Yoga as a prophylactic for stress: examination of effects for protection from cardiovascular disease

Research question:
Does a single session of Yoga change the responses to stress in a population at risk for CVD?

This project is appropriate for students in the following discipline(s):
- Bachelor of Health Sciences (Honours)
- Bachelor of Applied Science (Exercise and Sport Science) Honours
- Bachelor of Applied Science (Exercise Physiology) Honours

Aims and background:
Yoga is a mind-body practice which is often used to reduce stress in modern life. The way that yoga reduces stress isn’t well understood, and it’s important to unravel the effect so that the best recommendations for use are possible. We recently found that young healthy adults showed a reduced stress response to a maths task if they completed a yoga session immediately beforehand. This project plans to explore if this immediate anti-stress effect of yoga can work in populations who are at risk of cardiovascular disease (e.g. have high blood pressure) or during times of very high stress (e.g. during exams for students).

Proposed method of data collection:
Randomised crossover trial in participants (N=24) with elevated blood pressure (SBP130-150mmHg, DBP 80-100mmHg, High-normal and Grade 1 hypertension), without any other CVD risk factor (according to ACSM guidelines). On the first day of testing, participants will be randomly assigned to complete either the control condition (watching TV) or the Yoga session (delivered by CIB). All subjects will be their own control, hence those who have watched TV during the first day of experiment will participate in Yoga on the second day of experiment, and vice-versa. Study trials will be separated by a minimum of 48 hours and all trials will be completed during the afternoon to control for the known diurnal variation in cortisol. During each day of testing, participants will first rest for 15 minutes before undergoing the assigned condition (control or Yoga). After the 30-minute task, participants will undergo a math task to induce stress reactivity and, afterwards, will recover from the task during 30 minutes. Measurements of cardiovascular reactivity will be measured throughout the period (heart rate, heart rate variability, blood pressure); in addition salivary samples will be taken at intervals to assess the hypothalamic-pituitary adrenal (HPA) response (cortisol) and salivary pH as a marker of sympathetic and parasympathetic balance). In addition to demographic and trait psychological measures, participants will give self-reported mood and state cognitive, somatic anxiety and self-confidence assessments pre and post stress tasks.

Type of study:
Quantitative
Pre-exercise Fasting and Maximizing Muscular Hypertrophy.

Do you have a broad research topic for students to consider?
Exercise and dietary interventions to maximise muscular strength, hypertrophy and power adaptations.

Research question:
Is there potential for greater muscular hypertrophy with ingestion of supplement following fasted resistance training.

Research topic:
Exercise and dietary interventions to maximise muscular strength, hypertrophy and power adaptations.

This project is appropriate for students in the following discipline(s):
Any discipline

Aims and background:
Previous research has indicated that fasting for several hours allows faster transport of amino acids across muscle cell membrane may create a favourable environment for activation of genes involved in the process of muscular hypertrophy. This aim of this study is examine whether fasted resistance training enhances muscular hypertrophic effects.

Proposed method of data collection:
Subjects recruited will be healthy 18-25 year old males with 6 months resistance training experience. A total of 58 subjects will be randomised into either a fasted or fed resistance training group. Subjects will be required to complete a 12-week resistance training intervention (supervised, full-body resistance training three times/week) Sessions will be performed at 8am and include the following exercises: Leg Press, Bench Press, Seated Machine Row, Triceps pushdown, Bicep curl, Plank. 3-5 x 8-10RM, 60-120s rest. The sessions will be completed by 9.30am on the allocated days. Subjects randomised into fasted group will perform resistance training sessions following a 9 hour overnight fast, while subjects in the fed group will be given a standardised meal to consume 60 minutes prior to the resistance training sessions. Both groups will consume a protein shake within 15 minutes following the resistance training sessions. In addition, the fasted group will consume a low-protein meal to ensure caloric intake is standardised between groups. Daily diets will be given to subjects and compliance will be tracked via myfitnesspal. Data collected will be lean and fat mass via a DXA scan and ultrasound measures, muscular strength and power of the upper and lower body.

Additional information:
This will be the first ever study to be conducted investigating the efficacy of fasted resistance training for maximizing muscular hypertrophy. The project will be shared among a group of students due to the time required for this study to be completed.

Type of study:
Quantitative
Development of an in-patient fitness assessment for patients seeking treatment for substance use disorder

Research question:
This is a descriptive study that seeks to assess the baseline fitness of patients undergoing treatment for substance use disorder at Concord Hospital.

This project is appropriate for students in the following discipline(s):
Bachelor of Applied Science (Exercise and Sport Science) Honours
Bachelor of Applied Science (Exercise Physiology) Honours

Aims and background:
The in-patient addiction treatment wards at Concord Repatriation General Hospital propose to deliver an integrated life skills program comprised of exercise, nutrition, mental health promotion and vocational and recreational activity modules. However, there is currently no data available on the current levels of fitness of treatment seekers upon which to design an exercise program. As such, this project will be the first of its kind at CRGH in aid of testing the acceptability and feasibility of performing exercise testing and program design for this specialist population.

Proposed method of data collection:
This project will be almost entirely conducted at Concord Hospital. The student that takes on this project will be primarily based on the addiction treatment wards and will be responsible for the conduct of baseline fitness tests on patients undergoing treatment. This will predominantly take place early after admission. Secondary outcomes may include a re-assessment of fitness following treatment on the award. The data obtained from this study will inform future projects that seek to design exercise based programs that act as adjuncts to current usual care treatments.

Type of study:
Quantitative