Title: UW Adapted Fitness: Grip strength improvement mechanism

Date: 09/25/2025

Client: Dr. Kecia Doyle
Advisor: Dr. Randy Bartels
Team: Cookie Monsters
David Diancin - Team Leader

Sydney Smith - Communicator

Gabriel Klenner - BSAC

Lucy Mcardle - BWIG

Lauren Hain - BPAG

Problem statement

Individuals in the UW Adapted Fitness program may face challenges with grip strength that limit their ability to perform daily tasks and participate in exercise. A longtime client with reduced grip strength in one hand has worked consistently to improve function but still struggles with both everyday items and workout equipment. Current tools in the Conway Adapted Fitness space are not tailored to his needs, creating a gap in training effectiveness. This project aims to design a safe, affordable, and user-friendly mechanism to support targeted grip training, improve independence, and enhance the client's overall fitness experience.

Brief status update

This week, we met with our client, Dr. Doyle, who introduced us to the faculty at the Adapted Fitness Center. During our visit, we toured the facility and observed the different workout machines and equipment that our other client, John, uses for physical therapy. We were also granted access to the facility and are in the process of completing our HIPAA training. In addition, we met with our advisor for the first time, where we learned about his expectations for the project. Finally, we developed our design matrix where each team member proposed three designs, and together we voted to narrow them down to the top three.

Major team goals for the next week

1. Create the preliminary presentation for the current designs in the design matrix.
2. Record important information from client zoom meetings.
3. Begin prototyping and building fake fingers to be ready to test certain designs.
4. Full team meeting with advisor to get advice on next steps.

Next week's individual goals

- Sydney Smith: Research materials, figure out total cost, apply John's needs to chosen design, communicate with Simon about design and get input
- David Diancin: Create Solidworks designs for the Balloon Glove and Hinge Mitten, use the information from the next client meeting to revise the PDS.
- Lucy McArdle: focus on a design that we believe will perform the best, and research materials for the prototype. Continue to research current devices for grip strength
- Lauren Hain: Start to research materials for the design that we choose to start prototyping and continue doing individual research on grip strength mechanisms.
- Gabe Klenner: Create a better visual for the Hooks and Bands design (CAD or Onshape), Research similar designs

Previous week's individual goals and accomplishments

- Sydney Smith: Examine/research adapted fitness devices used in rehabilitation clinics (use Simon's sources)
    - Brainstormed 3 possible design ideas
    - Continued research and went over Simon's notes
- David Diancin: Research current adaptive devices for grip strength and create basic sketches of initial ideas.
    - Brainstormed 3 design ideas and drew each on paper
    - Completed assigned portion of the design matrix
- Lucy McArdle: Continue to research the effects of a stroke on grip strength and grip strength devices, and begin to brainstorm ideas for our own device
    - Brainstormed 3 design ideas and drew them out to share with the group
    - Worked on a design matrix with the group
- Lauren Hain: Continue to spend time researching the muscles in the hand that are used to grip and object and to research materials after meeting with our client.
    - Conducted more research on grip strength mechanisms and muscles in the hand
    - Brainstormed 4 and drew out design ideas to share with the group
    - Worked on the safety aspect of the design matrix and ranked each of the designs with regard to safety
- Gabe Klenner: Research possible materials and sensors to determine effectiveness, price, comfortability and shelf life for a grip strength detector.

- Brainstormed 3 design ideas to share with the group
- Completed Patient comfort and Hooks and Bands description on the design matrix

Timeline

Task	Sep				Oct					Nov				Dec	
	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12
Project R&D															
Empathize	x	x													
Background…	x	x	x	x											
Prototyping															
Testings															
Deliverables															
Progress Reports	x	x	x	x											
Prelim presentation															
Final Poster															
Meetings															
Client			x												
Advisor				x											
Website															
Update															

Filled boxes = projected timeline
X = task was worked on or completed