

Dynamic Balance Device

Date: 03/08/2026 - 03/13/2026

Client: Mr. Daniel Kutschera

Advisor: Professor Monica Ohnsorg

Team:

Kat Sattel - Team Leader (sattel@wisc.edu)

Therese Kalt- Communicator (tkalt@wisc.edu)

Noor Awad - BSAC (nawad2@wisc.edu)

Freyja Heggeland - BWIG/BPAG (heggeland@wisc.edu)

Problem statement: Patients that have suffered strokes have a 25-30% rate of developing spatial neglect syndrome. Symptoms of spatial neglect syndrome include loss of awareness of the body in space. Our client, Dr. Kutschera, a physical therapist, helps patients to regain strength and balance following a stroke. The client seeks to develop a device that can be used to improve visual scanning and balance training that is an update from the previous yard-stick design. The device should be mutli-functional so as to help patients with varying degrees of need and be effective in the rehabilitation treatment.

Brief status update: This week, the team ordered materials, updated CAD, and started creating a circuitry fabrication protocol.

Difficulties / advice requests: None to report

Current design:

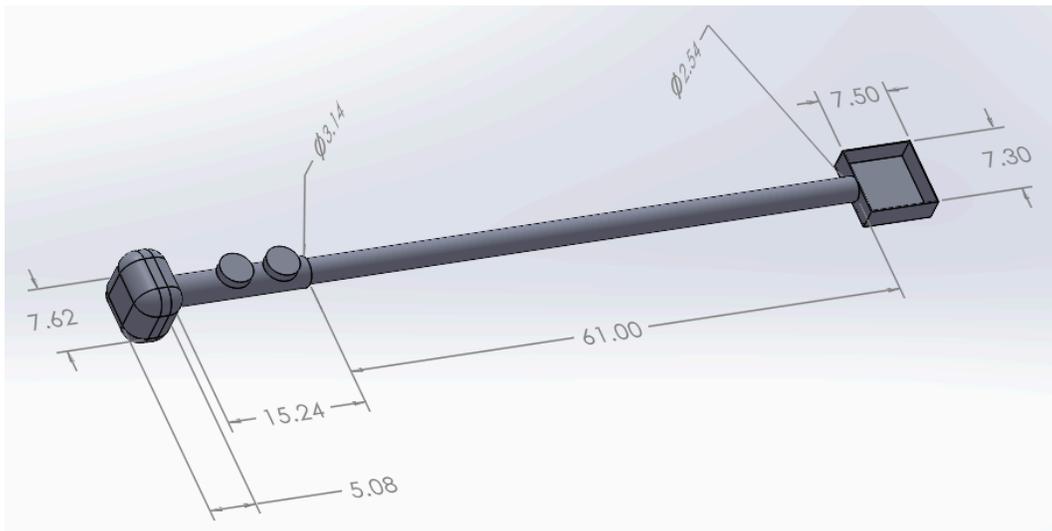


Figure 1: Dimensioned CAD drawing of current design

Materials and expenses

See table below:

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Materials										
Carbon Fiber Tube	1m long, 8mm outer diameter, 7mm inner diameter	CHZDPP	B0DJJ TX3S Q	Amazon	B0DJJT X3SQ	3/9/2026	1	\$57.23	\$57.23	Amazon.com
									\$0.00	
Electronics										
Capacitive Touch Sensor Switch	Sensor	Arduino	TTP223B	Ebay	TTP223B	3/9/2026	1	\$8.32	\$8.32	Ebay.com
9v battery	Battery	Vetco Electronics	VUPN8981	Shopify	VUPN8981	3/9/2026	1	\$0.69	\$0.69	Vetco Electronics
Tactile switch	Button	Vetco Electronics	TEA-5144	Shopify	TEA-5144	3/9/2026	2	\$0.89	\$1.78	Vetco Electronics
Waterproof Switch	On/Off switch	Vetco Electronics	NTE-54-250W	Shopify	NTE-54-250W	3/9/2026	1	\$9.99	\$9.99	Vetco Electronics
Speaker Module	Speaker	Vetco Electronics	VUPN6344	Shopify	VUPN6344	3/9/2026	2	\$4.21	\$16.21	Vetco Electronics
								TOTAL:	\$94.22	

Major team goals for the next week

1. Finish fabrication protocols
2. Attend show and tell - create a call to action
3. Finish circuitry

Next week's individual goals

- Kat Sattel
 - Assemble circuitry
 - Write testing protocols
- Therese Kalt
 - Begin assembling circuitry
 - Work on fabrication protocols for the CAD
 - Continue developing both CAD parts

- Noor Awad
 - Begin assembling circuitry
 - Write Testing protocol
- Freyja Heggeland
 - Assemble circuitry
 - Continue writing Arduino Code
 - Begin developing preliminary draft models

Timeline

Task	Week				Week					Week				Week	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Project R&D															
Empathize	X														
Background...	X	X	X	X	X	X									
Prototyping						X	X								
Testings															
Deliverables															
Progress Reports	X	X	X	X	X	X	X								
Prelim presentation				X											
Final Poster															
Meetings															
Client		X		X		X									
Advisor	X	X	X	X	X	X	X								
Website															
Update	X	X	X	X	X	X	X								

Filled boxes = projected timeline

X = task was worked on or completed

Previous week’s goals and accomplishments

- Kat Sattel
 - Ordered materials
 - Updated Fritzing diagram
 - Began writing Arduino code
- Therese Kalt
 - Worked on creating a CAD design that securely attached to the carbon fiber
 - Worked on fabrication protocol for the circuitry
- Noor Awad
 - Worked on fabrication protocol
 - Researched for future testing protocol
- Freyja Heggeland
 - Researched safe ranges for electronics when considering human skin

- Briefly researched a new ergonomic handle design that could be incorporated
- Wrote tentative Arduino code for electronics

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Kat Sattel	3/9/2026	- Ordered materials	0.5	2.5	27.5
	3/11/2026	- Updated Fritzing diagram + fabrication protocol	1		
	3/12/2026	- HIPAA training	1		
Therese Kalt	3/10/2026	- Worked on CAD design	0.5	2	23
	3/11/2026	- HIPAA training	1		
	3/11/2026	- Worked on fabrication protocol for circuitry	0.5		
Noor Awad		- Fabrication protocol	1	2	20
		- Testing research	1		
Freyja Heggeland	3/11/2026	- Material spreadsheet organization	0.5	2.5	28.5
		- Wrote tentative Arduino code	1		
		- Researched handle alternative and skin electropotentials	1		