction

Buoyancy



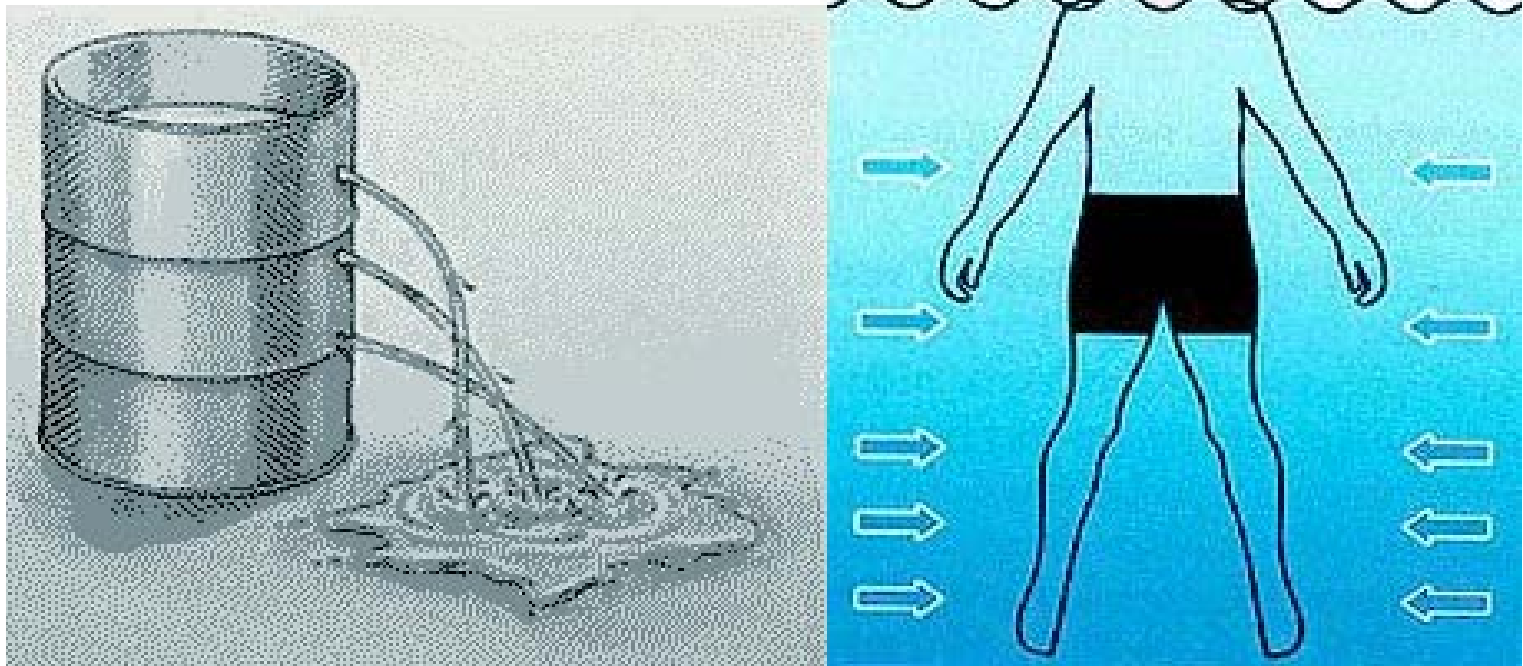


Weight Bearing in Water



Reprinted from Harrison, Hillman, and Bulstrode 1992.

Hydrostatic Pressure



Viscosity

High viscosity
Honey



Low viscosity
Water



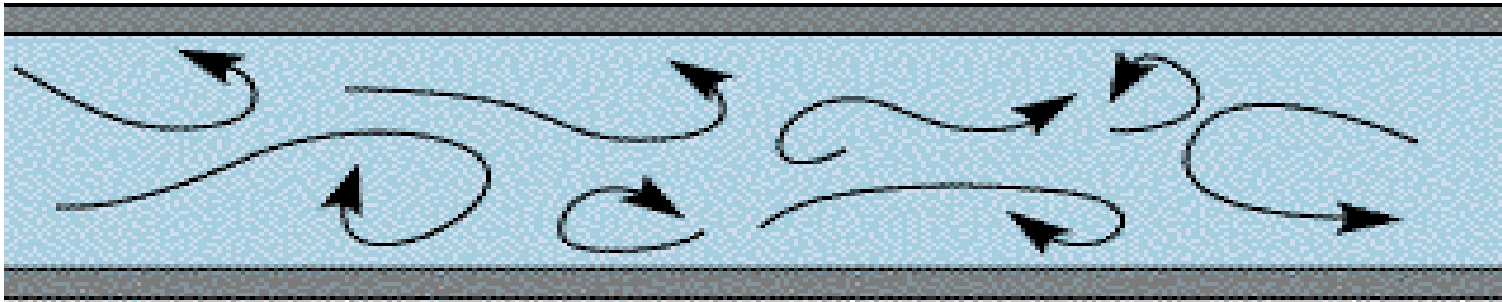


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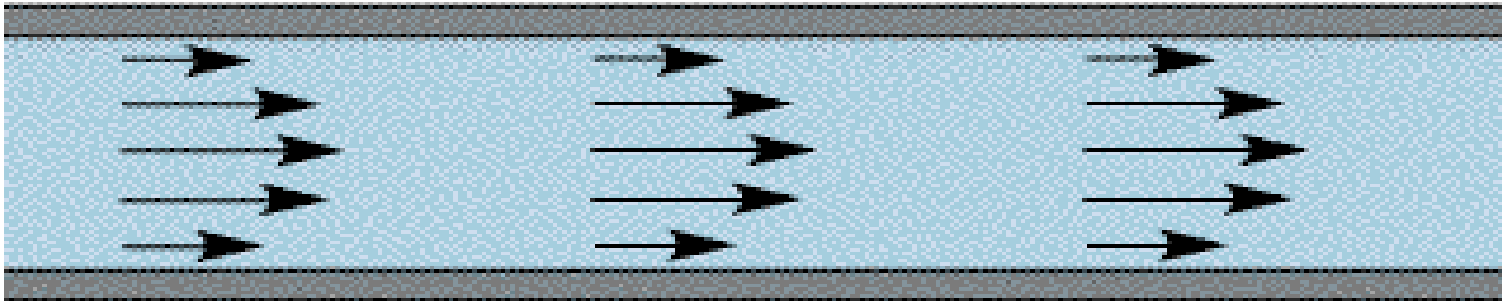


Flow

Turbulent



Laminar

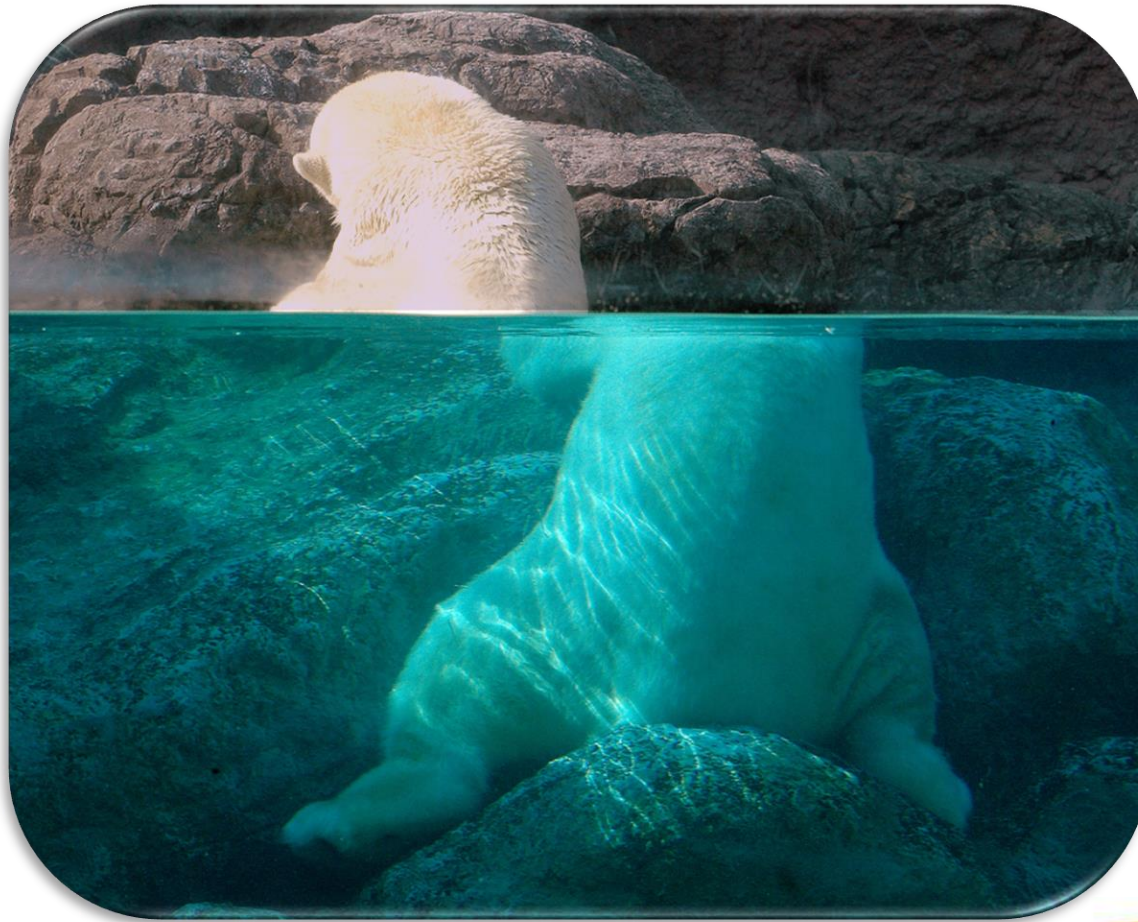


Temperature:

Thermal neutral 93F
(92-97 degree F range)



Refraction



Halliwick: The 10 Point Program

Mental
Adjustment

Sagittal
Rotation

Transversal
Rotation

Longitudinal
Rotation

Combined
Rotation

Up thrust

Balance in
Stillness

Turbulent
Gliding

Simple
Progression

Basic
Movement



Mental Adjustment



Overall Safety in water



Adaptations of Mechanical effects of water



Foundational Skills for Swimming

Progression

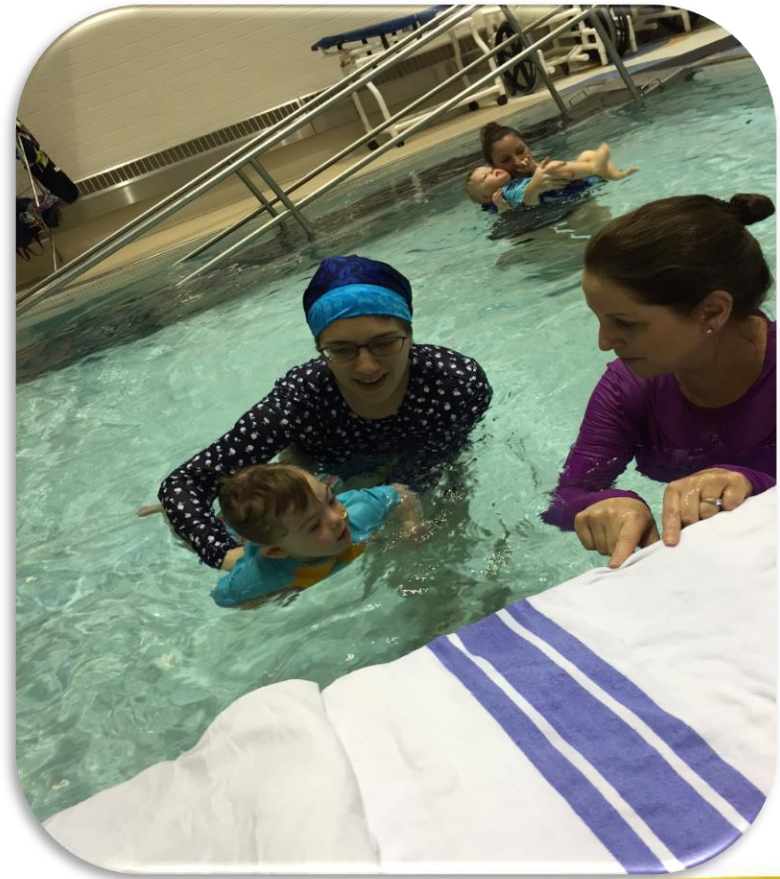


Sagittal Rotation Control





Transverse Rotation





RESEARCH REPORTS

The Benefits of Group Aquatic Therapy for Young Children With Down syndrome

Milligan, Helen PT, DPT, PCS; Glanzman, Allan PT, DPT, PCS; Waasdorp, Ilana PT, DPT, PCS; Kinslow, Tricia OT; Hagenbaugh, Michelle OT; Pipan, Mary MD; Harrington, Ann PT, DPT, PhD, PCS; Palombaro, Kerstin PT, PhD

[Author Information](#) 

The Journal of Aquatic Physical Therapy: January/April 2022 - Volume 30 - Issue 1 - p 12-21
doi: 10.1097/PXT.0000000000000011


Outline


Images


Download

CASE SERIES:

What: standardized aquatics program

Why: establishment of effective strategies

Who: children with Down syndrome.



AQUATIC GROUPS:

8 Week Program

Groups:

Starfish: 10-18 months

Goldfish: 18- 3 months

Dolphin: 3 – 6 years



ASSESSMENTS: GMFM 88 AND WOTA



ROUTINE:

- Pool Entry
- Circle Time
- Basic Swim Skills
- Circle Time
- Obstacle Course
- Circle Time
- Exit



RESULTS:

PARENT SURVEY:

FOLLOW DIRECTIONS

NUMBER OF SIGNS

TAKING TURNS

FOLLOWING DIRECTIONS

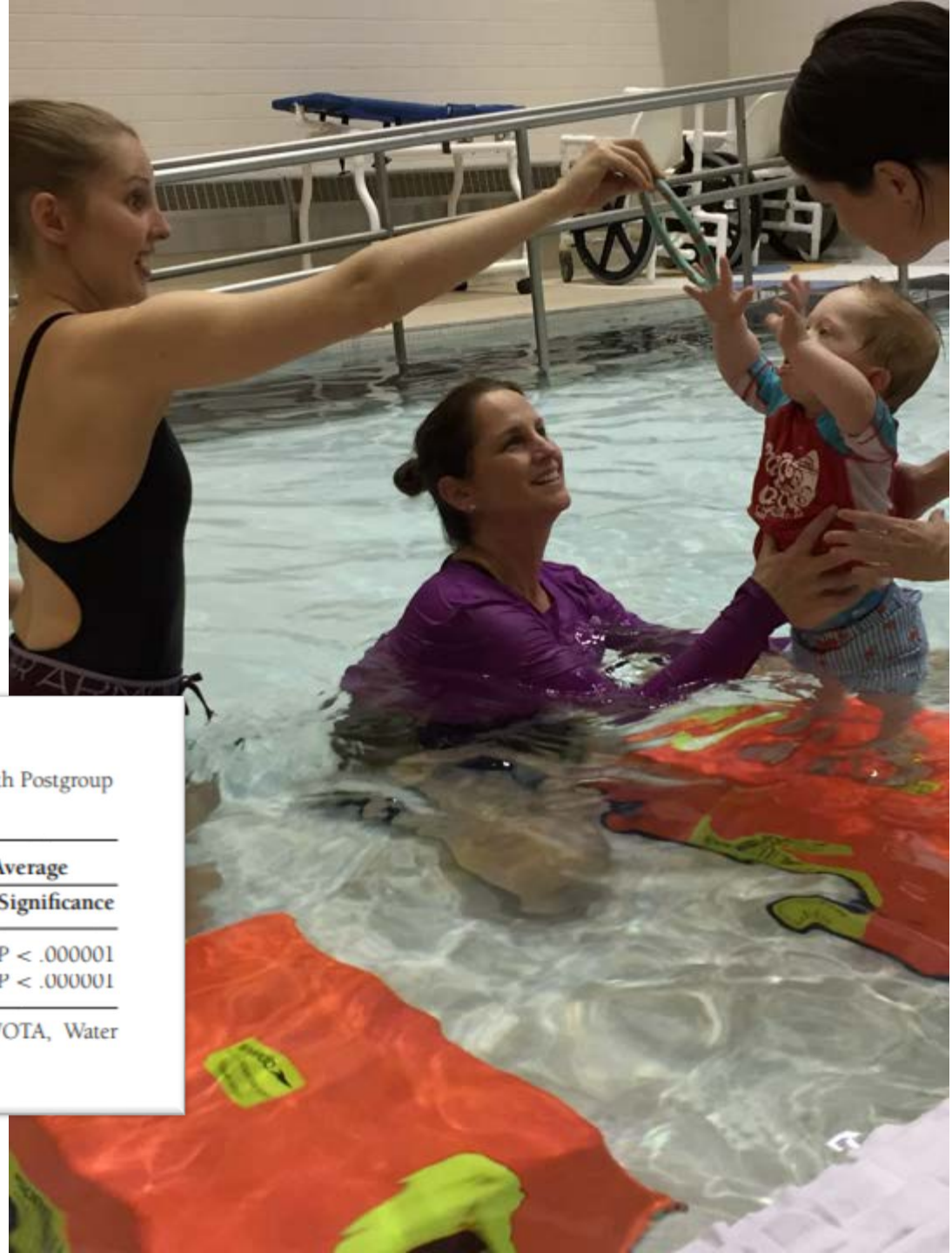


TABLE 1

Paired *t* Test Comparing Initial GMFM and WOTA Scores With Postgroup
Follow-up GMFM and WOTA Scores

Gross Motor and Water Acclimation Skill: Average						
	n	Initial	Follow-up	Difference	SD	Significance
GMFM	20	154.8	179.45	24.65	18.93	$P < .000001$
WOTA	15	25.533	37.733	12.2	8.13	$P < .000001$

Abbreviations: GMFM, Gross Motor Function Measure; WOTA, Water Orientation Test Alyn.

ESTABLISHMENT OF EFFECTIVE AQUATIC TREATMENT STRATEGIES FOR THOSE WITH DS



RESEARCH REPORT

The Benefits of Group Aquatic Therapy for Young Children With Down syndrome

Helen Milligan, PT, DPT, PCS; Allan Glanzman, PT, DPT, PCS; Ilana Waasdorp, PT, DPT, PCS; Tricia Kinslow, OT; Michelle Hagenbaugh, OT; Mary Pipan, MD; Ann Harrington, PT, DPT, PhD, PCS; Kerstin Palombaro, PT, PhD

Department of Physical Therapy (Drs Milligan, Glanzman, Waasdorp, and Harrington), Department of Occupational Therapy (Mss Kinslow and Hagenbaugh), and Trisomy 21 Program (Dr Pipan), Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; Program in Physical Therapy (Drs Harrington and Palombaro), Arcadia University, Glenside, Pennsylvania.

Water Safety Tips for Youth with Down Syndrome

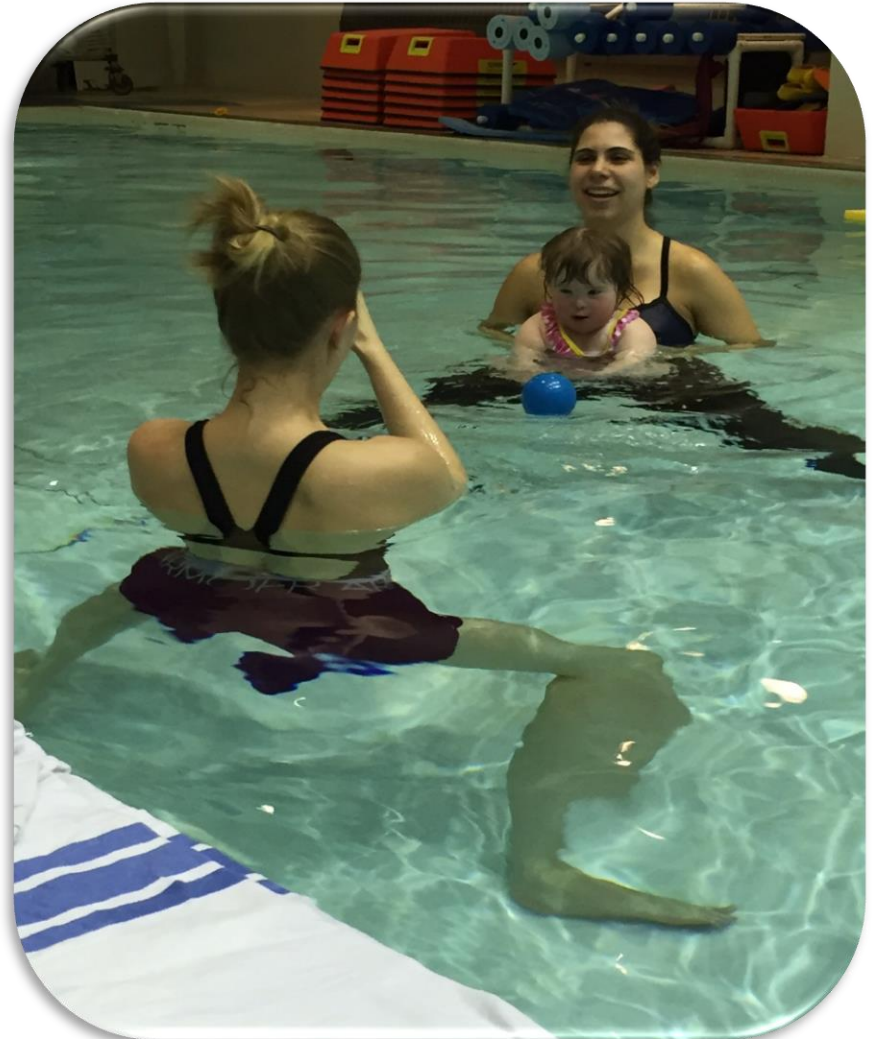
Published on Feb 16, 2022



Swimming is part of summer fun, especially for my son, Aidan, who has Down syndrome. It provides opportunities for him to exercise while being with family and friends. He's been a member of our local swim team for the past 10 years and was a varsity swimmer on the Haverford High School swim team for the past four years.



<https://www.chop.edu/health-resources/water-safety-tips-youth-down-syndrome>



Weekly Goals and Group Routine

- Water entry
- Hello song
- Bubble blowing
- Water orientation: support at trunk and side to side movements
- Front to back/floating
- Mat work
- Bilateral integration
- Standing balance/steps
- Good-bye song
- Exit from pool



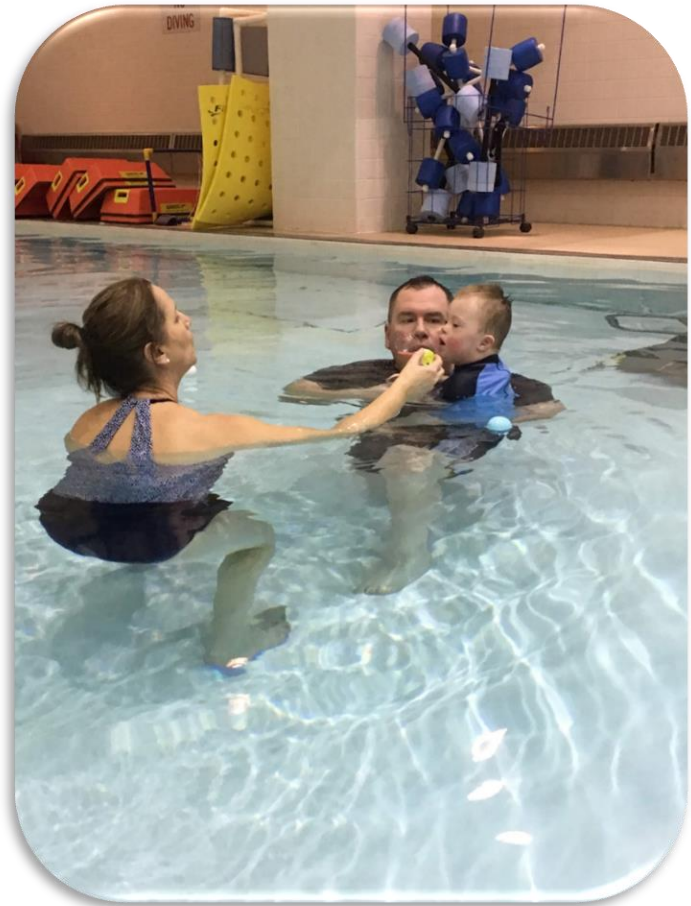
Water Entry

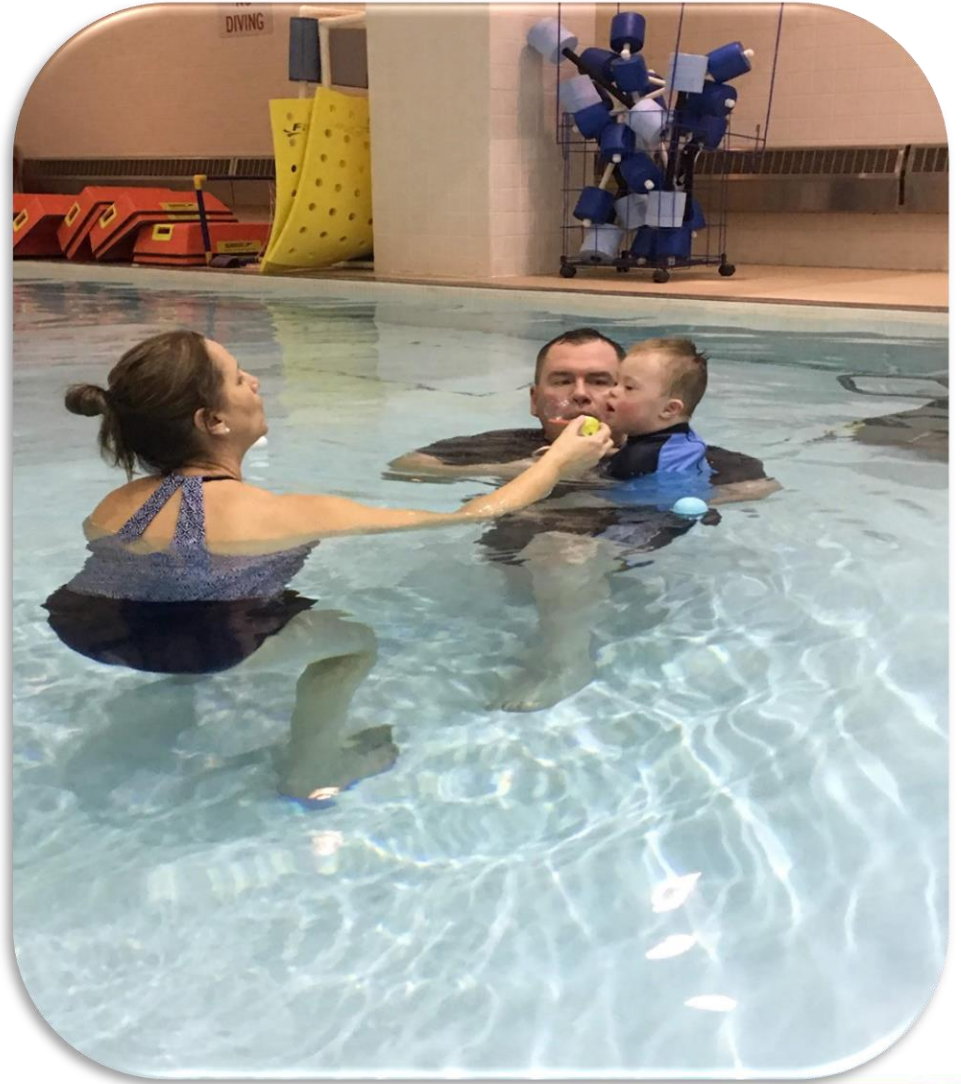


Hello Song



Bubble blowing





Oral Motor Home Exercise Program

For play: make a big smile and relax while facing... Practice making silly faces (kisses, "fish lips", etc). Imitation is key!



Blowing a pinwheel



Use vibration or various textures to rub cheeks and... Z-vibes and vibrating toothbrushes work great for this!



Encourage use of straw to reduce tongue protrusion facilitate lip closure. Once drinking from a straw, try drinking thicker fluids like smoothies and shakes



Stick a lippop onto lips and have child use tongue to lick off lippop to taste.



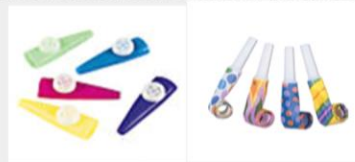
Blow bubbles off wand



Roll cotton balls, tissue, Pom Poms or balloon on table or highchair tray



Blow Kazoos, noise makers, party favors



Model Bubble Blowing -in bath, water table, bowl of water

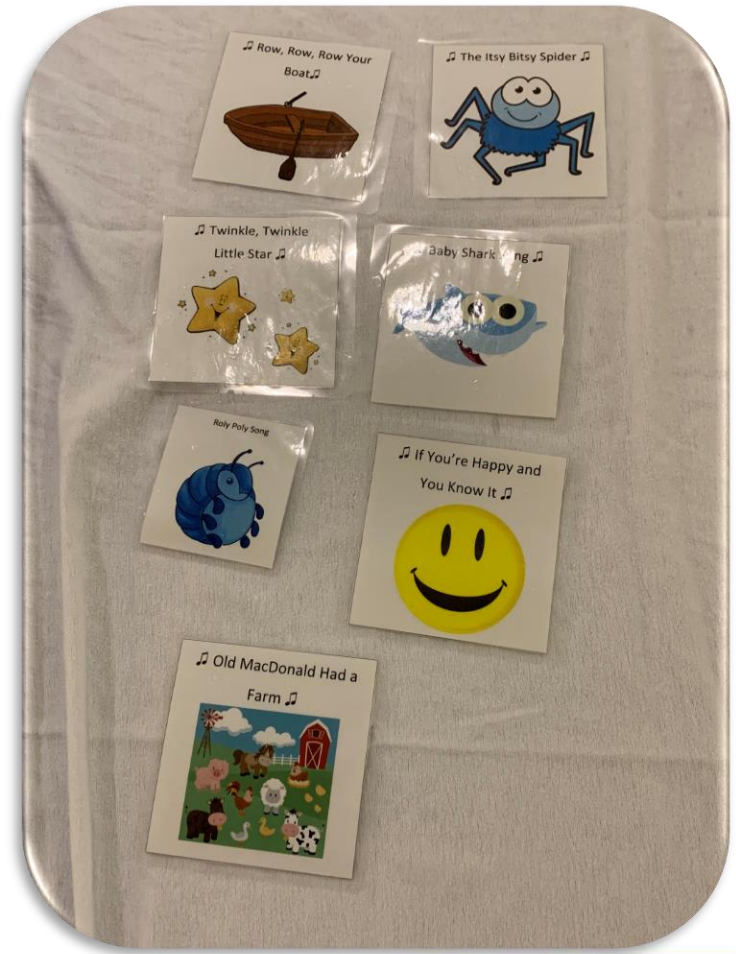


Model blowing Ping pong balls or Easter eggs- On table surface or highchair tray





Visual Schedule/Picture Cards



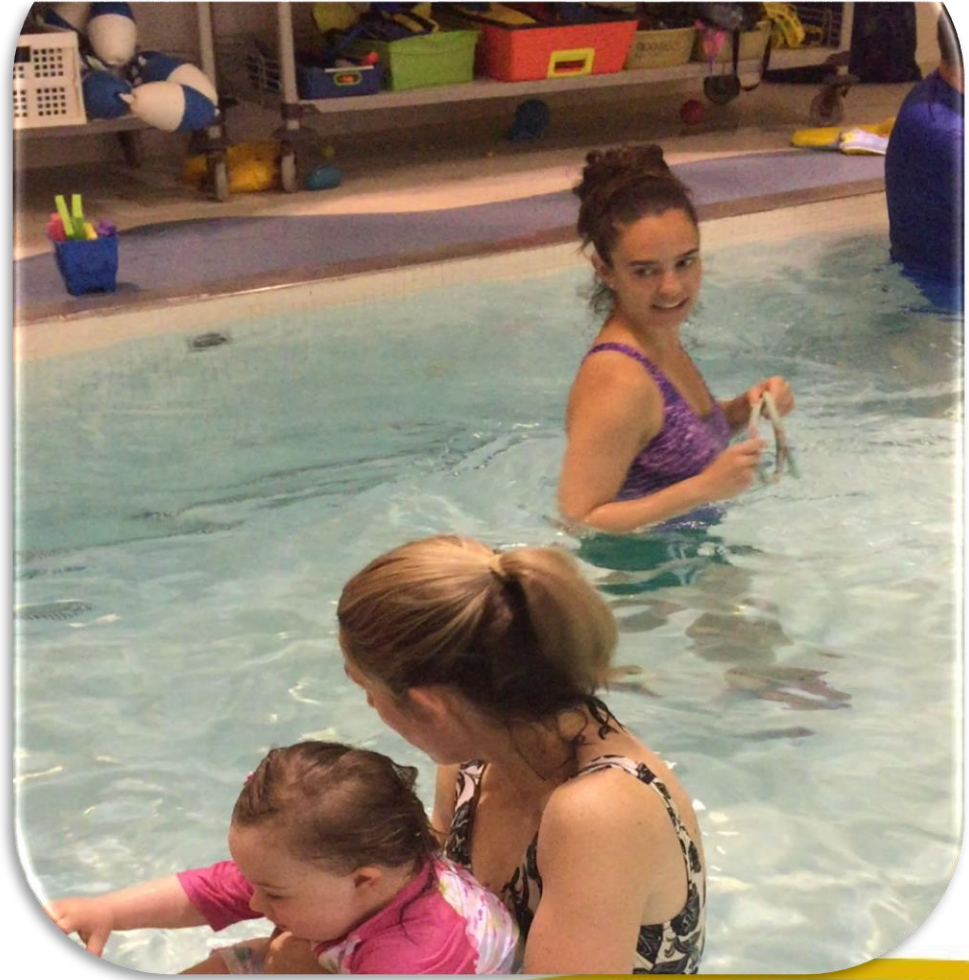
Eye Contact/ Turn Taking



Bilateral Skills



Reaching



Standing Balance





Walking

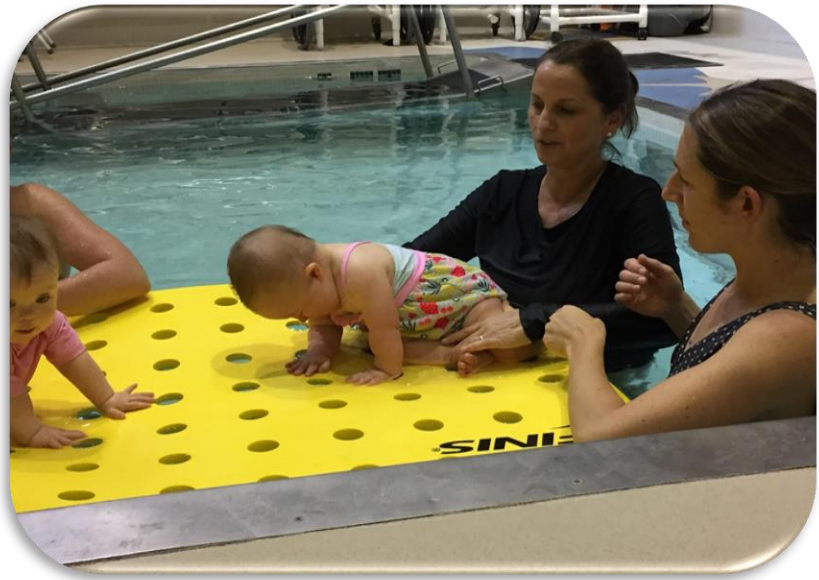


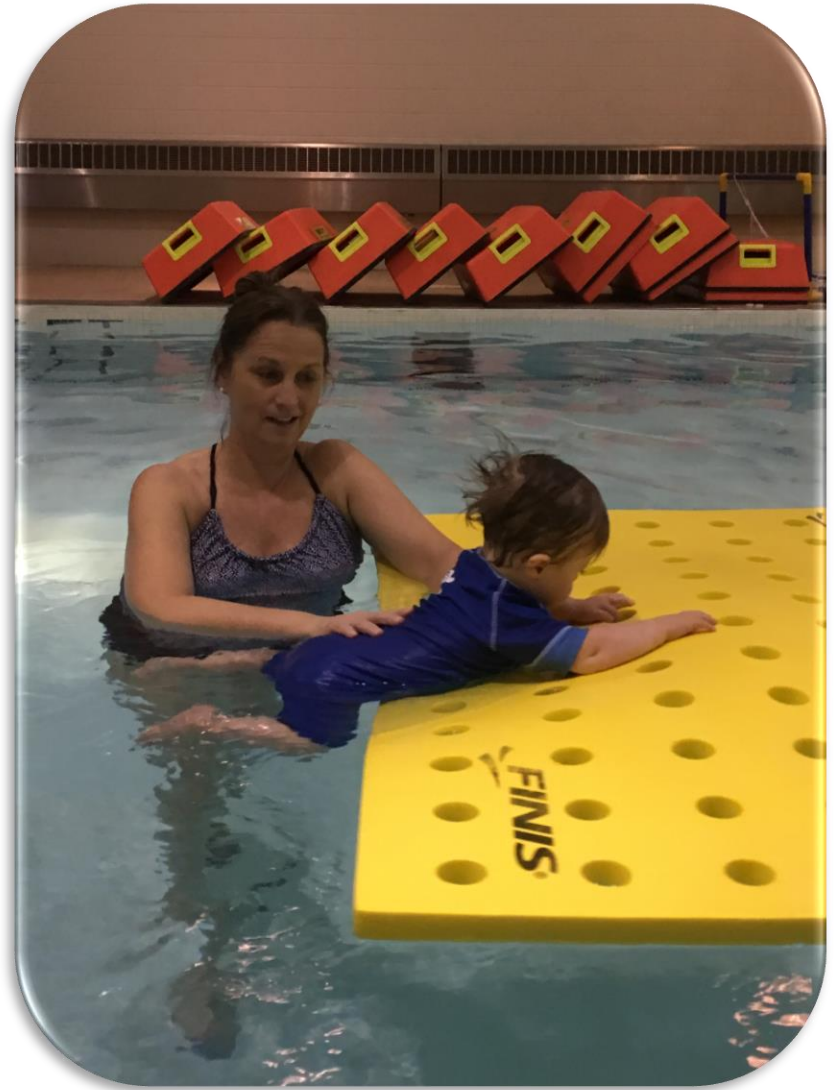
Stepping Up and Stepping Down



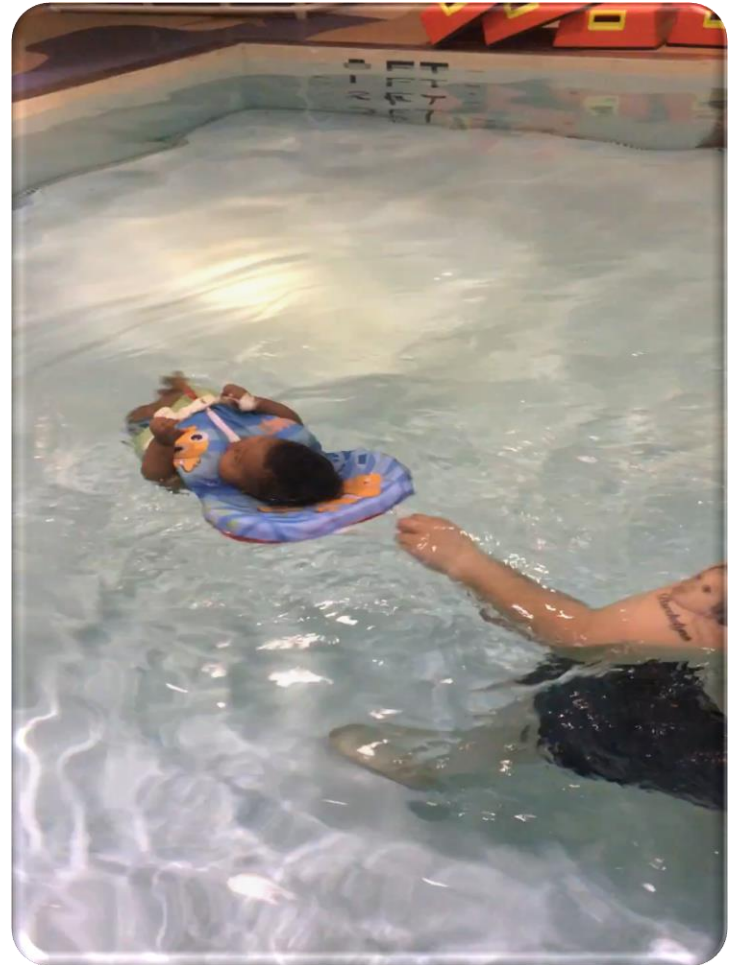
Promoting Foundational Swimming Skills







Floating on back



Flotation Week

flotation devices:

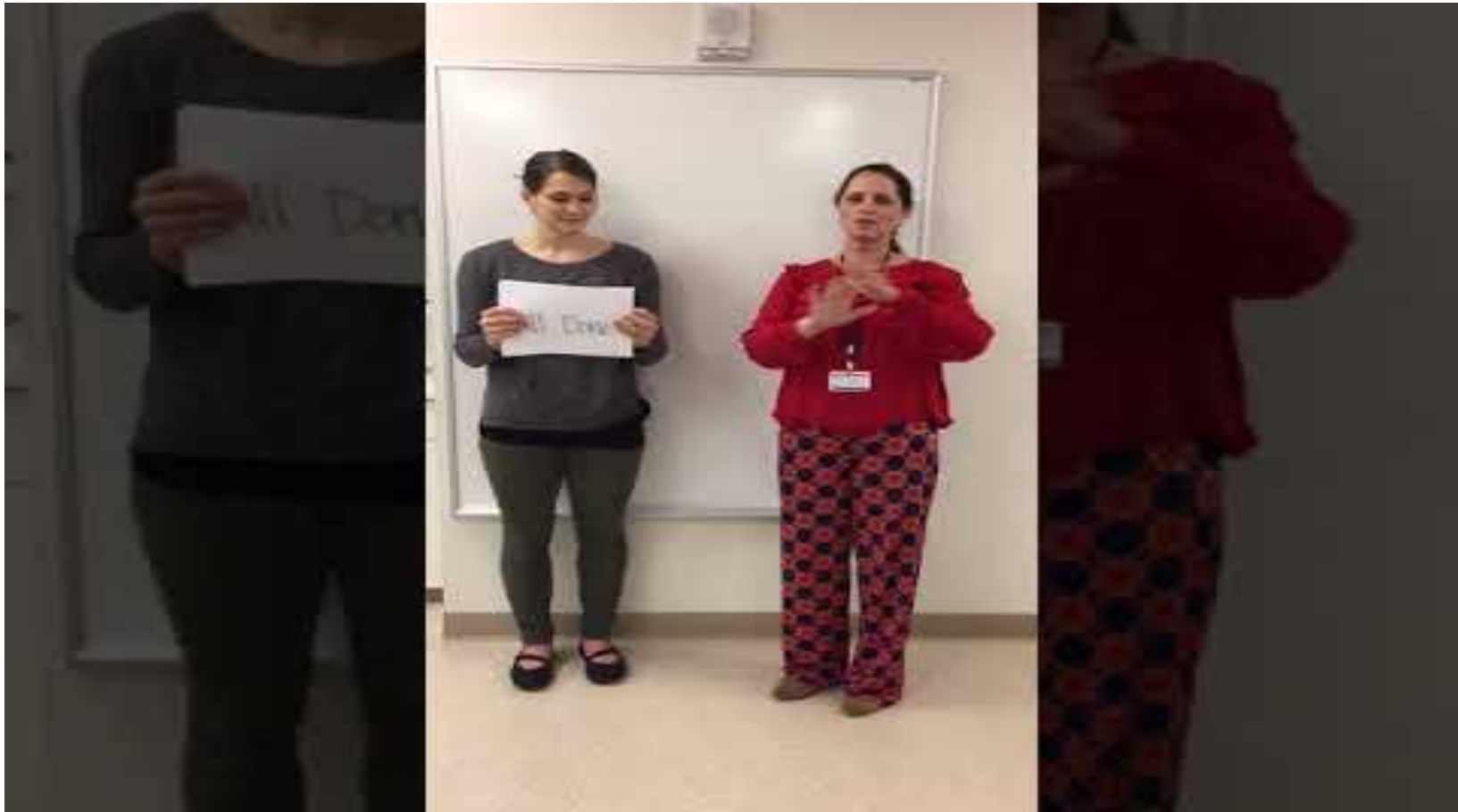
- Vest (with and without head support)
- Puddle Jumper
- Rings
- Noodles
- Barbells
- Floating mat



Group fun/ signing



You tube: Helenmilligansigns



Starfish (10-18 months)



Guppy (18 months-3 years)



Dolphin (3-6 years)



Certificates

Congratulations Scarlett!!!



**Thank You for joining the Dolphin's
Spring 2019 Pool Group!**





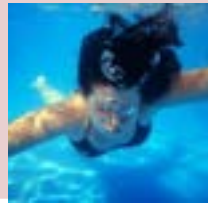
Skills Needed to Join a Group Lesson:



Safe entry



Waiting



Protecting the airway



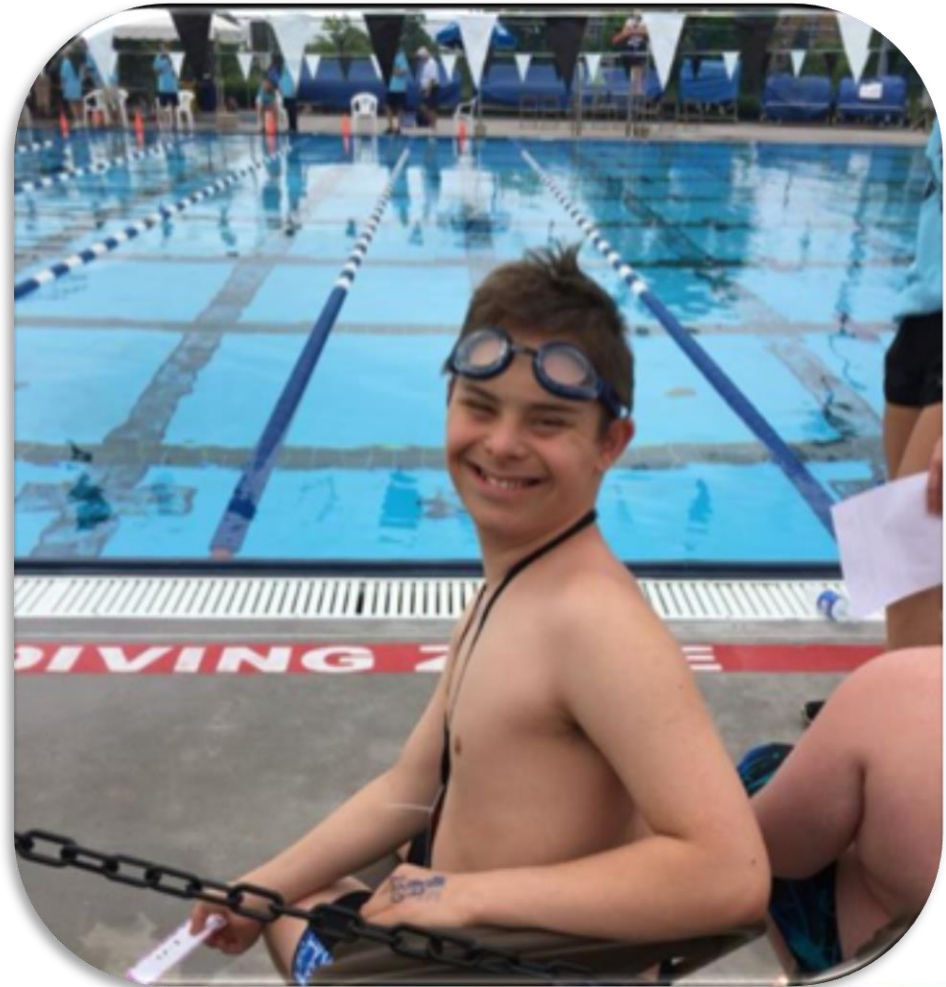
Adjustment to the water



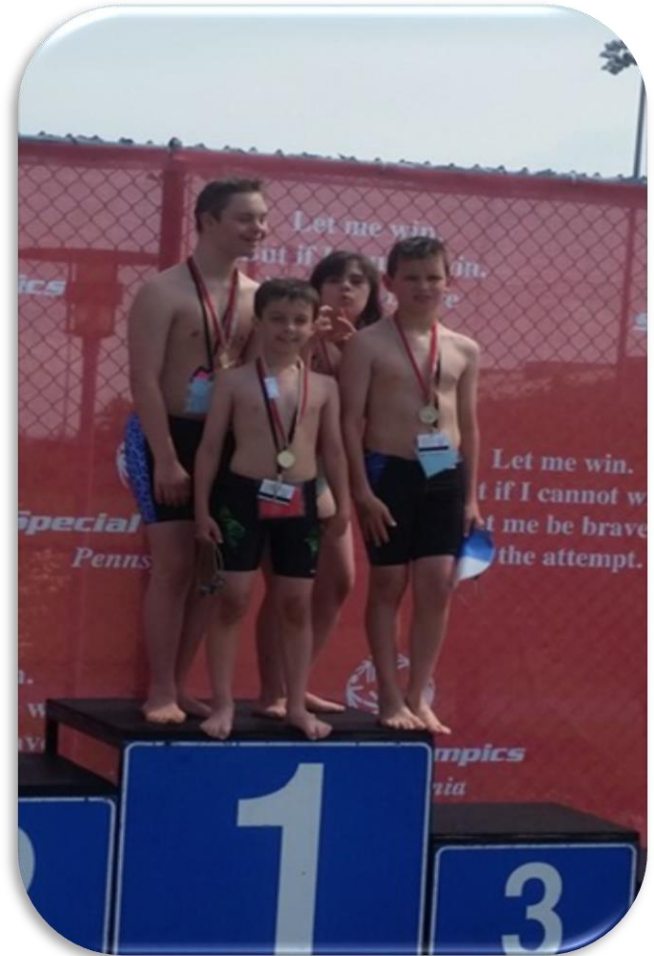
Motor planning

Swimming/Water Safety

- Swim teams
- Inclusion
- Great Sport for exercise:
 - Strengthening
 - Endurance
 - Aerobic
 - Non -Impact
- Leisure/ Fun
- Sensory Activity
- Social Activity
- Water Safety
- Employment



Penn State Games 2016



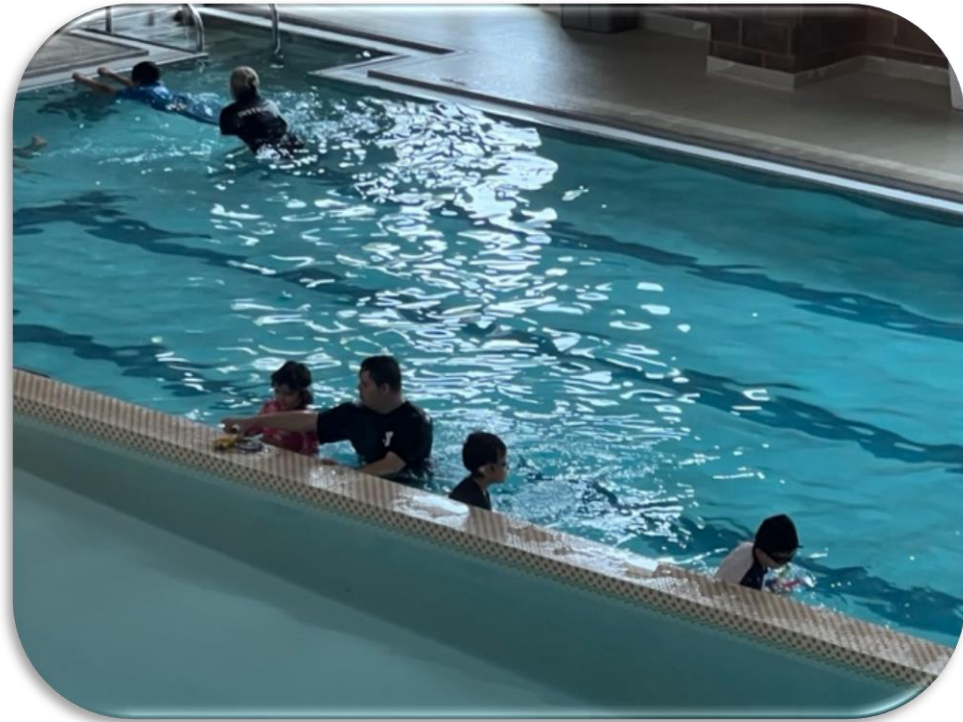
Olympic Stars



Villanova Manager



Employment



Let's Go Swimming!

- What 3 things will be able to implement when after leaving today?
- Do you think this will be easy?
- Who can help and support you?

Questions



Contact Information:

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References

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