

Preventing Weightlifting Injuries by Barbell Modifications

November 25th - December 6th, 2024

Client: Mr. Robert Gold

Advisor: Prof. William Murphy

Team Members:

Jackson Jarrett jrjarrett2@wisc.edu (Leader and BWIG)

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Problem Statement

Thousands of weightlifting injuries occur every year. Injuries are often caused by an uneven distribution of load on the barbell, leading to the weight lifter favoring one arm over the other. The team has been tasked with designing a biomedical device that can prevent weight lifting injuries by targeting, identifying, and correcting improper form.

Brief Status Update

We completed testing and the fabrication of our prototype for this semester-long project. We look forward to presenting our ideas, successes, and moments of learning and improvement during our Final Poster Presentation on Friday.

Team Goals

Complete poster presentation, and begin working on Final Report.

Individual Accomplishments and Goals

Jackson: Before we went home for Thanksgiving, we were able to complete the fabrication of the prototype at the makerspace. We soldered the wires for the battery pack and the button. After the prototype was complete, we performed our stationary and kinetic testing. We performed the stationary testing at the makerspace, and then went to the Nic Recreation Center in order to test the prototype in a gym environment. After the completion of the prototype and testing, I began work for the presentation, including the creation of the skeleton document, and then my work on the testing procedures, future work, design specifications, and modeled pictures. I look forward to presenting our ideas on Friday, and then wrapping up the semester with the final report.

Kai: The team was able to finish testing before Thanksgiving break, which set us up nicely for simply focusing on the poster and presentation for this Friday. For testing, the team met at the Nic Recreation Center and put our prototypes on one of the benches with weight on it to get the most accurate data collection possible for our goals. We completed 5-8 separate tests after some trial and error with transferring the data properly and correcting the prototype orientation on the bar. The results supported our theories for what the data should look like, with some noise errors due to the quality of our prototype.

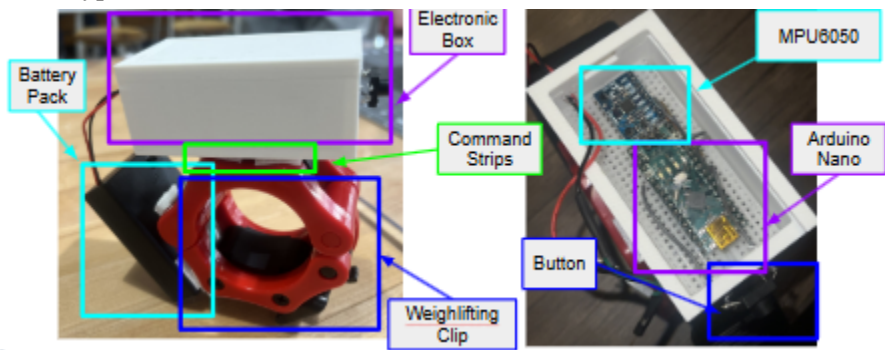
components. After break, I completed my speaking portion of the poster which includes testing and results, and modified the document after receiving feedback from Dr. Murphy to ensure proper formatting and layout prior to printing. I am excited to present our hard work on Friday, and after presentations the team will be completing the final deliverables for the project.

Luke: This week I made entries for our fabrication that took place before the break began as well as some of our testing. I also did my part for the poster board and we began the creation of the poster after getting feedback. This upcoming week especially over the weekend I plan to type a lot for the final report in order to get feedback from the advisor.

Gavin: This week I worked on our final presentation and the poster we will use for it. I worked on the problem statement and the background information. I also have been working on our presentation. We will have our presentation on Friday. In this next week, we will work on completing our final report and finishing up our project.

Design Accomplishments

Final Prototype:



Weekly/Ongoing Difficulties:

N/A

Project Timeline:

Week #	Task
1	Choose project Assign roles
2	Finish first progress report BSAC meeting First client meeting

3	PDS, Brainstorm, Research
4	Brainstorm, Literature Search, Design matrix criteria and design ideas (at least three) due
5	Preliminary Oral Presentation
6	Preliminary Report, Electronic Notebook, Peer/Self Evaluation, Decide on final design
7	Final Design
8	Order materials, consider submitting invention disclosure
9	Fabrication, show and tell
10	Fabrication
11	Fabrication
12	Design Testing and Modification, Poster Draft Review
13	Design Testing and Modification, Final Report
14	Poster Presentation, Final Report, Final Electronic Notebook, Team Evaluation, Peer/Self Evaluation

Expenses  BPAG Expense Spreadsheet