RESEARCH SCHOLAR PROGRAM 2017
SUPERVISOR/PROJECT INFORMATION FORM

Due on or before October 21 2016. Forms received after this date will not be posted on the website.

SUPERVISOR INFORMATION

Supervisor Name: Andrea Furlan

Mailing Address: 550 University Av, room 7-141-1, Toronto ON M5G 2A2

Telephone Number: 416-597-3422 x 4607

Email Address: andrea. furlan@uhn.ca

Degree (MD, PhD, MD/PhD): MD/PhD

Academic Rank: Associate Professor

Field of Research: Chronic pain, opioids, epidemiology, health services research

Graduate School Appointment (IMS, IHPME etc..): IMS
Please note that you must be appointed to the SGS in order to be a supervisor in the Scholar Program

Research Institute Affiliation (if applicable): Toronto Rehab - UHN

Allocation of student contact time (# of hours per week you are available to the student for any concerns or to review progress): one hour per week

Do you have a student that you have already agreed to work with? No
Please note, you may go ahead with a self-initiated project with a student of your choosing. If you choose this option, your project will not be posted online, meaning it will not be open to student applicants.

PROJECT INFORMATION

Project Title: Investigating the effects of opioids on safe driving using a high-fidelity driving simulator

Project Description (max 500 words):
In this multi-year project, we are investigating the effect of opioids on driving performance. Canada is the second largest user of opioids per capita in the world, and the province of Ontario has the highest rate of prescriptions in the country. Driving a motor vehicle is a complex task requiring attention, concentration, eye-hand coordination, motor control, and visual/auditory/proprioceptive information processing. Because opioids have a broad impact on the central nervous system, they can affect these processes, and may impair driving as a result. Our goal in this research is to examine if there is any significant effect of opioids on driving simulator performance and to provide a scientific basis for future guidelines on opioid use.

At Toronto Rehab we have a high-fidelity driving simulator (DriverLab) which consists of an Audi A3 inside a 360 degree projection dome on the top of a motion base. Participants will be recruited from UHN hospitals. The study design is a non-randomized, between subjects, mixed factorial design. We will recruit participants to these groups: (1) no chronic pain and no opioids (Healthy volunteers as a control group), (2) chronic Pain(CP) without opioids, (3) CP with Short-acting opioids, (4) CP with low doze-long-acting opioids without benzodiazepines, (5) CP with low dose-long-acting opioids with benzodiazepines, (6) CP with high dose long-acting opioids without benzodiazepines, (7) CP with high dose long-acting opioids with benzodiazepines. Each group will include approximately 20 participants.

Each subject will participate in two-day test sessions. On day 1, we will conduct several assessments which include the brief pain inventory (body pain diagram; pain intensity and pain interference with daily activities), general health questionnaire, screening for psychological symptoms (depression, anxiety and somatization), useful field-of-view (UFOV) test, questionnaires on current medications, driving habits, demographics, and a battery of psychomotor and cognitive tests (including MoCA, The Conners' Continuous Performance Test, The Paced Auditory Serial Addition Task, Halstead-Reitan Finger Tapping Test).
On day 2, the participants will drive in the driving simulator under different scenarios including daytime highway without secondary task (which require visual and cognitive attention), daytime highway with secondary tasks, daytime urban road without traffic, daytime urban road with traffic, nighttime highway without secondary task (assumed as the most challenging case in terms of sleepiness). We will record: the participants' driving performance (speed, lateral position, steering wheel manipulation, reaction time to some events, etc.), eye movement (to measure their attention and sleepiness) and vital signs (heart rate and blood pressure).

The data collected will be analyzed statistically. A two-sample t-test will be used to compare the outcomes across the groups. Analysis of covariance (ANCOVA) will be used to account for other factors that may influence the outcomes (covariates). Multivariate regressions will also be used to examine the significant factor to affect participants' performance.

If human subjects are involved, has Ethics been obtained?

√YES ☐NO ☐Application Submitted ☐N/A

Do you expect this work will be published within 20 months?

☐YES ☐NO √ Uncertain

Student's Roles / Responsibilities (Please be as specific as possible) Please indicate who will serve as the student's direct report. (PI, PDF, PhD student, technician etc…):

Role:
The student will be involved in the overall process of the project as a research assistant. The process will include;
- Recruiting participants: apply screening questionnaire over the telephone and make appointments for experiment sessions. Explain the study and obtain consent.
- Conducting experiments: the student will attend the participants during experiment sessions to give instructions to them, to collect verbal and behavioral responses and to watch the participant's condition (i.e., if they feel sick).
- Data management: The student will enter data into the computer and prepare tables and initial statistical analyses.
- Publication: the student will be involved in preparing posters, abstracts for conference and in initial drafts of manuscripts.

The student will be directly supervised by a research coordinator and will report to the PI.