# Smart Walker

**Client:** Mr. Daniel Kutschera

**Advisor:** Prof. Justin Williams

**Team Members:** Nicolas Maldonado, Shreya Venkatesh, Navya Jain, Xicheng Yang

| Name | Email | Role |
|---|---|---|
| Nicolas Maldonado | namaldonado@wisc.edu | Leader |
| Shreya Venkatesh | svenkatesh9@wisc.edu | Communicator |
| Navya Jain | njain52@wisc.edu | BPAG & BWIG |
| Xicheng Yang | xyang622@wisc.edu | BSAC |

## Problem statement:

The client, a physical therapist working in neuro-rehabilitation, has several patients with traumatic brain injury who use walkers as transition devices. He needs a smart walker for his patients that can objectively measure gait speed, distance walked, and the weight/force applied through the walker. Data is required by Medicare to demonstrate progress and efficacy, but can also help improve clinical assessment and motivate patients as they work to reduce device dependence. Currently, quantitative measurements are taken manually, which is time-consuming and incomplete, as there is no way to measure weight-bearing. Two prototypes have been made by modifying an existing walker, but this compromises structural integrity and is not viable for patient testing. The main goal is to develop a safe, attachable assessment device that provides real-time, clinically relevant gait and weight-bearing data for use with standard walkers by clinicians and patients.

## Brief status update:

As a team, we discussed the purchasing options for the two sensors and have processed an order. We also completed the preliminary report outlining all of our work and plans for the next couple of weeks.

## Difficulties/advice requests:

Nothing at the moment.

## Major team goals for the next week

1. 3D print the new end cap design
2. Remove not required materials from the old smart walker
3. Begin other fabrication processes

## Next week's individual goals

Navya:

- Order materials
- Begin writing testing procedures
- 3D print the endcaps

Shreya:

- Begin with 3D printing
- Research testing procedures

Nicolas:

- 3D print parts for fit testing
- Decide on parts and order them

Xicheng:

- Material ordering
- End cap CAD

## *Timeline*

| Task | January | | February | | | | March | | | | April | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 23 | 29 | 5 | 12 | 19 | 26 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 29 |
| **Project R&D** | / | / | / | / | / | / | | | | | | | | | |
| Empathize | | | | | | | | | | | | | | | |
| Background… | | X | X | X | X | X | | | | | | | | | |
| Prototyping | | | | | | | | | | | | | | | |
| Testings | | | | | | | | | | | | | | | |
| **Deliverables** | | | | | | | | | | | | | | | |
| Progress Reports | | X | X | X | X | X | | | | | | | | | |
| Prelim presentation | | | | | | | | | | | | | | | |
| Final Poster | | | | | | | | | | | | | | | |
| **Meetings** | | | | | | | | | | | | | | | |
| Client | | | X | | | | | | | | | | | | |
| Advisor | | X | X | X | X | X | | | | | | | | | |

| Website | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Update | X | X | X | X | X | X | | | | | | | | | |

**Filled boxes** = projected timeline
**X** = task was worked on or completed

# Previous week's goals and accomplishments

Get to know teammates, outline roles and responsibilities, create a communication plan.

## *Activities*

| Name | Date | Activity | Time (h) | Week Total (h) | Sem. Total (h) |
|---|---|---|---|---|---|
| Nicolas Maldonado | 20/02/26<br>24/02/26<br>25/02/26 | Preliminary presentation practice<br>Preliminary report<br>Preliminary report cont. | 1.5<br>1<br>0.5 | 3 | 13 |
| Shreya Venkatesh | 20/02/26<br>23/02/26<br>25/02/26 | Practiced preliminary presentation<br>Completed parts for preliminary report<br>Team meeting for sensor purchasing | 1.5<br>1<br>0.25 | 2.75 | 12.75 |
| Navya Jain | 20/02/26<br>23/02/26<br>25/02/26 | Practiced for prelim presentation<br>Researched about material purchasing<br>Worked on prelim report | 1.5<br>0.5<br>0.5 | 2.5 | 12.5 |
| Xicheng Yang | 20/02/26<br>25/02/26<br>25/02/26<br>26/02/26 | Practiced for preliminary presentation<br>Preliminary report testing part<br>Component ordering team meeting<br>Research on load cell and bluetooth testing | 1.5<br>1<br>0.25<br>0.75 | 3.5 | 13.5 |

# Current design

No current design to report.

# Materials and expenses

No current design to report.

# Other files

[Product Design Specification](#)

[Design Matrix](#)

[Preliminary Presentation](#)

[Preliminary Report](#)