

Inconspicuous Ankle Foot Orthosis (AFO) for teen

October 31st - November 06th, 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 attended show and tell Friday 10/31, and received multiple helpful pieces of information to help with the construction of the AFO. The team also gave out information to other teams, hopefully creating a positive environment for continuing these projects. It's crunch time...

We're finishing fabrication of our prototype for testing this weekend (11/08-10), and preparing any final notes for testing. We have 2 prototypes, the red prototype, which is a continuation from last semester with an additional dorsiflexion strap.

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

Alex:

- Completion of the itinerary (1 hour)
- Helped with fabrication (15 min)
 - Fabricated the Medial side of the brace in the Grainger Design Lab (1.5 hours)

- Communicated with the client about testing, deciding when to test, and how we are going to perform testing (1 hour)
- Missed team meeting, but reviewed notes from meeting and results (30 min)

Avery:

- Edited the itinerary (20 mins)
- Met with and notetook for team on 11/2 for weekly meeting
- Met with team on 11/4 to fabricate part of the design (2 hours)
- Emailed with client to confirm details of testing this weekend (45 mins)

Claire:

- Met with team on Sunday (11/2) to confirm testing itinerary (30 min)
- Met with team on Tues (11/4) to fabricate part of the design with the TPU straps (2 hrs)

Aditi:

- Attended team meeting on 11/2 to confirm itinerary (30 mins)
- Met with team on 11/4 to help with fabrication (2 hours)

Celia:

- Met with team on 11/2 to finalize testing itinerary (30 mins)
- Updated cost spreadsheet (30 mins)
- Looked further into potentially patenting design (1 hour)

Sean:

- Team meeting for itinerary (30 min)
- Fabrication of device (2 hours)
- 3D printed braces (30 min)

Weekly/Ongoing Difficulties

For our testing with our client, we may want to consider testing with and without shoes.

Upcoming Team and Individual Goals

Team:

- Testing!
- Analyze the data from testing
- Make any updates to the prototype as necessary
- Begin final report and final poster work.

Individual:

Alex:

- Analyze the data we get from testing this weekend.

- Finish the prototype, and update as needed after the initial round of testing.
- Help update the design on Sunday, Lead the design testing Monday

Avery:

- Lead testing on Saturday with client

Claire:

- Assist with testing on Monday and make adjustments to the prototype as needed

Aditi:

- Help with testing on Saturday

Celia:

- Help with testing on Monday
- Assist in making adjustments to the design

Sean:

- Testing on Saturday
- Possibly make adjustments to the brace design

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		

