

W

Water Safety & Swimming for Children with Autism Spectrum Disorder

Hilde Clark-Snustad, MOTS¹; Julia Comstock-Ross, MOTS¹; Grant Haynes, MOTS¹; Geneva Pritchett, MOTS¹
Faculty Adviser: Tracy Jirikowic, Ph.D, OTR/L¹; Community Mentors: Billie Otter, OTR/L²; Erica Woodcock³

¹Department of Rehabilitation Medicine, University of Washington, Seattle, WA; ²Maple Valley Pediatric Therapy, Maple Valley, WA; ³South Sound Swim School, Auburn, WA

INTRODUCTION

Swimming is a preferred activity for children with Autism Spectrum Disorder (ASD). Aquatic programming has been shown to benefit this population by increasing physical fitness, reducing stereotypical movements, and improving social functioning and self-esteem.^{1,2,3} However, there are high rates of accidental drowning within this population due to a tendency toward elopement, sensory seeking behaviors, and poor safety awareness.⁴ Thus, it is important to teach children with ASD water safety and basic swim skills. In response to this need, we designed and implemented a pilot program tailored for children with ASD.

POPULATION

ASD is a pervasive developmental disorder that affects one in 68 children in the United States.⁵ Symptoms include deficits in social communication and interaction as well as repetitive patterns of behavior, interests, or activities. Children with ASD have also been found to exhibit motor impairments, to be less active than their peers without disabilities, and to have higher rates of obesity than individuals without ASD.^{6,1,7} Additionally, the vast majority of children with ASD exhibit significant sensory processing deficits. These factors present challenges to locating activities that promote social, behavioral, and physical benefits.

NEEDS ASSESSMENT

Organizational Survey: Ten local organizations were surveyed to assess the availability of water safety and swimming lessons designed for children with special needs and/or ASD.

- Only 30% of organizations offer adaptive aquatic classes designed for individuals with special needs.
- No organization identified classes specifically tailored to children with ASD.
- All organizations responded that they would be interested in additional resources and/or training for instructors.

Parent Survey: 34 parents of children with ASD were surveyed to assess their experiences with swim instruction.

- 74% of parents reported previous swim instruction.
- The majority of parents reported limited success.

PILOT PROGRAM

Our program consisted of six 45-minute sessions taught twice a week. Five children, aged five to 12 years, participated, and each was paired with an instructor. Each session followed a consistent structure including warm up, individual instruction, group activities, and cool down.

FEATURES

Based on our literature review and needs assessment, we implemented the following evidence-informed interventions that provided a foundation for the pilot program.

- 1:1 instruction
- Small class size
- Minimized environmental distractions
- Graded activity difficulty
- Visual schedules
- Time cues before transitions
- Consistent structure and routine
- Direct and concise language and expectations
- Positive reinforcement
- Breaks for self-regulation

MANUAL

We developed a manual to provide a detailed program structure with scaffolded swim activities (see Image A). The manual also includes an instructor's tip sheet, a daily progress note template, a physician's approval form, and visual aids including a visual schedule (see Image B).

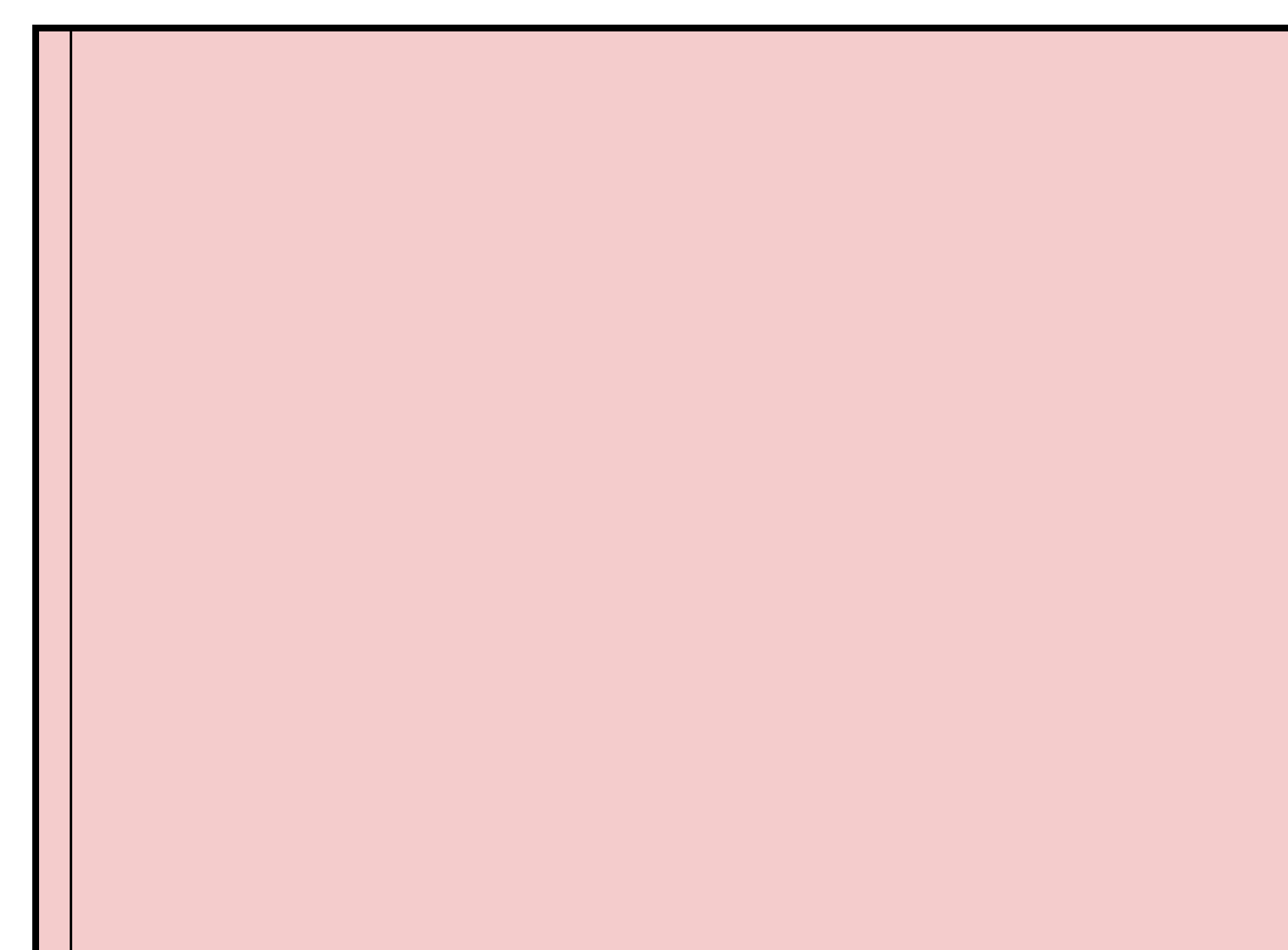


Image A: Example of an activity description page



Image B: Visual schedule

RESULTS

- We observed that children were able to engage in swim lessons with 1:1 support, consistent routines and activities, and positive reinforcement for participation.
- Skill acquisition and participation were best facilitated when we used the same preferred activities each session and graded them to target different skills.
- Following program implementation, parents completed a questionnaire and reported that their children made improvements in swim strokes, social participation, and safety awareness. However, personal goals and strides varied markedly between participants.
- All parents cited the customizability of the program as its greatest attribute and many noted that their child would benefit from additional sessions.

FUTURE RECOMMENDATIONS

- Replicate program in the community and disseminate resources to organizations to increase access to swim lessons for children with ASD.
- To reduce costs, consider training parents or volunteers to provide 1:1 instruction with OT support.
- In addition to the group visual schedule (see Image B), create individual visual schedules outlining selected activities for the session.
- Incorporate self-regulation language, tools, and strategies into the lessons.

REFERENCES

- Pan, C. (2010). Effects of water exercise swimming program on aquatic skills and social behaviors in children with autism spectrum disorders. *Autism*, 9-28.
- Pan, C. (2011). The efficacy of an aquatic program on physical fitness and aquatic skills in children with and without autism spectrum disorders. *Research in Autism Spectrum Disorders*, 5(1), 657-665.
- Yilmaz, I., Yanardag, M., Birkan, B., & Bumin, G. (2004). Effects of swimming training on physical fitness and water orientation in autism. *Pediatrics International*, 46, 624-626.
- National Autism Association. (2016). *Autism & safety facts*. Retrieved from <http://nationalautismassociation.org/resources/autism-safety-facts>.
- Christensen, D. L., Baio, J., Braun, K. V. N., Bilder, D., Charles, J., Constantino, J. N., ... Yeargin-Allsopp, M. (2016). Prevalence and characteristics of autism spectrum disorder among children aged 8 years - Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2012. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report Surveillance Summaries*, 65(3), 1-23.
- Fournier, K. A., Hass, C. J., Naik, S. K., Lodha, N., & Cauraugh, J. H. (2010). Motor coordination in autism spectrum disorders: A synthesis and meta-analysis. *Journal of Autism Developmental Disorders*, 40(10), 1227-1240.
- Curtin, C., Anderson, S., Must, A., & Bandini, L. (2010). The prevalence of obesity in children with autism: a secondary data analysis using nationally representative data from the National Survey of Children's Health. *BMC Pediatrics*, 10, 11.