

## Team Meeting Minutes

**Date:** Monday October 25, 2017 5:15-6:45pm

**Location:** Engineering Building

**Lead Person:** Hannah Rentschler

**Minutes Recorder:** Hannah Rentschler

**In Attendance:** Azalea Grant, Ethan Michel, Brandon Begay, Robert Libby, and Hannah Rentschler.

**Executive Summary:** Discussed proof of concept, upcoming assignments, and weekly goals.

Discussed the proof of concept that was created by the team on 10/24/17. The proof of concept showed that the propulsion would work, however, it was difficult to determine how well because the timing of the propulsion force was inaccurate using just another person to pull the cable. The team decided that the next step would be to build a prototype and test the device with real motors and controls.

Determined a list of things that need to be accomplished to create a working prototype:

- Sensor mounts
- PCB printed circuit board
- Select a microcontroller
- Determine cabling
- Create hinge using CAD
- Determine the motor requirements
- Finalize how the heel will be supported (i.e. just by hinge or some other support)
- Type of material for the foot plates
- CAD files of the foot plates
- CAD files of the Bowden cable mounts

Discussed this week's goals:

For sensor placement and mounting we determined the following.

- Potentiometer will be mounted at the knee by attaching to an elastic thigh orthotic and the calf orthotic.
- Force sensors will be mounted under the foot and possibly inset into the materials if cable connections need to be protected.
- The accelerometer will be positioned at the ankle and connected to the structural support there.

\*\*\*Need to ask Dr. Lerner about his requirement of a torque sensor and how he wants us to incorporate it into our current design\*\*\*

For material to be used in the foot plates we determined the following:

- We are going to use aluminum at least for the prototype
- We may try to use titanium for the actual device if it is within the budget
- Need to determine the exact shape of the plates, the type of aluminum to be used, and how it will be machined.

Rearranged goals for this week based on individual strengths and work completed.

Azalea: Finish the hinge design and determine if it is feasible

Brandon: Already completed the proof of concept

Robert: Determined the sensor mounting

Ethan: Come up with the motor requirements for the propulsion of the foot

Hannah: Continue defining the aluminum material to be used and start the foot plate CAD files

Goals for next Wednesday:

Brandon: Research where to buy materials for the exoskeleton such as, aluminum stock, orthotic materials, Bowden cables, Velcro straps, and sticky neoprene.

Robert: Torque sensor requirements and possible placement. Will need to discuss this with Dr. Lerner.

Azalea: Continue working on designing the hinge and the heel lift method

Ethan: Continue to develop CAD files/ Drawings of the design

Hannah: Design how the Bowden cables will attach to the calf and foot plates.