

Amputee Advanced Donning Device

Date: 09/04/2026 - 09/10/2026

Client: Dr. Daniel Kutschera

Advisor: Dr. Justin Williams

Team:

Freyja Heggeland - Team Leader (heggeland@wisc.edu)

Adam Bauer - Communicator (abauer24@wisc.edu)

Megan Pearson - BSAC (mepearson4@wisc.edu)

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Problem statement: During physical rehabilitation, it is critical for amputee patients to wear a specialized compression garment known as a shrinker sock. A shrinker sock aims to shape the residual limb in preparation for prosthetic fitting and prevent post-operative complications like swelling and excess fluid retention. To apply the shrinker, patients currently rely on basic donning tubes, where the shrinker is stretched over a plastic tube and pulled over the residual limb. Because shrinkers are designed to apply strong, consistent compression, they can be very difficult to stretch over donning tubes. This challenge is especially significant for elderly patients, who may have limited strength, dexterity, or mobility. This project aims to create an advanced donning device that stretches the garment to the desired diameter using electronics and mechanical means, simplifying shrinker application and eliminating the need for manual user input to stretch the garment.

Brief status update: The group has started researching cloth materials, fabrication methods, and electronic means to construct the device as requested by the client. Due to being unable to meet with the client at this time, the bulk of the research performed has been preliminary, based on how the team believes the past group would have continued, similar to as if they were continuing this project.

Difficulties / advice requests: None to report

Current design:

No current design to display

Materials and expenses

No current materials or expenses to report.

When materials/expenses are reportable, See table below:

Item	Description	Manufacturer	Mft Pt#	Vend-or	Vend-or Cat #	Date	#	Cost Each	Total	Link
Materials										

Major team goals for the next week

1. Finish Product Design Specifications
2. Meet with client
3. Begin developing design/decision matrices to weigh component choices

Next week's individual goals

- Freyja Heggeland
 - Write the PDS and have it ready by Wednesday night next week
 - Meet with advisor
 - Devise project plan and problem statement
- Adam Bauer
 - Write PDS
 - Continue researching design ideas
- Megan Pearson
 - Contribute to the PDS
 - Continue researching to prepare for design matrices
- Carl Assmus
 - Contribute to the PDS so we have it ready on time
 - Continue to focus research based on the first client meeting
 - Help create a problem statement and make updates to the team/project website accordingly

Timeline

Task	Week				Week					Week				Week	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Project R&D															
Empathize	X														
Background...	X														
Prototyping															
Testings															
Deliverables															
Progress Reports	X														
Prelim presentation															
Final Poster															
Meetings															

Client	X														
Advisor	X														
Website															
Update	X														

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

- Freyja Heggeland
 - Organized team notebook
 - Began background research
 - Met with client and advisor
- Adam Bauer
 - Looked at previous group's preliminary report and final poster
 - Set up client meeting for Friday
- Megan Pearson
 - Reviewed previous team's final report and poster
 - Researched amputations and shrinker socks
- Carl Assmus
 - Began research to gain a better understanding of the systems we will work with on this project
 - Reviewed the previous team's work on the project

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Freyja	9/5/2026	- Researching stretcher sock designs, functions, and necessary components. Also briefly reviewed last years' work.	2	4	4
		- Developed questions for our client	0.5		
	9/8/2026	- Continued introspective into previous team's device and design constraints	0.5		
	9/10/2026	- Met with advisor and started writing PDS	1		
Adam	9/9/2026	- Looked at previous teams designs and background	1.5	2	2
		- Researched additional stretcher sock information	0.5		

Megan	9/10/2026	- Reviewed previous team's final report and poster - Researched amputations and shrinker socks	1 1	2	2
Carl	9/7/2026 9/9/2026 9/10/2026	- Researched the shrinker sock - Researched competing designs for shrinker sock donning - Reviewed the previous teams work on the project	1 1 1	3	3