

Knee Crutch

Progress Report #4

BME Design 200/300

Date: 9/25-10/1

Client: Daniel Kutschera

Advisor: Duc-Huy Nguyen

Team:

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Problem statement

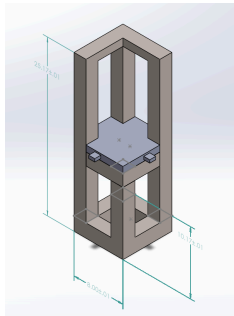
Patients who are non-weightbearing on a lower limb often have difficulty safely navigating stairs when returning home, particularly when weakness or other physical limitations prevent them from using crutches. Current solutions are either improvised, uncomfortable, difficult to adjust, or designed for 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 we updated our design and worked on the preliminary presentation. We added four legs to the base of the design for stability, and decided to add a belt around the removable plates and cushion to avoid any sliding during use. We also practiced presenting our presentation this week.

Difficulties / advice requests

Current design



Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
									\$0.00	
									\$0.00	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$0.00	

Goals

Major team goals for the next week

1. Present preliminary presentation!
2. Work on preliminary report
3. Meet with client and show final design so we can order materials

Next week's individual goals

- Carmen Tanem
 - Complete Prelim report
 - Complete peer review
 - Continue research
 - Get prepared to start some initial printing and ordering of materials
 - Update PDS with current information/advisor feedback
- Katie Matheus
 - Complete preliminary report
 - Complete peer reviews
 - 3 new research articles, look into base of the crutch
- Meghan Hayes
 - Complete preliminary report
 - Complete peer reviews
 - Update PDS
 - Research materials and fabrication processes
- Madeline
 - Complete preliminary report and peer reviews
 - Research materials and begin fabrication process
- Zach
 - Complete Preliminary Report
 - Complete Peer Review
 - Research and begin gathering materials
- Victoria Kind
 - Complete Preliminary Report
 - Complete Peer Review
 - Begin identifying and gathering materials for design

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																
Background...		X	x													
Prototyping				X	X											
Testings																
Deliverables																
Progress Reports		X	X	X	X											
Prelim presentation																
Final Poster																
Meetings																
Client		X														
Advisor		X	X	X	X											
Website																
Update		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
 - Work on the preliminary presentation
 - Start the preliminary report
 - Nail down material choice for base
 - Continue researching
 - Update PDS with design changes and advisor feedback
- Katie Matheus
 - Preliminary presentation and practice during team meeting
 - Start the report
 - 3 research articles about biology and physiology
 - Reach out to client about background information about him for our presentation
- Meghan Hayes
 - Work on the preliminary presentation
 - Update final design Solidworks
 - Email client with any questions
 - Completed research on materials
- Madeline
 - Work on material research & planning for design
 - Work on preliminary presentation
- Zach

- Work on preliminary presentation
- Meet with team to practice presentation
- Research possible conditions that could be assisted by our device
- Victoria Kind
 - Work on preliminary presentation
 - Continue researching sterilization techniques and materials
 - Identify testing for prototype

Summary of Team Accomplishments

1. Updated final design
2. Finalized preliminary presentation

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Carmen Tanem	9/29/26 9/29/26	Prelim report Prelim presentation	3 2	5	14
Katie Matheus	9/29/26 10/1/26	Preliminary presentation Research and start preliminary report	1 3.5	4.5	13
Meghan	9/28/26 10/1/2026	Update final design solidworks Research materials and competing designs Work on Preliminary Presentation	1 2 2	5	13
Victoria Kind	9/29/26 9/30/26 10/01/26	Work of Preliminary Presentation and practice Research articles on comfortability and sterilization Research competing designs	1.5 1.5 1.5	4.5	13
Madeline	9/29/26 10/1/26	Preliminary presentation Research	2 2	4	12
Zach		Worked on Preliminary Presentation Practice Preliminary Presentation Research	1 1 2	4	14