



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> Nicholas A. Saavedra	<b>Project Number</b>  35757
<b>Project Title</b> Effect of Sports Stimulants on Reaction Time	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of my project was to measure and compare the effectiveness of four key components of energy drinks, advertised to increase performance, at improving reaction time in humans.</p> <p><b>Methods/Materials</b> Supplements of 100mg caffeine, 1000mg taurine, 1000mg vitamin B12, and 500mg vitamin C were administered separately over a period of time to consenting participants aged 15-18. Their reaction time was then electronically measured 10 times per supplement and percent change calculated from their performance without the supplements.</p> <p><b>Results</b> After performing the experiment there was a noticeable improvement in reaction time after taking both caffeine and taurine, with caffeine having the largest effect. Across all participants, caffeine improved the mean reaction time by 8%, while taurine improved it by around 7%. Vitamin B12 improved reaction time on average by almost 2%, while vitamin C had a detrimental effect on reaction time by close to 2%.</p> <p><b>Conclusions/Discussion</b> Caffeine had the largest improvement on reaction time on individuals who had not developed a caffeine tolerance. Participants who identified as having a high caffeine intake did not experience a major improvement in reaction time compared to their peers, as the dosage of caffeine was equivalent to or less than what is commercially available in various products. In individuals with caffeine tolerance, taurine led to the largest improvement in reaction time. Future experimentation would compare the effectiveness of caffeine of those with tolerance to those who have not developed the tolerance.</p>	
<b>Summary Statement</b> My project measured and compared the effectiveness of four key components of energy drinks at improving reaction time in humans.	
<b>Help Received</b>	