CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
31207

Project Title
Throwing a Lacrosse Ball the Right Way

Abstract

Objectives/Goals
The objectives of this project are to:

1 - Determine if changing length of a lacrosse shaft will proportionally affect the throwing distance of a lacrosse ball.
2 - Determine if changing the throwing force will proportionally affect the throwing distance of a lacrosse ball.
3 - Determine if changing the throwing angle will proportionally affect the throwing distance of a lacrosse ball.

Methods/Materials
By building a catapult from construction lumber, barbell weights, and a lacrosse stick, throwing trials with standard lacrosse balls were conducted where each variable combination was tested five times. The changing variables were:

1 - Six different throwing shaft lengths, varied by 6" increments.
2 - Four different throwing forces, varied in 5 lb increments from 5 lbs of force to 20 lbs.
3 - Four different throwing angles, varied by 10 degree increments from 90 degrees to 60 degrees.

Results
For the first hypothesis, variable shaft length, the longer shaft lengths did cause, proportionally, longer ball throws.

For the second hypothesis, variable throwing force, the heavier weights did cause longer throws, proportionally.

For the third hypothesis, variable throwing angle, the higher angles did not conclusively cause a change in throwing distance.

Conclusions/Discussion
The main purpose of this experiment was to test different release angles, shaft lengths, and weights for a more accurate and farther throw. This wasn't completely achieved because of some malfunctions in the shaft extension. However, with the data that was collected, the purpose was semi-achieved because over sixty trials were conducted and good data were collected.

Summary Statement
The focus of this project was to test throwing distance based upon the changing variables of shaft length, throwing force, and throwing angle.

Help Received
My dad help me build the catapult and conduct the trials. My dad also helped me format the graphs and data tables using Excel.