

Stair Chair: BME 200/300

Dates: 11/14/2024-11/21/2024

Client: Mr. Daniel Kutschera, PT

Advisor: Dr. James Trevathan

Team:

Matt Sheridan (Leader)

Dan Altschuler (Communicator)

Cody Kryzer (BSAC)

Luke Rosner (BWIG)

Abi Conners (BPAG)

Problem Statement

Create a mechanical device that temporarily handicapped patients can use to ascend and descend 3-5 stairs. The device should be inexpensive to fabricate, as compared to competing powered stair lifts, and be easy to set up and take down, both inside and outside the patient's home.

Brief Status Update

The team has begun to assemble the final device so that testing can be completed before the poster presentation. The team has also started to work on the final poster and the final report given the upcoming due dates for the deliverables.

Weekly Goals and Accomplishments

- Team
 - Began assembly on stair chair scale model
- Matt Sheridan
 - Completed water jetting of the base plate
- Dan Altschuler
 - Wrote the protocols and helped with the final assembly
- Cody Kryzer
 - Drew out plans for the final design
- Luke Rosner
 - Completed water jetting of the base plate

Upcoming Goals

- Team
 - Complete the final design and begin testing
- Matt Sheridan
 - Complete the assembly and write out the fabrication plan
- Dan Altschuler
 - Start testing and work on filling in the testing section of the final report and poster
- Cody Kryzer
 - Get the rope for the assembly and help the team finish the design
- Luke Rosner
 - Get the plates machined for the final assembly

Project Timeline

Deliverable	Deadline	People Assigned	Progress
Initial Client Meeting	9/13	ALL	100%
Product Design Specifications (PDS)	9/20	ALL	100%
Individual Research	9/20	ALL	100%
Design Matrix Criteria	9/27	ALL	100%
Design Ideas	9/27	ALL	100%
Preliminary Presentation	10/4	ALL	100%
Individual Research	10/4	ALL	100%
Preliminary Deliverables	10/9	ALL	100%
Decide upon Final Design	10/9	ALL	100%
Finished Model of Final Design	10/25	ALL	100%
Show and Tell	11/1	ALL	100%
Final Prototype Prepared (by Thanksgiving break)	11/26	ALL	100%
Final Presentation	12/6	ALL	0%
Final Deliverables	12/11	ALL	0%

Materials and Expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	QTY	Cost Each	Total	Link
Category 1										
Surface-Mount Hinge	Hinges for connection of base and ramp plates.	McMaster-Carr	1798A31	McMaster-Carr		11/1	2	\$9.62	\$19.24	https://www.mcmaster.com

									m/products/hinges/
Pulley	Pulley for ropes to hoist design.	McMaster- Carr	3099T3 4	McMaster-Carr		11/1	8	\$11.89	\$95.12 https://www.mcmaster.com/products/pulleys/pulleys-mounted-pulleys-for-wire-rope-for-lifting/
Silver Anodized Aluminum—Grooved Rail Texture	Extrusion for support and framework.	McMaster - Carr	47065T 101	McMaster - Carr		11/1	4	\$28.93	\$115.72 https://www.mcmaster.com/47065T101-47065T413/
Diamond Tread Aluminum 1/8 inch Baseplate (1x1 and 1x2)	Material for base and ramp plates	Metals Depot	P418	Metals Depot		11/1	2	\$18.92 (1x1) \$32.84 (1x2)	\$51.76 https://www.metalsdepot.com/aluminum-products/aluminum-diamond-plate

Hardware (screws, brackets, nuts)	Used to fabricate the final design	UW Makerspace		UW Makers pace		12/2		\$16.78	\$16.7 8	
HDF	Used to make the stairs for the final design	UW Makerspace		UW Makers apce		12/2		\$4.48	\$4.48	
								TOTAL:	\$303. 02	