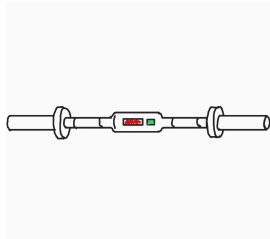
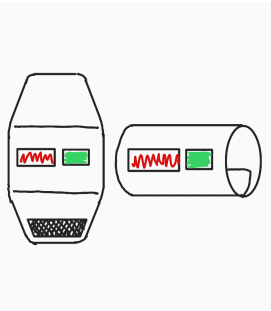
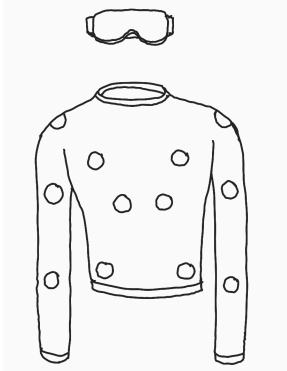



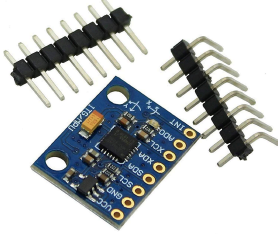
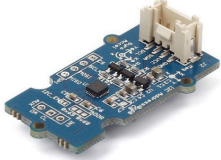
- **Title:** Preventing Weightlifting Injuries by Barbell Modifications, Weightlifting Injuries, BME301

- **Date:** 4/11/24 - 4/18/24

Last Name	First Name	Role	Email
Settell	Megan	Advisor	settell@wisc.edu
Gold	Robert	Client	bob.gld@gmail.com
BlomWillis	Nolan	Leader	blomwillis@wisc.edu
Kafar	Kaden	Communicator	kafar@wisc.edu
Parsons	Jacob	BSAC	jcparsons@wisc.edu
Waldenberger	James	BWIG	jwaldenberge@wisc.edu

- **Problem statement:** Over one million weightlifters each year experience weightlifting injuries that put them in the emergency room. Of these one million, 18-46% are reported to be caused by bench pressing a barbell. Our team's task is to create a marketable system that increases safety for lifting, specifically bench pressing.
- **Brief status update:** We are starting on the final prototype, getting ready for the final deliverables of the semester.
- **Difficulties / advice requests:** No difficulties or advice requests for this coming week.
- **Current design:** After show and tell, the design has been slightly changed from multiple sensors to one sensor that points to the ground due to rotation of a ball bearing system.

Design	Full barbell		Barbell attachment		Full suit + VR	
						
Safety (25)	4/5	20	5/5	25	5/5	25
Ease of Use (20)	4/5	16	5/5	20	2/5	8
Uniqueness (20)	3/5	12	2/5	8	5/5	20
Marketability (20)	3/5	12	4/5	16	5/5	20
Cost (10)	3/5	6	5/5	10	1/5	2
Ease of Fabrication (5)	2/5	2	4/5	4	1/5	1
Overall Score:	68		83		76	

Technology	Radar/Lidar		Accelerometer		IMU	
						
Accuracy (25)	5/5	25	4/5	20	3/5	15
Reliability (25)	3/5	15	4/5	20	4/5	20
Marketability (20)	5/5	20	2/5	8	3/5	12
Cost (15)	2/5	6	4/5	12	3/5	9
Ease of Fabrication (10)	2/5	4	4/5	8	3/5	6

Safety (5)	5/5	5	5/5	5	5/5	5
Overall Score:	75		72		67	

- Materials and expenses:** a concise accounting of the amounts and types of expenses incurred on the project. Use the template provided here: <http://bmedesign.engr.wisc.edu/course/resources/#bpag>

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	QTY	Cost Each	Total	Link
Ultrasonic Sensors										
CUI Ultrasonic	Ultrasonic Sensor	CUI		CUI Devices		3/14	2	\$6.70	\$22.93	url
Max Ultrasonic	Ultrasonic Sensor	Max Sonar		MaxBotix		3/14	2	\$29.95	\$68.95	url
Other										
Power Supply	Battery used to supply power to screen attachment			Amazon		4/14	1	\$29.95	\$29.95	url
Screen	Display attached to center of barbell			Dr. Nimunkar		4/14	1	\$0	\$0	url
Velco	Used to attach housing blocks to barbell			Amazon		4/14	1	\$9.99	\$9.99	url
Wire Components	Extra electrical components to attach everything			Makerspace		4/14	1	\$0	\$0	url
Housing Block	3D Printed Housing chamber			Makerspace		4/19	1	\$18.28	\$18.28	url
Raspberry Pi Pico W	Used to gather data from ultrasonic sensors and wirelessly transmit it to the main terminal			Amazon		4/14	3	\$27.99	\$27.99	url
Battery Housing	Holds 3 AA batteries to power the Pico W microcontrollers			Amazon		4/14	3	\$6.99	\$6.99	url
AA Batteries	AA Batteries to power Pico Ws			Amazon		4/14	10	\$14.32	\$14.32	url
								TOTAL:	\$181.12	

- Major team goals for the next week:** Finish final prototype, do testing on it, and make poster for poster session.

- **Next week's individual goals:** A concise statement of intended action to continue progress on the project - be specific, i.e. what will you research.

Kaden: Complete testing and prepare for poster.

Jacob: Complete all testing and prepare for poster presentations.

Nolan: Finish testing for prototype and presentation

James: Help complete testing for the prototype and prepare the poster for the presentation.

Project Goal	Deadline	Assigned	Progress	Completed
Initial meeting with client	1/31	Team	100%	Y
Gather research/project information	2/2	Team	100%	Y
Product Design Specification (PDS)	2/8	Team	100%	Y
Design Matrix	2/15	Team	100%	Y
Preliminary Presentation PDF	2/26	Team	100%	Y
Preliminary Report	3/1	Team	100%	Y
Order/Gather Materials	3/20	Team	100%	Y
Create prototypes, test	4/22	Team	50%	N
Final fabrication	4/22	Team	50%	N
Test and finalize final design	4/22	Team	20%	N
Poster Presentation PDF	4/22	Team	25%	N
Final Report	5/1	Team	50%	N
Final Notebook Team	5/1	Team	50%	N

- **Previous week's goals and accomplishments:**

Team: Working on getting a prototype made.

Kaden: Complete all modeling and design work for the prototype

Jacob: Began working on poster presentation and worked on code for display

Nolan: Began work on the poster presentation working on display code and display attachment.

James: Wrote code for Pico W to connect to wifi. Finished testing protocol and executive summary.

Activities: a concise accounting of time spent working on the project.

	Kaden	Jacob	Nolan	James
Week 1	2.5hrs	2.5 hrs	3 hrs	2.5 hrs
Week 2	2 hrs	1.5 hrs	2 hrs	1.5 hrs
Week 3	1.5 hrs	1.5 hrs	1.5 hrs	1 hr
Week 4	2.5 hrs	2 hrs	1.5 hrs	1 hr
Week 5	2 hrs	1.5 hrs	1.5 hrs	1.5 hrs
Week 6	2.5 hrs	3 hrs	2 hrs	2.5 hrs
Week 7	1.5 hrs	1.5 hrs	1.5 hrs	1.5 hrs
Week 8	2 hrs	5 hrs	2 hrs	3.5 hrs
Week 9	2 hr	1.5 hrs	1.5hrs	1 hr
Week 10	2.5 hrs	1.5 hrs	2.5hrs	2.5hrs
Week 11	5 hrs	5.5 hrs	5 hrs	6.5hrs