

Inconspicuous Ankle Foot Orthosis (AFO) for teen

September 6th - September 13th, 2024

Client: Debbie Eggleston

Advisor: Dr. Brandon Coventry

Team Members:

Anya Hadim (Team Leader)

Lucy Hockerman (BSAC)

Presley Hansen (Communicator)

Alex Conover (BPAG)

Grace Neuville (BWIG)

Problem Statement:

Ankle foot orthoses (AFOs) are engineered to provide dorsiflexion support during the swing phase of walking. This device is mainly used for treatment of muscular dystrophies and for this project in particular, we are focusing on young individuals diagnosed with Facioscapulohumeral Dystrophy (FSHD), the most common kind of muscular dystrophy. The team is aiming to design a brace for teens to aid in ankle dorsiflexion for safer walking, while being easily concealable and flexible enough to allow for functional ankle range of motion. The key objectives of this device include positioning the ankle in adequate dorsiflexion, maintaining a narrow, thin, and discreet design, and ensuring sufficient flexibility to minimize any restriction of movement.

Status Update:

Currently, the team is in the process of familiarizing ourselves with the project through research. From this research, we are determining how we can develop our design to accomplish the needs of the client. We are in the process of scheduling a client meeting. In preparation for this initial meeting, the team is preparing questions to ensure a productive and informational meeting.

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

Anya:

- Individual research on background of FSDH, AFOs and competing designs (2 hours)
- Met with the team to discuss research and work on the progress report (30 mins)
- Set up labarchives and shared drive for the team and organized it (30 mins)

Lucy:

- Individual research on FSHD stages/progression and ankle mobility (2-3 hours)
- Met with the team to discuss research and work on the progress report (30 minutes)

Presley:

- Individual research on AFOs and FSHD (2-3 hours)
- Emailed the client to develop possible meeting times (10 minutes)
- Met with the team to discuss research and work on the progress report (30 minutes)

Alex:

- Researched AFO types and the anatomy of the lower body (2-3 hours)
- Met with the team to discuss research and work on the progress report (30 minutes)

Grace:

- Researched different AFO types and the phases in a gait cycle (3 hours)
- Met with team to discuss research and work on progress report (30 minutes)

Weekly/Ongoing Difficulties

As of now, the team is still working to establish our client availability as well as the expectations and requirements of this design.

Upcoming Team and Individual Goals

Team:

- Meet with the client and establish a more concrete idea of the expectations and requirements of this project.
- Continue conducting research into relevant topics, patents, and standards.
- Start working on the Product Design Specifications.

Individual:

Anya:

- Continue individual research
- Work on the Product Design Specifications
- Meet with the client and ask questions from the client questions
- Think about potential designs

Lucy:

- Continue individual research
- Work on the Product Design Specifications
- Brainstorm more client questions and meet with client

Presley:

- Continue individual research.
- Work on the Product Design Specifications.
- Email progress report to the client and solidify a meeting time.

Alex:

- Continue Research and understand more on AFO's and FSHD
- Work on the Product Design Specification

- Log expenses when they come up in the project

Grace:

- Upload progress report to our webpage
- Continue research and understand more about FSHD and standards
- Work on Product Design Specifications
- Continue to brainstorm client questions for our client meeting next week

Project Timeline

Project Goal	Deadline	Team Member Assigned	Progress	Completed
Meet with Client	9/17/2023		50%	
→ email client with dates		Presley	100%	
→ create question list		All	50%	
→ write summary and put in notebook		All		
PDS Draft	9/22/2023		10%	
→ submit draft		Anya		
Design Ideas and Matrix	9/29/2023		0%	
→ create design 1		All		
→ create design 2		All		
→ create design 3		All		
→ compare designs in matrix		All		
Preliminary Design Presentation	10/06/2023		0%	
→ upload to website		Grace		
Preliminary Deliverables	10/13/2023		0%	
→ email report and notebook		Presley		
→ upload report to website		Grace		
→ peer/self evaluations		All		
Decide on Final Design	10/13/2023		0%	
→ get feedback from client on design		All		
Show and Tell	10/27/2023		0%	
→ create an initial prototype		All		
Final Poster Presentation	12/08/2023		0%	
→ invite client		Presley		

→ post on website		Grace		
Final Deliverables	12/13/2023		0%	
→ submit final notebook and report		Presley		
→ 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		