Amputee Advanced Donning Device

Date: 09/11/2026 - 09/17/2026

Client: Dr. Daniel Kutschera
Advisor: Dr. Justin Williams

Team:

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

Adam Bauer - Communicator (abauer24@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 team met with Dr. Kutschera on Friday to discuss project goals. The team continued individual research and prepared the Product Design Specification based on research and input from our client.

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

Materials										

Major team goals for the next week

1. Meet with advisor
2. Develop design ideas
3. Create design matrices to weigh component choices
4. Begin preparing for preliminary presentation

Next week's individual goals

- Freyja Heggeland
    - Develop 3 functional design ideas
    - Complete design matrix
- Adam Bauer
    - Complete Design Matrix
    - Brainstorm design ideas
- Megan Pearson
    - Sketch out potential design ideas
    - Meet with team to complete a design matrix
- Carl Assmus
    - Help with completing the design matrix
    - Upload files that need to go on the website
    - Continue research into the shrinker socks and competing designs

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**													
Prototyping															
Testings															
Deliverables															
Progress Reports	**X**	**X**													
Prelim presentation															
Final Poster															
Meetings															
Client	**X**														
Advisor	**X**	**X**													
Website															
Update	**X**	**X**													

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Freyja Heggeland
  - Completed PDS
  - Met with client
- Adam Bauer
  - Completed PDS
- Megan Pearson
  - Met with team and client
  - Completed research for PDS
  - Completed assigned sections of PDS
- Carl Assmus
  - Completed PDS
  - Met with client
  - Completed research for the PDS and continued general research

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Freyja	9/13/2026 9/16/2026 9/17/2026	- Developed PDS - Continued PDS development, researched existing competing designs - Revised drafted PDS and communicated with team	1 1 2	4	8
Adam	9/16/2026	- Completed PDS sections	0.5	0.5	2.5
Megan	9/16/2026	- Completed necessary research to fill in assigned sections of the PDS	3.5	3.5	5.5
Carl	9/11/2026 9/16/2026	- Client Meeting - Completed research for the PDS - Completed sections of the PDS assigned to me	0.5 2 1	3.5	6.5