

Stair Chair: BME 200/300

Dates: 10/25/2024-10/31/2024

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 met this week to get an order form for the materials and to also prepare for Show and Tell. The order form will be sent off to the client and we will figure out a fabrication plan once all the materials are in. For Show and Tell, the team is hoping to ask questions about testing so that we can figure out a stronger plan on what we want to test/what will be the most useful information about the model to know. Unfortunately, Abi has had to leave the group.

Weekly Goals and Accomplishments

- Team
 - Completed and sent in material order form
 - Prepared pitch for show and tell
- Matt Sheridan
 - Helped determine quantity and type of materials
 - Prepared for show and tell
- Dan Altschuler
 - Worked on the material order form
 - Handled labarchives
- Cody Kryzer
 - Worked on material order
 - Prepared for show and tell
- Luke Rosner
 - Worked to determine the materials we need to order
 - Did force simulation for base plates

Upcoming Goals

- Team
 - Get good feedback from Show and Tell

- Work on the final design
- Matt Sheridan
 - Begin assembling final prototype and design tests
- Dan Altschuler
 - Learn a lot from Show and Tell
- Cody Kryzer
 - Receive and give feedback at show and tell
- Luke Rosner
 - Start work on assembly when materials arrive

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	0%
Final Prototype Prepared (by Thanksgiving break)	11/26	ALL	0%
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/products/hinges/
Pulley	Pulley for ropes to hoist design.	McMaster- Carr	3099T34	McMaster - Carr		11/1	8	\$11.89	\$95.12	https://www.mcmaster.com/products/pulleys/pulleys-for-wire-rope-lifting/
Silver Anodized Aluminum—Grooved Rail Texture	Extrusion for support and framework.	McMaster - Carr	47065T101	McMaster - Carr		11/1	4	\$28.93	\$115.72	https://www.mcmaster.com/47065T101-47065T413/
Diamond Tread	Material for base and	Metals Depot	P418	Metals Depot		11/1	2	\$18.92 (1x1)	\$51.76	https://www

Aluminum 1/8 inch Baseplate (1x1 and 1x2)	ramp plates							\$32.84 (1x2)		www.wetalsdepot.com/aluminum-products/aluminum-diamond-plate
								TOTAL:	\$0.00	