CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

J0327

Project Title

Heads Up: Do Soccer Head Protectors Affect the Amount of Force to the Head?

Abstract

Objectives/Goals

Concussions are a rising problem in contact sports, especially in children's soccer. The purpose of this research was to determine whether these soccer head protectors that are currently legal in FIFA, The International Federation of Association Football, help protect against concussions.

Methods/Materials

To test whether the head protectors worked, a Dual-Range Force Sensor was attached to the Vernier Labquest and was embedded in a styrofoam head. A 1.82 kg medicine ball was rolled down a ramp and it collided with the styrofoam head. The force sensor measured (in Newtons) whether the head protectors reduced the force of the collision. Three trials were performed for the front, and then back of the styrofoam head.

Results

The head protectors reduced the force to the head only 2 to 4 percent compared to the control (no head protector). These results suggest that the head protectors do not protect the head to the extent that the product manufacturers stated.

Conclusions/Discussion

These soccer head protectors protect the head minimally. However, some of the companies that designed these protectors advertise 20 to 40 percent reduction in force to the head. This can provide players wearing the head protectors a false sense of protection, cause them to play soccer more aggressively, and increase the likelihood of suffering a concussion. Because soccer is the most popular sport in the world, there needs to be a way to make the sport safer, yet preserve the essence of the game.

Summary Statement

This study tests whether soccer head protectors reduce the force of a collision, thereby reducing the likelihood of receiving a concussion.

Help Received

Neighbor helped construct ramp; Mom was testing assistant who released medicine ball at top of ramp; Mom helped cut and glue project board