Summary: Team P15001 met with Dr. DeBartolo over the phone to discuss our engineering requirements in detail. As a result of the conversation, numerous changes were made to the list of engineering requirements. Comments regarding each requirement are listed in detail below.

Engineering Requirements Review:

Mechanical Requirements:

Pressure to leg of AFO:

- Compression sock comparison for pressure of AFO on leg.
- Dr. Debartolo would like to see the use of a range of pressures for this requirement rather than a marginal and ideal value
- 40mmHg on average- do NOT want to go over 50mmHg

Yield strength of hard plastics:

- Delete requirement

Average added heat from use:

- Requirement looks good

Torque to lift foot by Mckibben air muscle:

- Get in contact with Master's student that worked in the BAD lab. He completed a torque analysis of the ankle.

Dorsiflexion mobility with McKibben air muscle:

- P13001 and P13002 created flexing curves- review their work

Number of muscle flexes untethered:

- Analysis looks good

Electrical Requirements:

Battery in water repellent case:

- Requirement looks good- no change

Immediate power usage:

- Won't go over 100mA

Response time of terrain sensor:

- Should aim for a lower value
- Suggestion: ideal= 100, marginal=200

Total power over day's use:

- Change this requirement to "time between charges"

Sensors/controls waterproofing:

- Requirement looks good- no change

Error between sensor data and physical distance:

- Suggestion: switch to a percent accurate requirement
- How to test? Have an object a certain known distance away and calculate the percentage of time that the sensor can sense the object.

Wearibility Requirements:

Average time to put on AFO:

- Low priority

AFO Weight:

- Separate total and lower leg weight

- Battery and electrical board will be about 1lb alone
- Change marginal weight value on leg to be 1lb
- Change total weight to 8 (ideal) and 12 (marginal)

Adjustability:

- Need to think about how we want to measure this

Difference in knee flex:

- Requirement looks good- no change

Aesthetically pleasing:

- Requirement looks good- no change

Total running noise:

- Make sure we know where we're measuring (i.e. standing, etc)

Added foot width:

- Requirement looks good- no change

Audible low battery alert:

- Requirement looks good- no change

Easy interface:

- Requirement is vague

Questions:

1.) Does wearing different clothing between winter and summer play a role?

- Would be good to look into
- Ask clients at Nazareth clinic
- Can specify for device that it can only be worn in summer or tell the client to wear it over their pant leg

2.) Target market? Indoors or outdoors?

- Discuss with clients at the Nazareth Clinic
- Clients that Dr. Debartolo spoke with during her visit at the clinic did very little walking
- Focus on indoors
- Low priority

3.) How common is spasticity?

- DON'T focus on spasticity clients

4.) Use Scenario- changes look good?

- Neurological doctor- essentially just sends patient to physical therapist?
- Discuss this topic further with the clients at the Nazareth Clinic

5.) Backpack or belt pack?

- Ask clients at the Nazareth Clinic
- Device around the neck tended to be more ideal for clients at the Nazareth Clinic when Dr. Debartolo visited.

Overall feedback:

- Feasibility looks good
- Look further at response time
- See if foot is comfortable, wear old designs→ want to know what the orthotic is going to feel like
- Don't need a solution parking lot in the week 6 presentation

Improvements?

- Concerned with how to get air to muscles→ look further into this