CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

S1730

Project Title

The Effect of Caffeinated Drinks on Heart Rate and Cognitive Function in Adolescent Boys

Abstract

Objectives/Goals

The Food and Drug Administration (FDA) is investigating the safety of caffeine and its nervous system stimulating effects on adolescents. The aim of this study was to evaluate the effects of caffeinated drinks on heart rate and cognitive function in adolescents.

Methods/Materials

Ten adolescent boys consumed 10 ounces of commercially available drinks containing 0 mg, 58 mg, and 96 mg of caffeine, in a random order. Heart rate was measured electronically using a pulse oximeter. Cognitive function was evaluated using a Digit Symbol Substitution Test (DSST). Heart rate and DSST were measured before and twenty minutes after consumption of the drinks. Data are in mean ± standard deviation. Changes in heart rate and DSST were analyzed using ANOVA and paired t-test.

Results

Heart rate values were 71±15 beats per minute (bpm) and 71±16 bpm (P=0.99), 70±14 bpm and 72±12 bpm (P=0.94), and 67±13 bpm and 71±15 bpm (P=0.94) before and after consumption of 0 mg, 58 mg and 96 mg of caffeine, respectively. Respective DSST scores were 44±8 and 45±6 (P=0.24), 45±11 and 47±10 (P=0.002), and 44±13 and 47±13 (P=0.14).

Conclusions/Discussion

Caffeine did not have a statistically significant effect on heart rate in adolescent boys. Although, 58 mg caffeine increased DSST scores, the lack of DSST dose response suggests a Type I error and thus, no significant caffeine induced effect on cognitive function.

Summary Statement

The aim of this study was to evaluate the effects of caffeinated drinks on heart rate and cognitive function in adolescents.

Help Received

UCSF supplied me with a pulse oximeter that electronically measures heart rate.