

Amputee Advanced Donning Device

Date: 09/18/2026 - 09/24/2026

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)

Carl Assmus - BWIG & BPAG (cassmus@wisc.edu)

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 team worked on creating design matrices to assess overall construction of the device and the material choices. The team will be sorting this information, along with other project information into a presentation that will be delivered next week.

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	Manufac-turer	Mft Pt#	Vend-or	Vend-or Cat #	Date	#	Cost Each	Total	Link
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Materials

Major team goals for the next week

1. Develop presentation
2. Practice presentation
3. Present presentation
4. Begin thinking about prototyping

Next week's individual goals

- Freyja Heggeland
 - Develop and present preliminary presentation
- Adam Bauer
 - Make preliminary presentation
 - Finish a CAD model for the presentation or redraw a cleaner image of one design
- Megan Pearson
 - Prepare for preliminary presentation
- Carl Assmus
 - Help in creating the preliminary presentation
 - Give the preliminary presentation
 - Continue research into the chosen design
 - Come up with improvements for the chosen design

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	X													
Background...	X	X	X	X											
Prototyping															
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

Previous week's goals and accomplishments

- Freyja Heggeland
 - Developed design matrix and material matrix
 - Confirmed design choice and material choices with team
- Adam Bauer
 - Finished design matrix
 - Brainstormed design ideas with some research
- Megan Pearson
 - Created two design ideas
 - Helped complete the design matrices
- Carl Assmus
 - Helped in developing the design matrix
 - Came up with a potential design choice for the design matrix

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Freyja	9/21/2026 9/23/2026	- Developed design matrices - Developed individual material evaluation for matrix.	1 0.5	1.5	9.5
Adam	9/20/2026 9/21/2026 9/23/2026	- Brainstormed design ideas and researched possible mechanisms - Developed design matrices - Finished design matrix	1.5 1 0.5	3	5.5
Megan	9/21/2026 9/23/2026 9/24/2026	- Created two potential design ideas - Met with team to discuss design matrices - Completed research to evaluate material choices for material matrix - Finished design matrices	1.5 2 1	4.5	10
Carl	9/23/2026	- Develop design matrix - Develop design proposal for the matrix	2 2	4	10.5