

Progress Report # 5

UW Adapted Fitness: Grip Strength Improvement Mechanism

Client: Dr. Kecia Doyle

Advisor: Prof. William Murphy

Team:

Simon Nam (Team Co-Leader and BSAC)

Sarah Kendall (Team Co-Leader)

Nicolas Maldonado (Communicator)

Owen Noel (BWIG)

Joey Dringoli (BPAG)

Date: 10/10/24

Problem Statement

A longtime Adapted Fitness client and mechanical engineer has worked consistently on stimulating his hand with lesser grip strength. The client would like a custom mechanism that would help an adapted fitness client improve his grip function and enable him to better grip on daily objects and workout equipment.

Brief Status Update

The team has created a preliminary report containing the finalized design that they have presented last week in the oral preliminary presentations. We are still expected to receive feedback on our design from our client, which will allow us to improvise any necessary components and specifications of the device. As for now we have decided to focus on making a skeleton glove that the client can use independently and will focus more on the bioinstrumentation and live feedback aspects in future semesters.

Summary of Weekly Team Member Design Accomplishments

- TEAM
 - Created preliminary report containing details about our finalized design
- Simon
 - Worked on CAD/Solidworks sketching and drawings for the final design with specifications and assembly of components

- Wrote steps and procedure of design fabrication in the preliminary report
- Helped other team members finalizing the preliminary report
- Sarah
 - Worked on the preliminary report. Wrote the abstract, introduction, final design, materials, and conclusion sections, as well as editing and formatting the entire report.
 - Researched data surrounding the prevalence of weak grip strength in the population of 65 and older individuals. Contributes to the motivation of our project.
- Nicolas
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- Owen
 - Wrote the testing section of the preliminary report
 - Presented the Testing and Future Work slides of our preliminary presentation
- Joey
 - Helped write the introduction, background, and conclusion sections of the preliminary report

Weekly/Ongoing Difficulties

We are still pending on scheduling a follow-up meeting with our client to discuss our final proposed design that was stated in our preliminary report. We hope to reach out to our client by next week to receive any further suggestions or feedback on our current final design as well as deciding on the final budget.

Upcoming Team and Individual Goals

- TEAM
 - Finalize our budget and determine our funding source with Dr. Doyle.
 - Receive feedback and make any final, small adjustments in specifications and components for the final design to satisfy client requirements
 - Begin purchasing materials and acquire training permits and tools necessary to begin prototyping
- Simon
 - Decide on scheduling the follow-up meeting with the client in person to discuss final design and receive any further feedbacks and information necessary to begin prototyping
 - Set deadlines for the team for the phases of gathering materials, sources, and fabrication
 - Research and investigate practical ways to measure muscle activities for further data collection and testing analysis with the prototype to possibly include into final deliverables
- Sarah
 - Reconsider the material we will use for the glove. We were planning on using silicone, however, it is very difficult to 3D. We may need to either switch our material and come up with new fabrication plans.

- Obtain hand measurements of our client before we begin fabricating the glove.
- Begin fabrication of an initial prototype to present during show-and-tell.
- Nicolas
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- Owen
 - Work on figuring out the materials we will need for fabrication
 - Continue uploading all needed documents to the website
- Joey
 - Follow up with the client if the budget has still not been determined
 - Order materials and track expenses in a spreadsheet
 - Assist in setting deadlines and reach out to other group members to see where more research is needed

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Background Reading and Prep for First Client Meeting	9/12/2024	All	Complete	Yes
PDS Draft 1	9/19/2024	All	Complete	Yes
Design Matrix w/ at least 3 ideas	9/26/2024	All	Complete	Yes
Preliminary Presentations	10/4/2024	All	Complete	Yes
Preliminary Deliverables (Report, Notebook, Peer Eval)	10/9/2024	All	Complete	Yes
Final Poster Presentation	12/6/2024	All	Not yet started	No

Final Deliverables	12/11/2024	All	Not yet started	No
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Materials & Expenses

n/a