Inconspicuous Ankle Foot Orthosis (AFO) for teen

September 26th - October 2nd, 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:

This week the team is focusing on completing the preliminary presentation, and preparing for said presentation this Friday. We met with the client Wednesday to go over the preliminary designs in the matrix, where she provided helpful insight and information for the prototype ideas as well as the patient's current AFO.

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

Alex:

- Working on and practicing the preliminary presentation slides (1.5 hours)
- Met with the client on 10/1 to update with design ideas and receive feedback (30 minutes)
- Updated all trainings in lab archives from last semester (20 minutes)

- Attempted to figure out logistics for updating the CAD model of the inversion prevention design (20 minutes)

Avery:

- Finished design and Design Matrix slides for preliminary presentation (1 hour)
- Emailed with client about setting up Zoom meeting (10/01), Madison travel plans, and the Preliminary Presentation (10/03) (30 mins)
- Attended meeting with client on 10/1 and took notes in LabArchives (40 mins)
- Practiced for preliminary presentation (30 mins)

Claire:

- Prepared for Preliminary Presentation (1.5 hours)
- Completed chemical safety training (1.5 hours)

Aditi:

- Prepared future work slide for Preliminary presentation (1 hour)
- Practiced presentation (30 mins)
- Researched how FEA is carried out (1 hour)
- Researched what resources are available image capturing (30 mins)
- Researched the process of 3D printing an AFO to understand the fabrication and durability testing process (45 mins)

Celia:

- Prepared Background slides for preliminary presentation (1 hour)
- Practiced Presentation (1 hour)

Sean:

- Prepared slides and presentation content (2 hours)
- Researched competing designs for presentation (1 hour)
- Practiced Presentation (30 minutes)

Weekly/Ongoing Difficulties

Upcoming Team and Individual Goals

Team:

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Individual:

Alex:

- Present the team presentation Friday (10/3)
- Figure out what materials to order for the straps
- Test print TPU straps, find out what testing methods to use for repetitive use testing

Avery:

- Complete Preliminary Presentation
- Keep communicating with client on travel plans
- Research materials for straps

Claire:

- Present preliminary presentation
- Help with design
- Continue research on materials

Aditi:

- Present the preliminary presentation
- Order materials for straps
- Research other tests that can be carried out

Celia:

- Give preliminary presentation
- Figure out materials for design
- Order materials for straps once decided

Sean:

- Research materials
- Preliminary Presentation
- Work on the 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		50%	

→ upload to website		Sean		
Preliminary Deliverables	10/08/2023		0%	
→ email report and notebook		Avery		
→ upload report to website		Sean		
→ peer/self evaluations		All		
Decide on Final Design	10/10/2023		25%	
→ get feedback from client on design		All		
Show and Tell	10/31/2023		0%	
→ 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		
→ submit peer/self and client evaluations		All		

Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
Component 1								
Component 2								
Component 3								
TOTAL:								**$0.00**