**Smart Walker**
Progress Report 2: 09/18/2025

**Client:** Mr. Daniel Kutschera
**Advisor:** Duc-Huy Nyugen
**Team:**

- Leader: Nicolas Maldonado
- BSAC: Carolyn Randolph
- Communicator: Aidan Burich
- BWIG: Nial Donohoo
- BPAG: Henry Salita

**Problem Statement:** Mr. Daniel Kutschera a physical therapist working in neuro-rehabilitation need objective, real-time data from walker use to guide therapy and meet documentation needs required by medicare. Today these metrics are gathered manually (wheel + stopwatch) and do not quantify load, making measurements inconsistent and hard to track. Earlier attempts to add sensors by modifying frames have compromised walker safety and usability. We need a small, lightweight, clip-on module for common walkers that shows speed, distance, and how much weight the user puts through the walker in real time, saves a short session summary after each use, and doesn't change how the walker is used or folded. Our budget to complete this is $500.

**Brief Team Status Update:** This week the team continued our research and drafted our Product Design Specification, laying out the requirements and next steps for our projects. Individually we have started to sketch and model our initial designs for the project, on paper and on CAD!

**Summary of Weekly Individual Design Accomplishments:**

- Nicolas Maldonado: Began researching components that are compatible with our project goals and standards. Worked on PDS. Started drafting initial designs
- Carolyn Randolph: Continued research and worked on Product Design Specifications.
- Aidan Burich: Most of the work I did this week was completing the Product Design Specifications. I also did some research on load cells, trying to think of ways that we can design the weight tracker for the smart walker.
- Nial Donohoo:This week I continued research and worked on the Product Design specifications document.
- Henry Salita: This week I did research into the reasons why we are recording certain metrics, giving it more of a purpose in my mind. Additionally, I started drawing out some initial design ideas I had as well as help out with the Product Design Specification by researching some legal standards for the project.

**Weekly/Ongoing Difficulties:** No notable difficulties.

**Upcoming Team Goals:** Start preliminary designs of prototype.

**Upcoming Individual Goals**:

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- Nicolas Maldonado: Get an initial CAD design for the design. Find the best components for the design, balancing cost, reliability and, overall footprint.
- Carolyn Randolph: Start brainstorming initial designs. Begin sketching design ideas. Continue researching.
- Aidan Burich: My goal for the coming week is to sketch out some designs and brainstorm ideas to get the weight tracker implemented in the device. I will also do more research on how to get the load sensor to work with the device.
- Nial Donohoo: My goal for the next week is to work with my team to get an idea of our initial design. I will also continue research and meeting with my team and advisor.
- Henry Salita: My upcoming goal for this week is to sketch more of my initial ideas on papers as well as continue to work on my Onshape versions of my sketches. Additionally I will continue to research aspects of the project that will help our progress as I will do the rest of the semester.

**Project Timeline**

| **Project Goal** | **Deadline** | **Team Assigned** | **State of Completion** |
|---|---|---|---|
| Initial Research | 9/12 | All | The team will continuously research throughout the semester. |
| Product Design Specifications | 9/18 | All | The PDS has been completed |
| Design Matrix | | All | |
| Preliminary Presentation | 10/3 | All | |
| Preliminary Report | 10/8 | All | |
| Initial Fabrication - Circuitry and Coding | 11/7 | All | |

**Expenses**

| **Item** | **Description** | **Manufacturer** | **Part Number** | **QTY** | **Cost Each** | **Total** | **Link** |
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| **TOTAL:** | | | | | | | **$0.00** |