Title: Ski jump launch trainer (ski jump)

Date: 9/5/2025 - 9/11/2025

Client: Prof. Walter Block and Dr. Azam Ahmed

Advisor: Prof. Randy Bartels

Team:

- Team Leader: Kenneth Sun

- BSAC: Caleb White

- Team Communicator: Presley Stellflue   -

BPAG: Sarah Kong

- BWIG: Matthew Niemuth

Problem statement: Develop and prototype a comprehensive training system that will allow young skiers learning to jump to directly compare their technique to professionals utilizing force plates and motion capture.

Brief status update: The team has conducted initial research in relation to the project including: force plates, infrared motion capture systems, biomechanic teaching systems, similar products and services, and relevant patents. The team has also come up with questions and inquiries about the project that will be brought up during the scheduled meeting with the client early next week.

Difficulties / advice requests: No notable difficulties thus far

Current design: N/A

Summary of Weekly Individual Accomplishments:
- <u>Kenneth Sun:</u> Set up a team lab notebook and set up when2meet to facilitate team meeting times. Began research on motion capture systems including open cap smartphone motion capture and other similar systems that don't require expensive equipment and a large lab space.
- <u>Caleb White:</u> Began initial research into the use of motion capture systems in sports and activity settings, specifically aerial aerobics. This has included examining the process through which the motion capture footage is used to breakdown and assess the movement and further translate into a teachable and replicable format.
- <u>Presley Stellflue:</u> Set up a time and date to meet with our client Dr. Ahmed. Began initial individual research concerning the physics and dynamics of the sport. Concluded

that we will have to look into the biomechanics of the skier and their spine and skeletal system for proper function of our design.
- Sarah Kong: Looked into the motion capture machines in ECB and researched the use of force plates within sports analytics. Also researched prices for initial resources and materials that could prove beneficial for this project.
- Matthew Niemuth: I began researching the biomechanics and physiology of skiing to help understand how they impact the technique of skiers.

Upcoming Team Goals: Next week we will meet the clients, Prof. Walter Block and Dr. Azam Ahmed, and discuss their expectations and desires with the project. This will set the design specifications of the project which will focus next week, and the rest of semesters, research as well as give the group key details required for the Product Design Specification. We will also meet with our advisor, Prof. Randy Bartels, to communicate an effective way to attack the project moving forward.

Upcoming Individual Goals:
- Kenneth Sun: Keep track of my preliminary research, specifically focusing on understanding the biomechanics of ski jumpers. Also begin to meet with the team to brainstorm ideas on our project and discuss specifications for those ideas.
- Caleb White: Continue research into motion capture systems and their applications in educational settings as well as look into force plates and their specific utilization in tandem with motion capture systems. I will also look into getting acquainted with the motion capture system located at the ECB and begin to see how it can be implemented into the project. I will also contribute to the group's Product Design Specification.
- Presley Stellflue: I will do more research on understanding the concept of the ski jump and how the physiology and biomechanics of the jumper affects the jump and the skier's flight time.
- Sarah Kong: Dig deeper into sports training simulations, specifically researching ways to translate the actions/movements of a professional athlete to a teenager. I also will start gathering a list of materials we will need to order sooner rather than later.
- Matthew Niemuth: research sports training systems as well as competing designs. I also plan on beginning the PDS once we have more information about the project from our client.

Materials and expenses:

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	Cost Each	Total	Link
Category 1									

N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
								TOTAL:	**$0.00**			

Timeline:

Task	Sep			Oct					Nov				Dec	
	12	19	26	3	8	17	24	31	7	14	21	28	5	10
Project R&D														
Research	X													
Design														
Prototyping														
Testings														
Deliverables														
Progress Reports	X													
PDS														
Design Matrix														
Prelim Presentation														
Prelim Report														
Final Poster														
Final Report														
Meetings														
Client														
Advisor	X													
Website														
Update	X													

Filled boxes = projected timeline

X = task was worked on or completed