

Title: Gait Trainer with Treadmill (Step Masters) 200/300

Date: 10/03/2025 - 10/09/2025

Client: Amanda Pajerski

Advisor: Dr. Ashton

Team:

Grace Neuville, Leader, geneuville@wisc.edu

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Problem statement

A woman with a significant mobility impairment due to a seizure disorder requires support while walking because of seizure risks and poor postural strength. She has a Rifton Pacer Gait Trainer which has allowed her to resume walking outdoors; however, it is unsafe to use in winter. It is crucial for her to be able to use the gait trainer for daily walks in order to maintain her muscular strength and mental health. The solution is to design a transfer device that will allow her to use her gait trainer on a Horizon T101 treadmill to give her the opportunity to maintain her muscle conditioning when weather conditions are not favorable. The transfer device will need to allow the gait trainer to be wheeled onto the treadmill and secure the wheels in position so it cannot fall off the side while she's walking. It will need to hold the weight of the gait trainer, the user, and one caregiver, totaling to 173.6 kg. It will need to be easy for caregiving staff to use, taking no more than 5 minutes to assemble, under 22 kg, and have the ability to fold in order to maintain the functionality of her living environment.

Brief status update

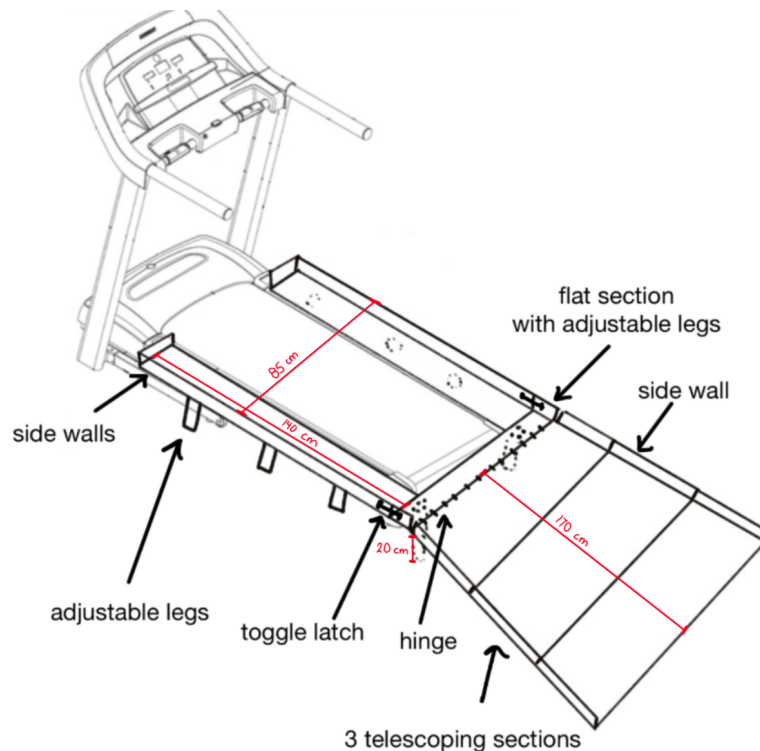
The team presented the preliminary presentation to advisors and peers. The team also completed the preliminary report, as well as met with staff in the Design and Innovation Lab to discuss fabrication plans. The team is continuing to look into other fabrication options due to the complexity of the telescoping ramp design.

Difficulties / advice requests

The team met with Mike (a fabrication staff) in the Design and Innovation Lab. He is unsure of the feasibility of the telescoping ramp design. He suggested creating slots in the top face of the ramp that the layers can slide in. Another suggestion was using ball pins on the side guards of the ramp, but the side guards would need to be thick enough to prevent any shearing or torsion about the pin.

He wants us to succeed and believes that the best option may be to use nesting wooden blocks, so that the device can still be compact but will be easier to fabricate. The team is hesitant at this idea because of the bulkiness of the wooden blocks. We are looking into foldable aluminum ramps available on the market that we could purchase and then alter to fit the clients specifications which would simplify the fabrication process and ensure stability of the device.

Current design



This design features adjustable legs that allow the side track's height to be modified, accommodating uneven flooring or different treadmill models. A flat platform section connects to the tracks using toggle latches, securing the assembly in place. This flat section also includes adjustable legs for added stability and adaptability.

A hinged connection links the flat platform to a telescoping ramp, allowing the ramp to fold for compact storage. The ramp is designed to nest upward, with a wider base that gradually narrows toward the top. The wider bottom section provides increased tolerance for wheeling the gait trainer onto the ramp, while the upper section conforms more closely to the gait trainer's dimensions for a snug fit.

For easy storage, the ramp section can be detached from the tracks, collapsed into itself, and placed on top of the treadmill or stored elsewhere when not in use.

Materials and expenses

Item	Description	Manufacturer	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	

Major team goals for the next week

1. Order materials
2. Begin any preliminary prototyping
3. Conduct material and load testing in solidworks

Next week's individual goals

- Grace
 - Help with ordering materials
 - Help with solidworks model of final design
- Sierra
 - Begin working on SolidWorks model of final design
 - Source materials for prototyping
- Julia
 - Rework design
 - Plan for fabrication
- Sara
 - Research cost-effective materials
 - Brainstorm design options
- Katelynn
 - Investigate cost-effective solutions for materials and fabrication
 - Begin ordering and sourcing materials
 - Make progress on Wendt and ECB trainings

Timeline

Task	Sept			Oct						Nov				Dec	
	11	18	25	3	8	10	17	24	31	7	21	20	28	5	10
Project R&D															
Empathize	X	X	X												
Background...	X	X	X												
Prototyping				X	X										
Testings															
Deliverables															
Progress Reports	X	X	X	X	X										
PDS		X	X	X	X										
Design Matrix			X												
Prelim Presentation				X											
Prelim Deliverables				X	X										
Show and Tell															
Final Poster															
Final Deliverables															
Meetings															
Client	X	X	X												

Advisor	X	X	X	X	X										
Website															
Update	X	X	X	X	X										

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

The team held a brainstorming session to combine the best features from the preliminary designs and combine them into the proposed final design. During this process, the team discussed all of the feedback that was gathered so far from the client and caregivers in order to ensure the proposed final design was meeting their most important needs. The team presented this proposed final design to advisors and peers during preliminary presentations.

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Grace Neuville	9/7/2025	Wrote problem statement	0.5	2	11.5
	9/7/2025	Researched ramp standards	0.5		
	9/7/2025	Worked on timeline in progress report	0.5		
	9/8/2025	Researched portable ramp designs	0.5		
	9/16/2025	Worked on my section of the PDS	1.5	1.5	
	9/24/2025	Refined the suitcase ramp design	0.5	1.5	
	9/24/2025	Researched importance of gait trainers	0.5		
	9/25/2025	Worked on the design matrix	0.5		
	9/29/2025	Worked on my section of the preliminary presentation	0.5	3.5	
	9/29/2025	Created a treadmill part in solidworks	2		
	10/2/2025	Created final design drawing	0.5		
	10/2/2025	Worked on final design section of preliminary presentation	0.5		
	10/6/2025	Researched testing methods	1	3	
	10/6/2025	Worked on testing section of the preliminary report	1		
	10/7/2025	Met with Fabrication staff	0.5		
	10/8/2025	Revised preliminary report	0.5		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sierra Loosen	9/8/25	Brainstormed questions for client meeting	0.5	1	11.5
	9/8/2025	Researched ADA compliant ramp dimensions	0.5		
	9/14/2025	Research relating to the importance of physical activity and current designs of portable ramps	1.5	4	
	9/14/2025	Completed assigned sections of PDS	1.5		
	9/18/2025	Proof read and formatted PDS	0.5		
	9/18/2025	Individual preliminary design brainstorming	0.5		
	9/20/2025	Refined individual preliminary design idea	0.5	2	
	9/21/2025	Wrote descriptions for design matrix criteria	0.5		
	9/24/2025	Helped finish design matrix	1		
	10/1/2025	Brainstorming for final design	0.5	1.5	
	10/2/2025	Preliminary presentation prep	1		
	10/4/2025	Updated PDS	1	3	
	10/6/2025	Individual work on preliminary report	1.5		
	10/7/2025	Research on prefabricated ramps	0.5		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Julia Shefchik	9/8/2025	Wrote questions for client meeting	0.5	1.5	12
	9/8/2025	Reviewed given information on pacer gait trainer and treadmill to answer client questions	0.5		
	9/11/2025	Researched material options	0.5		
	9/14/2025	Further research on aluminum as a potential material	0.5	3	
	9/17/2025	Formatted and contributed to the team PDS document	1.5		

	9/17/2025	Researched the treadmill and gait trainer the client uses	0.5		
	9/17/2025	Edited the problem statement	0.5		
	9/19/2025	Individual preliminary design and research to inform design	1	4	
	9/21/2025	Help format preliminary design presentation	0.5		
	9/22/2025	Refined preliminary design	0.5		
	9/24/2025	Refined preliminary design using client feedback	0.5		
	9/24/2025	Wrote design matrix discussion and contributed information for design 1	1.5		
	9/26/2025	Begin brainstorm for preliminary design presentation	0.5	1.5	
	10/2/2025	Prepare for preliminary design presentation	1		
	10/5/2025	Set up design meeting and inform staff of project	0.5	2	
	10/7/2025	Meet with design staff	0.5		
	10/7/2025	Individual work on preliminary report and revising	1		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sara Mlodik	9/9/2025	Brainstormed/looked over client meeting questions and progress report	.5	1.5	11.5
	9/11/2025	Analyzed the 2024 project process in the team notebook and found areas for improvement	1		
	9/14/2025	Finished analyzing the 2024 project process and notes and wrote questions for the upcoming client meeting	1	4	
	9/14/2025	Completed assigned sections of PDS	1.5		
	9/18/2025	Made a design sketch, a ramp model, and brainstormed specific questions for the design team	1.5		
	9/19/2025	Researched the background information on gait trainers	1	2.5	

	9/23/2025	Refined preliminary design #1 into preliminary design #2	.5		
	9/24/2025	Worked on slides and notes for the Preliminary Presentation	.5		
	9/24/2025	Helped finish design matrix	.5		
	9/26/2025	Brainstormed design ideas and telescoping legs	.5	1.5	
	10/2/2025	Worked on slides and notes for the Preliminary Presentation	1		
	10/6/2025	Individual work on preliminary report	1	2	
	10/9/2025	Research on material and design alternatives	1		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Katelynn Johnson	9/9/2025	Brainstormed questions for client meetings.	0.5	1.5	11.5
	9/9/2025	Reviewed previous group's final report and client comments.	0.5		
	9/10/2025	Reviewed BPAG resources and funding options.	0.5		
	9/16/2025	Reviewed NIOSH lifting guidelines and other safety research relating to caregiver safety.	1	3.5	
	9/17/2025	Completed assigned sections of the PDS and Progress Report #2	1		
	9/18/2025	Used information gained from client meetings to brainstorm designs.	1.5		
	9/21/2025	Researched how the gait trainer wheel locks operate, and brainstormed how to allow the best access to these locks while the gait trainer is elevated with wheel tracks.	0.5	2.5	
	9/21/2025	Updated my preliminary design to account to reduce design weight, and to make the folding process easier.	1.5		
	9/22/2025	Researched pre-existing aluminum ramps that could be modified for the design.	0.5		
	9/26/2025	Set-up budgeting and materials tracking system after reviewing additional BPAG resources and guidelines at BPAG	1	2	

		meeting.			
	9/30/2025	Edited slides for our preliminary presentation	0.5		
	10/2/2025	Practiced for preliminary presentation.	0.5		
	10/7/2025	Individual work on preliminary report	0.75	2	
	10/8/2025	Individual work on preliminary report	0.75		
	10/8/2025	Investigated BME department funding opportunities.	0.5		