

Amputee Advanced Donning Device

Date: 10/16/2026 - 10/22/2026

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 discussed fabrication logistics with Makerspace staff, printed their first 3D prototype, and is working to generate more prototypes that better deal with the constraints specified for the device.

Difficulties / advice requests: None to report

Current design:

No current design to display

Materials and expenses:

Item	Description	Manufacturer	Mft Pt#	Vend-or	Vend-or Cat #	Date	#	Cost Each	Total	Link
Materials										
3D filament	PLA	UW Makerspace	UW Makerspace	UW Makerspace	UW Makerspace	10/16/2026	1	\$6.21	\$6.21	https://making.engr.wisc.edu/

Major team goals for the next week

1. Continue fabrication
2. Develop stronger supports for prototype

Next week's individual goals

- Freyja Heggeland
 - Continue 3D print fabrication and development
 - Communicate with team regarding CAD file directions
 - Learn from makerspace regarding aluminum infill supports
- Adam Bauer
 - Continue to use solidworks testing
 - Work on adding a motor into CAD to better simulate our design
- Megan Pearson
 - Help with fabrication of prototype
 - Determine questions we want to ask other teams during show and tell
- Carl Assmus
 - Continue to revise electronics parts list
 - Order parts from revised electronics list

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					X	X	X	X							
Testings															
Deliverables															
Progress Reports	X	X	X	X	X	X	X	X							
Prelim presentation					X										

Final Poster															
Meetings															
Client	X				X										
Advisor	X	X	X	X	X	X	X	X							
Website															
Update	X	X	X	X	X	X	X	X							

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

- Freyja Heggeland
 - Began physical fabrication with team
 - Printed last groups' final models at Makerspace
 - Spoke with Makerspace staff regarding design ideas and 3D print future
- Adam Bauer
 - Begin physical fabrication
 - Adjust Previous groups CAD accordingly
- Megan Pearson
 - Completed required training
 - Researched torque the motor should provide
- Carl Assmus
 - Research more electronic components
 - Research how the electronic components can be connected
 - Build a sketch of the proposed electronic circuit

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Freyja	10/19/2026 10/22/2026	- Makerspace staff consultation - Evaluating moment calculations	2 1	2 1	25
Adam	10/22/2026 10/22/2026	- Remade missing components in last groups design - Reviewed solidworks testing simulations	2 2	4	15.5
Megan	10/22/2026	- Completed required training - Researched torque the motor should provide	0.5 1	1.5	18

Carl	10/21/2026	- Research electronic components we could use	3	4	21.5
	10/22/2026	- Sketch electronic circuit	1		