

Making a Splash

The Benefits of Group Aquatic Therapy for Young Children with Down Syndrome

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BACKGROUND

Down syndrome (DS) is the most common genetic condition with an incidence of 1.3 per 1,000 live births in North America. Obesity and inactivity are common obstacles for those with DS. Hypotonia, muscle weakness, impaired motor planning, and ligamentous laxity along with impaired cardiorespiratory health make physical activity a complex challenge. An increase in activity may help prevent the tendency toward childhood obesity and promote wellness in the DS population. Physical therapists can impact fitness and activity in those with DS and foster a healthy lifestyle as early as infancy. Aquatic therapy, aquatic exercise and swimming are ideal modes to achieve increased activity and participation in community activities through out the lifespan.



PURPOSE

- Describe the development and implementation of aquatic group exercise for children with DS to facilitate transition to community swim programs
- Establish effective treatment strategies
- Explore safety and effectiveness of group swim
- Promote lifelong physical activity
- Identify motivational components for children with DS
- Prepare caregivers to safely assist their children in community swim programs
- Present a standardized program which can be implemented with carryover to community



METHODS

Intervention

8-week group-based aquatic exercise program focused on:

- Respiratory control
- Water orientation
- Swim skills
- Balance training
- Trunk strengthening activities
- Endurance activities
- Standing and walking skills



- Peer interaction
- Integrated fine motor & communication skills
- Caregiver instruction in safe and effective aquatic handling strategies to promote caregiver confidence and community participation

Program Development

- 20 children, 10 months-5 years old, with caregiver participation
- 10-18 months: Starfish Group
 - 18-36 months: Guppy Group
 - 36-60 months: Dolphin Group

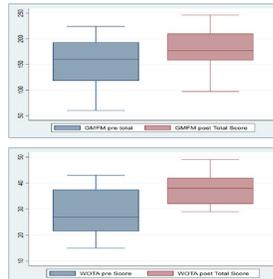
Clinical Measures

1. Survey of aquatic experience
2. Therapeutic goals
3. Gross Motor Function Measure (GMFM)
4. Water Orientation Test Alyn (WOTA-1)
5. Satisfaction Survey

RESULTS

GMFM and WOTA-1

Pre and Post group paired t-test analysis revealed statistically significant changes from pre- to post-test. The GMFM improved by 24.65 points ($p < 0.00001$) and the WOTA-1 by 12.2 points ($p < 0.00001$)



Survey Results

- "My child improved with turn taking and core strength in the pool group."
- "My child had improved stamina and strength."
- "The socialization was fantastic! It also really helped to work on new ways of moving her body and playing new games. She really loved pool group!"
- "The pool group helped her accept water on her face and comfort in the water and taught us both some sign language."
- "We noticed major improvements with walking, strengthening, core, confidence, mobility and sensory issues. This was an excellent group!"

-Parental quotes

CONCLUSIONS AND FUTURE STEPS

- This project describes the potential benefit of aquatic therapy and aquatic exercise on gross motor function, water safety, and quality of life in children with DS and their families.
- Current research regarding the effectiveness of aquatic Physical and Occupational Therapy groups in an increased sample size is in process.
- Further study is needed to determine the change in gross motor function observed relative to a control group and to examine longitudinal change over a longer intervention period.
- Follow-up studies should examine carryover into facilitating community participation in learning to swim, swim classes, and swim team.
- Additional areas of study may include the use of this intervention in children with a dual diagnosis of DS and autism and the potential social impact of the group approach.

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