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Investigating the Effects of Energy Drink Consumption on
Student Pilot Fatigue and Performance Levels

A thesis presented in partial fulfilment of the requirements for the

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Dedication

**I would like to dedicate this thesis to my mother and father,
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Abstract

A limited number of studies have examined the effects of energy drink consumption on student pilot fatigue and performance in aviation. The results from these studies were inconclusive and inconsistent. The aim of this study is to investigate the effects of consuming Red Bull energy drinks on student pilot fatigue and performance levels. Healthy student pilots participated in this applied Quasi-experiment, who were given either Red Bull energy drinks or bottled water. Fatigue and sleep questionnaires were administered to assess fatigue and alertness levels of the participants. The results indicated there were no significant effects of consuming Red Bull energy drinks on student pilot alertness levels, which was subjectively measured by the Karolinska Sleepiness Scale. At the same time, consuming Red Bull energy drinks had no significant effect on student pilot cognitive performance levels, which was objectively measured by psychomotor vigilance task. However, the performance of participants in the Red Bull energy drink group was improved compared to the performance of participants in the water group, which was measured by faster reaction times, fewer numbers of lapses and errors. Additionally, higher number of correct responses and zero number of sleep attacks were also measured. More importantly, the likelihood of error detection by student pilots who consumed Red Bull energy drinks was significant, $F(1,108) = 9.12, p = .003$.

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