

Inconspicuous Ankle Foot Orthosis (AFO) for teen

November 14th - November 20th, 2025

Client: Debbie Eggleston

Advisor: Dr. Justin Williams

Team Members:

Alex Conover (Team Leader)

Avery Lyons (Communicator)

Claire Matthai (BSAC)

Aditi Singhdeo (Co-BPAG)

Celia Oslakovic (Co-BPAG)

Sean Carey (BWIG)

Problem Statement:

Ankle-foot orthoses (AFOs) are designed to support dorsiflexion during the swing phase of walking. They are commonly used in managing muscular dystrophies, and for this project, our focus is specifically on adolescents with Facioscapulohumeral Dystrophy (FSHD), the most prevalent form of muscular dystrophy. Our goal is to create a brace that helps teens achieve safer walking by assisting ankle dorsiflexion, while remaining discreet, lightweight, and flexible enough to allow natural ankle motion. The main design priorities are to position the ankle in proper dorsiflexion, keep the brace slim and unobtrusive, and provide enough flexibility to reduce movement restrictions.

Status Update:

The team finished fabricating the first copy of the final prototype, with the second to be fabricated in the following week, and sent to the client. The data has been interpreted from testing, and is included in the email as a pdf. The data will be added to the final report, as well as included on the final poster. The report and poster were started this week, as well as any other updates to the Lab archives team notebook, specifically fabrication and testing notes.

Summary of Weekly Team Member Design Accomplishments (Include time spent):

Alex:

- Attended team meeting 11/16 to plan deliverables (1 hour)
- Attended BME 300 lecture (50 min)
- Fabricated the first final prototype (2 hours)
- Started the final report and final poster (30 minutes)

- Worked on the data from testing, finished the walking section (1 hour 30 min)

Avery:

- Attended BME 300 lecture (50 mins)
- Began poster and final report (30 mins)
- Attended team meeting on 11/16 to plan final deliverables (1 hour)

Claire:

- Met with team on Sunday 11/16 to plan final deliverables (1 hour)
- Started materials section of final report (30 mins)

Aditi:

- Attended team meeting on 11/16 to plan final deliverables (1 hour)
- Updated cost spreadsheet (20 mins)
- Started working on final report (30 mins)

Celia:

- Updated expenses sheet fully (45 minutes)
- Started final report (30 minutes)

Sean:

- Team meeting to plan the report and poster (1 hour)
- Updated Brace CAD (1.5 hours)
- Created drawings for brace CAD (30 mins)
- Printed updated brace (10 mins)

Weekly/Ongoing Difficulties

The team worked to delegate the final report and final poster. We are aiming to have the poster done on 11/25 to share with Dr. Williams, and the final report to share on 12/4 so we can receive adequate feedback to ensure the best final presentation.

Upcoming Team and Individual Goals

Team:

- Complete the first draft of the final poster.
- Complete the first draft of the final report.
- Complete the second prototype to send to the patient.

Individual:

Alex:

- Finish my section of the poster
- Continue my section of the final report
- Continue analyzing the stabilogram data.

Avery:

- Finish my section of the poster
- Continue working on my section of final report

Claire:

- Finish my section of the poster and final report

Aditi:

- Make sure finance spreadsheet accurately reflects team spending
- Finish my sections of the poster and final report

Celia:

- Finish section of poster and final report.

Sean:

- Work on my section of the poster and final report

Project Timeline

Project Goal	Deadline	Team Member Assigned	Progress	Completed
Meet with Client	9/10/2025		100%	
→ email client with dates	9/14/25	Avery	100%	
→ create question list		All	100%	
→ write summary and put in notebook		All	100%	
PDS Draft	9/18/2025		100%	
→ submit draft		Alex		
Design Ideas and Matrix	9/26/2023		100%	
→ create design 1		All		
→ create design 2		All		
→ create design 3		All		
→ compare designs in matrix		All		
Preliminary Design Presentation	10/03/2023		100%	
→ upload to website		Sean		
Preliminary Deliverables	10/08/2023		100%	
→ email report and notebook		Avery		
→ upload report to website		Sean		
→ peer/self evaluations		All		
Decide on Final Design	10/10/2023		100%	

→ get feedback from client on design		All		
Show and Tell	10/31/2023		100%	
→ create an initial prototype		All		
Final Poster Presentation	12/05/2023		0%	
→ invite client		Avery		
→ post on website		Sean		
Final Deliverables	12/10/2023		0%	
→ submit final notebook and report		Avery (email) and Sean (Canvas)		
→ submit peer/self and client evaluations		All		

Expenses

Item	Description	Manufacturer	Vendor	Date	QT Y	Cost Each	Total
Category 1 - Rigid Support							
CF-PLA	3D printing for testing	Bambu Lab Printer	Design Innovation Lab	10/27/2025	2	\$2.25	\$4.50
CF-PLA	3D printed for testing of mediolateral support	Bambu Lab Printer	Design Innovation Lab	10/27/2025	2	\$2.25	\$4.50
CF-PLA	3D printing for final product	Bambu Lab Printer	Design Innovation Lab	11/17/2025	1	\$1.90	\$1.90
CF-PLA	3D printing for final product	Bambu Lab Printer	Design Innovation Lab	11/17/2025	1	\$2.18	\$2.18
CF-PLA	3D printing for final product	Bambu Lab Printer	Design Innovation Lab	11/19/2025	1	\$2.17	\$2.17
CF-PLA	3D printing for final product	Bambu Lab Printer	Design Innovation Lab	11/19/2025	1	\$2.50	\$2.50
Elastic Strap link	1 inch wide Polyester and Rubber blend. 10 yd in length	Cisone	Amazon	10/10/2025	1	\$7.99	\$7.99
TPU	TPU Test Strip for testing apparatus	Makerspace	Makerspace	10/22/2025	1	\$0.39	\$0.39
Padding link	Air Sponge Mesh Fabric	Tong Gu	Amazon	10/24/2025	1	\$16.99	\$16.99
Superglue	Superglue for fabrication	Makerspace	Makerspace	11/4/2025	1	\$1.15	\$1.15
Superglue	Superglue for fabrication	Makerspace	Makerspace	11/5/2025	1	\$1.15	\$1.15
						Total:	\$45.42