Smart Walker
Progress Report 3: 09/25/2025

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: The team continued to refine their designs, ultimately resulting in a design with which we are all confident moving forward. This along with our preliminary presentation, has been the bulk of our time this week.

Summary of Weekly Individual Design Accomplishments:

- Nicolas Maldonado: Completed the Preliminary Presentation and decided on a final Design to move forward with.
- Carolyn Randolph: Worker on final presentation. Continued looking into components to purchase.
- Aidan Burich: Refined the handlebar design and worked on the Preliminary Presentation. I also did some research on the different type of load cells.
- Nial Donohoo:Worked on preliminary presentation. Refined tennis ball design and made CAD model
- Henry Salita: Mainly worked on designing our final initial preliminary design in Onshape, as well as contributed to the preliminary presentation.

Weekly/Ongoing Difficulties: We had no notable difficulties this week.

Upcoming Team Goals: We plan to move forward with the initial fabrication steps this forthcoming week. We will order components as needed and begin 3D printing prototypes. Additionally, we will complete the preliminary report.

Upcoming Individual Goals:

- Nicolas Maldonado: Order the parts needed for our design and begin the fabrication process.

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- Carolyn Randolph: Finalize initial purchasing list. Work on the preliminary report.
- Aidan Burich: In the coming week I hope to finalize our design and start 3D printing our design. I also plan on ordering the load cells and start the final report draft
- Nial Donohoo: I plan to help make final decisions on ordering specific pieces, begin fabrication, and work on the preliminary report.
- Henry Salita: My goal for the upcoming week, is to help decide what sensors we want ordered, as well as print some initial prototypes for the weight bearing component of the walker.

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	10/3	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

TOTAL:							**$0.00**