Biochemistry and Molecular Biology
Brown Bag Series
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"Disorientation Effects, Circulating Small RNA, and Genetic Susceptibility on Static and Dynamic Postural Stability"

Tuesday, October 22, 2019
11:00 AM
141 Medical Sciences Building

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http://www.med.wright.edu/bmb
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Abstract

Motion Sickness (MS) is one of the most prevalent conditions affecting naval aircrew today, placing an increased risk of performance deficits and safety concerns in the air. The vestibular system may play a role in the etiology of MS, but this mechanism is poorly understood. Research has shown that MS may increase postural instability. Here, we attempted to quantify the physiological effects of motion sickness on static and dynamic balance. Using a repeated measures design, 16 subjects underwent a disorientation stimulus to induce MS. MS susceptibility was identified using the MSSQ (Motion Sickness Susceptibility Questionnaire). Postural balance outcomes were measured using a force plate on two different tasks: eyes open and eyes closed on foam and small RNA profiles were assessed with blood draws. Each test was performed by subjects before and after the stimulus and differences were analyzed. After the stimulus, a significant increase in sway area (p= 0.03) was seen in eyes closed tasks. Subjective perception of sway increased as well. These findings suggest subjects were able to perceive an increase in sway following the stimulus but were not able to effectively reduce it. Reliance on the vestibular system during eyes closed on foam tasks may explain this significance following exposure to motion sickness and could point to a reliable method to measure it. Through backwards elimination, gender played a significant role in predicting all sway variables. Several small RNA and genetic predictors of each sway variable were found by random forest analysis, which could lead to further prediction models in a larger population.