Overview

Chris Fahey challenged PSU Orthotic to create an assistive orthotic device, as well as attachments for this device. These attachments needed to help Chris Fahey accomplish simple tasks and hobbies including photography and sailing.

Objectives

- Create an orthotic device that had wrist articulation, variable claw operation angles, and has interchangeable terminal ends
- Develop a camera attachment that is collapsible and allows Chris Fahey to use all of the camera features with his left hand while holding the camera steady with his right hand
- Create a winch attachment to enable Chris Fahey to operate a winch with his right hand, freeing his left hand to feed rope into the winch

Approach

- PSU Orthotic met with Chris Fahey to discuss the current problem
- Researched different solutions to the challenge through existing products and patents
- Concepts were generated and the best one was constructed
- The first three steps were done for each product: the orthotic, camera attachment, and winch attachment
- CAD models were generated prior to construction
- A prototype was made for each objective
- Upon completion of construction, testing was performed for each product
- For the products to pass testing, they had to have been functional and meet testing requirements specified by Chris Fahey and PSU Orthotic
- Testing procedures were set to ensure the device helps Chris Fahey rather than make hobbies more complicated
- PSU Orthotic was successful with the orthotic, camera attachment, and winch attachment

Outcomes

PSU Orthotic was successful in constructing an orthotic device as well as attachments for this device that helped Chris Fahey with photography and sailing.

- Chris Fahey will be able to use the orthotic for everyday uses
- The orthotic included wrist articulation, ease of use, and interchangeable parts
- The camera attachment is collapsible, easily interchangeable, and left hand operable
- The winch attachment allows for rope feeding with Chris Fahey's left hand while operating the winch with his right hand