



University
of Victoria

Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Science

of

ASHLEY HOWSE

BSc (Dalhousie University, 2015)

“Assessing Fatigue in the Field: Towards the Objective, Efficient, and Economically Viable Assessment of Acute Fatigue in On-Shift Physicians”

School of Exercise Science, Physical and Health Education

Wednesday, August 9, 2017

1:00 p.m.

McKinnon Building

Room 155

Supervisory Committee:

Dr. Olave Krigolson, School of Exercise Science, Physical and Health Education, University of Victoria (Supervisor)

Dr. Bruce Wright, Division of Medical Sciences, UVic (Co-Supervisor)

External Examiner:

Dr. Sam Liu, School of Exercise Science, Physical and Health Education, UVic

Chair of Oral Examination:

Dr. Catherine Harding, Department of Art History and Visual Studies, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Medical mistakes made during the fatigue state result in the spread of infection, diagnostic error, psychological distress, poor patient outcomes, and ultimately, loss of life. Alarming, the fatigue-management systems put forth by government agency have failed to reduce the risks of fatigue in physicians. A shift from “one size fits all” approaches for fatigue management, to individualized fatigue assessment and training, is required. To date, no validated measures of fatigue are feasible for use as portable, on-site assessments. Here, I propose the use new portable EEG technologies recently validated for the collection of ERP data, as a basis for a portable fatigue assessment that is cost effective, portable, and efficient enough to be used in medical professionals. Over the course of three experiments I have provided data to support the use of the MUSE portable EEG headband, in combination with short oddball task to assess fatigue related neural impacts. Result of these experiments indicate that the P300 component is reduced in fatigued subjects in comparison to non-fatigued, and further that there is a strong correlation between subjective fatigue severity and P300 amplitude.