

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 designed to provide dorsiflexion support during the swing phase of walking. These devices are primarily used to treat muscular dystrophies. For this project, we are focusing on young individuals diagnosed with Facioscapulohumeral Dystrophy (FSHD), the most common type of muscular dystrophy. The team aims to design a brace for teens that assists with ankle dorsiflexion, promoting safer walking while remaining easily concealable and flexible enough to allow for functional ankle movement. The brace will be tailored specifically for the client, Maggie Eggleston. Key objectives for the device include positioning the ankle in adequate dorsiflexion, maintaining a slim, discreet design, and ensuring sufficient flexibility to minimize movement restriction.

Status Update:

The team successfully met with the client to establish their requirements and budget and gain an understanding of Maggie's background and needs. Additionally, the team drafted the first Product Design Specification (PDS) based on these requirements and the research conducted so far.

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

Anya:

- Continued research on competing AFO designs, AFO construction steps, and relevant standards (2 hours)
- Met with client to answer questions, introduce ourselves, and plan the project moving forward (30 minutes)
- Updated LabArchives with team meeting notes, research, and client information (1 hour)
- Completed section of PDS draft about competing designs and standards (1 hour)
- Organized LabArchives and shared Google Drive (20 minutes)

Lucy:

- Continued research on PD-AFO reviews and foot mechanics (2 hours)
- Met with client to answer questions and create future plans (30 minutes)
- Worked on the PDS draft and edits (2 hours)
- Attended the BSAC meeting (1 hour)

Presley:

- Continued research on AFO designs, materials, and relevant standards (1 hour)
- Met with client to answer questions and confirm future meeting times (30 minutes)
- Worked on the first draft of the PDS (1.5 hours)
- Sent emails to client and advisor regarding meeting times, PDS revision, and completed reports (20 minutes)

Alex:

- Continued research on AFO, anatomy, materials, and structure (1.5 hours)
- Met with Client to update PDS and update information (30 minutes)
- Updated Lab Archives with client and advisor information (30 minutes)
- Worked on the PDS draft 1 (1.5 hour)

Grace:

- Continued research on AFO standards and materials (3 hours)
- Met with client to update quantity and budget sections of PDS (30 minutes)
- Met with team to work on updating PDS (30 minutes)
- Uploaded PDS to our webpage (5 minutes)

Weekly/Ongoing Difficulties

We are continuously meeting with our client to keep our designs and ideas up to date, as well as collect the necessary information to construct the AFO.

Upcoming Team and Individual Goals

Team:

- Come up with several design ideas for the next client and advisor meetings
- Plan a time and date to meet with Maggie (planning for 09/23)
- Continue updating the PDS as necessary

Individual:

Anya:

- Begin brainstorming design ideas
- Continue to research materials and other designs to gain inspiration for our design
- Make a rough plan for how we plan on constructing the product (3D printing, machine tools, etc)

Lucy:

- Continue research and being brainstorming AFO designs
- Meet with maggie in the upcoming week
- Start developing testing protocols

Presley:

- Continue research of AFO materials and competing designs
- Begin brainstorming design ideas
- Send out the PDS and progress report to the client and continue communication to secure a meeting time with Maggie

Alex:

- Brainstorm possible design ideas
- Continue to research materials and construction methods/ideas

Grace:

- Brainstorm possible design ideas
- Continue researching AFO materials and construction methods

Project Timeline

Project Goal	Deadline	Team Member Assigned	Progress	Completed
Meet with Client	9/17/2023		100%	
→ email client with dates		Presley	100%	
→ create question list		All	100%	
→ write summary and put in notebook		All	100%	
PDS Draft	9/22/2023		100%	
→ submit draft		Anya	100%	
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	