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## The Ocean as a Unique Therapeutic Environment: Developing a Surfing Program

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## Abstract

The lack of fitness and recreation opportunities for children with disabilities is problematic and can be consequential to proper health and development. All children need to accumulate 60 minutes or more of moderate-vigorous intensity activity throughout the day (World Health Organization, 2012). Adapted aquatics offers necessary physical activity and educational programming to children with disabilities and the benefits for children with disabilities are more pronounced and significant than for their able-bodied peers (Koury, 1996). Similar benefits could potentially be derived from surfing in the ocean. A twice weekly, eight-week surf instruction program was implemented for children with disabilities at a public beach in Rhode Island. The adapted surfing program was designed to develop and enhance the children's strength, flexibility, range of motion, coordination, balance, and psychosocial development. Children were recruited from local adapted physical education classes, the Rhode Island Special Olympics, and through flyers and word-of-mouth advertising. There were 17 participants and they ranged in age from 5 to 17 years. Our instructional goals were to teach the children to: 1) paddle while on the surfboard, 2) balance on the surfboards with their stomachs and in the seated, kneeling and standing positions, 3) learn to catch a wave and ride it into shore on their stomach and to progress to riding while sitting, kneeling and standing, and 4) paddling back out through the waves to repeat the process. Throughout the program, the children and surf instructors were encouraged to set realistic individual goals. There were many positive outcomes of the project including gains in social development and self-confidence.

*Keywords:* surfing program, children with disabilities

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### Background

24           According to the World Health Organization (2010), children with disabilities have the  
25 same activity requirements as children without disabilities. The lack of fitness and recreation  
26 opportunities for children with disabilities is problematic and can be consequential to proper  
27 health and development. All children need to accumulate 60 minutes or more of moderate-  
28 vigorous intensity activity throughout the day (World Health Organization, 2012). The  
29 participation of children with disabilities in sports and recreational activities promotes inclusion,  
30 minimizes deconditioning, optimizes physical functioning, and enhances overall well-being  
31 (Murphy, Carbone, and the Council on Children With Disabilities, 2008). Despite these benefits,  
32 children with disabilities are more restricted in their participation, have lower levels of fitness,  
33 and have higher levels of obesity than their able-bodied peers. (Murphy, Carbone, and the  
34 Council on Children With Disabilities, 2008; Okagaki, Diamond, Kontos, & Hestenes, 1998).  
35 Children with learning disabilities are often alienated or excluded by typically developing  
36 children for both social and physical reasons.

37           Developmental disabilities affects about 13% of all children, and an average of 1 in 110  
38 children in America have an Autism Spectrum Disorder (ASD) (CDC, 2011). Individuals with  
39 developmental disorders tend to have lower fitness and activity levels and, therefore, have  
40 decreased cardiorespiratory endurance, muscle strength, balance, coordination, and motor skills  
41 (Fragala-Pinkham M., Haley S.M., O'Neil, M.E., 2008). Children with autism demonstrate a  
42 higher rate of obesity and motor deficits than their able bodied peers (CDC, 2011). Furthermore,  
43 children with autism demonstrate hypotonia and motor apraxia (Ming, X., Brimacombe, M.,  
44 Wagner, G.C., 2007). As with children with autism, children with Down's Syndrome have  
45 higher rates of obesity and decreased fitness and physical activity levels. Many exercise

46 programs, including aquatic and land-based aerobics, have been proposed and studied for their  
47 ability to increase the fitness level of children with developmental disabilities.

48         Adapted aquatics offers necessary physical activity and educational programming to  
49 children with disabilities and the benefits for these students are more pronounced and significant  
50 than for their able-bodied peers (Koury, 1996). Due to water's buoyancy many children with  
51 disabilities, that would typically show an impaired mobility on land, are able to function  
52 independently in an aquatic environment. Often this can be done without the assistance of  
53 mobility devices such as braces, crutches, or walkers. It should be emphasized that swimming  
54 strengthens the muscles that allow for postural stability during both locomotor and object-control  
55 activities. Water supports the body, enabling some to walk for the first time, which can increase  
56 strength in those muscle groups needed for ambulating on land. Adapted aquatics also enhances  
57 breath control, upper body strength, flexibility and cardiorespiratory fitness (Yilmaz, I.,  
58 Yanardag, M., Birkan, B., Bumin, G., 2004 & Koury, 1996).

59         However, the benefits of aquatics are not limited to the physical domain. Carefully  
60 planned water activities that are implemented to meet a child's individual needs can contribute to  
61 psychosocial and cognitive development. Research with children with autism has demonstrated,  
62 a decrease in stereotypical movements: such as spinning, swinging and delayed echolalia  
63 (Yilmaz, I., Yanardag, M., Birkan, B., Bumin, G., 2004). Importantly, as a child with a physical  
64 disability learns to move through the water unassisted their self-esteem and self-awareness  
65 improve. This freedom of movement boosts morale and provides an incentive to maximize  
66 potential in other aspects of their rehabilitation (Koury, 1996). The motivational and therapeutic  
67 properties of water provide a stimulating learning environment for a child with a disability.

68 Similar benefits could potentially be derived from surfing in the ocean. There are several  
69 surf programs offered to people with disabilities around the world e.g. Surfers Healing, Ride-a-  
70 Wave, and the Disabled Surfer's Association in Australia. Surf programs for children with  
71 disabilities are quickly gaining popularity. Children with autism and other disabilities often  
72 become overwhelmed by sensory stimuli, suffer from severe social isolation, and lack  
73 communication skills (Delaney & Madigan, 2009). The sport of surfing, like running, is solitary,  
74 repetitive, and requires determination and stamina; most children with autism possess these traits  
75 (Delaney & Madigan, 2009). Furthermore, surfing provides the opportunity for independent  
76 participation without complicated rules or close contact with others potentially helping children  
77 with disabilities overcome social barriers (Delaney & Madigan, 2009). Due to the properties of  
78 the ocean and the nature of the sport of surfing, another new and therapeutically beneficial option  
79 could be created for children with disabilities.

#### 80 **Description of the Adapted Surf Program**

81 A twice weekly, eight-week surf instruction program was implemented for children with  
82 disabilities at a public beach in Rhode Island. The surfing program was designed to develop and  
83 enhance the children's strength, flexibility, range of motion, coordination, balance, and  
84 psychosocial development. The Brockport Physical Fitness Test (Winnick & Short, 1999), heart  
85 rate monitors and activity monitors were used to measure physical changes before, during and  
86 after the implementation of the surf program. Children were recruited from local adapted  
87 physical education classes, the Rhode Island Special Olympics, and through flyers and word-of-  
88 mouth advertising. There were 17 participants and they ranged in age from 5 to 17 years. The  
89 university's Institutional Review Board (IRB) granted approval for the research and program,  
90 this ensured the safety and protection of the participants. Parents and guardians were required to

91 sign forms of consent from the program leaders outlining the risks of participating in the surf  
92 program. Participants were required to sign a form of assent from the program leaders also  
93 outlining the risks of participating in the surf program. Prior to starting the program, all parents  
94 and guardians were questioned regarding their child's swim ability and comfort levels in the  
95 ocean. Children that were not viewed as good swimmers or comfortable in the ocean were not  
96 recommended for participation in the surf program. Prior to the start of the program, a parent or  
97 guardian to the program leaders reported disability information for each child. Based on this  
98 information, the program leaders recruited trained volunteers to work one-on-one with each  
99 enrolled child. The volunteers were undergraduate and graduate students in Kinesiology and  
100 Physical Therapy as well as other members of the local university and surfing community. The  
101 program leaders in the departments of Kinesiology and Physical Therapy advertised the adapted  
102 surf program to students enrolled in their courses and requested assistance from their students.  
103 Students were also offered independent study credits and adapted physical education practicum  
104 hours for volunteering. Several volunteers were recruited from the local surf community. These  
105 volunteers willingly donated their time without compensation. All volunteers were welcomed  
106 and accepted by the program leaders.

107         The program leaders formally trained the volunteers. The program goals and skills were  
108 reviewed with the volunteers. Cue words and progressions of the skills were also presented to the  
109 volunteers. In addition, disability information about each child was privately shared with the  
110 child's volunteer instructor. The volunteer instructors were encouraged to find each child's  
111 optimal learning style and offer an appropriate level of support that promoted full participation in  
112 ocean surfing. Some children needed to participate in surfing hand-over-hand with their  
113 instructor while others participated nearly independently. The level of support was determined

114 by recommendations by parents and caregivers and observations by program leaders and  
115 volunteer instructors. The volunteers were also encouraged to use aids like communication  
116 boards, pictures and sign language to communicate with their assigned child. There was a formal  
117 safety orientation by an experienced surfer from the local surfing community. She highlighted  
118 safety precautions like how to prevent getting hit with the surfboard, rip tides in the ocean and  
119 keeping children and instructors together at all times while in the ocean.

120 The local community was supportive of this program and provided beach access and 3  
121 lifeguards were hired to patrol the beach for additional water safety. Surf equipment was rented  
122 from a local surf shop and various sized surfboards were delivered to the beach each day.  
123 Because of the varied sizes of the participants and program volunteers, and the need to wash  
124 each wet suit after class, the suits were loaned to each for the entirety of the program. The  
125 volunteers assisted the children with putting their wetsuits on. This is depicted in figure 1.

### 126 **Instructional Goals of the Adapted Surf Program:**

127 Instructional goals of the adapted surf program were to teach the children to: 1) paddle  
128 while on the surfboard, 2) balance on the surfboards with their stomachs and in the seated,  
129 kneeling and standing positions, 3) learn to catch a wave and ride it into shore on their stomach  
130 and to progress to riding while sitting, kneeling and standing, and 4) paddling back out through  
131 the waves to repeat the process.

132 First, the goals were reviewed and demonstrated using a large group instruction method.  
133 Then, with their assigned volunteer instructor, all of the children practiced paddling, balancing  
134 and moving into a sitting, kneeling and standing position on their surfboards while on the beach

135 (before attempting to go into the ocean). The following is a description of how each skill was  
 136 explained:

<b>Surf Skill:</b>	<b>Cues from the instructor:</b>	<b>Modifications</b>
<p>Paddling                      (Please see figure 2 for a photograph of the skill.)</p>	<ol style="list-style-type: none"> <li>1. Lay prone in the center of the surfboard.</li> <li>2. Balance in a comfortable position prone in the center of the surfboard.</li> <li>3. Alternate reaching and pulling the sand or water with your right and left arm using an overhead motion.</li> </ol>	<ol style="list-style-type: none"> <li>1. The child and instructor can paddle together on the board in an “I” formation.</li> <li>2. The instructor can hold the child on the board while the child paddles.</li> <li>3. The child can use a boogie board instead of a surfboard.</li> <li>4. The child can use a paddleboard instead of a surfboard.</li> </ol>
<p>Balancing                      (Please see figures 3 and 4 for photographs of this skill.)</p>	<ol style="list-style-type: none"> <li>1. Center yourself on your board in a sitting or lying position.</li> <li>2. Move your legs in a circular motion. This will give you more stability on the surfboard.</li> <li>3. Once you are comfortable in a seated position you can try a lying position. Let me know when you are ready.</li> <li>4. Lie down in the center of your board in a prone position.</li> </ol>	<ol style="list-style-type: none"> <li>1. The child and instructor can balance together on the board.</li> <li>2. The instructor can hold the child on the board while the child attempts to balance independently.</li> </ol>
<p>Moving into a sitting position-                      This was attempted once the child progressed to successfully catching waves in the prone position with their surfboard.                      (Please see figures 5 and 6 for photographs of this skill.)</p>	<ol style="list-style-type: none"> <li>1. Once you catch a wave with your surfboard, try moving from lying on the board to sitting on the board.</li> </ol>	<ol style="list-style-type: none"> <li>1. The child and instructor can start and ride the waves in together in the seated position.</li> <li>2. The instructor can push the child into</li> </ol>



		<p>the waves to help the child catch the wave with the surfboard.</p> <p>3. The child can bodysurf the waves without a surfboard or use a boogie board.</p>
<p>Moving into a kneeling position- This was attempted once the child progressed to successfully catching waves in the prone position with their surfboard. (Please see figure 7 for a photograph of the skill.)</p>	<p>1. Once you catch a wave with your surfboard, kneel on the board after catching a wave in the lying position.</p>	<p>1. The child can catch and ride the wave tandem in the kneeling position with the help of the instructor.</p> <p>2. The instructor can push the child into the waves to help the child catch the wave with the surfboard.</p> <p>3. The child can bodysurf the waves without a surfboard or use a boogie board.</p>
<p>Moving into a standing position- This was attempted once the child progressed to successfully catching waves in the sitting or kneeling position. (Please see figure 8 for a photograph of the skill.)</p>	<p>1. Once you catch a wave with your surfboard, pop up to a standing position on your surfboard.</p> <p>2. You can shift your weight from right to left to steer your surfboard and ride the wave into the beach.</p>	<p>1. The instructor can push the child into the waves to help the child catch the wave with the surfboard.</p> <p>2. The child can bodysurf the waves without a surfboard or use a boogie board.</p> <p>3. The instructor and child can ride the wave tandem in the standing position.</p> <p>4. The child can use a paddleboard</p>

		instead of a surfboard and start in the standing position.
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138           After each skill was practiced and mastered on the beach, the child and their instructor  
 139 entered the water in pairs. They began in shallow water with each child given the opportunity to  
 140 sit on the boards practicing balance in a stationary position as the surf instructor stabilized the  
 141 board as necessary. Once the child was able to perform a seated balance on the board, they  
 142 practiced lying on the board. Next they were encouraged to ride a wave into the beach while on  
 143 their stomachs and to progress to riding a wave while kneeling on the board. Once kneeling was  
 144 mastered, the child was encouraged to attempt standing up on the board and riding into the  
 145 beach. Each child progressed through these stages at their own individual pace over the course  
 146 of the program.

147           Throughout the program, the children and surf instructors were encouraged to set realistic  
 148 individual goals. For instance, two children in the program were able to ride waves in the  
 149 standing position at the end of the program. Another was able to ride waves tandem with his surf  
 150 instructor by hugging his instructor’s waist. Yet another child was able to ride waves on her  
 151 stomach. Some children in the program solely focused on balancing and paddling their  
 152 surfboards with instructional help. Lastly, one child preferred to ride the waves with his body  
 153 instead of using a surfboard. All forms of surfing were encouraged and accepted by the program  
 154 leaders and surf instructors. Further, the program leaders, surf instructors and parents noted  
 155 dramatic physical and social improvements in all children regardless of the level of skill that was  
 156 finally achieved. Some of these improvements included increased verbalizations, excitement and

157 enthusiasm about physical activity, motivation, improvements in surfing skills and love of the  
158 ocean.

### 159 **Final Thoughts from the Program Leaders**

160 Overall there were many positive outcomes from this instructional surf program. The  
161 following are some final thoughts from the program leaders: the children seemed more self-  
162 confident, made gains in social development by interacting with volunteers and other  
163 participants, appeared to be more relaxed in the water. The student volunteers participated in an  
164 experiential learning environment outside of the classroom, which they will be able to apply to  
165 their future professions. Most importantly, they learned strategies for working with a child with a  
166 disability.

167 Furthermore, several outcomes of the program carried over into other areas of the  
168 participants' lives. After the completion of the program, 8 of the 17 children went on to compete  
169 in the Rhode Island Special Olympics State Games. They competed in several swimming and  
170 track and field events. 3 of the 17 children participated in the Unified Sports through Special  
171 Olympics and other inclusive sports offered at their schools. Participation in the surf program  
172 could have given the participants the self-confidence, social skills and physical fitness necessary  
173 for increased organized sport and physical activity participation. The program leaders are  
174 currently searching for additional funding and plan on implementing the program again in the

175 future<sup>1</sup>.

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<sup>1</sup> Grant funding to support the program was obtained from the University of Rhode Island's College of Human Science and Services (\$5,000) and from the Fogarty Foundation (\$4,000) and a local surf shop, Peter Pan Surf Academy, donated 50% of the cost of the equipment rentals.

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