



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Jodi R. Sanders	Project Number J2119
Project Title Soccer and Concussions: They Don't Mix	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this experiment is to find a soccer headgear that will lessen the probability of concussions when playing soccer.</p> <p>Methods/Materials concussions when playing soccer. The materials used was a radar gun, a Force Field headgear, a Donjoy Hat Trick, a Full 90 headgear, a soccer ball, a baseball, an accelerometer, a dummy head, tape, and a bench. The accelerometer was placed into a hole in the center of the dummy's head. Then, a ball was dropped from a height of 11 feet and 9 inches onto the side, forehead, and back of the head at an average speed of 15 miles per hour. This was repeated 20 times on each side of the head without a headgear on. Then, the steps were repeated, except with the three headgears on, each hit being recorded by the accelerometer.</p> <p>Results The control groups results were forehead 104.7gs, the side of the head 127.5gs, and the back was 147gs. Using the Force Field headgear, the foreheads results were 148gs, the side of the head 138gs, and the back of the head 116gs. Using the Donjoy Hat Trick the back of the head results was 102gs, the side of the head was 91.5gs, and the forehead was 147.5gs. Using the Full 90 Headgear, the back of the heads result was 133.5gs, the side of the head was 90gs, and the forehead was 141gs.</p> <p>Conclusions/Discussion The Full 90 headgear reduced the force on the head the most when hit on the forehead, and side of the head. The Donjoy Hat Trick reduced the most force when hit on the back of the head. Out of these three headgears, the Full 90 headgear works the best. All soccer players should wear this headgear to reduce the probability of receiving a concussion.</p>	
Summary Statement This project tests three different soccer headgears to see which one reduces the probability of receiving a concussion the most	
Help Received Neighbor drilled a hole into the dummy;Dad proof read papers and helped with experimentaion;Dr. Ian Purcell provided the accelorometer	