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Use of a virtual reality ride-on sailing simulator as a rehabilitation tool for recreational sports and community integration

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This research is pilot study demonstrating use of a virtual therapeutic sailing simulator as an important part of rehabilitation. The main objective of this initial proof-of-principle trial is to develop a therapeutic sailing program for individuals with SCI using the VSail-Access system that will have measurable improvements on physical and psychological health. The subjects were asked to complete the Spinal Cord Injury Quality of Life Questionnaire (SCI QL-23) at the beginning and the end of training program. They engaged in a simulator sailing program once a week, 1-hour/session for 12 weeks. All subjects demonstrated a substantial improvement in their sailing scores and SCI QL-23 scores. Following completion of the simulator course, all subjects were able to successfully sail on the water demonstrating ability to perform sailing maneuvers (i.e. steering, gybing, etc.). Subjects reported that for the very first time they participated in a sports activity with their respective family members and experienced a sense of optimism about the future. For many individuals living with paralysis, participation in recreational sports may seem impossible or even unimportant. This study is one of the first to scientifically quantify the positive impact of therapeutic sailing following a spinal cord injury, including a significant increase in overall self-confidence and sense of accomplishment among participants. The Virtual Sailing VSail-Trainer is the first sailing simulator available for people with paralysis. Its stationary, motorized sailboat cockpit features specialized software that enables patients to navigate the boat around a virtual course in the same way as an actual sailboat in the water. Electronic sensors give the participant real-time feedback that matches their movements and allows them to control wind strength and water conditions.

Biography

Albert Recio is a physician in the paralysis restoration program at the International Center for Spinal Cord Injury (ICSCI), and the Medical Director for the Aquatics Medicine Program at Kennedy Krieger Institute. His research interests center on activity-based restoration therapies (ABRT). In an effort to provide patients with long-term spinal cord injuries or paralysis greater independence, his research evaluates the ability of ABRT to help patients recover neurological sensation and physical movement. His field of interest also includes electrical stimulation in the treatment of recalcitrant pressure wounds and the use of functional electrical stimulation (FES) to activate nerves innervating extremities affected by paralysis resulting from spinal cord injury (SCI).

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