



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Benjamin H. Shaw	Project Number J0727
Project Title Placebo: To Believe or Not to Believe	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine if the use of a placebo energy chew would impact the free throw performance of an average sixth grader.</p> <p>Methods/Materials Parent participation consents were signed by nine sixth graders of which four were boys and five were girls. Individual starburst candies were repackaged with FRS-branded foil covers. The free throw performance of each participant was measured prior to the use of the placebo. Following the first set of free throws, the students were given one placebo disguised as an FRS chew and were introduced to the FRS product through its online marketing material and website. After fifteen minutes, the students performed a second free throw test and the results were measured. The overall free throw performance improvement and reduction were measured for all students. The data was also divided by gender to see if there was a statistical difference when looking at boys versus girls.</p> <p>Results Across all the students, the number of free throws was greater by 2.22% after taking the placebo. When looking only at the percent of kids that improved, declined or did not change, 33.3% of students improved while 44.4% declined and the remainder stayed the same. The 33.3% improvement is consistent with the research on placebos but the 44.4% decline is not typical. When looking at performance by gender, the boys overall improvement in performance was greater by 5% driven by a big improvement by one individual child. When calculating to see if the difference was statistically significant, the results showed that there was no statistical difference by gender.</p> <p>Conclusions/Discussion The results of my experiment negated my hypothesis that the use of the placebo would improve every student's free throw performance by one additional basket. While my experiment was consistent with scientific data where 33.3% of the students improved with the placebo, the misperception about how students should feel after taking the energy chew had an even more powerful impact on the results. Since some were expecting an immediate surge of energy and did not feel it, students felt tired and blamed their performance on feeling tired. I also concluded that the use of placebo in this experiment had the same statistical impact across boys and girls. The data suggests that when using a placebo, it is important to be very clear about the immediate side effects of the placebo to set expectations correctly.</p>	
Summary Statement The placebo effect and its impact on sixth graders' free throw performance.	
Help Received My step-mom suggested I use starbursts as my placebo and helped me disguise the starburst using FRS energy chew packaging.	