CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY

Name(s)

Quinn Olson

Project Number

J0323

Project Title

Shock Absorption: Can You Feel It?

Abstract

Objectives

The objective of this project is to test materials that can be used as padding in baseball or softball gloves, to potentially improve protection and reduce injury.

Methods

The materials tested included Felt (which is used in most gloves), Sorbothane (a specialized shock absorbing material), Neoprene (a synthetic rubber sometimes used for protection), and Silicone.
Two types of experiments were completed. The first was a shock absorption test, measuring the bounce height of a ball dropped onto the different materials. The second experiment used a pressure-sensitive film to measure the impact pressure and the spread of the impact over the surface.

Results

In the shock absorption experiment, the Sorbothane had the lowest bounce, meaning it absorbed the most energy. The felt absorbed the least energy. In the second experiment, the silicone performed the best. It spread the impact the most, which reduced the maximum pressure at any particular spot.

Conclusions

All three alternative materials provided more protection in my tests than the felt that is typically used in gloves. This is evidence that a more protective baseball glove could be made.

Summary Statement

I showed that baseball gloves could be more protective by using padding materials that absorb energy and spread the impact of the ball.

Help Received

My family members assisted by operating the slow motion camera, helping me learn the physics concepts, and proofreading.