

Project Description

Practicing pickleball alone is ineffective and tiresome. Pickleball machines on the market today are a great tool to practice alone, but they are expensive and limited in their capabilities. Most machines launch from the ground and can only create spin on one axis. **Our goal is to design an inexpensive pickleball machine made from easily accessible parts that can replicate the speed, angle, launch height and spin that one would experience in a pickleball game** to give the user an accurate and realistic pickleball practice experience.

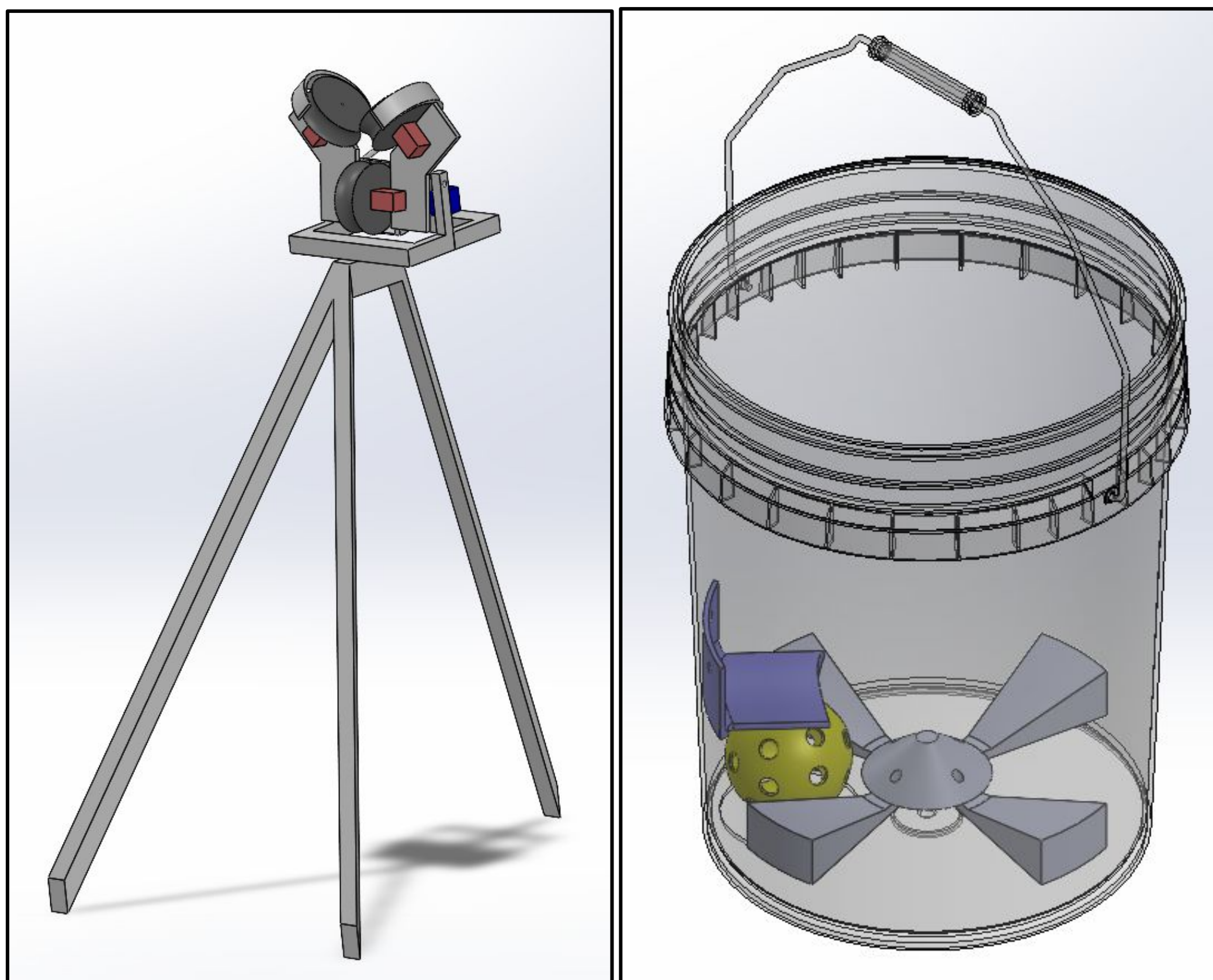


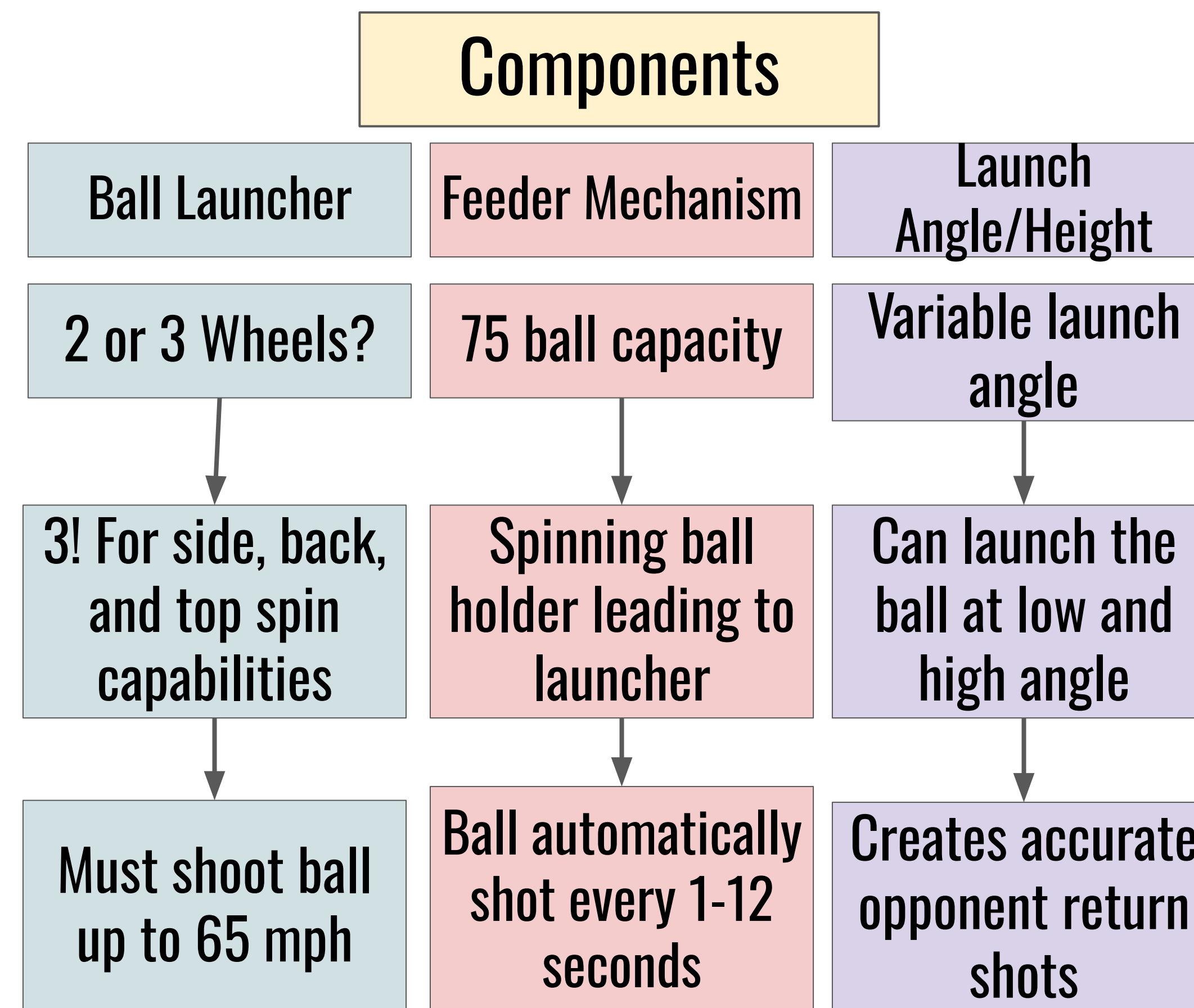
Figure 1: CAD of Pickleball Launcher and Feeder Mechanism

References:

D. Kirkby, "Ball Launcher Motor Selection," Observable, <https://observablehq.com/@dkirkby/ball-launcher-motor-selection> (accessed Feb. 27, 2024).

Automatic Pickleball Launcher

Members: Jerome M, Jacob S, Andrew S, William R, Kevin Y, Jared Y
Sponsor: Prof. Kirkby



Proof of Concept

- Assemble feeder mechanism and demonstrate capabilities
- Test the launch mechanism concept with one wheel and one motor
 - Assemble track and launch mechanism with one motor to analyze torque, max velocity, and effective squeeze ranges

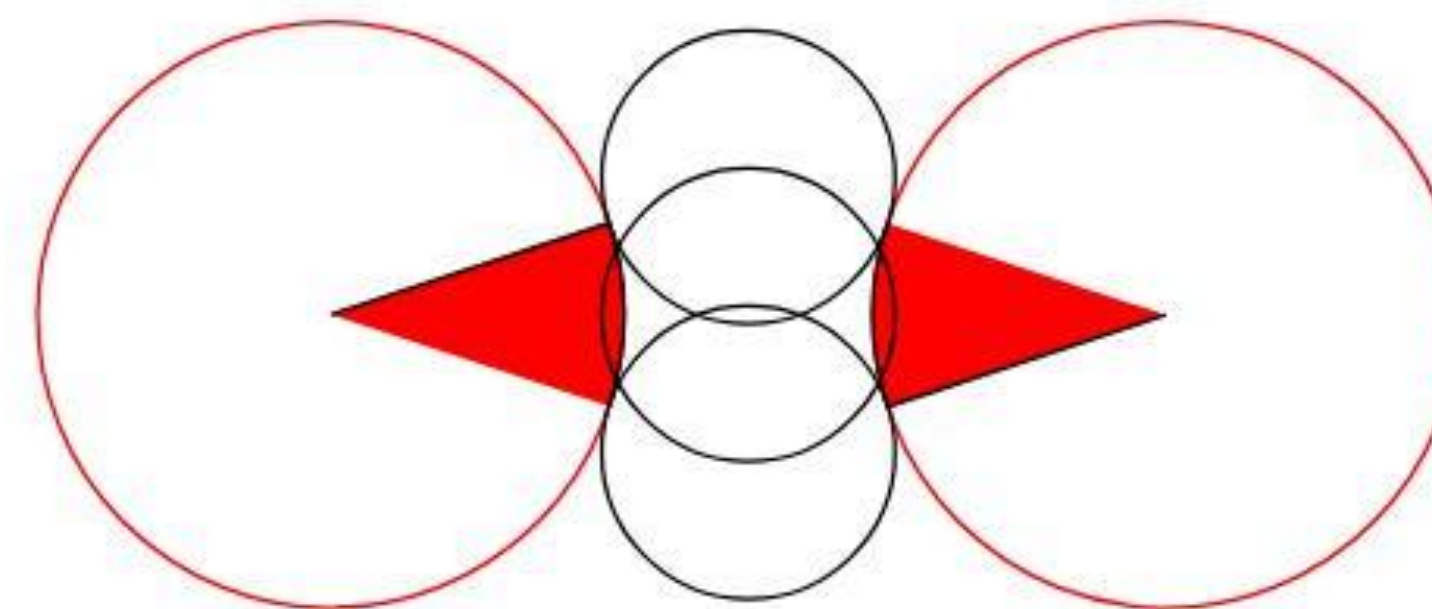


Figure 2: Visualization of how squeeze is utilized in launch mechanism

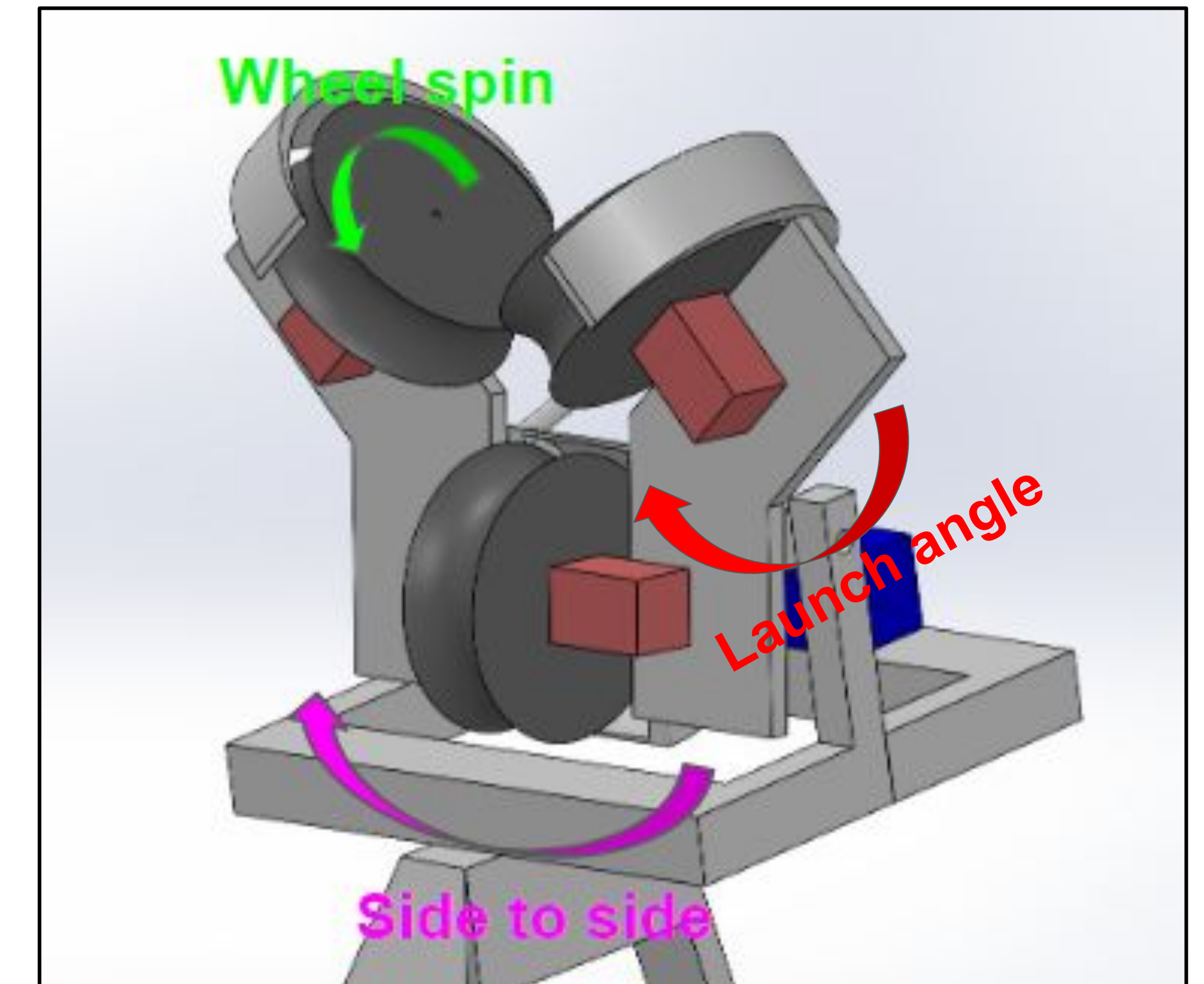


Figure 3: Three wheel launch mechanism with varying launch angle

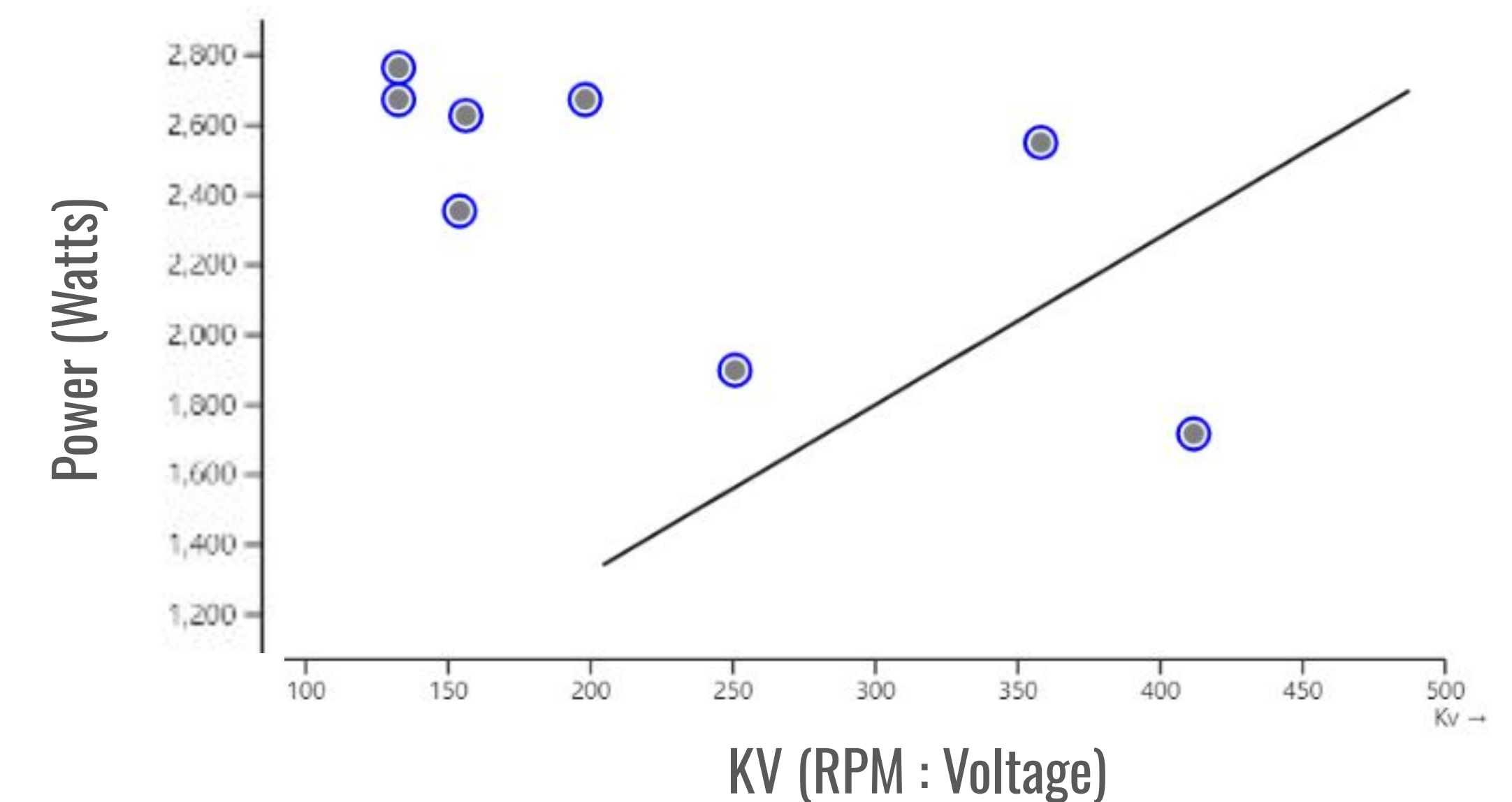


Figure 4: Motor Effectiveness Graph

Future improvements

- Automated Oscillation for specified practice drills
- Adjustable height for varying initial launch heights
- Stronger frame material to handle higher speeds
- Capability to be remote controlled
- Set modes for different types of shots
- Increased ball capacity in feeder mechanism