

Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P14031	Jib Transfer Bench	Assistive Devices	Biomedical Systems and Technologies
Start Term	Team Guide	Project Sponsor	Doc. Revision
Fall 2013	Kate Leipold	MSD	1

Project Description

Project Background:

Sailing is an activity that promotes lifelong wellness and a sense of freedom not easily experienced on land. People with limited or no leg mobility who would like to participate in this activity have additional challenges when faced with the need to move about the boat. Focusing specifically on the jib trimmer crew member, our goal is to create a jib transfer bench to enable a jib trimmer to move transversely across the width of the sailboat, without the use of their legs or core muscles. The end result will be a functional prototype and, ultimately, design documentation publicly available for disabled sailors to use to create their own bench. This is the second iteration of this project, stemming from P13031 in the Spring 2013.

Problem Statement:

The objective of this project is to further develop the existing jib transfer bench design to make a bench that is lighter, cheaper, and easier to assemble. The improved bench will allow a jib trimmer to safely access and control the jib lines on both port and starboard.

Objectives/Scope:

1. Design a mechanical system to assist a disabled jib trimmer to move transversely between port to starboard
2. Device permits translation and rotation
3. Device permits user to access the jib lines
4. Device is usable in salt water
5. Device complies with Sonar race regulations

Deliverables:

- Functional jib transfer bench for use at Pier's Park (Boston, MA)
- Detailed design plans and documentation for manufacturing, including assembly plans
- Installation instructions and user manual for proper device use

Expected Project Benefits:

- Provide public access to the design and build instructions for the device
- Enable disabled sailors to maintain a healthy and active lifestyle through sailing
- Allows user to perform jib trimmer duties effectively
- Provide a basis for future design improvements and project iterations

Core Team Members:

- Matthew Brunelle – ME
- Nicole Conway – ME
- Michael Kennedy – ME
- Katy Wurman – IE/Project Manager
- Kate Leipold – Faculty Advisor

Strategy & Approach

Assumptions & Constraints:

1. Device designed to fit in a Sonar sailboat
2. Completely mechanical solution (allowing the bench to be used for racing)
3. Cannot hinder the ability of the sailor to operate the jib lines due to positioning or introduction of barriers
4. Must remain within budget (\$2500)
5. Cannot contain components requiring alteration of the boat or that will cause damage to the boat.
6. the size constraint (stemming from requiring P13032's skipper chair to be used simultaneously with the jib transfer bench) is no longer applicable
7. The height of the device from the floor, plus the height of the user above the seat, needs to be less than the boom height

Issues & Risks:

- Project funding from NSF is no longer available
- Team does not have access to a Sonar boat for testing