Knee Crutch

Progress Report #8

BME Design 200/300

Date: 10/24-10/29

Client: Daniel Kutschera
Advisor: Duc-Huy Nguyen
Team:

Carmen Tanem Team Leader	ctanem@wisc.edu
Katie Matheus Team Leader	kmatheus@wisc.edu
Meghan Hayes Communicator	hayes27@wisc.edu
Madeline Kramer BSAC	mkkramer3@wisc.edu
Victoria Kind BWIG	vkind@wisc.edu
Zach Haussler BPAG	haussler@wisc.edu

Problem statement

Patients who are non-weightbearing on a lower limb often have difficulty safely navigating stairs when returning home, particularly when weakness or other physical limitations prevent them from using crutches. Current solutions are either improvised, uncomfortable, difficult to adjust, or designed for walking rather than stair navigation. Therefore, there is a need for a stable, adjustable, comfortable, and easily sanitized device that allows non-weightbearing patients to safely ascend and descend stairs without placing weight on the injured lower limb.

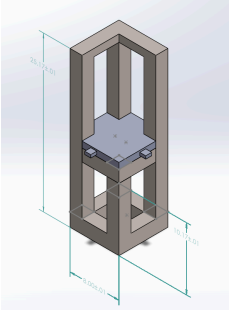
Brief status update

This week our team members finished up training. We had a meeting with an ecb shop advisor, Mike Hughes, who suggested we rethink our material shape, due to complications with welding H-bars. We also prepared for show and tell.

Difficulties / advice requests

We need to rethink our material shape. Mike suggested we look into angle bars, or hollow rectangular bars coupled with circular bars. Is there a shape that might be better for our design?

Current design



Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
Al H-Beams	3ft long aluminum h beams; thickness: 0.05in; height: 1.074in; width: 1.040in	Unknown	Unknown	McMaster	4558t51	10/15/2026	6	$10.60	$79.33	https://www.mcmaster.com/4558T51/
									$0.00	
Category 2										
Knee cushion	knee cushion	etsy	-	etsy	-	10/21	2	14.76	$14.76	
									$0.00	
								TOTA	**$0.00**	

								L:		

Goals

Major team goals for the next week

1. Meet with Mike and figure out fabrication plan
2. Reorder materials if necessary

Next week's individual goals

- Carmen Tanem
  - Order/fabricate base
- Katie Matheus
  - Order handles and different materials
- Meghan Hayes
  - Figure out fabrication plan
  - Meet with Mike again
  - Order new materials
- Madeline
  - Possible small scale model prototype
  - Discuss new play with fabrication
- Zach
  - Continue Training
  - Incorporate feedback into design and fabrication plan
  - Discuss and order new materials
- Victoria
  - Fabricate the base
  - Identify new plan of action

Timeline

Task	N/A	Sept				Oct					Nov				Dec	
	N/A	3	10	17	24	1	8	15	22	29	5	12	19	26	10	17
Project R&D																
Empathize			X													
Background…			X	X	X											
Prototyping				X	X	X	X	X	X	X						
Testings																
Deliverables																

Progress Reports		X	X	X	X	X	X	X	X	X						
Prelim presentation						X										
Final Poster																
Meetings																
Client		X														
Advisor		X	X	X	X	X	X	X	X							
Website		X	X	X	X	X	X	X	X							
Update		X	X	X	X	X										

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

Detailed accomplishments

Previous week's goals and accomplishments

- Carmen Tanem
  - do training
  - order knee pad
- Katie Matheus
  - Do training
  - Start fabricating
- Meghan Hayes
  - Meet with shop consultant
  - Look into alternate design/fabrication methods
- Madeline
  - Continue training
  - Determine how the strap will be attached to the platforms
  - Finalize design of riser platforms
- Zach
  - Continue training
  - Determine exactly how base will be manufactured
  - Order potential materials required to manufacture base
- Victoria
  - Completed Machining trainings
  - Begin welding trainings

Summary of Team Accomplishments

1. Finished several team trainings

2. Prepared for show and tell

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Carmen Tanem					
Katie Matheus	10/27 10/29	Submitted training Work on show and tell	0.5 1	1.5	23.5
Meghan	10/29	Consultation meeting Looked into alternate designs/fabrication methods	1 1.5	2.5	24.5
Victoria	10/28	Submitted and completed all trainings	4	4	26
Madeline	10/26 10/29	Completed training Completed final training	1 3	4	27
Zach	10/27-29/2026	Completed required trainings	4	4	27