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Sailing as a Therapy Modality for Occupational Therapy; Requirements Prior to Participation

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Abstract

Many outdoor activities are currently being utilized by recreational therapists to aid in the development of play and leisure skills, education, social skills training, and even therapeutic community. The process of using these outdoor activities can aid clients in emotional, physical, cognitive and social functions. Although these types of activities have been primarily utilized in recreational therapy intervention sessions, these activities carry the potential to also fit within the domain of occupational therapy. In order to engage in the recreational activity of sailing, persons must have specific cognitive, physical, emotional and social abilities. The purpose of this study is to examine what client factors should exist prior to a child/adolescent's participation in a sailing intervention. This study will survey currently established adaptive sailing programs and existing literature as it relates to sailing with disabilities and explore what physical prerequisites current adaptive sailing programs mandate for their participating students.

Key Words: Sailing, Assistive Technology, Adaptive, Occupational Therapy, Sailing Intervention

## Overview

Within the past five years, the United States Sailing and the International Association for Disabled Sailing co-jointly developed a manual that describes the development of safe and quality adaptive sailing programs. The purpose of this manual is to not only aid in the growth of existing development of adaptive sailing programs, but also to encourage the development of new programs for individuals with disabilities to participate in the sport of sailing. This sport and leisure activity is starting to receive more attention as a method of therapy, which yields psychosocial benefits. In 1991, a sailing program was approved on an experimental basis at the Long Beach Memorial Rehabilitation Hospital, in Long Beach, California. Recreational Therapist, Karen Shinuaku, was quoted as saying: “We’ve just been waiting for a program like this to happen. This gives (the patients) a sense of freedom and a boost in self-esteem” (Haldane, 1991).

While literature is beginning to document the use of sailing for recreational therapy purposes, it fails to provide evidence supporting sailing as a modality for occupational therapy intervention. Even though the foundational roots of occupational therapy lie in the field of mental health, it has broadened to encompass activities of daily living, independent activities of daily living, leisure, work, play, sleep and rest, education and social participation. Although perhaps not formally documented and published, participants have reported psychosocial benefits from utilizing sailing as a method of therapy, leisure pursuit or venue for social participation. Boston’s Community Sailing Program wrote:

*The benefits of the therapeutic and recreational rehabilitative activity can offer the experience of adventure, mobility, and freedom. Improvement in motor skills and coordination, self-confidence, and pride through accomplishment are but a few of the goals*

*that can be achieved. The integration of the fundamentals reinforces the goals of rehabilitation; independence, communication, identity formation, comprehension, concentration, focus, and problem solving in a demanding environment* (du Moulin, Kunicki, Zechel, 2013).

If sailing were to be utilized as a method of occupational therapy intervention, it then follows that some method of ensuring a participant's readiness must exist in order to encourage safe participation and measurable results. This study was intended to examine the current adaptive sailing programs and develop a comprehensive list of prerequisites in order to encourage the use of sailing as an occupational therapy modality.

#### Methods

There are currently fifty-eight facilities associated with United States Sailing Association's adaptive sailing programs, and an additional seventy-six programs that are not associated with the United States Sailing Association (Walker, 2014). As programs associated with the United States Sailing Association are required to employ staff that are first aid and cardio-pulmonary resuscitation certified and United States Sailing Level 1 Small Boat Instructor certified, only the fifty-eight programs associated with the United States Sailing Association were examined. Having these certifications increases the quality of the program delivered due to staff training in risk management, multiple education strategies and offshore safety both in sailboat and motor boat. The websites of the adaptive sailing programs associated with US SAILING were analyzed for written requirements and participant testimonials. Existing literature was found using the Western Michigan University library's database, American Occupational Therapy Association database and *Palaestra*, a journal of sports and activities for individuals with disabilities.

## Results

Out of the fifty-eight facilities examined, 20.69% outlined requirements for the student prior to their enrollment. Of the 20.69%, 58.33% required the students to complete a swim test either with or without a personal flotation device. Although required by law, only 41.67% those programs that posted requirements mentioned that it is mandatory for the student to wear a personal flotation device while near or on the water. Twenty-five percent outlined behavior rules that consisted of following and listening to instruction. Of the 20.69% only 16.67% required a desire to learn how to sail, 8.33% mandated the child be able to apply sunscreen, and 8.33% required students be able to wear a hat and sunglasses as provided by the parent and guardian. Only one program was limited to persons with physical and developmental disabilities due to facility restrictions, and one program was specifically developed for the visually impaired. Programs encouraged students between the ages of 6-18 to participate.

## Discussion

The results described above imply that 79.31% of programs have no physical or cognitive requirements for children to participate. Programs reach out to students of all abilities.

Courageous Sailing Center of Boston, Massachusetts says:

*Whether it's taking a nonverbal 4-year old with severe autism for his first sail or hosting training programs for blind and Special Olympics racing champions, Courageous is committed to adaptive sailing. If you or someone you know wants to sail and has a particular challenge that might require special accommodations, let us know and we'll be happy to work with you to make it possible! (Adaptive Sailing at Courageous, 2014).*

Like Courageous Sailing Center, many programs do not have requirements for a student's physical, cognitive or developmental abilities. The main reason behind this is the advancement of technology. Environmental adaptations and assistive technology have been created in order to ensure that persons with disabilities can safely participate in sailing. In an interview, Mr. Croteau, a participant in the Pier's Park Community Sailing program, described assistive technology as needing to be very individualized as it is taking something that was never designed for persons with disabilities and giving them the opportunity to participate (Croteau, 2014). Mr. Croteau's experience is discussed in the case studies; for further information regarding assistive technology, refer to Appendix A.

Sailboats that are being utilized for adaptive sailing range from 7ft 9in to full keelboats of varying lengths. The majority of programs use some type of keelboat as the ballast is built onto the hull of the boat the weight does not allow the boat to capsize, creating a safer environment for all sailors. Facilities have equipped their docks with ramps to increase accessibility for wheelchairs. They also use a Hoyer Lift, transfer board or other personal assistance to help transfer individuals from their wheelchair to a specialized seat. The seats include a few seatbelts, which allows for increased security, stability and safety. Steering the boat has been adapted for individuals with quadriplegia. Arizona State University Sailing Club explains it as the: "autohelm/windlas for the Martin 16 which allows a person with limited mobility to control the boat with either an electronic joystick or the sailors breath by using the sip and puff controls"(Adaptive Sailing, 2014).

Sailing, although not well known as a therapeutic intervention, does incur physical as well as psychosocial benefits when the participants are actively involved. Sail to Prevail, an adaptive sailing program in Newport, Rhode Island, completed a study of its participants

following their involvement. The study revealed: 90% reported increased self-confidence in overcoming challenges in other activities of daily living, 99% reported more of a positive outlook on life, 94% reported improvement in teamwork skills and 79% reported benefits in their physical condition (Sail to Prevail Program, 2012). For children with developmental disabilities, the physical benefits of sailing include: increased independence, improved balance and the promotion of physical fitness (du Moulin, Kunicki, Zechel, 2013).

The potential cognitive benefits include: development of character, communication skills, a sense of accomplishment and a decreased awareness of their disability (du Moulin, Kunicki, Zechel, 2013). As noted by the staff at Little Traverse Sailors, sailing increased a child's confidence in his/her social and physical abilities (Raab, 2014). This student's experience is further discussed in the case studies.

Some of the same benefits are possible for individuals with physical disabilities. Potential physical improvements include: improved independence, functionality and motor skills (du Moulin, Kunicki, Zechel, 2013). Cognitive and social benefits include: a sense of accomplishment, improved self-esteem, sensory integration, improved comprehension, community reintegration, increased participation with others and an increased quality of life (du Moulin, Kunicki, Zechel, 2013).

The results of this study indicate that none of the programs associated with US SAILING have significant physical or cognitive requirements for children with disabilities to participate in the sport of sailing. Consequently, continued research should be conducted in order to ascertain the evidence to support the use of these programs as a modality for occupational therapy intervention. It is not necessary for a sailing program to utilize an initial assessment for its participants as the safety guidelines and instructor training provided by the United States Sailing



Association, accessibility requirements from the Americans with Disabilities Act and technology developments allow individuals with all abilities to enjoy the sport of sailing. For future research, an assessment would prove beneficial, but solely for the purpose of supplying the qualitative and quantitative data that will support further use of sailing as a therapy modality.

### Case Studies

The following are stories regarding the observed benefits of sailing for persons with disabilities. The names of the individuals have been changed for confidentiality reasons. The first story is based on observations made by US SAILING Level 1 instructors. The second case study was an individual's personal experience.

James, a boy with high-functioning autism spectrum disorder, was eight years old when he first began attending Little Traverse Sailors. He initially appeared to be shy and apprehensive when coming to class. Even though his sister was also attending classes, he would stay close to his mother until classes began. He initially demonstrated great interest in learning the various positions in the boat as soon as it was off the dock and in the harbor. However, he demonstrated a lack of confidence with the physical ability to ambulate onto and off the boat.

James was only able to attend sailing school for three weeks during the summer. As time progressed, he developed confidence in initiating conversations with other students and staff. At the beginning of his involvement, he would demonstrate fear in making requests by either asking his sister to speak for him or by fidgeting and weight-shifting while making the request. At the end of the three weeks, he would confidently approach me; or even seek me out in order to make requests. He began to branch out and request to sail with different instructors and to sail using more challenging boats. The staff noticed that he demonstrated an increase in confidence when stepping onto the sailboat (Raab, 2014).

Charlie is a gentleman who has participated in Pier's Park Community Sailing for five years. Since sustaining a spinal cord injury, he has been teaching wheelchair mobility for a local community college. He enjoys adapting, building and inventing things such as wheelchairs, hand cycles and alternate devices or sailing accessibility. When he was giving a lecture at the local community college, he heard a physical therapist speak about Pier's Park Community Sailing. He decided to try the program, and has been actively involved ever since.

Pier's Park Community Sailing uses assistive equipment such as hoist lifts, transfer benches and specialized seating. They sail twenty-three foot boats called Sonars. Once he used some of the assistive devices, he chose to adapt them to meet his needs. He created other types of seats using PVC pipe, wood and a webbing material. Charlie reported that sailing has benefitted him socially by providing him with opportunities to meet new people. It is a venue for fun and competition. He is able to use his background in engineering in order to create new devices for Pier's Park Community Sailing to incorporate into their program.

His advice to future individuals who are considering working in adaptive sailing programs is to be creative in individualizing equipment. Everyone's needs and abilities are different and as the sport of sailing was initially provided for the able-bodied, bridging the gap



*An example of adaptations Charlie has created for Pier's Park Community Sailing*

between the equipment and the client's skill sets will be necessary. Additionally, he said that client motivation begins with the therapist. If the therapist demonstrates a positive attitude about the client's abilities in relation to the task then the client is more likely to be positive.

These psychosocial, physical and emotional benefits were observed after a relatively limited time of participating in the sport of sailing. When given a controlled, safe environment, a child can develop and refine skills needed to participate in other occupations, such as school and play. Further controlled studies are needed in order to begin establishing an evidence to justify its use as an intervention.

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Appendix A  
Assistive Technology

Equipment Modifications recommended by US SAILING include:

1. A padded, non-slip seat
2. Protection/padding around sharp objects in the cockpit (ex: mainsheet block, centerboard pulleys)
3. Transfer bench to help with switching sides during tacks
4. Loops on the end of lines or handles
5. Extensions to the sheets

US SAILING additionally recommends to:

1. Eliminate all possible obstructions around the boat

2. For visually impaired sailors, make sure there is a consistent storage location for equipment
3. Consistently check all equipment to maintain safety
4. Lubricate mechanical parts and replace lines as needed
5. Tape all things that could snag the participant
6. Line up the lines and cleats so that participant can operate the line with one hand

**Adaptations for those with mobility impairments:** Conditions in this classifications include: amputations(with or without artificial limbs) and spinal cord injuries.

1. Rail type device to hold onto for balance
2. Transfer bench



*Transfer Bench; Adaptive Sailing Manual*

3. Harnesses/straps/belts with a quick-release fastener: attaches the sailor to the seat for additional safety, comfort and stability



*Adaptive seat and straps, Adaptive Sailing Manual*

4. Leg straps, which can be made from sail ties, can help keep the individual's legs safe from injury, especially if their legs are weak or paralyzed.



*Leg straps, Adaptive Sailing Manual*

**Stability and Balance Adaptations**

Balance and stability impairments can be the result of a loss of core strength. It can be the result of conditions such as: spinal cord injuries, neuromuscular conditions, leg amputees and certain developmental disabilities. Adaptations include

1. Seat with good trunk and back support



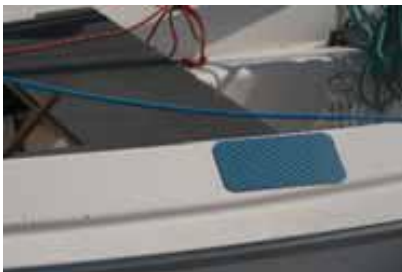
*Adaptive Seats, Adaptive Sailing Manual*

2. Suction handles
3. Grab bars



*Grab bars, Adaptive Sailing Manual*

4. Harness
5. Non-skid surfaces



*Non-skid surfaces, Adaptive Sailing Manual*

### **Hand Function Limitations**

Limitation or loss of hand function can be unilateral or bilateral. It can be paired with conditions such as: spinal cord injury,

stroke, amputation, muscular sclerosis, ALS, muscle weakness from overuse syndromes, and muscle deficiency conditions.

Adaptations include:

1. Power winches
2. Steering wheel
3. Tractor/rod
4. Power steering or joystick



*Joystick steering mechanism, Adaptive Sailing Manual*

5. Sip and Puff



*Sip and Puff, Adaptive Sailing Manual*

### **Steering Modifications**

Steering modifications can be needed because the individual cannot use their hands or because the tiller gets in the way during transferring to the other side of the boat. Adaptations include:

1. Stretchy straps with Velcro closures—enhance grip strength
2. Make the tiller extension longer or shorter
3. Add a ring to the end of the tiller for easier grip
4. Add a shock cord to the tiller extension to increase tension

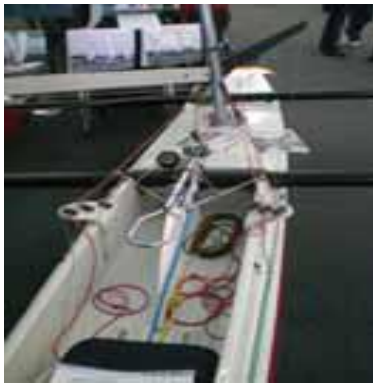
5. Steer with wheel or lever



*Adaptive Steering, Adaptive Sailing Manual*

### Sheets and Rigging

1. Modify the ends of the sheets with a large knot or ball so that it is easier to grip



*Modifying access to the lines, Adaptive Sailing Manual*

2. Bring the lines all the way to the cockpit
3. Make sure the blocks are of good quality to reduce friction
4. Main sheet may be easier if operated from the boom instead of cockpit
6. Add grips, knobs or spokes



*Adaptive Steering, adding grips, Adaptive Sailing Manual*

### Vision Impairment

It is most important to have tactile cues around the boat in order to help the sailor determine direction. Verbal cues can also be helpful.

1. Labeling the boat with braille markers can help the individuals learn the boat parts.
2. Increasing the size of cleats can be helpful
3. Tactile maps
4. Audio compasses
5. Learning to tell wind direction based off of the feeling on your body
6. Acoustic Buoys

### Boats

1. Freedom 20—the Freedom 20 is a keelboat with two pivoting seats. It has lower sides to increase the ease of access and a self-tending jib to ease trimming
2. Access Dinghy—driven by a joystick and have a sling seat. They have additional weight added to the centerboard for added stability
3. Sonar
4. Martin 16—increased stability due to a heavier keel. It is accessible to older adults and persons with disabilities. Adaptations to steering can be made so that individuals with quadriplegia can control the boat
5. Hobie Trapseat—the trapseat is bolted onto the hull so an individual with a disability can sit in it.
6. Challenger Trimaran—This boat can be launched from a variety of locations making it more versatile for boarding. Many racing classes of this boat will allow adapted boats to participate.
7. Ideal 18—This keelboat is equipped with seats, seat backs, and splash

- railing. It has the capability to be adapted to meet individual needs.
8. Flying Scot—A key feature is that it can get very close to the shore when participants are boarding. Many individuals with disabilities have been successful on this boat.
  9. Keelboats: Because keelboats are larger and heavier they are almost impossible to capsize.