



# School of Exercise and Nutrition Sciences

## 2019 Honours Projects

Bachelor of Food and Nutrition Sciences (Honours)  
H418

Bachelor of Exercise and Sport Science (Honours)  
H442

[deakin.edu.au](http://deakin.edu.au)

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## **TEDDY ANG**

Bachelor of Food and Nutrition Sciences (Honours); 2016

**Current role/position: Undertaking PhD in Physiology and Metabolism at Deakin University, School of Exercise and Nutrition Sciences**

*Honours topic: Effects of omega-3 docosapentaenoic acid supplementation on oral glucose tolerance in an animal model of diet-induced glucose intolerance*

*Honours was undoubtedly the most challenging year of my undergraduate studies but also the most enriching. This is something you will hear from any Honours survivor, but the skills, experience and memories that you will acquire, if not embedded, during this 8-month roller coaster ride will be invaluable regardless of your future endeavours. For me, it was being able to work closely with a supervisory team and receive the hands-on laboratory training that I am truly grateful for, and not to mention, your very own unique masterpiece they call the 'Thesis' produced at the end. Honours is not simply another year of mundane coursework study, it is an opportunity to become part of something bigger and let it be known that the inevitable pain and struggle that accompanies it will be worth the blood, sweat and tears.*

## Honours Overview

The honours program in the School of Exercise and Nutrition Sciences (SENS) builds upon the foundations provided by a three year undergraduate degree. The aim of the program is to provide students with the necessary knowledge and skills to enable them to undertake higher degree studies and advance their professional training.

The School offers the following Honours degrees:

- Bachelor of Food Science and Nutrition (Honours) H418
- Bachelor of Exercise and Sport Science (Honours) H442

All honours programs in the School have common features, specifically:

- Coursework units and a written thesis
- Undertaken over two trimesters within a single year full time (8 months total)
- Allocation of a supervisor and co-supervisor

## Why do Honours with SENS?

- ✓ Our teaching facilities are outstanding
- ✓ We have strong industry partnerships/relations with over 150 sporting, government, community, health and food industry organisations
- ✓ Our students get 'hands-on' experience
- ✓ We provide a high-level of support and resources to assist students with their projects

You will learn to:

- ✓ Critically evaluate existing research
- ✓ Identify questions/hypotheses worth researching
- ✓ Understand and apply correct research methods to the collection and/or analysis of data
- ✓ Interpret study findings
- ✓ Understand strengths and limitations of research

## Benefits of learning research

- ✓ Increased employability, skills transferable to many jobs/disciplines
- ✓ Learning & collaborative opportunities
- ✓ Independence to drive your ideas
- ✓ Opportunity to contribute to knowledge in your specialised area
- ✓ Gain important research skills and practical research experience

### **GISELLA MAZZARINO**

Bachelor of Food and Nutrition Science (Honours) graduated 2015

**Current role/position: Undertaking PhD in Molecular Physiology at Deakin University**

*“My honours project investigated: The role of miRNA in Physiological Cardiac Hypertrophy”*

*“Completing my honours degree was a challenging yet entirely rewarding experience. Over the course of the year, I acquired a number of important skills and techniques necessary for a career in scientific research and academia. Honours marks the transition between undergraduate coursework and research, and was, for me, a year of great personal growth. I was provided with mentoring in problem solving, analytical writing, and working independently in research and laboratory environments, which are skills that are applicable to a variety of career paths. I was also able to be part of real-world research, which I highly recommend for the experience, but also for the wonderful satisfaction and sense of accomplishment that awaits at the end.*

*My honours project investigated antioxidant supplementation in reactive oxygen species production during exercise and their possible influence on response to exercise training due to their role as metabolic messengers.”*

## What are the career pathways after Honours?

### Entry into Research/Research Degrees

Deakin University is interested in providing you with a fulfilling research experience in honours so that you will consider returning to complete a research masters or doctorate. These post-graduate research degrees allow you to further investigate in an area of interest to you and open up a range of career options; in academia, and as a leader in industry. The completion of Honours also opens up opportunities to be employed in a research role within the School or other universities.

### Careers

There are a range of careers that you can follow after gaining research experience in an Honours year. Aside from continuing to work in research, you can gain employment in industry such as in physiology, nutrition, fitness, and in government posts. In sport, you can work in player and team management, sports administration and development, strength and conditioning, sports science, and in coaching. The Honours degree allows you to gain some specialist knowledge in one of these areas and apply that knowledge.

#### **SEAN BULMER**

Bachelor of Exercise and Sport Science (Honours) completed in 2015  
graduated 2016

**Current role/position: Human Performance Science, Research  
Assistant at Defence Science and Technology**

*“My honours project investigated: The utility of subjective measures to monitor firefighters’ stress and fatigue during a simulated deployment. This involved development of a questionnaire.”*

*“Undertaking the honours program at Deakin was the most educational, challenging and fun year of my education so far. I had a great time meeting with and learning from my supervisors. The content of the honours course has translated extremely well to application in a professional setting. I use the processes and writing skills I learned last year every day in my current role, and would not be where I am without them.”*

## What types of Honours projects can I do in SENS?

### Food science and nutrition

Topic areas in food science and nutrition include:

- Nutrition choices and eating patterns;
- Salt, appetite control and blood pressure regulation;
- Fatty acids, inflammation, cognition and blood pressure regulation;
- Proteins, sport performance and muscle gain;
- Nutrition and ageing;
- Health effects of phytochemicals and minerals;
- Nutrition and gut bacteria;
- Food choice and perceptions;
- Food policy and safety;
- Early childhood influences on eating.

### Exercise and sport science

Topic areas in exercise and sport science include:

- Health and injury in work and sport;
- Physical activity;
- Obesity prevention;
- Coaching practices;
- Exercise physiology;
- Women's health;
- Behavioural aspects of sport;
- Skill acquisition;
- Motor control and motor learning;
- Biomechanics and performance analysis,
- Strength and conditioning.

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**\*\*\*Refer to the back of this handbook for the 2019 Honours projects\*\*\***

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#### **KEREN BEST**

Bachelor of Food and Nutrition Science (Honours) – 2016

**Current role/position: Project manager of two ARC research projects at IPAN, Deakin University**

*Honours topic: Parental predictors of maintenance of physical activity over three years in children.*

*Undertaking honours was both challenging and rewarding. Honours allows you to immerse yourself in the research world and gain a range of skills in a short amount of time. The analytical writing, research processes and data management skills developed have been invaluable in enhancing my project management career.*

## Who supervises Honours projects?

Supervisors closely guide you through this first experience of research. They will assist you in planning your research, data collection and analysis and writing it in thesis format. In addition, they will offer you support in the planning and presentation of your oral assessments. All supervisors are experienced researchers who understand the rigours and requirements of your project and have knowledge of your topic area.

## How do I choose a topic?

Each year the School provides a list of projects for you to peruse and choose those that interest you. We then advise that you speak to supervisors of these projects to gauge your interest and then to nominate three projects on your preference sheet. We aim to provide you with one of your preferences.

## Can I develop my own project?

You are best to take a directed project in this first year of exposure to research, as it allows for the supervisor to direct the research in an area they know well. If you have a passion for something you may be able to tailor your Honours project to fulfil your interest or use that idea for a further degree; Honours is about research training.

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**\*\*\*Refer to the back of this handbook for the 2019 Honours projects\*\*\***

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### **BELLA HARTLEY**

Bachelor of Food Science and Nutrition (Honours), 2017

**Current role/position: Undertaking a PhD in Sensory Science at Deakin University**

*Honours topic: Investigating the impact of a new front-of-pack label, the physical activity calorie equivalent label, on discretionary snack food consumption and liking.*

*Completing my honours year was an extremely challenging year, but a year for significant personal development. During just 8 months of study, I gained more skills than I imagined possible in that timeframe. From an academic perspective and with support from my supervisor my critical writing, laboratory, statistical analysis, communication and problem solving skills improved considerably. From a personal perspective, it was a year of immense growth, particularly gaining stress management skills, gaining confidence in my own abilities, plus the feeling of enormous achievement when I submitted my thesis. The skills you gain during honours are essential for any career path, I honestly couldn't recommend completing an honours year highly enough.*

## What happens in the Honours year?

Honours is an intense year and you will need to commit ~35 hours a week. Your Honours degree is mostly assessed on research but there is also a coursework component. Both parts count towards your final mark. The coursework is directed towards giving you the necessary research skills to complete your research project, and provides you with research training. There are two units in Trimester 1, Research Methods (unit code HBS400) and Developing Research Skills (HSE401). They have lectures and assignments to complete that incorporate aspects of your project. The remainder of your research is conducted in Trimester 2 and this is where you complete your data collection, analyse the data and write a thesis (HSE402/HSN414). Aspects of these units are discussed below.

### **Research methods (HBS400)**

This unit examines the ethics of research, critiquing research and an elective. It is directed towards your research and you can choose to take the quantitative, qualitative or lab-based stream. This unit is designed to help you develop the methods for your research project.

### **Literature review and research proposal (HSE401)**

You are asked to read and review the previously published research (i.e. the literature) in the area of your project, find aspects that have not been fully investigated and then propose your research that will answer a specific research question. This will provide you with a thorough understanding of your area of research, form the introduction to your thesis and allow you to understand how your research project fits within the current research literature. You will also present your literature review and research proposal to your peers as an oral presentation.

### **Thesis (HSE402/HSN414)**

After you have planned your research and received ethics approval (if required), you are ready to collect your data. The final step is to analyse and write your research in a thesis format. This 12,000 word document is set out in chapters and describes the existing research literature, your research methods, the results of your research and then discussion of your findings. You will then present your findings at the School Research day at the end of the year.

### **Timelines**

The year is short and intense, beginning with an orientation session in February and completing with your oral presentation of your research in October. In between, there is plenty to keep you busy.

## What are the admission requirements?

Students must have completed a Bachelor degree, have a mid-credit average (Weighted Average Mark (WAM) of 65) calculated in all the units taken in their degree and to have also completed a major in the discipline involved. Eligible students with degrees from other universities are welcome to complete their Honours year at Deakin University.

## How do I apply for Honours?

To apply for Honours in the School of Exercise and Nutrition Sciences there are three steps:

### 1. Review Project Offerings and Complete Your Project Preference Form

- Please review carefully the list of Honours research projects that the School is offering in 2019.
- When you have selected the projects you are interested in, it is very important that you contact the named Supervisor (contact details are provided with each project) to discuss the proposed project/s.  
This will allow you to determine whether the project meets your career goals and allows the Supervisor to determine whether you have the appropriate academic background to complete the research project.
- Once you have contacted the Supervisors of the projects that interest you, please download and complete a project preference form found in this handbook.
- If you have submitted a course application via the applicant portal, please upload your preference form into your applicant portal account, please do not email your preference form.

### 2. Submit a Course Application

- You will need to submit a course application via the [Deakin applicant portal](#) by Friday 23 November 2018 and upload your Project Preference Form as part of your supporting documents.  
Supporting documents can also include academic transcripts, personal statement, course completion certificates etc.  
Note: Deakin students are not required to submit academic transcripts.
- If you are unable to upload your documents or have any questions about the admission process, please email [health-enquire@deakin.edu.au](mailto:health-enquire@deakin.edu.au) or call 9251 7777

## How are projects allocated?

Projects are allocated based on a combination of student project preferences, supervisor's student preferences and WAM. Students are advised that allocation to research projects is a competitive process and a student cannot be assured of being assigned to their choice of research project.

The list of available research projects reflects research being undertaken by Deakin staff and the availability of resources at the date of publication. It is the nature of research that projects change focus and direction over time and the final project therefore may not be exactly as described.

In rare cases, research staff and resources may become unavailable during the period when the project is being undertaken. If this occurs, the School will offer the student the best available alternative which will provide the opportunity to satisfy course requirements.

## When do I find out if I have been accepted?

It is anticipated that successful candidates will be advised of their offer mid-December 2018.

## Additional Information

You can also contact the Honours Coordinators on the contact details provided below:

### **Dr Lukar Thornton**

(Honours Coordinator)

Ph.: (03) 9244 5029

Email: [lukar.thornton@deakin.edu.au](mailto:lukar.thornton@deakin.edu.au)

### **Dr Jason Bonacci**

(Deputy Honours Coordinator)

Ph.: (03) 5227 2634

Email: [jason.bonacci@deakin.edu.au](mailto:jason.bonacci@deakin.edu.au)

### **Dr Anne Turner**

(Deputy Honours Coordinator)

Ph.: (03) 9244 6950

Email: [anne.turner@deakin.edu.au](mailto:anne.turner@deakin.edu.au)

School of Exercise and Nutrition Sciences  
**2019 Honours Project Preference Form**

Name: \_\_\_\_\_ Deakin student ID: \_\_\_\_\_  
Address: \_\_\_\_\_ Postcode: \_\_\_\_\_  
Mobile: \_\_\_\_\_ Home: \_\_\_\_\_  
Email: \_\_\_\_\_ Date: \_\_\_\_\_

**Please note the following information:**

- You will need to submit a course application via the Deakin applicant portal by **Friday 23 November 2018**
- Upload your Project Preference Form as part of your supporting documents.
- If you are unable to upload your documents or have any questions about the admission process, please email [health-enquire@deakin.edu.au](mailto:health-enquire@deakin.edu.au) or call 9251 7777
- The list of Honours projects for 2019 are available via the [H418](#) or [H442](#) course handbooks.
- Applicants are advised that allocation to research projects is a competitive process and an applicant cannot be assured of being assigned to their choice of research projects.
- Applicants are required to contact the Supervisors of the projects you nominated below before submitting this form.

**Please nominate your three preferences:**

1st preference - Project no: _____ Supervisor: _____ Project title: _____ Have you personally spoken with the supervisor about the project? (please circle) Yes No
2nd preference - Project no: _____ Supervisor: _____ Project title: _____ Have you personally spoken with the supervisor about the project? (please circle) Yes No
3rd preference - Project no: _____ Supervisor: _____ Project title: _____ Have you personally spoken with the supervisor about the project? (please circle) Yes No

Some projects have many students apply for them. If you are NOT offered one of the above projects would you consider an offer of an honours project in a related area? (Please circle) Yes No

Please list any other projects you may consider if you are not offered your preferences:

\_\_\_\_\_

## **Project number: FN\_1**

**Project title:** Nutrition in the classroom: Teachers use of online food and nutrition materials

**Primary supervisor:** Dr Alison Booth

**Phone:** 0392517211

**Email:** alison.booth@deakin.edu.au

**Co-supervisor/s:** Prof Tony Worsley

### **Supervisor profile**

Dr Alison Booth is a senior lecturer with the School of Exercise and Nutrition Sciences and is the current course director for the Bachelor of Nutrition Sciences. She has been actively involved with research since completing her PhD in 2008 and is a member of the Institute for Physical Activity and Nutrition (IPAN). Her research has focused on the delivery of nutrition education to improve dietary intake of children and adults. Alison has supervised five successful honours students since 2011.

Prof Tony Worsley is the Chair of Behavioural Nutrition within the School of Exercise and Nutrition Sciences and is an active member of IPAN. Tony is an established researcher in his field of nutrition promotion and food communication as well as understanding consumers' food and nutrition behaviours.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Recent research has found that school teachers often access online resources to use in their classroom, some of which may contain information that is not supported by evidence based research. We have also found that since the introduction of the new VCE Food Studies curriculum, some teachers are not as confident with some aspects of the curriculum as they would like. Therefore, we are currently developing an online blog to support VCE Food Studies teachers in their teaching. It will include materials that aim to enhance their understanding of selected topics and also to provide resources they can use in the classroom. The blog will go live early 2019. The aim of this research is to evaluate VCE teachers' use and perception of the blog and its resources. Data collected will include a combination of qualitative and quantitative data and include such things as download counts, responses to survey questions regarding the suitability of materials, analysis of discussion board content, etc). You would be involved with developing some of resources and the survey questionnaire, and analyse the information to feedback to the developers to make improvements.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); Qualitative analysis; Development of food and nutrition teaching resources

## **Project number: FN\_2**

**Project title:** To examine the influence of dietary protein and physical activity on quality of life

**Primary supervisor:** Dr Susan Torres

**Phone:** 9244 6189

**Email:** storres@deakin.edu.au

**Co-supervisor/s:** Dr Catherine Milte

### **Supervisor profile**

Dr Susan Torres is an accredited practicing dietitian and senior lecturer in nutrition in the School of Exercise and Nutrition Sciences. Her research assesses the role of lifestyle factors, particularly the independent and combined effects of diet and physical activity, on mental health and well being and quality of life across the lifespan. Her current research assesses the relationship between indicators of mental health and dietary intake. She has conducted intervention studies assessing the impact of dietary modifications and weight loss on mood, anxiety and blood pressure responses to stress. Recently, Dr Torres has been investigating the effect of dietary and physical activity interventions on quality of life in older adults and the relationship between diet and depressive symptoms in pregnant women.

Dr Catherine Milte is a lecturer in nutrition in the School of Exercise of Nutrition Sciences. Dr Milte's research investigates the link between dietary intake, cognitive function and mental health in older adult.

### **Broad project topic area**

Food and nutrition science; Physical activity;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Using data from a large longitudinal study in the Australian adult population, the Australian Diabetes, Obesity and Lifestyle Study (AusDiab), we will examine the association between dietary protein, including types of protein, and physical activity on measures of quality of life over a 12 year period in a sample of adults. The AusDiab included 11247 adults (5049 men and 6198 women) aged 25 years randomly selected from areas in Australia recruited in 1999-2000. Five year follow up was conducted in 2004-2005 and 12 year follow up was conducted in 2011-2012. Dietary intake was assessed using a food frequency questionnaire, physical activity using the Active Australia Survey and Quality of Life using the SF-36.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: FN\_3**

**Project title:** Food choice and sensory research in Virtual Reality

**Primary supervisor:** Gie Liem

**Phone:** 0392446039

**Email:** gliem@deakin.edu.au

**Co-supervisor/s:** Georgie Russell

### **Supervisor profile**

Dr Gie Liem is a senior lecturer in the school of Exercise and Nutrition Sciences and leads the consumer science within the Centre of Advanced Sensory Science. His research focuses on sensory marketing and how food choice, liking and consumption can be influenced without changing the food as such.

Dr Georgie Russell is a lecturer in the school of Exercise and Nutrition Sciences and a consumer researcher in the Centre for Advanced Sensory Science. Her research focuses on psychological determinants of food choice and consumption.

### **Broad project topic area**

Food and nutrition science; Sensory science;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The Centre for Advanced Sensory Science has state of the art virtual reality equipment which enables us to investigate the relation between real life and virtual reality when investigating sensory properties of food. Virtual reality is capable of transcending you from one place to make it feel like you're in another. Research has shown that the context in which foods are evaluated can affect the way foods are perceived, and how much they are enjoyed. These effects can have secondary impacts onto food choice and consumption behaviours.

Virtual reality is a potential tool to modify the eating context. However, further investigation into the efficacy of virtual reality at creating engaging immersive environments is required, specifically identifying which sensory modalities are required with practical considerations of sensory evaluation practices while in virtual reality. This honours project aims to investigate the influence of different virtual environments on food choice, liking and consumption

During this project you will obtain skills in the use of virtual reality and how to apply this to sensory science.

### **Skills/attributes required by the student**

Knowledge and background in a sensory science;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Image and/or video analysis; Quantitative analysis (statistics); Skills in virtual reality, Skills in sensory science

## **Project number: FN\_4**

**Project title:** Glucose, lipid and amino acid metabolism in muscle and liver.

**Primary supervisor:** Clinton Bruce

**Phone:** 9244 6684

**Email:** clinton.bruce@deakin.edu.au

**Co-supervisor/s:** Greg Kowalski / Ahrathy Selathurai

### **Supervisor profile**

Our research broadly encompasses the areas of physiology, metabolism and endocrinology in the context of health and disease. We are interested in understanding how glucose, fat and amino acid metabolism are regulated and integrated at the whole-body, organ and cellular level. An area of particular interest is examining the regulation of liver, adipose, and skeletal muscle metabolism by the hormones insulin and glucagon. We also have a strong interest in mitochondrial biology. We use a range of experimental approaches in humans, rodents and cell systems to understand metabolic regulation. We employ a broad range of laboratory based techniques including molecular biology approaches to manipulate gene expression and microscopy based imaging techniques. We also specialize in using mass spectrometry based platforms to perform metabolite and biochemical flux analysis. Our research is particularly relevant for conditions with metabolic underpinnings such as insulin resistance, diabetes, fatty liver and cardiovascular disease.

### **Broad project topic area**

Food and nutrition science; Biomedicine; Metabolic physiology, biochemistry

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We have a number of potential projects that can be developed according to individual interests. Projects will be particularly suited to students with a strong interest in the area of nutritional physiology, fuel metabolism and/or biochemistry. Potential areas of study include:

- Understanding how liver glucose production is regulated following ingestion of various nutrients
- Examining mechanisms of insulin resistance and hyperinsulinemia
- Metabolic and hormonal responses following protein-carbohydrate co-ingestion
- Understanding how lipids regulate skeletal muscle mass and mitochondrial function.

Projects may involve human and animal experiments and will develop a broad range of skills including analytical laboratory skills. All techniques will be taught as part of honours training. Our projects may be of interest to both Food and Nutrition Sciences as well as Exercise and Sport Science students.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: FN\_5**

**Project title:** Cancer malnutrition prevalence and association with clinical outcomes using two diagnostic criteria

**Primary supervisor:** Dr Nicole Kiss

**Phone:** 9246 8858

**Email:** nicole.kiss@deakin.edu.au

**Co-supervisor/s:** Dr Adam Walsh, Erin Laing

### **Supervisor profile**

Dr Nicole Kiss is an Advanced Accredited Practising Dietitian and senior lecturer in the School of Exercise and Nutrition Sciences. Nicole's research investigates interventions to optimise nutritional and functional outcomes during cancer treatment, improving the recognition and management of cancer malnutrition and the evaluation of novel models of health care delivery.

Erin Laing is an Accredited Practising Dietitian and Senior Clinical Dietitian at Peter MacCallum Cancer Centre. Erin is currently completing her PhD in nutrition and neuroendocrine tumours.

Dr Adam Walsh is an Accredited Practising Dietitian, deputy course director for Master of Dietetics and a lecturer in the School of Exercise and Nutrition Sciences. Adam's clinical expertise include that of paediatric ICU and oncology.

### **Broad project topic area**

Dietetics;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Cancer malnutrition is associated with reduced survival, increased hospital admissions and poorer quality of life. Early identification and treatment is important to prevent poor patient outcomes. Internationally, consensus regarding a definition and diagnostic criteria for malnutrition has not yet been reached. This project will compare malnutrition prevalence and association with clinical outcomes in a cancer population using two international definitions.

This project involves 2600 patients from the 2016 and 2018 Victorian cancer malnutrition point prevalence studies. Data collected enables the classification of patients as malnourished according to definitions proposed by the European Society for Parenteral and Enteral Nutrition (ESPEN) and the International Statistical Classification of Diseases 10th revision (ICD-10). This project will compare the impact of the different definitions on malnutrition prevalence and association with clinical outcomes including 30-day hospital admission/ readmission and mortality. Results will provide important insight for clinicians working with cancer patients regarding appropriate definitions and identification of cancer malnutrition.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); An understanding of the pathophysiology and assessment of malnutrition in the cancer setting. An understanding of the consequences of malnutrition for people with cancer.

## **Project number: FN\_6**

**Project title:** Impact of pre-exercise FODMAPs and breath hydrogen on gastrointestinal symptoms in a marathon race

**Primary supervisor:** Dr Rhiannon Snipe

**Phone:** 03 9244 6737

**Email:** r.snipe@deakin.edu.au

**Co-supervisor/s:** Dr Dominique Condo and Dr Ricardo Costa (Monash University)

### **Supervisor profile**

Dr Rhiannon Snipe is an accredited sports dietitian, lecturer and researcher in sports nutrition. Rhiannon has experience researching gastrointestinal disturbances and symptoms in endurance athletes which stems from her interest in endurance running and professional experience working with endurance athletes. Her research interests include endurance sports nutrition, applied exercise physiology and the investigation and/or prevention and management of exercise-induced gastrointestinal disturbances.

Dr Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dominique is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in team sports. Her current interests include energy availability in female athletes and the relationship between diet and sleep in athletes.

Dr Ricardo Costa is a senior lecturer in sport and exercise nutrition at Monash University.

### **Broad project topic area**

Dietetics; Food and nutrition science; Sports nutrition; Applied Sports Science; Exercise physiology;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Gastrointestinal symptoms affect  $\geq 60\%$  of endurance athletes and can have adverse effects on nutrition intake, sports performance and may cause withdrawal from competition. Current sports nutrition guidelines recommend high carbohydrate diets and/or carbohydrate loading prior to endurance running events which may inadvertently increase athlete's dietary intake of fermentable oligo-, di, monosaccharides and polyols (FODMAPs). Recent laboratory research has shown that high pre-exercise intake of FODMAPs causes carbohydrate malabsorption (e.g. increased breath hydrogen) and gastrointestinal symptoms. However, the prevalence of high dietary pre-exercise FODMAP intakes and pre-exercise carbohydrate malabsorption and the relationship to gastrointestinal symptoms during competitive endurance events is currently unknown. This research project involves athlete recruitment and dietary monitoring to explore the impact of pre-exercise FODMAP intake and carbohydrate malabsorption on gastrointestinal symptoms during competitive endurance running events. Findings from this research project may be used to inform the development of pre-exercise sports nutrition guidelines and recommendations

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to travel to offsite for data collection and other projected related tasks; Knowledge and background in sports nutrition

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Exercise prescription and monitoring; Quantitative analysis (statistics); Dietary assessment

## **Project number: FN\_7**

**Project title:** Human brain activity following oral taste stimulation in a fasting and fed state

**Primary supervisor:** Dr Sze-Yen Tan

**Phone:** 03-9246 8977

**Email:** szeyen.tan@deakin.edu.au

**Co-supervisor/s:** Prof Russell Keast, Dr Wei-Peng Teo

### **Supervisor profile**

Dr Sze-Yen Tan is a Senior Lecturer in Nutrition Science. His research focuses on dietary strategies that influence energy balance and metabolic health. He has conducted several clinical trials and his current research focuses on investigating the link between taste and human physiology, the metabolic effects of non-nutritive sweeteners, and the health effects of nuts.

Prof Russell Keast is a Professor in sensory and food science. The majority of Prof Keast's published research has focused on the relationship between taste and diet with a specific focus on problem nutrients, fat, salt and sugar. His research group are leaders in discovery of a taste responsive to fat and have identified an association between fat taste and diet. The link between taste, diet and obesity is also a research area within his research program.

Dr Wei-Peng Teo is an Assistant Professor in Motor Behavior at the Nanyang Technological University in Singapore and an adjunct research fellow in SENS. Dr Teo specialises in various brain imaging techniques and neuroscientific testing paradigms. Dr Teo's current research focuses on how maintaining gut function and exercise can improve overall cognitive and brain health.

### **Broad project topic area**

Food and nutrition science; Sensory science; Neuroscience

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Consumers often rate food flavour such as taste and smell as the most important factor that influence food choice and dietary intake. Neural signals are generated when tastes are perceived in the oral cavity, which are subsequently processed centrally in the brain that influences dietary-related decisions and behaviours. In this project, you will investigate if different taste stimuli such as sweet and bitter tastes preferentially activate different regions of the brain involved with taste regulation and behaviours. In addition, you will also determine if brain activation patterns are amplified when study participants are in a fasting state and suppressed in a fed state. Habitual dietary intake data will be collected and associations between brain activity and dietary intake will be examined. This project will use a functional near-infrared spectroscopy, a non-invasive neuroimaging method much like functional magnetic resonance imaging (fMRI) to quantify brain activity. The student will have the opportunity to obtain skills and knowledge across three domains namely sensory science, nutrition science, and neuroscience.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in a sensory science; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: FN\_8**

**Project title:** Social enterprise: an innovative approach to addressing food insecurity

**Primary supervisor:** Dr Rebecca Lindberg

**Phone:** 03 9256 8947

**Email:** r.lindberg@deakin.edu.au

**Co-supervisor/s:** Dr Fiona McKay

### **Supervisor profile**

Dr Lindberg has worked as a practitioner and a researcher, inside Australian not for profits and social enterprises that aim to improve food security. She helps her students gain real-world evaluation, critical thinking, writing and analytical skills to assist in making them job-ready post-Honours. And she uses her research to assist in improving programs and policies for a healthier, fairer, future.

Dr McKay's research interests relate to the study of reliance and how different groups survive and thrive in situations of adversity. Her work includes those experiencing forced displacement, issues of refuge and asylum, those experiencing food insecurity, single mothers experiencing financial insecurity and drug users who struggle to access health services, in the Australian setting and internationally.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

In Australia, approximately one million households report food insecurity. Food insecurity is associated with adverse social, health and developmental outcomes in adults and children. Social enterprises are starting to emerge to help ameliorate and prevent this nutrition challenge in Australia and elsewhere.

A social enterprise is a commercially viable business, which exists to benefit the community, rather than shareholders and/or business owner. They have grown in popularity worldwide, particularly over the last decade. This is an exciting entrepreneurial space, although practice is ahead of the evidence.

This study will systematically review evaluations of social enterprises that aim to tackle food insecurity in high-income settings. The objectives are to: identify models and their outcomes and develop recommendations for this sector.

This research will assist practitioners and researchers who work on preventing food insecurity and reducing nutrition inequities. From our understanding, it will be the first study of its kind anywhere in the world and therefore highly publishable.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Qualitative analysis; EndNote and using databases effectively to locate literature

## **Project number: FN\_9**

**Project title:** Can nuts improve the nutritional status and health of older adults?

**Primary supervisor:** Dr Sze-Yen Tan

**Phone:** 03-92468977

**Email:** szeyen.tan@deakin.edu.au

**Co-supervisor/s:** Dr Barbara Cardoso, Prof Robin Daly

### **Supervisor profile**

Dr Sze-Yen Tan is a Senior Lecturer in Nutrition Science. His research interests lie in the effective dietary strategies that influence energy balance and metabolic health. He has conducted several clinical trials and his current research focuses on the health effects of nuts in older adults.

Dr Barbara Cardoso is an Alfred Deakin Postdoctoral Fellow at the School of Exercise and Nutrition Sciences and a researcher at the Institute for Physical Activity and Nutrition. Her research focuses on micronutrients and neurodegenerative diseases, such as Alzheimer's and Parkinson's. Her research interests also lie in dietary strategies to prevent cognitive decline.

Professor Robin Daly holds the position of Chair in Exercise and Ageing within the Institute for Physical Activity and Nutrition. He conducts clinical and translational research that focuses on the integration of exercise and nutritional approaches to prevent and manage common chronic diseases, particularly musculoskeletal conditions, type 2 diabetes, certain cancers and cognitive related disorders.

### **Broad project topic area**

Dietetics; Food and nutrition science; Clinical Research

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Geelong Waurin Ponds campus

### **Project description**

Malnutrition is common among older adults and suboptimal nutrient intake can negatively impact upon health and wellbeing. Hence, identifying simple, digestible and cost effective strategies to improve the nutritional status in this population are needed. Nuts are a healthy high calorie food that contain healthy fats, protein and fibre and are reported to have multiple beneficial effects on health. Therefore, this study aims to test the efficacy and feasibility of supplementing the diet of older adults with an easy to spread nut butter on their nutritional status and health indicators. We hypothesise that nut butter will improve the nutritional status and health of older adults in an aged care facility. This will be the first study to examine the effects of nuts on malnutrition prevention in the elderly. The outcomes will provide insights on the effectiveness of a simple and practical nutritional strategy, which could be translated into practice in the future. This study will recruit older adults at the Percy Baxter Lodge at Mckeller Centre in Geelong. Students based in Geelong, or based in Burwood but willing to travel to Geelong for this project are encouraged to apply.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Ability to work with blood and/or muscle biopsy samples; Quantitative analysis (statistics);

## **Project number: FN\_10**

**Project title:** What drives engagement, satisfaction and performance in undergraduate nutrition students?

**Primary supervisor:** Dr Katherine Livingstone

**Phone:** +61 3 9244 5416

**Email:** k.livingstone@deakin.edu.au

**Co-supervisor/s:** Dr Catherine Milte

### **Supervisor profile**

Dr Katherine Livingstone is a lecturer and researcher in population nutrition within the School. She is unit chair or various undergraduate and postgraduate units, including HSN202 Lifespan Nutrition. She leads a research program to understand dietary and lifestyle behaviours of young adults and how these link with health outcomes. She has expertise in quantitative and qualitative research and has published over 45 peer-reviewed journal articles. Katherine is committed to developing the next generation of researchers and has experience supervising Honours and PhD students. The co-supervisor, Dr Catherine Milte, is a lecturer and researcher in nutrition sciences and has previously chaired HSN202. The student will gain experience with the collection, analysis and interpretation of qualitative and quantitative research that will be applicable to a wide range of future research projects. Given that both supervisors worked as research fellows prior to becoming lecturers, the student will receive mentoring in how to manage research projects and will have the opportunity to publish their research findings in a peer-reviewed journal.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Teaching and learning

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Background: Have you ever wondered if your learning experience could have been improved? This project will help answer that question. The undergraduate unit HSN202, Lifespan Nutrition, currently includes face-to-face classes and seminars that are supplemented by online reading. However which aspects of the learning materials students find most beneficial to their learning is unclear.

Aim: To evaluate the engagement, performance and satisfaction of undergraduate students enrolled in HSN202 in Trimester 2 2018.

Methodological approach: A study is currently underway in undergraduate students enrolled in HSN202 in Trimester 2 2018. Students are being asked about their engagement and satisfaction with their learning in an online survey. This Honours project will analyse the quantitative and qualitative data collected from this survey and will extend this project by performing qualitative interviews with the students. Findings will inform the design of a follow up survey in students enrolled in HSN202 in 2019. This project will have implications for how learning is designed within the School and Faculty of Health.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics); Qualitative analysis;

## **Project number: FN\_11**

**Project title:** A mobile health approach to improve diabetes in culturally and linguistically diverse populations

**Primary supervisor:** Professor Ralph Maddison

**Phone:** +613 9244 6218

**Email:** ralph.maddison@deakin.edu.au

**Co-supervisor/s:** Dr Shariful Islam

### **Supervisor profile**

Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at the Institute for Physical Activity and Nutrition (IPAN). He has developed a significant programme of innovative research, which leads the way in terms of the interventions and the methodologies used, exemplified through 1) the incorporation of leading edge technologies (e.g., mobile phones, wearable sensors, and video games) to trial interventions and measure outcomes; 2) robustly designed and conducted randomised controlled trials to Good Clinical Research Practice standards. Prof Maddison has substantial skills and experience in the design, development, management, analysis, interpretation and reporting of large-scale clinical trial studies.

Shariful Islam is a Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). His research focuses on using eHealth, wearable devices and innovative information technologies for prevention and management of chronic diseases. Shariful has supervised Doctor of Medicine and Masters students and has skills in research design and development, implementation, data analysis and reporting.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Physical activity; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Mobile phone health programs have shown to improve health outcomes and potential to reach a large section of the population with limited healthcare access. We have developed and evaluated a text messaging intervention (Self-Management Support for Blood Glucose; SMS4BG) to motivate and support a person to self-manage their diabetes. This project aims to 1) adapt the existing SMS4BG intervention for people with diabetes from culturally and linguistically diverse (CALD) backgrounds; 2) determine its feasibility and acceptability; and 3) evaluate the potential of the intervention for improving diabetes control. We will recruit 20 CALD adults aged 19-70 yrs with type 2 diabetes via diabetes outpatient clinics at Western Health, as well as targeted local communities. We will also recruit 10-12 diabetes educators, clinicians, and allied health professionals (e.g. dietitians) involved in clinical management. Participants will be presented with an outline of the existing SMS4BG program, module description and examples of messages. Using one-on-one or small group interviews we will assess participant's views on its appeal, feasibility and likelihood of use, and suggestions for improvement.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews;

## Project number: FN\_12

**Project title:** What Drives Snacking in Young Adults?

**Primary supervisor:** Professor Sarah McNaughton

**Phone:** +61 39251 7842

**Email:** sarah.mcnaughton@deakin.edu.au

**Co-supervisor/s:** Dr Rebecca Leech; Dr Katherine Livingstone

### Supervisor profile

Professor McNaughton is a public health nutritionist and Accredited Practising Dietitian in the Institute for Physical Activity and Nutrition (IPAN). Her current research interests focus on the assessment of eating patterns, dietary patterns, diet quality and indicators of a healthy diet and the impact of specific dietary patterns on chronic disease outcomes, particularly cardiovascular disease and type 2 diabetes.

Dr Rebecca Leech is a Registered Nutritionist and an Alfred Deakin Postdoctoral Research Fellow within IPAN. Her current research aims to understand determinants of food intake at eating occasions and the role of eating patterns in cardiometabolic health in adults.

Dr Katherine Livingstone is a lecturer and researcher in population nutrition within the School. She is unit chair or various undergraduate and postgraduate units, including HSN202 Lifespan Nutrition.

### Broad project topic area

Food and nutrition science; Public health nutrition;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus (Geelong Waurn Ponds campus by negotiation)

### Project description

Are we really products of our environment? To what extent do our surroundings impact on our food choices? Eating is a complex behaviour embedded in context. Social networks, activities while eating and food settings are likely to influence our food choices, yet the extent of their influence is poorly understood. Young adulthood is an important life transition period marked by poor dietary habits and excess weight gain. In 2011-12, just over one-third of young adults' total daily energy came from "discretionary" or "junk" foods. Evidence also suggests these foods are more likely to be eaten at snacks. Research examining the drivers of food choices at snacks in young adults is urgently needed.

This project will examine the food profiles of snacks across the day. Using "real-time" assessment of young adults' eating behaviours, this project will identify contextual factors associated with food choices at snacks. This project involves secondary analysis of data from the Meals in Every Day Life Study (MEALS). "Real-time" data on diet and context, collected using a Smartphone food diary will be analysed.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; This project will suit a student interested in understanding what factors shape eating behaviours.

### Skills specific to this project the student will develop

Quantitative analysis (statistics); Applicants will be given a unique opportunity to develop skills in analysing and interpreting dietary intake data. In an era where we are constantly collecting and analysing data to guide decision making and improve performance, these skills are highly sought after across a range of career settings.

## **Project number: FN\_13**

**Project title:** Barriers and facilitators for home monitoring and self-management in patients with heart failure.

**Primary supervisor:** Dr Shariful Islam

**Phone:** +61 3 9246 8393

**Email:** shariful.islam@deakin.edu.au

**Co-supervisor/s:** Professor Ralph Maddison; Dr Jonathan Rawstorn; Dr Susie Cartledge

### **Supervisor profile**

Shariful Islam is a Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). He is a Physician Scientist with a PhD and post doctorate in digital health. Shariful's research focuses on using eHealth, wearable devices and innovative information technologies for prevention and management of chronic diseases. He has experience in design and conduct of large-scale epidemiological studies, clinical trials and implementation research. He has published >60 peer-reviewed articles. Shariful currently supervises 7 Doctor of Medicine students at the University of Sydney and has supervised to completion 12 Masters students.

Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at IPAN. He has substantial skills and experience in the design, development, management, analysis, interpretation and reporting of large-scale clinical trial studies. Jonathan Rawstorn is a Research Fellow at IPAN. Jonathan has supervised Honours students and has skills in experimental design, systematic review/meta-analysis, and eHealth intervention design. Susie Cartledge is a Registered Nurse, specialising in cardiac care.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Physical activity; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Heart failure is one of the most challenging public health problem with increasing prevalence and burden on individuals, societies and health systems. Almost half of all heart failure patients are readmitted to hospital within 6 months after discharge. These patients receive little support at home after discharge from hospitals. Optimal self-management includes maintaining a healthy lifestyle, adhering to prescribed medications and monitoring symptoms, which are often difficult at home. Home monitoring has potential to improve self-management behaviours in heart failure patients. Despite this, little is known about patient and healthcare professionals' perspectives on the use of home monitoring technologies to support self-management behaviours in heart failure patients. This project aims to understand the barriers and facilitators of home monitoring and self-management in patients with heart failure. This will be a mixed method study. Quantitative data will be collected using a pre-developed questionnaire from patients and healthcare providers. Qualitative data will be collected from 10 healthcare providers and 20 patients using semi-structured interviews.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics); Qualitative analysis;

## **Project number: FN\_14**

**Project title:** Does short term overfeeding impair skeletal muscle and adipose tissue microvascular blood flow?

**Primary supervisor:** Dr Gunveen Kaur

**Phone:** 9246288

**Email:** Gunveen.Kaur@deakin.edu.au

**Co-supervisor/s:** Dr Lee Hamilton and A/Prof Michelle Keske

### **Supervisor profile**

Dr Gunveen Kaur is a lecturer within the School of Exercise and Nutrition Sciences. Her research is focused on understanding the role of omega-3 fatty acids in prevention or management of chronic diseases such as diabetes and cardiovascular disease. She is involved in areas of research that examine the link between dietary fat intake, metabolism, molecular biology and lifestyle diseases. Since joining Deakin in 2014, Dr Kaur has been successful in receiving \$37,000 in internal grant funding and has experience in honours supervision, dietary intervention studies, blood sample collection and lipid analysis techniques.

Dr Lee Hamilton's research program is focused on understanding the molecular processes by which exercise and nutrition alter whole body physiology. His research goal is to allow us to more effectively treat or manage diseases linked to poor lifestyle behaviours such as diabetes, dementia and sarcobesity.

A/Prof Michelle Keske's research focuses on the effect of nutritional interventions that can help prevent insulin resistance and type 2 diabetes by regulating microvascular blood flow within muscle and adipose. She has supervised 13 honours students to completion.

### **Broad project topic area**

Food and nutrition science;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Previous studies have shown that short term (3-7days) overfeeding (50%-70% more caloric intake) can lead to increased fasting glucose, impaired glucose tolerance, elevated circulating lipids as well as impaired insulin sensitivity. Researchers at Deakin University have established that blood flow plays an important role in glucose and lipid metabolism after a meal by improving the delivery of nutrients into tissues such as skeletal muscle and adipose tissue. This blood flow action after a meal is lost during insulin resistance and type 2 diabetes in animals and humans. However, it is not known if the impaired glucose tolerance and elevated circulating lipids induced by 'short term overfeeding' are linked to impaired microvascular blood flow in skeletal muscle and in adipose tissue. Therefore, the aim of this project is to investigate if 7 days of overfeeding (+50% of energy) leads to impaired microvascular blood flow in skeletal muscle and adipose tissue. This project will involve a human intervention trial, assessment of dietary intake, mixed meal tolerance, blood collection, body composition analysis and analysis of skeletal muscle and adipose tissue microvascular blood flow.

### **Skills/attributes required by the student**

An interest in nutrition, metabolism and/or biochemistry. All other skills will be taught as part of honours.

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: FN\_15**

**Project title:** Interactions of selenium with toxic metals: is there a link with age-associated cognitive decline?

**Primary supervisor:** Dr Barbara R Cardoso

**Phone:** 03 9246 8396

**Email:** barbara.r@deakin.edu.au

**Co-supervisor/s:** Dr Ewa Szymlek-Gay, Professor Robin Daly

### **Supervisor profile**

Dr Barbara Cardoso is a Postdoctoral Fellow at the School of Exercise and Nutrition Sciences / Institute for Physical Activity and Nutrition (IPAN). Her research focuses on micronutrients and neurodegenerative diseases, such as Alzheimer's and Parkinson's. Her research interests also lie in dietary strategies to prevent cognitive decline.

Dr Ewa Szymlek-Gay is a Senior Lecturer at the School of Exercise and Nutrition Sciences and a researcher at IPAN. Her research focuses on micronutrients and maternal and child health. Her main interests are in iron and zinc absorption, utilisation and requirements; the aetiology and functional consequences of iron and zinc deficiency in high-risk population groups; and strategies to enhance the content and bioavailability of iron and zinc in diets.

Professor Robin Daly has over 20 years of research experience evaluating the role of various dietary factors, such as vit D, protein and omega-3 fatty acids, supplements and exercise for preventing and managing chronic diseases (sarcopenia, type 2 diabetes, kidney disease, cancer, cognitive related disorders). He is particularly interested in the translation of evidence-based research into practice.

### **Broad project topic area**

Dietetics; Public health nutrition;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

With an increasingly aged population, cognitive impairment is a major health and social issue, as it negatively affects quality of life of older adults, and increases risk of dementia, illness and mortality. Hence, identifying contributors to age-related cognitive decline is paramount to propose efficient strategies to delay and prevent this issue. Exposure to toxic metals, such as mercury and lead, is suspected to result in neuropathology damage and cognitive impairment. On the other side, selenium is believed to have protective effects, as besides its known antioxidant role, it participates in detoxification of heavy metals. Although toxic metals are naturally occurring elements, human exposure has increased as a result of their use in several industrial, agricultural and domestic applications. Thus, this study aims to examine the association between mercury and lead, as well as their interaction with selenium, on age-associated cognitive decline. To accomplish the aim of this study, we will analyse a large dataset of non-institutionalised civilians in the US aged 60 years or over from the continuous National Health and Nutrition Examination Survey (NHANES 2011-2014). The project will result in a journal article.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: FN\_16**

**Project title:** Healthy and sustainable food - is it only for the wealthy?

**Primary supervisors:** Dr Rebecca Lindberg and Dr Georgie Russell

**Phone:** 03 9246 8947

**Email:** r.lindberg@deakin.edu.au; georgie.russell@deakin.edu.au

**Co-supervisor/s:**

### **Supervisor profile**

Dr Rebecca Lindberg is a Lecturer in Population Nutrition and a member of the Institute for Physical Activity and Nutrition. Her research interests include health inequities, sustainability and food waste, and food policy in the Australian context.

Dr Georgie Russell is a Lecturer in Food Innovation and a member of the Centre for Advanced Sensory Science. Her research examines how and why people make food choices, undertake particular food behaviours and eat particular foods/diets, across the lifespan.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Healthy and sustainable food systems are vital for human and planetary health. In Australia there is a socio-economic gradient in diet related nutrition behaviours. Organic food, growing your own food, and shopping at farmers markets are also behaviours more typical of high-income Australians. These trends suggest that consumers who have more disposable time and income, may be the more likely to adopt healthier greener diets. In order to create a more sustainable system, however, all consumers need to be moving towards better consumption. This study will examine the perspectives and behaviours of low and middle-income consumers, in regards to healthy and sustainable eating. The objectives are to: identify resilient behaviours that enable people on a low or middle-income to eat healthy and sustainable foods, and understand the trade-offs consumers make when purchasing, preparing and consuming food, in relation to price, convenience, nutrition and sustainability. Mixed-methods will be used, including focus groups and observational field-research, and secondary analysis of consumer purchasing data.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Qualitative analysis;

## **Project number: FN\_17**

**Project title:** Eating to cope with University: Exploring stress, emotions and food intakes in young adults

**Primary supervisor:** Georgie Russell

**Phone:** 03 9246 8503

**Email:** georgie.russell@deakin.edu.au

**Co-supervisor/s:** Anne Turner and Susan Torres

### **Supervisor profile**

Dr Georgie Russell is a Lecturer in Food Innovation and a member of the Centre for Advanced Sensory Science. Her research examines how and why people make food choices, undertake particular food behaviours and eat particular foods/diets, across the lifespan.

Dr Anne Turner is a member of the Institute for Physical Activity and Nutrition (IPAN) and the School of Exercise and Nutrition Sciences (SENS). Her research expertise is in the physiology and endocrinology of stress and the impact of stress on human health. Her research aim is to develop strategies to reduce responsiveness to stress and, as a consequence, to reduce progression to chronic disease.

Dr Susan Torres is an accredited practicing dietitian and senior lecturer in Nutrition in the School of Exercise and Nutrition Sciences. Her research assesses the relationship between dietary intake and mental health. Dr Torres has recently been investigating the effect of dietary and physical activity interventions on quality of life in older adults and relationships between diet and depressive symptoms in new mothers/pregnant women.

### **Broad project topic area**

Dietetics; Food and nutrition science; Sensory science; Public health nutrition; Biomechanics; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We all eat foods for many different reasons, and hunger is just one of these. Two of the factors influencing food choices and intakes are negative emotions (e.g. boredom, anxiety) and stress. Although negative emotions and stress are sometimes conflated, it is likely that they do not affect food choices and intakes in the same ways and this may be linked to individual differences in eating styles: whether individuals tend to over-eat or under-eat in response to negative emotions, or whether individuals tend to over-eat or under-eat in response to stress. University students are often placed in situations where they are likely to experience stress and/or negative emotions. This study will use a questionnaire to investigate the characteristics of emotional and stress based eaters within the Deakin student population, the factors that might explain their emotional or stress based eating, as well as the links between these eating styles and food choices and weight.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics);

## **Project number: FN\_18**

**Project title:** Do the stars align? Is marketing on food packages consistent with their health star rating?

**Primary supervisor:** Georgie Russell

**Phone:** 03 9246 8503

**Email:** georgie.russell@deakin.edu.au

**Co-supervisor/s:** Dr Julie Woods

### **Supervisor profile**

Dr Russell is a Lecturer in Food Innovation and a member of the Centre for Advanced Sensory Science. Her research examines how and why people make food choices, undertake particular food behaviours and eat particular foods/diets, across the lifespan. Georgie conducts research in consumer food behaviours, including the influence of food marketing and advertising on food choices and perceptions and implications of this for interventions and policy to promote healthy and sustainable food systems.

Dr Woods is a Senior Lecturer in Public Health Nutrition and is a member of the Institute for Physical Activity and Nutrition (IPAN) within the School of Exercise and Nutrition Sciences. Julie's primary research interests centre around food policy and regulation, specifically in relation to the food environment and its relationship with health. She has used the Mintel Database in recent years to examine the nutritional value of new food products, the contribution of vegetables and legumes to new products and how well the Health Star Rating differentiates five food group foods and discretionary foods.

### **Broad project topic area**

Food and nutrition science; Sensory science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The Health Star Rating (HSR) was introduced by the Australian Government in 2014 to help Australian consumers make healthier food choices amongst packaged, manufactured and processed foods. The HSR appears on the front of packaged food products as a star (ranging from 0.5-5 stars) with the message to consumers that "The more stars, the healthier the choice". However, packaged foods also carry a range of other attributes on their packets that may compete with the HSR message. For instance, marketing in the form of images of the product, ingredients, serving suggestions, celebrities, taste claims, colours and fonts all affect consumer perceptions and behaviours. These attributes are generally not regulated by the Government. This study will investigate the use of front of pack marketing and compare and contrast the type of marketing on products with a low HSR and those with a high HSR to determine whether front of pack marketing messages are supporting or undermining the HSR message to consumers and therefore the consumption of healthier diets.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in a sensory science; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## **Project number: FN\_19**

**Project title:** Evaluating the Health Star Rating system on its 5th anniversary against the Dietary Guidelines

**Primary supervisor:** Professor Mark Lawrence

**Phone:** 92443789

**Email:** lawrence@deakin.edu.au

**Co-supervisor/s:** Dr Julie Woods, Dr Phillip Baker

### **Supervisor profile**

Mark is a public health nutritionist with over 34 years experience in food policy. He is actively involved in policy research to promote healthy and sustainable food systems and critically analysing how evidence is used in informing Dietary Guidelines and interventions such as the health star rating system/reformulation. Mark has published over 80 scientific papers and is an investigator on research projects totalling over \$6million. He is an advisor to the WHO, the Chair of Advisory Board for Cochrane Nutrition Field, A member of the IUNS taskforce on sustainable diets, a Member of the FSANZ Board, and a former member of the NHMRC's Dietary Guidelines working committee. Over the past 5 years, 2 of his 5 Honours students have topped the Honours year at SENS.

Julie is a senior lecturer in public health nutrition with an interest in food policy, food regulation and food supply issues and their impact on food consumption. She is the Co-Convener of the Food and Nutrition Special Interest Group of the Public Health Association of Australia and is involved in a range of advocacy and research activities in relation to food policy and food supply.

### **Broad project topic area**

Dietetics; Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The Health Star Rating (HSR) system awards 'health' stars to foods based on their nutrient composition and in particular the salt, added sugar, saturated fat composition. However, the HSR system is a controversial intervention. While it is based on assessing the 'healthiness' of a food on a limited number of nutrients, the Dietary Guideline recommendations are based on evidence that is obtained from studying the relationships between total dietary patterns and health outcomes - because people eat whole foods and not individual nutrients. This project will involve extracting data from an extensive and up-to-date database of 10s of thousands of food products to analyse the profile of food products that display health stars against Dietary Guideline recommendations. The 5 year review of the HSR system will take place in 2019 and the evidence collected from this project will be relevant to that review. The project will build on the findings of an interim HSR monitoring project conducted in 2017 and which resulted in a highly cited publication. It is intended that the Honours student undertaking this research also will write up their research and submit to a science journal.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics); Qualitative analysis;

## **Project number: FN\_20**

**Project title:** Trends, patterns and drivers of global infant formula markets and implications for nutrition

**Primary supervisor:** Dr Phillip Baker

**Phone:** 03 924 68870

**Email:** phil.baker@deakin.edu.au

**Co-supervisor/s:** Dr Julie Woods, Prof Karen Campbell

### **Supervisor profile**

Dr Baker is a public health nutritionist based in the Institute for Physical Activity and Nutrition (IPAN) within the School of Exercise and Nutrition Sciences (SENS). His research focuses on understanding food systems and dietary change, and policies to prevent undernutrition, overweight and obesity, and diet-related diseases in Australia and internationally. He regularly consults to the World Health Organization, including an existing project on infant and young child nutrition. Dr Woods is a Senior Lecturer in Public Health Nutrition in SENS/IPAN. Julie's primary research interests centre around food policy and regulation, specifically in relation to the food environment and its relationship with health. Dr Karen Campbell is the Professor of Population Nutrition in SENS/IPAN. Her research focuses on supporting best health outcomes for parents and children across the first 1000 days of life.

### **Broad project topic area**

Public health nutrition; Health promotion; Infant and young child nutrition

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

A global infant and young child (IYC) dietary transition towards diets higher in milk-based formulas appears to be underway. This is especially so in the rapidly industrialising countries of Asia. In contrast, breastfeeding rates have improved only marginally in recent decades with reports of 'unprecedented declines' in breastfeeding throughout the region. These trends are concerning given the strong evidence that breastfeeding is important for IYC health and development, and for maternal health, in both developed and developing countries.

However, this IYC dietary transition is poorly understood. In what countries is change occurring most? What factors are driving the observed trends, patterns and variations? Using food supply and market sales data this project will quantify trends and patterns in infant, follow-up and toddler formula markets at global, regional and national levels. It will draw from existing literature to understand what's driving the observed changes. The project will use a method already developed by Dr Baker and use a newly available dataset. It will result in a journal article. For an example see: Baker P et al. (2016) Public Health Nutrition, 23:1-11

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member.

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics).

## **Project number: FN\_21**

**Project title:** Fat politics: a framing analysis of stakeholder submissions to the Senate Inquiry on Obesity

**Primary supervisor:** Dr Phillip Baker

**Phone:** +61 3 924 68870

**Email:** phil.baker@deakin.edu.au

**Co-supervisor/s:** Prof Mark Lawrence

### **Supervisor profile**

Phillip is a public health nutritionist. His research focuses on understanding food systems and dietary change, and policies to prevent undernutrition, overweight and obesity, and diet-related diseases in Australia and internationally. He has published in world-leading journals on these topics. He regularly consults to the World Health Organization on global nutrition topics. He is also a member of the Independent Expert Group of the Global Nutrition Report.

Mark is a public health nutritionist with over 34 years experience. He is actively involved in policy research to promote healthy and sustainable food systems and analysing how evidence is used in informing Dietary Guidelines and interventions. Mark has published over 80 scientific papers and is an investigator on research projects totalling >\$6million. He is an advisor to the WHO, the Chair of Advisory Board for Cochrane Nutrition Field, a member of the IUNS taskforce on sustainable diets, and a Member of the FSANZ Board.

### **Broad project topic area**

Public health nutrition; Health promotion; Food and nutrition policy

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Much like climate change, obesity is the topic of heated political debate, with wide ranging views about the nature of the problem. As a result, and despite its importance as a leading contributor to the burden of disease in Australia, policy responses have been weak. Is it a matter of 'individual responsibility' alone? Or are 'obesogenic environments' and 'junk food' companies to blame? Disagreement among stakeholders (e.g. food industry, public health advocates, academics) on these topics has the potential to undermine support for needed policy change.

This project will involve a qualitative analysis of Australian policy submissions about obesity. Using a qualitative framing analysis method it will determine how different stakeholders portray the causes of the problem, who or what is to blame for causing it, who should be responsible for addressing it, and what the solutions should be. It will involve an analysis of submissions to the recent Senate Select Committee Inquiry into the Obesity Epidemic in Australia. The results may help to inform strategic communications by public health advocates to generate support for policy intervention.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Ability to work as a team member.

### **Skills specific to this project the student will develop**

Qualitative analysis;

## **Project number: FN\_22**

**Project title:** Assessment of a Children's Vegetable and Fruit Education Program

**Primary supervisor:** Dr. Ramon Hall

**Phone:** 9246 8777

**Email:** ramon.hall@deakin.edu.au

**Co-supervisor/s:** Professor Tony Worsley

### **Supervisor profile**

Dr. Ramon Hall: Dairy and Food Industry Research Experience; Health Claim and Food Labelling; Regulatory Dossier Supporting Health and Nutrition Claims; Systematic Review and Meta-analyses; Food Safety and Toxicology; Nutrition and Dietary Intervention Studies; Nutritional Product Development and Nutritional Innovation.

Professor Tony Worsley: Tony Worsley is Professor of Behavioral Nutrition. His broad interests include nutrition education and food communication as well the study of consumers, food and nutrition behaviors. Recent research includes: examination of the food knowledge required by consumers, the influence of household food purchasing and consumption on obesity risk, consumers, use of food label information, population cooking skills, consumers, food and health concerns, secondary school food literacy education, and attitudes to food marketing in the Asia Pacific region.

### **Broad project topic area**

Dietetics; Food and nutrition science; Public health nutrition; Health promotion

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We already know that children aged between 6 to 12 years of age consume a large proportion of their energy requirements from discretionary foods. We are currently running a number of nutrition education initiatives with children aimed at reducing consumption of discretionary foods and increasing consumption of vegetables, fruits and other core nutrient dense foods from the dietary guidelines. This honours project is designed to help measure the effectiveness of one of these nutrition education initiatives by assessing nutrition knowledge and eating practices in children and their families before and after an educational intervention.

This project would conduct two tailored questionnaires on children and their parents before and after the nutrition education initiative to assess any changes in behavior and nutrition knowledge.

This project will provide valuable information to understand if our novel nutrition education is effective and may be useful for further application.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics; Interpersonal skills and ability to communicate directly with participants and other project contacts; Some understanding of survey design and children nutrition issues

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics)

## **Project number: FN\_23**

**Project title:** Use and Impact of Nutrition and Health Claims by the Beverage Industry

**Primary supervisor:** Dr. Ramon Hall

**Phone:** 9246 8777

**Email:** ramon.hall@deakin.edu.au

**Co-supervisor/s:** Professor Tony Worsley

### **Supervisor profile**

Dr. Ramon Hall: Dairy and Food Industry Research Experience; Health Claim and Food Labelling; Regulatory Dossier Supporting Health and Nutrition Claims; Systematic Review and Meta-analyses; Food Safety and Toxicology; Nutrition and Dietary Intervention Studies; Nutritional Product Development and Nutritional Innovation.

Professor Tony Worsley: Tony Worsley is Professor of Behavioural Nutrition. His broad interests include nutrition education and food communication as well the study of consumers, food and nutrition behaviours. Recent research includes: examination of the food knowledge required by consumers, the influence of household food purchasing and consumption on obesity risk, consumers, use of food label information, population cooking skills, consumers, food and health concerns, secondary school food literacy education, and attitudes to food marketing in the Asia Pacific region.

### **Broad project topic area**

Dietetics; Food and nutrition science; Public health nutrition;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We already know that large Fast Moving Consumer Goods (FMCG) Food Companies use health and nutrition claims to help sell their food products to consumers. This project is designed to investigate how effective nutrition and health claims are on influencing consumer purchasing behaviour and also gain insights into the types of information consumers would like to see.

Using selected nutrition and health claims that are on beverage products in Melbourne we will run a survey using a questionnaire within Qualtrix on a group of consumers to measure how these health and nutrition claims impact on consumer choice.

This project will provide valuable information to Government agencies trying to regulate the industry, consumers/consumer groups who may be confused with health and nutrition claims on products and provide guidance on the future use of health and nutrition claims for the food industry producing beverage products. The project will use information collected from products collected in supermarkets, as well as information sourced from the Mintel Database on new product launches.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Understanding of Nutrition and Health Claim requirements with the FSANZ Food Standards Code

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics)

## **Project number: FN\_24**

**Project title:** Does drinking coffee reduce liver fat in people with fatty liver disease?

**Primary supervisor:** Dr Elena George

**Phone:** 9246 8622

**Email:** elena.george@deakin.edu.au

**Co-supervisor/s:** Dr Claire Margerison, Brooke Chapman (Austin), A/Prof Paul Gow (Austin)

### **Supervisor profile**

Dr Elena George is an Accredited Practising Dietitian and Lecturer in Nutrition and Dietetics at Deakin University. Elena is interested in enhancing evidence based practice in dietetics through research. Her interests are in metabolic factors that contribute to chronic disease and dietary interventions for their prevention and management.

Dr Claire Margerison is an Accredited Practising Dietitian and Senior Lecturer in Dietetics. Claire has a strong interest in clinical dietetics and the use of research to answer clinical nutrition questions and the use of evidence based guidelines in clinical practice.

Brooke Chapman is a senior clinical dietitian in the Liver Transplant Unit at Austin Health. She is experienced in the nutritional management of all aspects of liver disease and transplant, is active in clinical research and has presented widely on these topics.

A/Prof Paul Gow is the Deputy Director of Gastroenterology and a Senior Liver Transplant Physician at Austin Health. His main research interests include post liver transplant renal impairment, testosterone therapy in advanced liver disease and innate immunity in advanced liver failure and after transplantation.

### **Broad project topic area**

Dietetics;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Predominantly based Austin Hospital Heidelberg

### **Project description**

Non-alcoholic fatty liver disease (NAFLD) is the most common liver disease worldwide. Diet and lifestyle modifications to induce weight loss remain the cornerstone of management, but are difficult to achieve and maintain. Recent data demonstrate an inverse relationship between coffee consumption and prevalence of NAFLD but no prospective studies have attempted to treat NAFLD with coffee. This study will build upon results of a recent pilot trial conducted at Austin Health and aims to confirm whether moderate coffee consumption reduces steatosis, inflammatory markers and insulin sensitivity in patients with NAFLD. Non-coffee drinkers with NAFLD will be randomised to either coffee plus diet advice, or diet advice-alone for 12 weeks. All participants will receive nutrition advice regarding a healthy diet, and the intervention group will also be required to drink 3 cups of coffee each day. The primary outcome measure is change in liver fat infiltration from baseline to week 12 as measured by MRI spectroscopy. Secondary outcomes will include change in anthropometry (weight, BMI, waist circumference), biochemistry (liver function, metabolic and inflammatory markers), and ultrasound.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks; Availability on Wednesdays

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics);

## Project number: FN\_25

**Project title:** Diet, physical activity and metabolic risk factors in patients with liver cancer.

**Primary supervisor:** Dr Elena George

**Phone:** 924 68622

**Email:** elena.george@deakin.edu.au

**Co-supervisor/s:** Prof Rob Daly, A/Prof Amanda Nicoll (Eastern Health), Dr Stephen Bloom (Eastern Health)

### Supervisor profile

Dr Elena George is an Accredited Practising Dietitian and Lecturer in Nutrition and Dietetics at Deakin University. Elena is interested in enhancing evidence based practice in dietetics through research. Her interests are in metabolic factors that contribute to chronic disease and dietary interventions for their prevention and management.

Professor Robin Daly holds the position of Chair in Exercise and Ageing within the Institute for Physical Activity and Nutrition. He conducts clinical and translational research that focuses on the integration of exercise and nutritional approaches to prevent and manage common chronic diseases, particularly musculoskeletal conditions, type 2 diabetes, certain cancers and cognitive related disorders.

A/Professor Nicoll is the director of Gastroenterology and Hepatology at Eastern Health. She is a member of the Australian Liver Association, and in this role has played an integral part in developing a document for the Chief Medical Officer and Health Department on the burden of chronic liver disease in Australia. She is also an active member of the Melbourne Liver Group and established the Melbourne liver group hepatocellular carcinoma network.

### Broad project topic area

Dietetics; Physical activity;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Eastern Health (Box Hill)

### Project description

Hepatocellular carcinoma (HCC) represents the fifth most common cancer in men and the seventh in women. We are increasingly seeing HCC in fatty liver, and may be (over 20%) in patients without cirrhosis. This makes it difficult to screen for this cancer to identify it at an early enough stage for curative therapy. Also, the role of insulin resistance and lifestyle in the natural history of HCC and its effect on the management are not known.

**Aim:** To prospectively characterise the metabolic properties and lifestyle (diet and physical activity) of patients presenting with HCC with regard to the prevalence of insulin resistance.

This is a prospective cohort study of patients with HCC. Patients will be recruited from the HCC MDM and HCC clinic. They will be invited to fill out dietary information, weight information (eg previous and current history of being overweight or obese), and give a blood sample for insulin, glucose, etc. Their BMI, waist circumference and waist:hip ratio, body fat, anthropometry will be recorded. They will also be assessed for sarcopenia. This will be a descriptive analysis of the cohort to advice future prospective studies.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks; Eastern Health (Box Hill)

### Skills specific to this project the student will develop

Recruitment of participants; Ability to conduct interviews; Quantitative analysis (statistics);

## Project number: FN\_26

**Project title:** What is the nutrition status of patients with amyloidosis?

**Primary supervisor:** Dr Elena George

**Phone:** 924 68622

**Email:** elena.george@deakin.edu.au

**Co-supervisor/s:** Dr Claire Margerison, Dr Ola Niewiadomski (Eastern Health), Dr Simon Gibbs (Eastern Health)

### Supervisor profile

Dr Elena George is an Accredited Practising Dietitian and Lecturer in Nutrition and Dietetics at Deakin University. Elena is interested in enhancing evidence based practice in dietetics through research. Her interests are in metabolic factors that contribute to chronic disease and dietary interventions for their management.

Dr Claire Margerison is an Accredited Practising Dietitian and Senior Lecturer in Dietetics. Claire has a strong interest in clinical dietetics and the use of research to answer clinical nutrition questions and the use of evidence based guidelines.

Dr Ola Niewiadomski is a Gastroenterologist at Eastern Health she completed a fellowship in Inflammatory Bowel Disease (IBD) as well as Parenteral Nutrition . Her PhD focused on the natural history and disease progression in IBD. She is part of the Nutrition Gastroenterology team at Eastern Health.

Dr Gibbs is a specialist haematologist with experience in the diagnosis and treatment of a wide range of malignant and benign haematological disorders. His research experience and interest in the diagnosis and treatment of multiple myeloma, all forms of amyloidosis, and monoclonal immunoglobulin deposition disease.

### Broad project topic area

Dietetics;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Eastern Health (Box Hill)

### Project description

Amyloidosis, in particular the most common sub-type of light chain (AL), is frequently associated with malnutrition. Nutrition status has been shown to be strong predictor of survival in patients with AL, with a reduced survival in those that are malnourished. The aetiology of malnutrition is likely multifactorial, including poor oral intake and the impact of gastrointestinal manifestation of the AL (which can include slowed motility, malabsorption and bleeding). A high hepatic load of amyloid is frequently associated with worse nutritional outcomes. It remains unclear if the nutritional impact is directly related liver disease or rather it's due to overall high disease burden.

There is a lack of prospective data available to explore some of these issues, including if nutritional intervention has a beneficial impact on patient outcomes such as mortality, morbidity and quality of life (QOL).

This prospective cross sectional study aims to:

- 1) Assess the nutritional status of patients suffering from amyloidosis and assessing risk of malnutrition with disease factors
- 2) Measure hepatic disease burden with biochemical markers and fibroscan, and correlating with risk of malnutrition.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### Skills specific to this project the student will develop

Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics);

## **Project number: FN\_27**

**Project title:** Relationship between dietary intake and sleep in elite Australian female football players

**Primary supervisor:** Dr Dominique Condo

**Phone:** 03 9244 5487

**Email:** dominique.condo@deakin.edu.au

**Co-supervisor/s:** A/Prof Brad Aisbett

### **Supervisor profile**

Dr Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dr Condo is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in team sports. Her current interests include energy availability in female athletes and the relationship between diet and sleep in athletes.

A/Prof Brad Aisbett is the Associate Head of School for Teaching and Learning in Exercise Science. As one of Australia's foremost experts on how the interactions between sleep, work and exercise impact human performance, he has worked with civilian and military emergency services and national sporting teams. His research has been published internationally and featured on national television and radio programs. In past 10 years, he has supervised twelve honours students through to completion, with many of these students receiving research awards from within and outside the university.

### **Broad project topic area**

Dietetics; Sports nutrition; Exercise physiology;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The importance of sleep in elite athletes is well well-documented, given its wide-ranging benefits for cognition, physical health, emotional well-being, and mental health. Dietary composition, hydration, and meal timing are thought to influence sleep quantity and quality, yet there is limited evidence to confirm whether these and other dietary factors affect sleep, particularly in females. Further research is needed to prescribe more precise recommendations for controlling diet to improve female athletes' sleep which will, in turn, improve their recovery to optimise sporting performance. The aim of the proposed study is to build on a previous study in male AFL players and further investigate whether there are interactions between dietary intake and sleep characteristics in elite female Australian football players. This information will help guide future group and individual sleep education programs for individual and team sport athletes.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## Project number: FN\_28

**Project title:** The McDonaldization of the world: A global analysis of the growth of fast food chains and impacts

**Primary supervisor:** Dr Phillip Baker

**Phone:** 03 924 68870

**Email:** phil.baker@deakin.edu.au

**Co-supervisor/s:** Professor Mark Lawrence

### Supervisor profile

Phillip is a public health nutritionist. His research focuses on understanding food systems and dietary change, and policies to prevent undernutrition, overweight and obesity, and diet-related diseases in Australia and internationally. He has published in world-leading journals on these topics. He regularly consults to the World Health Organization on global nutrition topics. He is also a member of the Independent Expert Group of the Global Nutrition Report.

Mark is a public health nutritionist with over 34 years experience. He is actively involved in policy research to promote healthy and sustainable food systems and analysing how evidence is used in informing Dietary Guidelines and interventions. Mark has published over 80 scientific papers and is an investigator on research projects totalling >\$6million. He is an advisor to the WHO, the Chair of Advisory Board for Cochrane Nutrition Field, a member of the IUNS taskforce on sustainable diets, and a Member of the FSANZ Board.

### Broad project topic area

Public health nutrition; Health promotion; International nutrition

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

A nutrition transition towards diets higher in energy-dense ultra-processed foods and drinks is underway globally. Dietary change is most evident in the industrialising countries of Asia, Latin America and Africa. What role does the fast food industry play in this transition? To what extent are fast food companies establishing in developing countries? Surprisingly, very few studies have explored trends and patterns of worldwide fast food industry change. This project will involve a quantitative analysis of worldwide growth, trends and patterns in the establishment of fast food chain outlets in different countries and regions. It will further examine changes in the volumes of ultra-processed foods and drinks distributed through fast food chains. This research will help to inform our understanding of how consumer food environments are changing globally, and the implications for nutrition and health.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member.

### Skills specific to this project the student will develop

Quantitative analysis (statistics);

## **Project number: FN\_29**

**Project title:** One size doesn't fit all: assessing variation in consumer preferences for cardiac rehabilitation

**Primary supervisor:** Dr Jonathan Rawstorn

**Phone:** 92468461

**Email:** jonathan.rawstorn@deakin.edu.au

**Co-supervisor/s:** Prof Ralph Maddison, Prof Chris Dubelaar, Dr Susie Cartledge

### **Supervisor profile**

Jonathan is an exercise/behavioural scientist at the Institute for Physical Activity and Nutrition (IPAN). His research uses novel technologies to enhance exercise & lifestyle programmes for people with heart disease. His research skills include intervention design/evaluation, validation studies, & systematic reviews/meta-analysis.

Ralph is a behavioural scientist & Professor of Physical Activity & Disease Prevention at IPAN. His research skills include design/evaluation of health-tech interventions for heart disease.

Chris is a Professor of Marketing at Deakin Business School. His research skills include quantitative analysis of consumer behaviour/preferences.

Susie is a registered nurse, specialising in cardiac care. Her research investigates novel education and disease prevention interventions for people with heart disease.

This experienced supervisory team will help students to develop skills reviewing/critiquing literature and collecting/analysing/interpreting data, with the aim of producing a scientific publication.

### **Broad project topic area**

Public health nutrition; Cardiac rehabilitation

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Cardiac rehabilitation (CR) is a critical part of coronary heart disease (CHD) secondary prevention that has numerous benefits, but only ~30% of people attend. Many people cannot access traditional programmes in hospitals/rehabilitation centres, particularly in regional/rural areas. We need to improve CR accessibility but don't understand how to design new delivery models that will satisfy the unmet needs of people who don't benefit from traditional CR. This project will apply an innovative quantitative consumer science research approach to understand peoples' CR preferences. The study will involve the development/conduct of a web-based discrete choice experiment, and quantitative class-based analysis to identify participant preferences across CHD population sub-groups. Findings will help us 1) design new CR delivery models that are tailored to the preferences of specific CHD population sub-groups, and 2) match people to CR programmes that will most likely satisfy their preferences. The project can be tailored for exercise/sport science and nutrition science students, and for students living/based in different locations. Please contact us to discuss options.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS);

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); scientific writing and preparation of a scientific paper

## Project number: FN\_30

**Project title:** Sugar reduction in processed and packaged foods: how are food companies approaching the challenge?

**Primary supervisor:** Dr Shirani Gamlath

**Phone:** 92517267

**Email:** shirani.gamlath@deakin.edu.au

**Co-supervisor/s:** Dr Georgie Russell

### Supervisor profile

Dr Shirani Gamlath and Dr Georgie Russell are Lecturers in Food Innovation and members of the Centre for Advanced Sensory Science.

Dr Shirani Gamlath has established a research program on use of bioactive/functional ingredients in designing sustainable and healthy products. Her current research focusses on application of fat and sugar replacers to reduce the energy density and enhancing the protein, fibre and bioactive components in processed foods. Shirani also investigates the changes in sensory perception and physico-chemical properties of structure modified foods.

Dr Georgie Russell examines how and why people make food choices, undertake particular food behaviours and eat particular foods/diets, across the lifespan. Georgie conducts research in consumer food science, including the influence of food marketing and advertising on food choices and perceptions and implications of this for interventions and policy to promote healthy and sustainable food systems. Georgie's research also investigates how psychological and social factors interact with biological factors to provide insights into the mechanisms and processes underlying food behaviours and food intakes.

### Broad project topic area

Food and nutrition science; Sensory science;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Many Australian consumers are attempting to reduce sugar their consumption. However, central to the diets of many Australians are packaged and processed foods, which are often higher than unprocessed foods in unfavourable nutrients such as (added) sugar. Reformulating packaged foods to reduce nutrients such as added sugar is one strategy likely to have significant impacts on improving the diets and health of Australian consumers. However, consumers also demand that processed and packaged foods meet expectations and overall liking. This necessitates the use of clever formulation strategies to reduce added sugar but maintaining consumer satisfaction. This project will examine the strategies currently being used by food manufacturers to reduce added sugar in products (e.g. in "low sugar" variants), including an analysis of ingredients and formulation changes (e.g. whether sugar replacers are used and/or whether other ingredients such as fat are substituted) by utilising the MINTEL Global New Products Database. This analysis will provide insights into whether lower sugar products are likely to be healthier overall, and also provide information to inform future reformulation strategies.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Knowledge and background in a sensory science; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts;

### Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics);

## **Project number: FN\_31**

**Project title:** Do menus in Victorian Long Day Care Centres meet the recommended menu planning guidelines?

**Primary supervisor:** Penny Love

**Phone:** 5227 8484

**Email:** penny.love@deakin.edu.au

**Co-supervisor/s:** Prof Karen Campbell; Dr Alison Spence

### **Supervisor profile**

Dr Penny Love is an Accredited Practicing Dietitian and a postdoctoral research fellow in IPAN conducting translational research within the Early Prevention of Obesity in Childhood, Centre for Research Excellence (EPOCH-CRE). The focus of her research is identifying and addressing research-practice gaps for the implementation of childhood obesity prevention interventions at scale.

Prof Karen Campbell is Deputy Director of the CRE, with a well-developed profile nationally and internationally for her work in the area of childhood obesity prevention.

Dr Alison Spence is a Senior Lecturer in Nutrition and Population Health, co-ordinator of Community Nutrition within Deakin's Masters of Dietetics course, and an Accredited Practicing Dietitian. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, parental modelling and feeding practices, and family meals.

### **Broad project topic area**

Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurn Ponds campus

### **Project description**

Foods served in long day care services (LDCs) provide a significant proportion of the dietary intakes of young children, and offer great potential for nutrition promotion. This project will be the first research to explore menu compliance of Victorian long day care services (LDCs) with the Victorian menu planning guidelines for LDCs and the national Get Up & Grow guidelines. This project forms part of a larger study investigating appropriate support strategies to assist Victorian LDCs in embedding the onsite provision of healthy food as routine practice. This project will involve the analysis of a sample of 2-week menus and relevant recipes provided by LDCs, using the recently developed Victorian online menu review tool (FoodChecker) and FoodWorks to determine compliance with recommended menu planning guidelines and specific nutritional requirements, respectively. Analysis of menu compliance data will explore associations between socio-economic position, and urban, regional and rural geographic location. This project will inform the work of the Healthy Eating Advisory Service at Nutrition Australia Victoria, and may offer opportunity for interaction with that service.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; interest in childhood nutrition and/or public health nutrition; attention to detail

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Qualitative analysis; translational research skills; in-depth knowledge of nutrition within the early childhood education and care setting in Victoria

## **Project number: FN\_32**

**Project title:** What support do Day Care Centres need and use to improve the nutritional quality of foods served?

**Primary supervisor:** Penny Love

**Phone:** 5227 8484

**Email:** penny.love@deakin.edu.au

**Co-supervisor/s:** Prof Karen Campbell; Dr Alison Spence

### **Supervisor profile**

Dr Penny Love is an Accredited Practising Dietitian and is a postdoctoral research fellow in IPAN conducting translational research within the Early Prevention of Obesity in Childhood, Centre for Research Excellence (EPOCH-CRE). The focus of her research is identifying and addressing research-practice gaps for the implementation of childhood obesity prevention interventions at scale.

Prof Karen Campbell is Deputy Director of the CRE, with a well-developed profile nationally and internationally for her work in the area of childhood obesity prevention.

Dr Alison Spence is a Senior Lecturer in Nutrition and Population Health, co-ordinator of Community Nutrition within Deakin's Masters of Dietetics course, and an Accredited Practising Dietitian. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, parental modelling and feeding practices, and family meals.

### **Broad project topic area**

Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurn Ponds campus

### **Project description**

This project will explore access to and usage of support strategies as a predictor of menu compliance of Victorian long day care services (LDCs) with the Victorian menu planning guidelines for LDCs. This project forms part of a larger study investigating appropriate support strategies to assist Victorian LDCs in embedding the onsite provision of healthy food as routine practice. This project will involve the analysis of an existing dataset of online survey responses provided by LDCs regarding awareness of, access to and usage of support strategies. Findings will be interpreted against existing menu compliance data for these LDCs. This project will provide valuable insights into practical ways to work with and support LDCs in improving the quality of their menus, and aims to inform the work of the Healthy Eating Advisory Service at Nutrition Australia, Victoria. This project may therefore offer opportunities to interaction with this agency.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; interest in childhood nutrition and/or public health nutrition; attention to detail

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Qualitative analysis; translational research skills; in-depth knowledge of nutrition within the early childhood education and care setting in Victoria

## Project number: FN\_33

**Project title:** What do we know about diet and lifestyle patterns and health as we age?

**Primary supervisor:** Dr Catherine Milte

**Phone:** +61 3 92468280

**Email:** catherine.milte@deakin.edu.au

**Co-supervisor/s:** Prof Sarah McNaughton

### Supervisor profile

Dr Catherine Milte is a Lecturer in Nutritional Sciences. Her research focuses on understanding dietary patterns, and investigating how consuming a healthy diet can protect against chronic disease, mental illness and dementia in older age.

This project will be co-supervised by Professor Sarah McNaughton who is the Discipline Leader for Dietetics and a NHMRC Career Development Fellow in Nutritional Epidemiology.

During the honours year with Dr Milte and Prof McNaughton the student will develop:

- in-depth knowledge and understanding of nutrition and health concerns in the ageing population
- skills in analysing, presenting and interpreting population-based health data, particularly dietary intake data.
- skills in use of statistical analysis software
- an understanding of the conduct of epidemiological studies and the generation of new nutrition knowledge

### Broad project topic area

Food and nutrition science; Public health nutrition;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

With Australia's increasing older population, maintenance of health in older age is important for public health intervention. Consumption of a healthy diet may reduce the risk of poor health and chronic disease in older age.

Potential research projects include:

- Examining influences of retirement on diet and lifestyle behaviours
- Examining associations between lifestyle behaviours, physical and mental health, such as overweight and obesity, depression and cognitive function
- Examining mechanisms behind relationships between diet and health in older adults

This project involves secondary analysis of data collected from the Wellbeing, Eating and Exercise for a Long Life (WELL) study, a longitudinal cohort study of 4082 adults aged 55-65 years living in Victoria recruited in 2010. Self-report questionnaires were used to collect information on lifestyle behaviours and health status in 2010, 2012 and 2014. Blood samples were collected in 2012 for assessment of cardio metabolic biomarkers and cellular ageing. Information on depression and cognitive function were also collected in 2014. Analysis approach will be determined depending on the potential project and student's interests.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### Skills specific to this project the student will develop

Quantitative analysis (statistics);

## **Project number: FN\_34**

**Project title:** How do substantiated and spurious environmental and health marketing messages influence consumers?

**Primary supervisor:** Georgie Russell

**Phone:** 03 9246 8503

**Email:** georgie.russell@deakin.edu.au

**Co-supervisor/s:** Dr Gie Liem

### **Supervisor profile**

Dr Georgie Russell is a Lecturer in Food Innovation and a member of the Centre for Advanced Sensory Science. Her research examines how and why people make food choices, undertake particular food behaviours and eat particular foods/diets, across the lifespan. Georgie conducts research in consumer food behaviours, including the influence of food marketing and advertising on food choices and perceptions and implications of this for interventions and policy to promote healthy and sustainable food systems. Georgie's research also investigates how psychological and social factors interact with biological factors to provide insights into the mechanisms and processes underlying food behaviours and intakes, and consequently helps to identify opportunities for helping people have healthier and happier lives.

Dr Gie Liem is a senior lecturer and member of the Centre for Advanced Sensory Science. Gie's research is in sensory marketing. His research has investigated how various packaging labels influence consumer perceptions and behaviours.

### **Broad project topic area**

Food and nutrition science; Sensory science; Public health nutrition; Consumer science

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Many consumers are demanding products that are better for them and/or better for the environment. Manufacturers of processed and packaged foods are responding to this consumer trend in a number of ways including how they communicate with consumers about their health or environmental credentials on the front of food packs. These messages vary in their accuracy and credibility, and many are not regulated by Governments. However, regardless of their accuracy, they are likely to influence consumers in a range of ways including perceptions of the food's health and environmental benefits, but also other attributes such as taste and liking. This study will investigate the impact of substantiated and spurious pro-health and pro-environmental packaging messages on a range of consumer perceptions of an ambiguous food product. The study will also explore how different consumers respond to these marketing messages depending upon whether the claims are congruent or in-congruent with their personal goals (e.g. whether they are concerned about the environment or health).

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in a sensory science; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Sensory and consumer testing skills

## Project number: FN\_35

**Project title:** Do young children eat differently on weekends compared to weekdays? Informing nutrition promotion

**Primary supervisor:** Dr Alison Spence

**Phone:** 9244 5481

**Email:** a.spence@deakin.edu.au

**Co-supervisor/s:** Dr Jazzmin Zheng, Dr Katie Lacy

### Supervisor profile

Dr Alison Spence is a Senior Lecturer in Nutrition and Population Health, co-ordinator of Community Nutrition within Deakin's Masters of Dietetics course, and an Accredited Practising Dietitian. She has a passion for promoting the nutrition and health of young children and their families. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, parental modelling and feeding practices, and family meals.

Dr Jazzmin Zheng is an NHMRC Early Career Research Fellow and a nutrition epidemiologist with research interests in the role of dietary, environmental and behavioural factors in the development of obesity and chronic diseases in childhood and adulthood.

Dr Katie Lacy is a Senior Lecturer in Nutritional Science, with a research focus on preventing child and adolescent obesity through good nutrition. She is committed to promoting evidence-based strategies for moderating energy intake to children, adolescents and their parents.

### Broad project topic area

Dietetics; Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Understanding whether children eat less healthily on weekends may help inform nutrition messages for parents, and public health approaches to improve young children's nutrition. This project will involve secondary analysis using data from the Melbourne InFANT Program, which was a novel health promotion trial conducted from 2008-13. Dietary data (one weekend day and two week days per child) is available for 300-500 children at ages 9 months, 1.5 years, 3.5 years and 5 years. This is the only Australian study with multiple 24 hour diet recall data available for children under two years of age, representing a unique opportunity to investigate intakes in this age group. Using this data, a comparison of food group intakes to dietary guidelines was published in 2018 and reported in newspapers nationally (<https://www.smh.com.au/national/australian-toddlers-aren-t-eating-enough-healthy-food-20180311-p4z3ul.html>). The student project will build on that work by specifically investigating whether and how intakes of food groups and energy differ between weekdays and weekend days. Depending on the student's interests, analyses could also include assessment of socioeconomic differences.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member; Interest in childhood nutrition, completed at least one unit related to public health nutrition (e.g. HSN302 or HSN210), high attention to detail

### Skills specific to this project the student will develop

Quantitative analysis (statistics); In-depth knowledge of early childhood nutrition and skills in analysing, interpreting and presenting dietary intake data in a way which informs health professionals and researchers

## Project number: FN\_36

**Project title:** What foods do Australian toddlers eat most?

**Primary supervisor:** Dr Alison Spence

**Phone:** 9244 5481

**Email:** a.spence@deakin.edu.au

**Co-supervisor/s:** Dr Jazzmin Zheng, Dr Katie Lacy

### Supervisor profile

Dr Alison Spence is a Senior Lecturer in Nutrition and Population Health, co-ordinator of Community Nutrition within Deakin's Masters of Dietetics course, and an Accredited Practising Dietitian. She has a passion for promoting the nutrition and health of young children and their families. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, parental modelling and feeding practices, and family meals.

Dr Jazzmin Zheng is an NHMRC Early Career Research Fellow and a nutrition epidemiologist with research interests in the role of dietary, environmental and behavioural factors in the development of obesity and chronic diseases in childhood and adulthood.

Dr Katie Lacy is a Senior Lecturer in Nutritional Science, with a research focus on preventing child and adolescent obesity through good nutrition. She is committed to promoting evidence-based strategies for moderating energy intake to children, adolescents and their parents.

### Broad project topic area

Dietetics; Food and nutrition science; Public health nutrition; Health promotion;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

This project will examine the main foods consumed within each of the food groups, and the main food sources of energy and other key nutrients, in the diets of young children in Australia. Specifically, this project will involve secondary analysis using data from the Melbourne InFANT Program, which was a novel health promotion trial conducted from 2008-13. Dietary data is available for 300-500 children at ages 9 months, 1.5 years, 3.5 years and 5 years. This is the only Australian study with multiple 24 hour diet recall data available for children under two years of age, representing a unique opportunity to investigate intakes in this age group.

Using this data, a comparison of food group intakes to dietary guidelines was published in 2018 and reported in newspapers nationally (<https://www.smh.com.au/national/australian-toddlers-aren-t-eating-enough-healthy-food-20180311-p4z3ul.html>). The student project will build on that work by investigating the main food sources consumed within each of the food groups, in addition to food sources of other key nutrients. Depending on the student's interests, analyses could also include assessment of socioeconomic differences.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member; Interest in childhood nutrition, completed at least one unit related to public health nutrition (e.g. HSN302 or HSN210), high attention to detail.

### Skills specific to this project the student will develop

Quantitative analysis (statistics); In-depth knowledge of early childhood nutrition and skills in analysing, interpreting and presenting dietary intake data in a way which informs health professionals and researchers.

## **Project number: FN\_37**

**Project title:** Too much salt is making us fat: The role of cortisol

**Primary supervisor:** Dr Anne Turner

**Phone:** 9244 6950

**Email:** anne.turner@deakin.edu.au

**Co-supervisor/s:** Dr Susan Torres and Associate Professor Michelle Keske

### **Supervisor profile**

Between them, the supervisory team are well versed in all aspects of this research and are well positioned to train the student in a broad range of research skills.

Dr Anne Turner's research expertise is in the physiology and endocrinology of stress and its impact on human health. In particular, she is interested in factors that influence hypothalamo-pituitary adrenal axis and sympatho-adrenal medullary system responses to stress. She has a long-term interest in cortisol and its effect on human health and wellbeing.

Dr Susan Torres is an Accredited Practising Dietitian and Senior Lecturer in Nutrition. She has conducted dietary intervention studies in humans investigating the effect of salt reduction on cortisol, blood pressure and mood. She has also investigated cortisol responses to food intake and acute stress in human models examining the effect of fitness and body weight.

Associate Professor Keske has been a dedicated researcher in the fields of diabetes and cardiovascular disease for the past 15 years. Her research focuses on the effect of pharmacological and nutritional interventions that can help prevent insulin resistance and type 2 diabetes.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Biomedicine;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Independent of total energy intake, people with high salt intake have higher prevalence of obesity. People with higher salt intake also produce more cortisol. Animal studies show an increase in cortisol production in visceral fat when salt intake is high. Cortisol acts locally in visceral fat to increase fat accumulation. Consequently, we propose that cortisol is the link between high salt intake and obesity. We aim to demonstrate an acute cortisol response to ingestion of a single high-salt meal in healthy human adults. In a randomised cross-over design, healthy human adult volunteers will ingest a high-salt soup and a low-salt soup. Saliva and urine samples will be collected every 20 minutes from 1 hour before to 3 hours after ingestion of soup. We will measure salivary and urinary cortisol by enzyme immunoassay. Findings will help define the relationship between high salt intake, cortisol production and obesity and help us determine if reducing salt intake should be part of dietary advice in weight loss programs. From a public policy perspective, this research is expected to strengthen the case for food reformulation efforts to reduce salt in the food supply.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: FN\_38**

**Project title:** Seeing is believing: what are people with heart failure eating?

**Primary supervisor:** Dr Susie Cartledge

**Phone:** 92446667

**Email:** susie.cartledge@deakin.edu.au

**Co-supervisor/s:** Dr Elena George, Professor Ralph Maddison, Professor Andrea Driscoll, Dr Shariful Islam

### **Supervisor profile**

Dr Susie Cartledge is a Registered Nurse, specialising in cardiac care. Susie has a passion for researching novel solutions using mobile health for people with cardiovascular disease both to aid patient education and disease prevention. This project will allow students the opportunity to work alongside Susie and Dr Elena George, an Accredited Practising Dietician who has an interest in dietary patterns and their practical application for the prevention and management of chronic diseases. In addition, Professor Ralph Maddison brings mobile health expertise, Professor Andrea Driscoll brings clinical heart failure knowledge and Dr Shariful Islam will provide cardiology input. A student who undertakes this project will develop skills in using data from wearable cameras, rapid image review, and data synthesis with the aim to produce a scientific publication.

### **Broad project topic area**

Food and nutrition science; Public health nutrition; Health promotion; technology (lifelogging, wearable cameras)

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Nutrition is a critical component of chronic disease management. The use of technology offers opportunities to objectively assess nutrition and dietary patterns in people with chronic disease. We have tested the feasibility of using images captured by wearable cameras (known as 'lifelogging') to assist in objectively identifying and describing nutrition behaviours in this population.

This project would consist of using our database of lifelogging images to describe nutrition patterns in a heart failure population regarding: dietary patterns, dietary intake (including assessing packaging and serving size), meal preparation and other variables. The scope of this project is broad but could include a student designing a coding framework to better evaluate and assess nutrition related images from lifelogging data.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to trial new software techniques

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics); Coding framework development, data synthesis, scientific writing and preparation of paper

## **Project number: FN\_39**

**Project title:** Influence of food matrix on leucine amino acid absorption patterns in athletes

**Primary supervisor:** Dr Ramon Hall

**Phone:** 9246 8777

**Email:** ramon.hall@deakin.edu.au

**Co-supervisor/s:** Dr Rhiannon Snipe

### **Supervisor profile**

Dr Ramon Hall: Nutrition and Dietary Intervention Studies; Dairy and Food Industry Research Experience; Regulatory Dossiers Supporting Health and Nutrition Claims; Systematic Review and Meta-analyses; Nutritional Product Development and Nutritional Innovation.

Dr Rhiannon Snipe has research experience in sports nutrition, exercise gastroenterology and exercise physiology, including thermoregulation and sex differences.

### **Broad project topic area**

Dietetics; Food and nutrition science; Sports nutrition; Applied Sports Science;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We know that leucine is a very important amino acid in terms of helping to switch on muscle protein synthetic pathways. There has been a plethora of studies conducted on athletes and non-athletes investigating the absorption patterns of leucine and other essential amino acids using mainly a beverage food matrix. There is very little data looking at other food matrices on leucine absorption.

This project will investigate the absorption patterns of leucine in a group of athletes after undertaking an intensive training session in a number of food matrices. This study will involve running a number of exercise based sessions and feeding the athletes different food matrices containing elevated levels of leucine. Additionally, there will be some involvement in analysing leucine samples.

This project will be of great interest to food companies making high quality protein foods for athletes and will also be of interest to sports nutrition practitioners, coaches and athletes.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Understanding of sports nutrition and amino acid absorption and metabolism

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics); In depth understanding of leucine absorption and impact of different food matrices

## Project number: FN\_40

**Project title:** What influences diet quality in young adults?

**Primary supervisor:** Dr Katherine Livingstone

**Phone:** +61 3 9244 5416

**Email:** k.livingstone@deakin.edu.au

**Co-supervisor/s:** Professor Sarah McNaughton

### Supervisor profile

Dr Katherine Livingstone is a lecturer and researcher in population nutrition within the School. She is unit chair or various undergraduate and postgraduate units, including HSN202 Lifespan Nutrition. She leads a research program to understand dietary and lifestyle behaviours of young adults and how these link with health outcomes. She has expertise in quantitative and qualitative research and has published over 45 peer-reviewed journal articles. Katherine is committed to developing the next generation of researchers and has experience supervising Honours and PhD students.

Professor Sarah McNaughton is a senior researcher within the School.

The student will gain experience with the analysis and interpretation of quantitative research that will be applicable to a wide range of future research projects. The student will receive mentoring in how to manage their own research project and will have the opportunity to publish their research findings in a peer-reviewed journal.

### Broad project topic area

Food and nutrition science; Public health nutrition;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Have you ever wondered what influences unhealthy eating in young adults? Given that individual nutrients or single foods are not consumed in isolation, there is a need to evaluate the quality of the overall diet, i.e. diet quality. Poor diet quality is a major risk factor for obesity and chronic diseases. Young adults often have poor diets and are thus at increased risk of obesity and chronic disease. Reasons why individuals may have a poor quality diet include the cost or availability of fresh fruit and vegetables and a perceived lack of time to prepare healthy meals. However, few studies have evaluated what influences diet quality in young adults.

The aim of this study will be to examine the potential correlates (such as socio-demographics and health behaviours) of diet quality in young adults.

This project involves secondary analysis of data from the Meals in Every Day Life Study (MEALS). Information on dietary intakes and correlates were collected using 'real-time' Smartphone food diaries. This project will examine dietary intakes of young adults using an overall diet quality. Characteristics of young adults will be explored to identify correlates of diet quality.

### Skills/attributes required by the student

Knowledge and background in a nutrition related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### Skills specific to this project the student will develop

Qualitative analysis; Experience working with data from a large research study

## **Project number: FN\_41**

**Project title:** Do long chain omega-3 fatty acids exert their beneficial metabolic effects through CMPF?

**Primary supervisor:** Dr Gunveen kaur

**Phone:** 9246288

**Email:** Gunveen.Kaur@deakin.edu.au

**Co-supervisor/s:** Dr Damien Callahan and Prof Andrew Sinclair

### **Supervisor profile**

Dr Gunveen Kaur is a lecturer within the School of Exercise and Nutrition Sciences. Her research is primarily focused on understanding the role of omega-3 fatty acids in prevention or management of chronic diseases such as diabetes and cardiovascular disease. She is involved in areas of research that examine the link between dietary fat intake, metabolism, molecular biology and lifestyle diseases. Since joining Deakin in 2014, Dr Kaur has been successful in receiving \$37,000 in competitive internal grant funding and has experience in honours supervision, dietary intervention studies, blood sample collection and lipid analysis techniques.

Dr Damien Callahan is a Chemistry lecturer in the School of Life and Environmental Sciences. He has more than 15 years experience in analytical chemistry and is an expert in metabolite analysis using LC-MS method that has been applied to a number of fields, including nutrition.

Prof Andrew Sinclair is an honorary professor at Deakin University with experience in research design, lipid metabolism and nutritional biochemistry. He has more than 50 years experience in the field and has successfully supervised 40 honours and postgraduate students.

### **Broad project topic area**

Food and nutrition science;

**Course code:** H418 Bachelor of Food and Nutrition Sciences (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Long chain omega-3 fatty acid intake in purified form or via fish and fish oil is associated with numerous beneficial effects such as reduced plasma lipids, triglycerides and fatty liver. Consumption of fish or fish oil has shown to increase the plasma levels of a metabolite called CMPF or 3-carboxy-4-methyl-5-propyl-2-furanpropanoic. Recent data have suggested a link between CMPF and some of the functions of omega-3 fatty acids. Mice fed on a high-fat diet were given purified CMPF and this improved insulin sensitivity, ameliorated the fatty liver, possibly by increased beta oxidation, and reduced lipogenic gene expression. Given the structural basis of CMPF and omega-3 fatty acids, it is likely that CMPF is an actual metabolite of long chain omega-3 fatty acids and is responsible for their beneficial metabolic effects. However no studies so far have confirmed this hypothesis. Therefore, this project aims to determine if omega-3 fatty acids can be a precursor of CMPF in vivo. This project will involve animal experiments including supplementation of animal diet with labelled omega-3 fatty acids, blood and tissue samples analysis, metabolite analysis using lipidomics.

### **Skills/attributes required by the student**

An interest in the area of biochemistry, nutritional physiology, metabolism and molecular biology is required.

### **Skills specific to this project the student will develop**

Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Quantitative analysis (statistics); Animal studies

## **Project number: ESS\_1**

**Project title:** Children's health and physical activity using advanced analytical techniques

**Primary supervisor:** Dr. Nicky Ridgers

**Phone:** 9244 6718

**Email:** nicky.ridgers@deakin.edu.au

**Co-supervisor/s:** A/Prof. Daniel Belavy

### **Supervisor profile**

Dr. Nicky Ridgers is a Senior Research Fellow. Her research focuses on children's physical activity patterns and health. She has expertise in the measurement and analysis of physical activity data. Nicky has supervised five Honours students to completion at Deakin University. She is currently supervising one Honours student in 2018.

Associate Professor Daniel Belavy has been at Deakin since 2014. His work at Deakin focusses on exercise and the spine. He has supervised two honours students to completion to date with one student currently enrolled in 2018. One prior student received a PhD scholarship and the other student achieved her chosen goal of going on to study medicine. Daniel has specialist expertise in signal processing and musculoskeletal imaging.

This project will also include Dr. Timo Rantalainen (previously Deakin, currently in Finland), expert in signal processing and Matlab.

### **Broad project topic area**

Physical activity;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Typical approaches to quantify physical activity and sedentary behaviour rely on laboratory determined threshold values to classify into sedentary, light, moderate and vigorous categories. Recent technological advances have meant that it is now possible to explore physical activity levels using information-rich approaches. Work from our group has highlighted the benefit of more advanced signal processing techniques.

In this project you will implement a flexible and robust analytical platform for quantifying physical activity and sedentary time and examine relationships with health outcomes (body weight, physical fitness [20m shuttle run], blood pressure). The analytical procedures will include advanced methods to quantify activity accumulation, intensity and loading profiles. This project will answer a key question for the field: do more sophisticated analyses result in a better understanding of the relationship between health and physical activity and sedentary time than the traditional approaches.

### **Skills/attributes required by the student**

Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); analytical and critical analysis skills

## **Project number: ESS\_2**

**Project title:** Mental Toughness and Coping in Competitive Triathletes

**Primary supervisor:** Fraser Carson

**Phone:** 52272388

**Email:** f.carson@deakin.edu.au

**Co-supervisor/s:** Peter Kremer

### **Supervisor profile**

Dr Fraser Carson: Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He currently provides psychological support for the Deakin Melbourne Boomers. He has previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. He has a strong research background with a number of publications in performance psychology, mental toughness, well-being, stress and coping, and coach education.

Dr Peter Kremer: Peter is a senior lecturer in sport and exercise behavior with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

### **Broad project topic area**

Applied Sports Science;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Mental toughness refers to an individual's resilience and inner drive to succeed, especially in challenging situations. It is a collection of values, attitudes, behaviours and emotions that enable a performer to persevere and overcome obstacles, adversity or pressure. There are some key characteristics of mentally tough individuals (Clough et al. 2002): a) the capacity to remain calm and relaxed; b) to regulate lower anxiety levels; c) higher levels of self-belief; d) an inner confidence that they will be successful; and e) and a capacity to remain unaffected by competition or adversity.

There are over 12,000 individual members of Triathlon Australia and over 185 triathlon clubs affiliated. There are also over 120 sanctioned triathlon events in Victoria each year, with participation numbers increasing each year. The purpose of this study is to explore elite junior and competitive senior triathletes' mental toughness and coping skills. Participants will complete an online survey that includes three standardised questionnaires ) in order to assess their mental toughness and coping skills. Descriptive analysis will be conducted on these responses, followed by a regression analysis.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## **Project number: ESS\_3**

**Project title:** Can we strengthen the spine in people with back pain to reduce burden of disease?

**Primary supervisor:** A/Prof. Daniel Belavy

**Phone:** 92446606

**Email:** d.belavy@deakin.edu.au

**Co-supervisor/s:** Dr. Clint Miller, Dr. Patrick Owen

### **Supervisor profile**

A/Prof Belavy focusses on exercise, the spine and back pain. His interest is in conducting research that leads to significant advances in how we conceptualise back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics. Along with Dr Miller, he has supervised two honours students to completion. One went on to obtain a PhD scholarship, whereas the other was accepted to study medicine.

Dr Miller has been an Accredited Exercise Physiologist in private practice for over 10 years and has worked predominately with musculoskeletal injury and disease. His research is focussed on the use of clinical exercise for improvements in physical function, body composition and work productivity in adults with musculoskeletal and cardiometabolic disease. He is also interested in the relationship between lifestyle-related factors and exercise participation.

Dr Owen recently completed his PhD focussed on sarcopenia and exercise oncology. He has extensive experience working with A/Prof Belavy and Dr Miller across a range of projects investigating musculoskeletal health and exercise.

### **Broad project topic area**

Applied Sports Science; Exercise physiology; musculoskeletal health

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Whether or not the intervertebral discs and other tissues of the spine can actually respond to exercise remains controversial. Also, if they do, it is unclear whether this has any clinical relevance in terms of reducing burden of disease. This honours project will analyse data from a 6-month randomised controlled trial that compared an exercise physiologist-led exercise intervention to physiotherapy treatment in patients with chronic back pain. You will examine the impact of the interventions on the intervertebral discs and bone marrow via magnetic resonance imaging and examine the relationship between these factors and changes in pain and physical performance. The findings of this project will provide novel insight into whether we can strengthen the spine in patients with back pain and whether this reduces the burden associated with the disease. Collectively, this will inform the management of chronic back pain in this susceptible population group.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Analytical and critical analysis skills

## **Project number: ESS\_4**

**Project title:** Are elite athletes at higher risk of spinal degeneration?

**Primary supervisor:** A/Prof. Daniel Belavy

**Phone:** 92446606

**Email:** d.belavy@deakin.edu.au

**Co-supervisor/s:** Dr. Clint Miller, Dr. Patrick Owen

### **Supervisor profile**

A/Prof Belavy focusses on exercise, the spine and back pain. His interest is in conducting research that leads to significant advances in how we conceptualise back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics. Along with Dr Miller, he has supervised two honours students to completion. One went on to obtain a PhD scholarship, whereas the other was accepted to study medicine.

Dr Miller has been an Accredited Exercise Physiologist in private practice for over 10 years and has worked predominately with musculoskeletal injury and disease. His research is focussed on the use of clinical exercise for improvements in physical function, body composition and work productivity in adults with musculoskeletal and cardiometabolic disease. He is also interested in the relationship between lifestyle-related factors and exercise participation.

Dr Owen recently completed his PhD focussed on sarcopenia and exercise oncology. He has extensive experience working with A/Prof Belavy and Dr Miller across a range of projects investigating musculoskeletal health and exercise.

### **Broad project topic area**

Applied Sports Science; Exercise physiology; musculoskeletal health

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Athletes constitute a unique population to study the effect of loading and exercise on the body. At the spine, it is unclear what kinds of exercise are best. In recent work, we discovered that running exercise 'strengthened' the intervertebral discs in the spine. In contrast, it is unknown whether athletes in certain sporting codes are at risk spinal degradation. The aim of this Honours project is to examine spinal health in athletes across a range of sporting codes. Collaborators in Japan (Dr. Mika Hangai from the Japan Institute of Sports Sciences & Prof. Koji Kaneoka from Faculty of Sport Sciences Waseda University) collected data on sub-elite and elite university athletes in swimming, basketball, running, baseball, soccer and kendo as well as people who were not physically active. Using these magnetic resonance imaging data, you will perform quantitative analyses of the spine to measure the properties of the discs and vertebrae. This project will draw conclusions on the impact of each sporting code on spine health and identify whether any sub-set of athletes are at greater risk of spinal degradation.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics); analytical and critical analysis skills

## **Project number: ESS\_5**

**Project title:** Women in sport coaching

**Primary supervisor:** Dr Fraser Carson

**Phone:** 52272388

**Email:** f.carson@deakin.edu.au

**Co-supervisor/s:** Dr Julia Walsh

### **Supervisor profile**

Dr Fraser Carson

Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He currently provides psychological support for the Deakin Melbourne Boomers. He has previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. He has a strong research background with a number of publications in performance psychology, mental toughness, well-being, stress and coping, and coach education.

Dr Julia Walsh

Julia is a senior lecturer in sport coaching on the Burwood campus. Her expertise is in coach expertise, education, communication, and mentoring. She is a member of the Deakin Women in Sport and Exercise (WISE) with a research interest in female leadership in sport. She has been instrumental in shaping coach education macro structures in the UK. Current research includes understanding issues of health and well-being in a sport coaching population, and coach education signature pedagogies.

### **Broad project topic area**

Sports coaching;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurin Ponds campus

### **Project description**

In the last few years there has been an increase the media coverage of women in sport, resulting in a greater number of females participating in sport at all levels. However, many of these teams are coached by men. Numerous barriers and challenges have been identified for women in coaching, but little research has investigated how these can be eradicated.

The purpose of this research is identify what strategies and programs sports organisations are implementing to recruit, retain and develop women in sport coaching. Utilising a critical discourse analysis, the research will focus on how key sports organisations are targeting women and whether specific programs are being developed, rather than reshaping previous strategies aimed at men. Discourse is the social and cognitive process of putting the world into words, of transforming our perceptions, experiences, emotions, understandings, and desires into a common medium for expression and communication, through language and other semiotic resources (Strauss & Feiz, 2013).

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Discourse analysis research skills

### **Skills specific to this project the student will develop**

Primary data collection skills; Qualitative analysis;

## **Project number: ESS\_6**

**Project title:** Estimating internal loads during ground impact activities using microsensors

**Primary supervisor:** Dr Elizabeth Bradshaw

**Phone:** 9244 6646

**Email:** liz.bradshaw@deakin.edu.au

**Co-supervisor/s:** Associate Professor Daniel Belavy

### **Supervisor profile**

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018 after working at the New Zealand Academy of Sport (now known as Sport Performance Research New Zealand), and the Australian Catholic University. She has extensive experience in supervising Honours and Higher Degree Research students. Her research is focused upon biomechanics and motor control of human movement with a specific interest in sports performance, injury mechanisms, movement variability, and human gait. Liz is presenting a technical report on using microsensors when load monitoring on differing viscoelastic surfaces at the upcoming International Society of Biomechanics in Sport conference in Auckland.

Associate Professor Daniel Belavy has been at Deakin since 2014. His work at Deakin focusses on exercise and the spine. He has supervised two honours students to completion to date with one student currently enrolled in 2018. One prior student received a PhD scholarship and the other student achieved her chosen goal of going on to study medicine. Daniel has specialist expertise in signal processing and musculoskeletal imaging.

### **Broad project topic area**

Applied Sports Science; Biomechanics; Biomedicine; Physical activity;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This honours project builds onto existing collaborative research studies presently being undertaken on artistic gymnastics at the Australian Institute of Sport and University of Canberra. In this study, male and female participants will be asked to complete a range of physical activities including walking, running, hopping, jumping and landing, and lifting. During data collection they will be asked to wear inertial measurement units (IMUs) on the distal tibia, distal femur, and also on the lower back (L5). They will also be asked to strike and/or land onto a force platform. Vicon Nexus software will be used to synchronise the IMUs and the force platform. The external loads during each activity will be obtained from the force platform. These external loads will be compared with the estimates of internal load from the IMUs. The information obtained will provide baseline data for a variety of applied studies in the areas of spine loads during physical activity, bone loads during physical activity, and athlete load monitoring.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_7**

**Project title:** Estimating internal impact loads on viscoelastic sport surfaces using microsensors

**Primary supervisor:** Dr Elizabeth Bradshaw

**Phone:** 9244 6646

**Email:** liz.bradshaw@deakin.edu.au

**Co-supervisor/s:** Associate Professor Daniel Belavy

### **Supervisor profile**

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018 after working at the New Zealand Academy of Sport (now known as Sport Performance Research New Zealand), and the Australian Catholic University. She has extensive experience in supervising Honours and Higher Degree Research students. Her research is focused upon biomechanics and motor control of human movement with a specific interest in sports performance, injury mechanisms, movement variability, and human gait. Liz is presenting a technical report on using microsensors when load monitoring on differing viscoelastic surfaces at the upcoming International Society of Biomechanics in Sport conference in Auckland.

Associate Professor Daniel Belavy has been at Deakin since 2014. His work at Deakin focusses on exercise and the spine. He has supervised two honours students to completion to date with one student currently enrolled in 2018. One prior student received a PhD scholarship and the other student achieved her chosen goal of going on to study medicine. Daniel has specialist expertise in signal processing and musculoskeletal imaging.

### **Broad project topic area**

Applied Sports Science; Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This honours project extends pilot testing of impact loads on different viscoelastic sport surfaces commonly encountered in artistic gymnastics. In this study, male and female participants will be asked to run, jump and land onto a variety of sports surfaces. During data collection they will be asked to wear inertial measurement units (IMUs) on the distal tibia, distal femur, and also on the lower back (L5). They will also be asked to land onto a force platform. Vicon Nexus software will be used to synchronise the IMUs and the force platform. The external loads during each activity will be obtained from the force platform. These external loads will be compared with the estimates of internal load from the IMUs. The information obtained will provide baseline data for a variety of applied studies in the area of athlete load monitoring.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics);

## **Project number: ESS\_8**

**Project title:** Head impact biomechanics after a shoulder charge collision in rugby

**Primary supervisor:** Dr Elizabeth Bradshaw

**Phone:** 9244 6646

**Email:** liz.bradshaw@deakin.edu.au

**Co-supervisor/s:** Dr Lyndell Bruce

### **Supervisor profile**

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018 after working at the New Zealand Academy of Sport (now known as Sport Performance Research New Zealand), and the Australian Catholic University. She has extensive experience in supervising Honours and Higher Degree Research students. Her research is focused upon biomechanics and motor control of human movement with a specific interest in sports performance, injury mechanisms, movement variability, and human gait.

Dr Lyndell Bruce is a Senior Lecturer in Sports Science within the School of Exercise and Nutrition Science and a member of the Centre for Sport Research at Deakin University. She has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

This project is being completed in collaboration with members of the Rugby Codes Research Group including Professor Patria Hume and Dr Doug King (AUT), Dr Simon Mayhew (NZRL), and Dr Paul Bloomfield (NRL).

### **Broad project topic area**

Applied Sports Science; Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This NRL endorsed honours project investigates the effectiveness of head gear in reducing impact loads during a shoulder charge (tackle) to the head. In rugby league this action would be considered a dangerous contact (spearing), which is why we have selected it to test head gear. In this study an upper body model (Bob) with and without head gear fitted on the head will be used as the opponent. High load accelerometers will be placed on the participants charging shoulder and also on the head of the model to measure the impacts (peak accelerations) at each site. Further, an inertial measurement unit (IMU) will also be placed on the models head to measure the rotational kinematics of the head movement; a key measure for head injury such as concussion.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_9**

**Project title:** The relationship between pre-season AFL academy players' training loads and selection for AFL games

**Primary supervisor:** Eric Drinkwater

**Phone:** 92446136

**Email:** eric.drinkwater@deakin.edu.au

**Co-supervisor/s:** Luana Main; Lyndell Bruce

### **Supervisor profile**

Dr Eric Drinkwater is a senior lecturer of sports science. Dr Drinkwater is an accomplished researcher with over 60 peer-reviewed research publications, mostly collaborating with high-performance sporting organisations such as the Geelong Cats or Australian Institute of Sport investigating applied sport science questions.

Dr Luana Main's research investigates relationships between stress exposure (e.g. training load), fatigue, and its impact on wellbeing and physical performance in sport and occupation contexts (i.e. Firefighters, Army) to identify warning signs of excessive stress exposure to minimise risk of injury and illness.

Dr Lyndell Bruce has multidisciplinary research interests including sports analytics, expertise development, sports technology, and load monitoring. Dr Bruce uses a range of technologies (including wearables, applications and software) and analytic techniques to offer insights into research questions.

By combining the supervisors' industry-based background in sport with their research skills, research students can expect to learn how research and sport science integrate in the elite sports environment to influence coaching decisions.

### **Broad project topic area**

Applied Sports Science; Strength and Conditioning;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Burwood campus + GMHBA Stadium (Geelong)

### **Project description**

This project will be conducted in collaboration with the Geelong Cats AFL club (GFC), being proposed and partially by the GFC academy physical performance coaches. The aim of the GFC academy program is to prepare players for AFL competition, with a successful program resulting in academy players being selected in the AFL squad. Many factors, such as chronic training load, influence if an athlete is selected from the academy to the AFL squad. The aim of this study is to investigate the amount of influence many of these commonly measured factors have in the selection of players for the AFL squad. This project will draw on 5 years of data collected by GFC academy physical preparation coaches to estimate the contribution each factor makes to the AFL squad selection decision. Estimates will be calculated using correlations, partial correlations, multiple regression, and discriminate analysis.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Exercise prescription and monitoring; Quantitative analysis (statistics);

# Project number: ESS\_10

**Project title:** Does fatigue change the way we perform injury prevention exercises?

**Primary supervisor:** Dr Aaron Fox

**Phone:** 5247 9720

**Email:** aaron.f@deakin.edu.au

**Co-supervisor/s:** Dr Natalie Saunders; Alanna Antcliff (Netball Australia)

## Supervisor profile

Dr Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance. Aaron's work involves the use of a range of technologies (including motion capture, force plates, electromyography, and two-dimensional ultrasound) and analytical techniques to identify optimal neuromuscular and biomechanical strategies for improving performance and reducing injury risk in sporting movements.

Dr Natalie Saunders is a lecturer in Clinical Exercise Physiology with research expertise in neuromuscular control and biomechanics in a functional context, in particular understanding the various loads on the human body that result in injury.

Alanna Antcliff is the current head physiotherapist for the Australian Diamonds national netball team, and lead the development of Netball Australia's KNEE injury prevention program.

## Broad project topic area

Applied Sports Science; Strength and Conditioning; Biomechanics; Injury Prevention

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurin Ponds campus

## Project description

Lower limb injuries, particularly to the knee and ankle, are common in sports that involve landing and cutting. To combat this, injury prevention programs have been developed that focus on performing these high-risk movements with appropriate biomechanical and neuromuscular strategies. Incorporating these programs within post-training practices, while athletes are likely to be in a fatigued state, has shown promise in reducing injury rates. However, the manner in which fatigue affects the performance of injury prevention program exercises has yet to be examined. This project will use advanced biomechanical (motion capture, force plates) and neuromuscular (electromyography) analysis techniques to examine how fatigue impacts the manner with which injury prevention program exercises are performed. Exercises will be taken from the KNEE program (<https://knee.netball.com.au/>), with the project undertaken in close consultation with Netball Australia. This project will require the student to recruit sub-elite netball players to participate in laboratory-based data collection, where their performance of exercises from the program will be monitored before and after a fatiguing protocol.

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

## Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics); Motion capture, force plate and electromyography (EMG) data collection and analysis

## **Project number: ESS\_11**

**Project title:** Characterising injury in Australian netball: A review of national data

**Primary supervisor:** Dr Aaron Fox

**Phone:** 5247 9720

**Email:** aaron.f@deakin.edu.au

**Co-supervisor/s:** Dr Natalie Saunders; Alanna Antcliff (Netball Australia); Dr Corey Joseph (Monash Health)

### **Supervisor profile**

Dr Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance. Aaron's work involves the use of a range of analytical techniques to identify optimal neuromuscular and biomechanical strategies for improving performance and reducing injury risk in sport. The bulk of Aaron's work in injury risk and prevention has focused on lower limb injuries in netball.

Dr Natalie Saunders is a lecturer in Clinical Exercise Physiology with research expertise in neuromuscular control and biomechanics in a functional context, in particular understanding the various loads on the human body that result in injury.

Alanna Antcliff is the current head physiotherapist for the Australian Diamonds national netball team, and lead the development of Netball Australia's KNEE injury prevention program.

Dr Corey Joseph is a Senior Evidence Analyst at Monash Health. His work predominantly focuses on undertaking reviews and evaluating evidence in health and clinical settings.

### **Broad project topic area**

Applied Sports Science; Injury

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurin Ponds campus

### **Project description**

Netball is a sport that is commonly associated with injury, particularly to the knee and ankle. There is, however, limited up-to-date data characterising serious injuries within the sport. This project will use national insurance data to examine the frequency, costs and characteristics of injuries stemming from netball. Currently, national insurance data relating to netball injuries from 2010-2016 is coded in a database. This project will involve adding to this database by coding data from 2017, and using all of this data to answer several research questions around the characteristics of netball injuries in Australia. Specific areas up for exploration in this project include: (i) what are the frequency and costs associated with serious knee injuries in netball; (ii) is there a match time-course effect on injuries in netball (i.e. do more injuries occur later in games); (iii) has the establishment and promotion of injury prevention programs by Netball Australia impacted the number of injuries; and (iv) has knowledge and uptake of these programs had an effect on injuries in specific regions.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics); Database coding

## Project number: ESS\_12

**Project title:** Motor control mechanisms underlying cricket fast bowling

**Primary supervisor:** Dr. Lyndell Bruce/Dr. Liz Bradshaw

**Phone:** 03 9246 8967/03 9244 6646  
liz.bradshaw@deakin.edu.au

**Email:** lyndell.bruce@deakin.edu.au /

**Co-supervisor/s:** Dr. Simon Feros

### Supervisor profile

Dr Lyndell Bruce has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018. Her research is focused upon biomechanics and motor control of human movement with a specific interest in sports performance, injury mechanisms, movement variability, and human gait. Whilst working at the Australian Institute of Sport in the late 1990's, she developed a gait measurement system for track and field for linear and curvi-linear run-up's, which was subsequently also used to examine cricket bowling run-ups.

Dr Simon Feros is a Lecturer in Functional Anatomy / Strength and Conditioning Sciences at Deakin University, Waurn Ponds campus. Simon's overarching research is in the enhancement of cricket fast bowling performance.  
[https://www.researchgate.net/profile/Simon\\_Feros](https://www.researchgate.net/profile/Simon_Feros)

### Broad project topic area

Applied Sports Science; Sports coaching; Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Can be based at either campus upon discussion with supervisors

### Project description

Cricket fast bowling is a skill that requires players to run up at near-maximal speed and then perform a complex and coordinated action. Further, the fast bowler must also accurately execute their run-up and take-off to ensure that their front (lead) foot remains behind the crease at the time of ball delivery, in order to deliver a legal ball. To date, there has been limited research on training approaches to prevent the illegal 'front-foot no-ball' in cricket fast bowling. This is a problem, because currently at the elite level, fast bowlers have taken wickets with these illegal deliveries, which are subsequently then discounted by the umpires. Preventing no-balls is therefore a priority in cricket fast bowling. This could be achieved through a constraints-led approach to coaching, where the performer, task, and environmental constraints can be manipulated to achieve a desired outcome. Therefore, the aim of this project is to determine the efficacy of a constraints-led coaching approach in minimising front-foot no-balls in cricket fast bowling.

### Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Laboratory techniques; Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: ESS\_13**

**Project title:** Growth, wellness and physical qualities of talent-selected high school athletes and their classroom

**Primary supervisor:** Dr Elizabeth Bradshaw

**Phone:** 9244 6646

**Email:** liz.bradshaw@deakin.edu.au

**Co-supervisor/s:** Dr Eric Drinkwater and Mr Matthew Pollard (Rise Health Group)

### **Supervisor profile**

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018 after working at High Performance Sport New Zealand, and the Australian Catholic University. She has extensive experience in supervising Honours and Higher Degree Research students. Her research is focused upon biomechanics and motor control of human movement with a specific interest in young athletes, sports performance, injury mechanisms, movement variability, and human gait. Related to this project, Liz has previously completed a study on the health, wellness and physical performance of talent-selected gymnasts, that reported to Gymnastics Australia and the Australian Institute of Sport.

Dr Eric Drinkwater is a Senior Lecturer of Sports Science in School of Exercise & Nutrition Sciences, and course director for the Master of Applied Sport Science at Deakin University. Dr Drinkwater completed a PhD at Victoria University (2006) and is an accomplished researcher with over 60 peer-reviewed research publications. He is also an experienced research supervisor, an accredited coach with the Australian Strength and Conditioning Association (ASCA), a Certified Strength & Conditioning Specialist (CSCS), and a Level 3 Australia

### **Broad project topic area**

Applied Sports Science;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This honours project investigates the effect of committed sport training and competition on growth, wellness and physical qualities of young athletes. This project is the first stage of a study on long-term athlete development which, if successful, will be expanded in subsequent years to include additional measures and applied investigations such as the exploration of the best strength training strategies for each stage of maturation. In this study male and female students at a specialist sport high school will be assessed at the start, middle, and end of each school year. Growth and physical quality (e.g. 20 m sprinting speed) measures will be undertaken during Physical Education classes for all volunteers. Further, each volunteer will be asked to complete an online survey including questions on their physical activity/sport, maturation and wellness. The training and competition hours of all athletes and any injuries will be recorded by the Sports Medicine team at Rise Health Group using an Athlete Management System. For this Honours project you will assist with the testing and analysis of the first 6 months of data collected.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## **Project number: ESS\_14**

**Project title:** Time-course of acute changes in muscle pennation angle in response to heavy resistance exercise

**Primary supervisor:** Dr Simon Feros

**Phone:** 03 5247 9723

**Email:** simon.feros@deakin.edu.au

**Co-supervisor/s:** Dr Aaron Fox

### **Supervisor profile**

Dr Simon Feros is a Lecturer in Functional Anatomy / Strength and Conditioning Sciences at Deakin University, Waurn Ponds campus. Simon's research focuses on explosive strength training and biomechanical adaptations underpinning sports performance, particularly in cricket fast bowling. A majority of his research has involved the application of post-activation potentiation to acutely enhance power output in rowing and in cricket.

Dr Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance. Aaron's work involves the use of a range of technologies (including motion capture, force plates, electromyography, and two-dimensional ultrasound) and analytical techniques to identify optimal neuromuscular and biomechanical strategies for improving performance and reducing injury risk in sporting movements.

### **Broad project topic area**

Strength and Conditioning; Exercise physiology; Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Due to their architecture, pennate muscles are able to exert significantly greater contractile force compared to non-pennate muscles. While heavy resistance training over 14-16 weeks has been demonstrated to cause favourable adaptations to skeletal muscle, little is understood regarding the acute changes in muscle architecture (i.e., pennation angle) from such exercise. Previous research has shown an acute reduction in pennation angle 3-6 minutes following maximal voluntary isometric contractions, however, the time-course of this change has not been fully explored, as acute increases in muscle contractile force can occur 8-12 minutes following heavy resistance exercise. Therefore, the purpose of this project is to investigate the time-course of acute changes in muscle pennation angle in response to heavy resistance exercise.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Exercise prescription and monitoring; Image and/or video analysis; Quantitative analysis (statistics); Ultrasound sonography and measurement of muscle pennation angle.

## **Project number: ESS\_15**

**Project title:** A movement analysis of the newest Olympic sport: 3x3 basketball

**Primary supervisor:** Dr Eric Drinkwater

**Phone:** 92446136

**Email:** eric.drinkwater@deakin.edu.au

**Co-supervisor/s:** Dr Julia Walsh

### **Supervisor profile**

Dr Eric Drinkwater is a senior lecturer of Sports Science in School of Exercise & Nutrition Sciences. Dr Drinkwater completed a PhD at Victoria University (2006) and is an accomplished researcher with over 60 peer-reviewed research publication, 90% of which involve sport and exercise. Most of Dr Drinkwater's research involves collaborating with high-performance sporting organisations such as the Geelong Cats or Australian Institute of Sport, investigating applied sport science questions. Dr Drinkwater is also an accredited coach with the Australian Strength and Conditioning Association (ASCA), and a Certified Strength & Conditioning Specialist (CSCS).

Dr Julia Walsh is a sports coaching researcher and a high performance basketball coach. Dr Walsh's interest is in performance analysis and how this can assist in preparing Australian athletes for competition. She currently coaches a professional women's team in the 3x3 Pro Hustle competition but the lack of information on 3x3 is hindering her ability to coach. Dr Walsh's long history with basketball coaching and professional involvement in 3x3 make her very interested in 3x3 as a new addition to the basketball suite of games.

### **Broad project topic area**

Applied Sports Science; Sports coaching; Performance analysis

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

3x3 Basketball is scheduled to make its Olympic debut at the Tokyo 2020 Olympic Games. In 3x3 Basketball, many of the characteristics of 5x5 Basketball exist but the rule differences between the two games make them vastly different sports. While most sports have been described in terms of their physical and physiological demands, and movement analysis, there is a dearth of information about 3x3 Basketball beyond coach's intuition. Coaches need more information about the physical and physiological demands, and movement analysis of 3x3 Basketball to more effectively develop athletes specifically for the demands of this new sport.

This project will involve interpreting physical (e.g. accelerometer, SportsCode) and physiological (e.g. heart rate) data from 3x3 Basketball to gain a better understanding of the demands placed on athletes, and how it differs from 5x5 Basketball.

Applied sport science research is about collecting data, interpreting it, and feeding it back to coaches to answer specific questions about their sport. This project was specifically requested by 3x3 Pro Hustle coaches, so sport-science research doesn't get any more applied than this!

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts;

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics);

# Project number: ESS\_16

**Project title:** Performance Insights in Netball

**Primary supervisor:** Dr. Lyndell Bruce

**Phone:** 03 9246 8967

**Email:** lyndell.bruce@deakin.edu.au

**Co-supervisor/s:** Dr. Laura Juliff (Netball Australia) & Dr. Dan Dwyer

## Supervisor profile

Dr Lyndell Bruce is a Senior Lecturer in Sports Science within the School of Exercise and Nutrition Science and a member of the Centre for Sport Research at Deakin University. She has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Dr. Laura Juliff is the current Performance Science and Support Manager at Netball Australia. She has been based at Netball Australia for over 3 years, and has been the physiologist for the Australian Netball Diamonds for over 7 years.

Dan's research interests centre on the adaptation of existing technology and exploiting emerging technology, to evaluate aspects of sports performance that provide new information that can be used to enhance performance. Dan also collaborates with a group of researchers who use machine learning to interrogate databases of sports results to reveal winning patterns of performance and to provide support when making strategic and tactical decisions.

## Broad project topic area

Applied Sports Science; Strength and Conditioning;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

## Project description

Load monitoring is increasingly evident in professional and sub-elite sporting environments in order to guide training and match practices. Ratio's of acute to chronic workload have been suggested as a guide to elicit training adaptations and assist in the prevention of injury. Netball has a relative high risk of injury, so the capacity to prevent injuries from occurring based upon load undertaken may provide a mechanism to support athletes and coaches. A greater understanding of the risk of injury based upon the acute and chronic load undertaken by an athlete will assist practitioners in better prescribing load. Therefore the purpose of this project is to examine load undertaken by netballers to assess the associated injury risk.

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

## Skills specific to this project the student will develop

Quantitative analysis (statistics); Qualitative analysis; Understanding of load monitoring, athlete management systems and analytical and statistical techniques used in applied sports science

# Project number: ESS\_17

**Project title:** Athletes' Perceptions of Strength and Conditioning Coaches

**Primary supervisor:** Dr Fraser Carson

**Phone:** 5227 2388

**Email:** f.carson@deakin.edu.au

**Co-supervisor/s:** Dr Samantha Hoffmann, Kris Hinck

## Supervisor profile

Fraser Carson is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He currently provides psychological support for the Deakin Melbourne Boomers. He has worked as a performance psychologist providing mental skills training with professional teams, coaches and athletes. He has a strong research background in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

Sam Hoffmann is a lecturer in Applied Exercise and Sport Science whose broad research areas are exercise physiology, exercise prescription and sports performance. Sam has experience as a Strength and Conditioning Coach and her research takes an applied approach to understanding the influences of physiology and coaching on performance outcomes.

Kris Hinck is a lecturer in Applied Sport Science, specifically educating in athletic training and high performance management at undergraduate and postgraduate level. Kris has a BAppSci (Sp Sci) and MBA from Deakin, and a 15 year work history as a service provider for elite and professional athletes in sport science and athletic preparation.

## Broad project topic area

Strength and Conditioning; Sports coaching;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Project can be completed at either the Geelong Waurin Ponds or Burwood campus

## Project description

Strength and conditioning (S&C) coaches are constantly striving to enhance athletic performance. In order to be effective, the S&C coach needs to build a relationship with the athlete that is underpinned by respect, belief in, and trust. While there is considerable research exploring this relationship in general sport coaching, little has focused on the S&C coach. It is therefore important to identify the skills, characteristics and behaviours that the athlete perceives to enhance (or reduce) this relationship. Thus, the main purpose of this study is to investigate the perceptions of elite athletes towards S&C coaches they have worked with throughout their careers. Specifically to: 1) identify key behaviours in building trust; 2) highlight effective coaching practice for this cohort; and 3) to establish the issues that may impede the relationship. This study will consist of a large scale survey of athletes (approx. n = 200) utilising previously validated questionnaires to investigate athletes' perceptions of; (1) their relationship with their strength and conditioning coach; (2) aspects of coaching behaviour; and (3) coaches' leadership qualities.

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Some knowledge of the Qualtrics survey tool would be beneficial but not necessary.

## Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); Survey data collection and analysis skills.

## **Project number: ESS\_18**

**Project title:** Effect of menstrual cycle phase and training load on gastrointestinal symptoms in female athletes

**Primary supervisor:** Dr Rhiannon Snipe

**Phone:** 03 9244 6737

**Email:** r.snipe@deakin.edu.au

**Co-supervisor/s:** Dr Luana Main and Dr Amelia Carr

### **Supervisor profile**

Dr Rhiannon Snipe is an accredited sports dietitian, lecturer and researcher in sports nutrition. Her research interests include the investigation and/or prevention and management of exercise-induced gastrointestinal disturbances, endurance sports nutrition and applied exercise physiology, including female sex hormones and the interaction with sports performance.

Dr Luana Main investigates the relationship between stress exposure (e.g. training load), fatigue, and its impact on wellbeing and physical performance in sport and occupation contexts (i.e. Firefighters and Army). Ultimately with the goal to identifying early warning signs of excessive stress exposure to minimise risk of injury, illness, and compromised long-term health.

Dr Amelia Carr's interest is in athletes' performance, and the implications of applied sports science and nutrition. Her previous research has focused on nutritional supplements and other training interventions, in athletes. Amelia completed her PhD in Physiology at the Australian Institute of Sport, and in her previous professional role, conducted research into performance testing for the Australian Army and Australian Navy.

### **Broad project topic area**

Dietetics; Sports nutrition; Applied Sports Science; Exercise physiology; Biomedicine;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Gastrointestinal symptoms affect  $\geq 60\%$  of endurance athletes and can have adverse effects on general health and wellbeing, nutrition intake and sports performance. Female endurance athletes consistently report a greater prevalence of gastrointestinal symptoms than male endurance athletes however, the reason for these differences and contributing factors is currently unknown. It is possible that physiological factors such as changes in sex hormones across the menstrual cycle may contribute to the development of these symptoms but this is yet to be investigated. This novel research project therefore aims to explore the effects of menstrual cycle phase and other potential contributing factors such as training load on the prevalence of gastrointestinal symptoms in female endurance athletes. The findings from this research project will provide new insight into the relationship between menstrual cycle phase (as an indicator of sex hormones) and other contributing factors on the prevalence of gastrointestinal symptoms in female endurance athletes. Students will learn about the interaction between female physiology, exercise/training, health and the impact on sports performance.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Exercise prescription and monitoring; Quantitative analysis (statistics); Survey development

## **Project number: ESS\_19**

**Project title:** The impact of training and lifestyle factors on gastrointestinal symptoms in elite AFL players

**Primary supervisor:** Dr Rhiannon Snipe

**Phone:** 03 9244 6737

**Email:** r.snipe@deakin.edu.au

**Co-supervisor/s:** Dr Dominique Condo, Dr Luana Main and Dr Amelia Carr

### **Supervisor profile**

Dr Rhiannon Snipe is an accredited sports dietitian, lecturer and researcher in sports nutrition. Her research interests include the investigation and/or prevention and management of exercise-induced gastrointestinal disturbances, endurance sports nutrition and applied exercise physiology.

Dr Dominique Condo is a lecturer in sports nutrition and consults at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Her current research interests include energy availability in female athletes and the relationship between diet and sleep in athletes.

Dr Luana Main's research interest is the relationship between stress exposure (e.g. training load), fatigue, and its impact on wellbeing and physical performance in sport and occupational contexts (i.e. Firefighters, Army).

Ultimately with the goal to identifying early warning signs of excessive stress exposure to minimise risk of injury, illness, and compromised long-term health. Ultimately with the goal to identify early warning signs of excessive stress exposure to minimise risk of injury, illness, and compromised long-term health.

Dr Amelia Carr's interest is in athletes' performance and the implications of applied sports science and nutrition. She completed her PhD in Physiology at the Australian Institute of Sport. Her previous research has focused on nutritional supplements and other training interventions in athletes.

### **Broad project topic area**

Dietetics; Sports nutrition; Applied Sports Science; Exercise physiology; Biomedicine;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Gastrointestinal symptoms in athletes are common and may be related to training load, stress and diet. Depending on the severity, these symptoms may have adverse effects on nutrition intake, health and wellbeing and sports performance. The prevalence of gastrointestinal symptoms, factors that influence the prevalence of symptoms and how it changes over the season in team sport athletes, including Australian rules football league (AFL) players, is currently unknown. This research project will be conducted in collaboration with the Geelong Football Club and aims to explore the prevalence of gastrointestinal symptoms in AFL players across different training phases and identify potential contributing factors. The findings from this research project will provide information on the prevalence of gastrointestinal symptoms in AFL players and how this potentially relates to training load/phase, life stress and diet across the football season. This information can be used by coaches, support staff and athletes to assist players in understanding their symptoms and potential contributing factors and inform guidelines in screening and treatment for undiagnosed irritable bowel syndrome.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Exercise prescription and monitoring; Quantitative analysis (statistics); Survey development

## **Project number: ESS\_20**

**Project title:** Exercise is Medicine: How do today's doctors prescribe the 'exercise pill'?

**Primary supervisor:** Shannon Sahlqvist

**Phone:** 03 9251 7782

**Email:** shannon.sahlqvist@deakin.edu.au

**Co-supervisor/s:** Dr Samantha Hoffman, Dr Peter Kremer, Dr Scott McCoombe

### **Supervisor profile**

Shannon Sahlqvist is a senior lecturer in Physical Activity and Health. Shannon's research is primarily focused on understanding and promoting physical activity, especially walking and cycling. She has good knowledge and experience in qualitative and mixed methods research design methods.

Sam Hoffmann is a lecturer in Applied Exercise and Sport Science. Sam's broad research areas are sport and exercise physiology, and education in physical activity and strength and conditioning.

Peter Kremer is a senior lecturer in Sport and Exercise Behaviour. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

Scott McCoombe is a senior academic in the School of Medicine and is head of the year 1 Public Health Medicine stream. He has an exceptional resume of research supervision and vast experience in the area, with a diverse set of research interests including: cancer, medical education, rural health and indigenous health.

### **Broad project topic area**

Exercise physiology; Physical activity;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

The growing burden of chronic disease means a changing of the role and requirements of General Practitioners (GPs). For five years, the attitudes towards, and knowledge of 'exercise is medicine', and physical activity habits have been investigated in pre-clinical medical students at Deakin. Results indicate that although students are familiar with the National Physical Activity guidelines, they lack confidence in providing physical activity counselling to their patients and feel their medical training is inadequate in this regard. It is not yet known how Australian GPs use physical activity counselling in their daily practice. This project will expand on the previous work undertaken by the research team by translating it to the clinical environment. A qualitative interview methodology will be used to explore levels of knowledge, skills and training relating to physical activity counselling and prescription among GPs. This will provide important context for the medical students' results, and in the longer term, is anticipated to help inform the need for inclusion of an 'Exercise is Medicine' module/unit in the Medical School curriculum and in postgraduate GP training.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Qualitative analysis;

## **Project number: ESS\_21**

**Project title:** If I can't see me, it can't be me: Barriers and enablers in female youth leadership pathways.

**Primary supervisor:** Dr Julia Walsh

**Phone:** 92468729

**Email:** julia.walsh@deakin.edu.au

**Co-supervisor/s:** Dr Fraser Carson

### **Supervisor profile**

Dr Julia Walsh: Julia is a senior lecturer in sport coaching on the Burwood campus and a member of the Deakin Women in Sport and Exercise Hub (WISE). Her expertise and research is in coach expertise, female leadership in sport, coach wellbeing, and sport pedagogy. Julia has worked in sport and taught in schools and is an active coach in high performance sport.

Dr Fraser Carson: Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He has previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. He has a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

We provide support to help you think and act like a sport scientist, and develop the values required for that profession. In this research project you will learn how to design, structure and analysis results using a socio-cultural lens. Other learning includes development of qualitative quantitative research methods.

### **Broad project topic area**

Sports coaching;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The recent increase of women's sport participation has not been matched by women's leadership positions in coaching and officiating. In the 2012 London Olympics Australia sent a contingent of 84 coaches of which 12 were women, no improvement was observed in the 2014 Commonwealth games with 84 coaches 9 of which were women and none in swimming and hockey, the figures were similar for team managers, no figures were available for officials (Norman, 2014). Fox (1999) highlights the importance of role models, if there is no visibility of women in sport leadership roles, or they are a novelty, it is difficult for other women to see or navigate a pathway. This research investigates how female youth leaders (coaching and officiating) perceive their experiences (barriers and enablers) and visualise and navigate future roles. A socio-cultural lens is used to design, investigate and interpret this phenomena. A mixed methodology is used to investigate the phenomena which involves participants completing a survey and participating in an interview. This research fills a gap in the leadership literature that is yet to explore female youth, leadership roles, and pathway navigation in sport.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks; Ability and willingness to learn qualitative research methods.

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Qualitative analysis;

## Project number: ESS\_22

**Project title:** Exploring possession patterns and their relation to success in elite-level netball

**Primary supervisor:** Dr Aaron Fox

**Phone:** 5247 9720

**Email:** aaron.f@deakin.edu.au

**Co-supervisor/s:** Dr Lyndell Bruce; Dr Dan Dwyer

### Supervisor profile

Dr Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance. Aaron's work involves the use of a range of analytical techniques to identify optimal strategies for improving performance in sport. Aaron's previous work has included analysing the activity patterns and workload demands of elite-level international netball.

Dr Lyndell Bruce is a senior lecturer in Sports Science and has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Dr Dan Dwyer is a senior lecturer in Applied Exercise and Sports Science with a research focus on measurement, analysis and prediction of performance in sport. Dan has specific interests in how modern technology can assist in measuring athlete training load and competition performance, and the role of data science and statistical models in sport.

### Broad project topic area

Applied Sports Science; Sports coaching; Performance Analysis; Data Analytics

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurn Ponds campus

### Project description

The rules and characteristics of netball encourages a wide variety of play patterns across a given match. Players are restricted to certain areas of the court and are not allowed to move once in possession of the ball. Due to this, teams must coordinate effective strategies to move the ball down the court to create scoring opportunities. Currently there is little understanding of the structure of patterns of play in netball (i.e. how teams move the ball down the court, which players are involved etc.) and how variations in these patterns relate to possession outcomes and success (i.e. do specific patterns of play create better goal scoring opportunities). This project will explore these areas using data coded from the 'NetballStats' app (<http://peranasports.com/software/netballstatshd/>), which reports information regarding in-game statistics, as well as player involvement and spatial positioning details. Pre-coded data from the 2018 Suncorp Super Netball season will be used, with the opportunity to code additional data (e.g. 2017/18 Australian Diamonds matches; 2019 Suncorp Super Netball matches) also available.

### Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### Skills specific to this project the student will develop

Image and/or video analysis; Quantitative analysis (statistics); Data Analytics; Performance Analysis

## Project number: ESS\_23

**Project title:** Individual and team playing styles in elite-level netball: Do certain styles lead to success?

**Primary supervisor:** Dr Aaron Fox

**Phone:** 5247 9720

**Email:** aaron.f@deakin.edu.au

**Co-supervisor/s:** Dr Lyndell Bruce; Dr Dan Dwyer

### Supervisor profile

Dr Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance. Aaron's work involves the use of a range of analytical techniques to identify optimal strategies for improving performance in sport. Aaron's previous work has included analysing the activity patterns and workload demands of elite-level international netball.

Dr Lyndell Bruce is a senior lecturer in Sports Science and has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Dr Dan Dwyer is a senior lecturer in Applied Exercise and Sports Science with a research focus on measurement, analysis and prediction of performance in sport. Dan has specific interests in how modern technology can assist in measuring athlete training load and competition performance, and the role of data science and statistical models in sport.

### Broad project topic area

Applied Sports Science; Sports coaching; Performance Analysis; Data Analytics

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurn Ponds campus

### Project description

Netball teams are often made up of a selection of players that individually and in combination encompass various playing styles. For example; certain teams place a high scoring load on a single shooting position, while others may share this more evenly across the two shooting positions. Certain play styles may result in more successful outcomes, or different play styles may be required when facing different oppositions. This project aims to quantify the playing styles (both individual and team) used within elite-level netball, and examine how these relate to success (i.e. winning vs. losing games). Data coded from the 'NetballStats' app (<http://peranasports.com/software/netballstatshd/>), which reports information regarding in-game statistics, as well as player involvement and spatial positioning details will be used to explore these areas. Pre-coded data from the 2018 Suncorp Super Netball season will be used, with the opportunity to code additional data (e.g. 2017/18 Australian Diamonds matches; 2019 Suncorp Super Netball matches) also available.

### Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### Skills specific to this project the student will develop

Image and/or video analysis; Quantitative analysis (statistics); Data Analytics; Performance Analysis

## **Project number: ESS\_24**

**Project title:** Sporting profiles of female Australian Rules Football players

**Primary supervisor:** Dr Lyndell Bruce

**Phone:** 03 9246 8967

**Email:** lyndell.bruce@deakin.edu.au

**Co-supervisor/s:** Dr. Fraser Carson & Brad Keller (Glenelg Football Club)

### **Supervisor profile**

Dr Lyndell Bruce is a Senior Lecturer in Sports Science within the School of Exercise and Nutrition Science and a member of the Centre for Sport Research at Deakin University. She has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He currently provides psychological support for the Deakin Melbourne Boomers. He has previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. He has a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

### **Broad project topic area**

Applied Sports Science; Skill acquisition, talent identification

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The sporting backgrounds of athletes can provide an indication of the types of activities and experiences that may contribute to the development of their sporting skills. Previous research has demonstrated that sport specific structured practice is required, however this may be somewhat supplemented by other sporting experiences. The incarnation of AFLW has provided another elite pathway for female athletes to explore. Gaining insight into the backgrounds of these athletes and current pathway athletes will assist in understanding those experiences which may contribute to the developing of sporting expertise if female Australian Rules Football athletes.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## Project number: ESS\_25

**Project title:** Health-related risk factors for cognitive impairment in the elderly

**Primary supervisor:** Dr Helen Macpherson

**Phone:** 9244 5317

**Email:** helen.macpherson@deakin.edu.au

**Co-supervisor/s:** Prof Robin Daly

### Supervisor profile

Dr Helen Macpherson completed undergraduate studies in Psychology and Psychophysiology. She conducts research on healthy brain ageing, with a focus on dementia prevention. Dr Macpherson is currently leading a randomised controlled trial examining the effects of dietary supplementation combined with physical activity on brain health and cognitive function in older people at risk of dementia. Dr Macpherson has conducted numerous randomised controlled trials to investigate the cognitive and mood effects of nutritional interventions including multivitamins, glucose and whole diet change. Her research investigates mechanisms of action including cardiovascular changes and direct effects on brain function using a range of neuroimaging modalities including EEG and MRI.

Prof Robin Daly has over 20 years of experience in conducting human clinical, public health and translational intervention trials to evaluate the role of exercise and nutrition for preventing and managing common chronic diseases.

### Broad project topic area

Biomedicine; Physical activity; Cognitive function

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Low physical activity is recognised as a risk factor for cognitive decline and dementia. Recent work has indicated that in individuals over the age of 60, those with the lowest participation in physical activity had increased 10 year risk of dementia compared to those with higher physical activity. There is also growing evidence that low physical activity is associated with poorer cognition, even in those without dementia. However, the underlying mechanisms responsible for these associations are uncertain.

The aim of this study is to investigate the relationship between cognition and health parameters relevant to a sedentary lifestyle, such as cardiovascular health and body composition. Participants in this study will be older people with subjective memory complaints, which can serve as an early marker of cognitive impairment. The findings from this study will be used to inform the development of targeted interventions designed to benefit brain health in older people.

**Methodology:** This will be a cross-sectional analysis of baseline data from a larger study examining the effects of exercise training and nutrition on cognitive function in older adults.

### Skills/attributes required by the student

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### Skills specific to this project the student will develop

Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics);

## **Project number: ESS\_26**

**Project title:** The effect of strength and conditioning on lower limb gait and strength symmetry in runners

**Primary supervisor:** Jason Bonacci

**Phone:** 52272634

**Email:** jason.bonacci@deakin.edu.au

**Co-supervisor/s:** Aaron Fox, Sam Hoffmann, Kris Hinck, Danielle Trowell

### **Supervisor profile**

Jason Bonacci is a senior lecturer in Biomechanics at the Waurin Ponds Campus. Jason is an active researcher in the area of lower limb neuromuscular control and performance. His research interests include the mechanical and neuromuscular adaptations that occur with training and injury. He has a particular interest in understanding the mechanisms of musculoskeletal injury and the evidence underpinning the management of such injuries.

Aaron Fox is a lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance.

Sam Hoffmann is a lecturer in Applied Exercise and Sport Science and her research expertise is related to strength and conditioning and sports physiology.

Kris Hinck is a lecturer in Applied Sport Science and has research interests in strength and conditioning and sports performance.

Danielle Trowell is a PhD student based at the Australian Institute of Sport and has research expertise in running biomechanics and performance.

### **Broad project topic area**

Applied Sports Science; Strength and Conditioning; Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Supervisors are based at Waurin Ponds but the student can be based at either campus

### **Project description**

Strength training is advocated for injury prevention and performance enhancement in runners. Running technique is regulated by a complex interaction of the neuromuscular and skeletal systems and inter-limb asymmetry in running technique and strength and power tests are thought to be related to injury risk. The aim of this study is to examine the effect of a 10 week strength and conditioning program on lower limb strength and gait symmetry in runners. This project is part of a larger trial examining the effect of strength and conditioning on running biomechanics and performance and the data has been collected.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Exercise prescription and monitoring; Quantitative analysis (statistics);

## **Project number: ESS\_27**

**Project title:** The effect of surfing on mood and mental health and wellbeing

**Primary supervisor:** Peter Kremer

**Phone:** 03 52273396

**Email:** peter.kremer@deakin.edu.au

**Co-supervisor/s:** Fraser Carson

### **Supervisor profile**

Dr Peter Kremer

Peter is a senior lecturer in sport and exercise behavior with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

Dr Fraser Carson

Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He has a strong research background with publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

This project provides opportunity for a student to develop survey development and data collection skills as well as quantitative data management and analysis skills. Significantly, students will also be able to collect data 'while hanging out at the beach'.

### **Broad project topic area**

Physical activity; Mental health

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Evidence indicates that physical activity and exercise provides a range of psychological benefits. Other evidence indicates enhanced mental health and wellbeing is associated with natural environments: 'a green space' effect. Surfing is a popular leisure time activity performed in the natural ocean environment. Anecdotally, surfers report a number of positive psychological effects (e.g., enhanced positive mood) following surfing and internationally a number of programs now use surfing as an activity to facilitate promote positive mental health. This project will empirically examine exercise-induced mood alteration following a single bout of surfing. It will also examine the time course of such effects over a 24 hour period post-exercise as well as on general mental health and wellbeing states.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); Survey development

## **Project number: ESS\_28**

**Project title:** Early parental predictors of preschool children's sitting

**Primary supervisor:** Dr Katherine Downing

**Phone:** 92446088

**Email:** k.downing@deakin.edu.au

**Co-supervisor/s:** Assoc Prof Kylie Hesketh

### **Supervisor profile**

Dr Katherine Downing is a postdoctoral research fellow at the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on sedentary behaviour (including screen time, time spent in situations that restrict movement and objectively assessed sitting) in early childhood. Katherine has a particular interest in how we can best educate and support parents to reduce their children's sedentary behaviour.

A/Prof Kylie Hesketh is a senior researcher at IPAN. Her research centres on public health approaches to the promotion of children's physical activity, reduced sedentary behaviours, and prevention of obesity. She has a particular focus on providing children with a healthy start to life through the promotion of obesity-preventive behaviours during early childhood and the development of programs with 'real world' public health utility.

### **Broad project topic area**

Health promotion; Sedentary behaviour

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Despite the common belief that young children are naturally active, many spend large proportions of the day sitting. This is worrying given the increasing evidence that spending prolonged periods of time sitting can have detrimental health outcomes (e.g. increased risk of overweight/obesity, cardiovascular disease). In order to design effective interventions to reduce sitting, we need to understand what influences the amount of time children sit; however, there is currently very little evidence around the predictors of sitting. This project aims to investigate the early parental predictors of objectively assessed sitting in 3-year-old children. Data have been collected from around 200 children. At baseline (child age 3 months), parents reported a wide range of potential predictors including parenting, home environment, individual (e.g. temperament), and family factors. At follow up (child age 3.5 years), activPAL monitors were used to measure time spent sitting. These data will be analysed to determine the early parental predictors of time spent sitting and where future interventions might focus their efforts. There is some scope to tailor the project to the student's interests.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Self-motivated with the ability to work independently

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Understanding of issues pertinent to child health/population health

## **Project number: ESS\_29**

**Project title:** What do parents of young children think about screen time? An exploration of parents' views

**Primary supervisor:** Dr Katherine Downing

**Phone:** 92446088

**Email:** k.downing@deakin.edu.au

**Co-supervisor/s:** Assoc Prof Kylie Hesketh, Dr Jill Hnatiuk

### **Supervisor profile**

Dr Katherine Downing is a postdoctoral research fellow at the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on sedentary behaviour (screen time, time spent in situations that restrict movement and objectively assessed sitting) in early childhood. Katherine has a particular interest in how we can best educate and support parents to reduce their children's sedentary behaviour.

A/Prof Kylie Hesketh is a senior researcher at IPAN. Her research centres on public health approaches to the promotion of children's physical activity, reduced sedentary behaviours and prevention of obesity. She has a particular focus on providing children with a healthy start to life through the promotion of obesity-preventive behaviours during early childhood and the development of programs with 'real world' public health utility.

Dr Jill Hnatiuk is a Lecturer in Physical Activity and Health. Her research focuses on understanding and promoting physical activity in young children. Jill is interested in examining the patterns of physical activity observed in young children and investigating the role of the family, community and early learning settings in shaping these behaviours.

### **Broad project topic area**

Health promotion; Sedentary behaviour

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This project aims to explore the perceptions around screen time of parents of young children (under the age of 2 years). Screens are now ubiquitous in our lives and many devices and Apps are marketed as being educational or beneficial for young children's development. However, there is currently no evidence that there are any benefits of screen time in early childhood; current guidelines in Australia suggest that children under the age of 2 years should not be exposed to any screen time. There are subsequently conflicting and confusing messages for parents. This study will utilise qualitative research methods to gain an understanding of parents' perceptions around screen time. The project can be tailored to student's skills and interest. The student will have the opportunity to recruit parents of young children and conduct qualitative interviews/focus groups or to audit freely available online material for parents' views.

### **Skills/attributes required by the student**

Interpersonal skills and ability to communicate directly with participants and other project contacts; Knowledge and background in health-related sciences

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Qualitative analysis;

## **Project number: ESS\_30**

**Project title:** How many days of monitoring are required to estimate preschool children's sedentary behaviour?

**Primary supervisor:** Dr Katherine Downing

**Phone:** 92446088

**Email:** k.downing@deakin.edu.au

**Co-supervisor/s:** Assoc Prof Kylie Hesketh

### **Supervisor profile**

Dr Katherine Downing is a postdoctoral research fellow at the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on sedentary behaviour (including screen time, time spent in situations that restrict movement and objectively assessed sitting) in early childhood. Katherine has a particular interest in how we can best educate and support parents to reduce their children's sedentary behaviour.

A/Prof Kylie Hesketh is a senior researcher at IPAN. Her research centres on public health approaches to the promotion of children's physical activity, reduced sedentary behaviours, and prevention of obesity. She has a particular focus on providing children with a healthy start to life through the promotion of obesity-preventive behaviours during early childhood and the development of programs with 'real world' public health utility.

### **Broad project topic area**

Health promotion; Sedentary behaviour

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Most sedentary behaviour research in early childhood has focused on subjective measures of specific sedentary behaviours (e.g., parent-reported screen time). However, sedentary behaviour includes a number of different behaviours beyond screen time (e.g., sitting reading, playing quietly, sitting in car). Objective measures of sedentary behaviour, such as ActiGraph and activPAL accelerometers, can be used to provide an estimate of total sedentary time. However, there is lack of evidence about the volume of data (i.e., number of days, number of hours within days, weekdays, and/or weekend days) required to reliably estimate sedentary time in young children.

This study will investigate the minimum wear criteria for activPAL and ActiGraph sedentary time using previously collected data from around 250 3-year-old children. These data will be used to determine the differences between week and weekend day sedentary time and to determine the number of hours/day and days required to reliably estimate preschool children's sedentary time.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: ESS\_31**

**Project title:** What are the mechanisms that underpin the plasticity of skeletal muscle to changes in activity?

**Primary supervisor:** Dr Lee Hamilton

**Phone:** 92445207

**Email:** lee.hamilton@deakin.edu.au

**Co-supervisor/s:** Dr Chris Shaw and Dr Kirsten Howlett

### **Supervisor profile**

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the molecular processes by which exercise and nutrition alter whole body physiology. The goal is to contribute research that ultimately allows us to more effectively treat or manage diseases linked to poor lifestyle behaviours such as diabetes, dementia and sarcobesity (sarcopenia concurrent with obesity).

Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences. His research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He is particularly interested in how acute and chronic exercise influence fat and glucose metabolism in skeletal muscle.

Dr Kirsten Howlett is a Senior Lecturer in the School of Exercise and Nutrition Sciences. Her research program is focused on understanding the physiological and metabolic responses to exercise with the aim of providing insight into the role of exercise in the maintenance of good health, and prevention and treatment of disease, in particular insulin resistance and type 2 diabetes.

### **Broad project topic area**

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurin Ponds campus

### **Project description**

There is little doubt that the evolutionary success of humans is in large part due to our cognitive, physical and metabolic adaptability. The metabolic and structural adaptability of skeletal muscle has been well defined such that if you use a muscle a certain way it will adapt, and if you stop using a muscle a certain way it will revert back to its 'default' phenotype. The underlying molecular processes that sense and signal environmental changes relaying this information to a change in gene/protein expression and ultimately function, are poorly understood. The aim of the project is to employ a range of molecular techniques on banked tissue samples to explore the responsiveness of candidate mechanisms to variations in skeletal muscle loading.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_32**

**Project title:** What are the mechanisms that underpin the plasticity of skeletal muscle to changes in nutrition?

**Primary supervisor:** Dr Lee Hamilton

**Phone:** 92445207

**Email:** lee.hamilton@deakin.edu.au

**Co-supervisor/s:** Dr Kirsten Howlett and Dr Chris Shaw

### **Supervisor profile**

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the molecular processes by which exercise and nutrition alter the phenotype of skeletal muscle. The goal is to contribute research that ultimately allows us to treat or manage diseases linked to poor lifestyle choices such as diabetes, dementia and sarcobesity (sarcopenia concurrent with obesity).

Dr Kirsten Howlett is a Senior Lecturer in the School of Exercise and Nutrition Sciences. Her research program is focused on understanding the physiological and metabolic responses to exercise with the aim of providing insight into the role of exercise in the maintenance of good health, and prevention and treatment of disease, in particular insulin resistance and type 2 diabetes.

Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences. His research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He is particularly interested in how acute and chronic exercise influence fat and glucose metabolism in skeletal muscle.

### **Broad project topic area**

Food and nutrition science; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurin Ponds campus

### **Project description**

The evolutionary success of humans is in large part due to our cognitive, physical and metabolic adaptability. The metabolic adaptability of our bodies has allowed our ancestors to survive and thrive on very wide ranges of macronutrient distribution. From the Inuit populations of Canada who survive on a fat rich diet to the Hadza tribe of Tanzania who survive on a carbohydrate rich diet. This diversity of hunter gatherer diets highlights the capacity of our bodies to adapt to large fluctuations in fuel type and availability. The ability of our skeletal muscle to adapt to fuel availability is a large part of our evolutionary success. Unfortunately, it appears that with our current food environment and eating behaviours, our skeletal muscle has a tendency to mal-adapt resulting in insulin resistance. Whilst the basic metabolic responses of skeletal muscle to dietary changes are fairly well characterised, the underlying molecular processes that sense and signal environmental changes relaying this information to adaptations are poorly understood. The aim of the project is to employ a range of molecular techniques on banked tissue samples to explore the mechanisms of adaptation to diet.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_33**

**Project title:** What are the molecular mechanisms that underpin the effects of exercise on the brain?

**Primary supervisor:** Dr Lee Hamilton

**Phone:** 92445207

**Email:** lee.hamilton@deakin.edu.au

**Co-supervisor/s:** Dr Chris Shaw and Dr Kirsten Howlett

### **Supervisor profile**

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the molecular processes by which exercise and nutrition alter whole body physiology. The goal is to contribute research that ultimately allows us to more effectively treat or manage diseases linked to poor lifestyle behaviours such as diabetes, dementia and sarcobesity (sarcopenia concurrent with obesity).

Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences. His research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He is particularly interested in how acute and chronic exercise influence fat and glucose metabolism in skeletal muscle.

Dr Kirsten Howlett is a Senior Lecturer in the School of Exercise and Nutrition Sciences. Her research program is focused on understanding the physiological and metabolic responses to exercise with the aim of providing insight into the role of exercise in the maintenance of good health, and prevention and treatment of disease, in particular insulin resistance and type 2 diabetes.

### **Broad project topic area**

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurin Ponds campus

### **Project description**

There is little doubt that the evolutionary success of humans is in large part due to our cognitive, physical and metabolic adaptability. During post-natal development mammalian brains are incredibly adaptable and plastic. Young, developing mammalian brains can suffer extensive damage and still recover, in part due to the process of neurogenesis (the generation of new neurons). This damage-recovery phenotype reduces with progressing age and for decades it was believed that the adult brain could not undergo neurogenesis. However, in the late 90's it was shown that exercise training could stimulate neurogenesis in the adult brain. Subsequent population based analysis has highlighted the cognitive protection afforded older adults who continue to exercise regularly. Understanding the mechanisms by which exercise can stimulate neurogenesis could reveal novel therapeutic targets for the treatment of neurodegeneration, such as that present in Alzheimer's disease. The aim of the project is to employ a range of molecular techniques on banked tissue samples to explore the responsiveness of candidate mechanisms that may regulate brain neurogenesis.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Image and/or video analysis;

## **Project number: ESS\_34**

**Project title:** Examining the Mental Health (MH) and Well-being (WB) of Australian Sport Officials

**Primary supervisor:** Fraser Carson

**Phone:** 52272388

**Email:** f.carson@deakin.edu.au

**Co-supervisor/s:** Julia Walsh; Luana Main; Peter Kremer

### **Supervisor profile**

Dr Fraser Carson is a Lecturer in Sport Coaching, and currently provides psychological support for the Deakin Melbourne Boomers. He has a strong research background with publications in performance psychology, wellbeing, stress and coping, and coach education.

Dr Julia Walsh is a Senior Lecturer in Sport Coaching. Her expertise is in coach development, communication, female leadership in sport and mentoring. Current research includes understanding issues of health and wellbeing in a sport coaching population, and coach education signature pedagogies.

Dr Luana Main is a Senior Lecturer in Applied Sport Science, with a research background in the space of load monitoring where she investigates the relationship between stress exposure, the resultant fatigue, and impact on wellbeing and performance.

Dr Peter Kremer is a Senior Lecturer in Sport and Exercise Behavior. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

### **Broad project topic area**

Applied Sports Science; Sports coaching; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Officials play an important role in all levels of sport. Research notes they are required to operate under stressful conditions and report a myriad of negative experiences (e.g. fan/athlete abuse; social media commentary). While the ultimate consequence of these circumstances is well documented (i.e. official attrition) less is known of how these negative experiences impact their MH and WB. To perform at their best information is needed to: 1) provide opportunity for them to manage their own MH and WB; and 2) be supported by their organisation in promoting positive MH initiatives. The focus of this project is to provide to obtain an understanding of the individual-, social- and sport-related factors that impact officials' MH and WB.

Participants will complete an online survey questionnaire that will include a number of validated scales. Descriptive analyses will examine relationships between individual-, social- and sport-related factors and officials' MH and WB. This will be followed by subgroup analyses that will test for differences according to demographic factors such as age and gender, previous sporting experience, previous officiating experience and peer support networks.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Primary data collection skills; Quantitative analysis (statistics);

## **Project number: ESS\_35**

**Project title:** 'Have a beer and a bet': Alcohol and gambling advertising and promotion in community sports clubs

**Primary supervisor:** Peter Kremer

**Phone:** 03 52273396

**Email:** peter.kremer@deakin.edu.au

**Co-supervisor/s:** Fraser Carson

### **Supervisor profile**

Dr Peter Kremer

Peter is a senior lecturer in sport and exercise behaviour with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

Dr Fraser Carson

Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He has a strong research background with publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education. This project provides opportunity for a student to develop advanced observational and content analysis methodological skills as well as quantitative data management and analysis skills.

### **Broad project topic area**

Applied Sports Science; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Community sporting clubs play an important role within many communities. Many clubs have mission statements espousing 'family friendly' environments and have policies around the service and consumption of alcohol and gambling behaviour. At the same time, many clubs receive sponsorship/funds from commercial organisations/venues involved in these industries and in turn advertise and promote these to members. Research has documented the frequency and nature of alcohol- and gambling-related advertising in the mass media and shown this has effects on young people including the age they first consume alcohol and their first gambling experience. Little is known about the pervasive presence of alcohol- and gambling-related advertising and promotion in community sport. This project aims to document alcohol- and gambling-related advertising and promotion at community sporting clubs. Observational audits of club facilities (eg. signage) and content analysis of club communications (eg. websites, social media) will be conducted on ~60 community sporting clubs (eg. Australian Rules football, soccer) in Victoria to capture detail about alcohol- and gambling-related advertising and promotion.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Primary data collection skills; Image and/or video analysis; Quantitative analysis (statistics); Observational data and content analysis skills

## Project number: ESS\_36

**Project title:** Measuring healthy lifestyle behaviour using a mobile phone app: The Lifestyle App study

**Primary supervisor:** Dr Shariful Islam

**Phone:** +61 3 9246 8393

**Email:** shariful.islam@deakin.edu.au

**Co-supervisor/s:** Professor Ralph Maddison; Dr Jonathan Rawstorn; Dr Susie Cartledge; Dr Katherine Livingstone

### Supervisor profile

Shariful Islam is a Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). He is a Physician Scientist with a PhD and post doctorate in digital health. Shariful's research focuses on using eHealth, wearable devices and innovative information technologies for prevention and management of chronic diseases. He has experience in design and conduct of large-scale epidemiological studies, clinical trials and implementation research. He has published >60 peer-reviewed articles. Shariful currently supervises 7 Doctor of Medicine students at the University of Sydney and has supervised to completion 12 Masters students.

Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at the Institute for Physical Activity and Nutrition (IPAN). He has substantial skills and experience in the design, development, management, analysis, interpretation and reporting of large-scale clinical trial studies.

Jonathan Rawstorn, Susie Cartledge and Katherine Livingstone are Research Fellows at IPAN and have skills and experience in physical activity and nutrition, research design, implementation, data analysis and reporting.

### Broad project topic area

Food and nutrition science; Public health nutrition; Applied Sports Science; Exercise physiology; Physical activity; Health promotion; Digital Health, mHealth

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Lifestyle related behaviours such as physical activity, sleep and diet are important risk factors for chronic diseases. However, measuring these lifestyle behaviours is challenging. Advancing smartphone capabilities provide an ideal platform to capture real-time lifestyle data from large numbers of participants, for extended duration, at low-cost and with a relatively low participant burden. In collaboration with the School of IT, we are developing a mobile phone app that can measure daily steps and heart rate, and collect self-reported data on diet, disease and health status. The aim of this project is to develop a set of healthy lifestyle messages based on current guidelines, collect data on lifestyle risk factors from a cohort of adult volunteers and measure the relationships between risk factors and cardiovascular diseases.

The successful student will work with the team to develop the text messages on healthy lifestyle behaviour that can be sent through the app to encourage physical activity and optimum diet. The student will assist the team in data collection, analysis and reporting.

### Skills/attributes required by the student

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member;

### Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics); Qualitative analysis;

## **Project number: ESS\_37**

**Project title:** Acceptability and usability of wearable device for measuring cardiovascular risk factors in the elderly population

**Primary supervisor:** Dr Shariful Islam

**Phone:** +61 3 9246 8393

**Email:** shariful.islam@deakin.edu.au

**Co-supervisor/s:** Professor Ralph Maddison

### **Supervisor profile**

Shariful Islam is a Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). He is a Physician Scientist with a PhD and post doctorate in digital health. Shariful's research focuses on using eHealth, wearable devices and innovative information technologies for prevention and management of chronic diseases. He has experience in design and conduct of large-scale epidemiological studies, clinical trials and implementation research. Shariful has supervised 7 Doctor of Medicine students and 12 Masters students to completion.

Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at IPAN. He has developed a significant programme of innovative research, which leads the way in terms of the interventions and the methodologies used, exemplified through 1) the incorporation of leading edge technologies to trial interventions and measure outcomes; 2) robustly designed and conducted randomised controlled trials. Prof Maddison has substantial skills and experience in the design, development, management, analysis, interpretation and reporting of large-scale clinical trial studies.

### **Broad project topic area**

Physical activity; Health promotion; Digital Health

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Heart disease is the leading cause of death and disability among older population. Monitoring of risk factors such as high blood pressure, physical inactivity and sleep problems is essential for prevention and management of heart disease. However, these risk factors are difficult to monitor over time by both participants and healthcare providers. In recent years, with the development of consumer wearable devices offers potential for monitoring of these risk factors by participants. We have a low-cost, wrist-worn device that can measure blood pressure, heart rate, physical activity and sleep. These devices might be useful for the elderly population to monitor their risks of heart disease. However, the acceptability and usability of wearable devices for measuring these risk factors is not known in the elderly population. In this study, the successful student will test the acceptability and usability of the wearable device in 20 participants aged 60 years and older. Participants will be required to wear the devices for 7 days. At the end of the study, data will be collected from the device, and the participants using a questionnaire and semi-structured interviews.

### **Skills/attributes required by the student**

Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS)

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); qualitative analysis; Scientific writing

## **Project number: ESS\_38**

**Project title:** The impact of embedding pedagogical strategies targeting physical activity within teacher education

**Primary supervisor:** Dr Natalie Lander

**Phone:** +61 3 924 68818

**Email:** natalie.lander@deakin.edu.au

**Co-supervisor/s:** Professor Jo Salmon and Dr Harriet Koorts

### **Supervisor profile**

Dr Natalie Lander is a Lecturer in the School of Education (Health and Physical Education). Her research focus is around developing and delivering evidenced-based teacher training interventions, which aim to increase physical activity and decrease sitting time across the school day. Natalie has published 11 peer review papers, and has disseminated her research at nine key international and 10 national conferences. She has actively led research, and collaborates with researchers across faculties at Deakin University, and also nationally and internationally. The original Transform-Us! Study (2009-2013) was led by Professor Jo Salmon and supported by a National Health and Medical Research Council (NHMRC) Project Grant and a Diabetes Australia Research Trust grant. Prof Salmon holds a current NHMRC Partnership Grant for the implementation of this program to all primary schools in Victoria. Prof Salmon has been awarded more than \$15 million in funding for nationally competitive funding schemes.

### **Broad project topic area**

Physical activity; Health promotion; School based intervention, teacher education

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Just 14% of Australian children meet recommended levels of PA (60 mins/day) and sedentary behaviour (<2hrs/day recreational screen time). This is particularly evident at school where children spend around 70% of their day sitting. Therefore, reducing sedentary behaviour and improving PA across the school day is a global research priority. Classroom-based active breaks and active lessons are a low-cost and easy-to-implement way of breaking sitting time and increasing PA throughout the school day. Transform-Us! was a successful school-based randomised controlled trial (RCT) targeting increases in children's PA and reductions in sitting. This project aims to embed Transform-US! approaches within key units across each year of a pre-service teacher education course (i.e., Transform-ED!) and then investigate the impact of this training on the pre-service teachers' capacity to increase children's PA, reduce sitting time and improve academic-related outcomes. The impact of pre-service teacher education on teacher effectiveness and student outcomes is internationally recognised as pivotal, but is an understudied setting for PA and sedentary behaviour.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Quantitative analysis (statistics); Qualitative analysis;

## **Project number: ESS\_39**

**Project title:** Soldier performance management: The impact of training on psycho-physiological wellbeing of army recruits

**Primary supervisor:** Dr Luana Main

**Phone:** 9244 5030

**Email:** luana.main@deakin.edu.au

**Co-supervisor/s:** Dr Jamie Tait

### **Supervisor profile**

Dr Main has expertise in the psycho-physiological monitoring of individuals wellbeing. Her research investigates the relationship between stress exposure (physical and/or psychological), the resultant fatigue, and impact on wellbeing and physical performance. Specifically in the areas of sport and physically demanding occupations. In each context, the goal has been to identify early warning signs of excessive stress exposure to mitigate risk of injury, illness, and compromised long-term health. She has supervised six honours students. Three have gone onto PhDs with scholarship, one into Masters of Clinical Exercise Physiology, and the others went to industry positions.

Dr Jamie Tait has recently completed his PhD focusing on the application of exercise to improve cognitive health and wellbeing. A related interest of Dr. Tait's research explores the psycho-biological relationships that exist between inflammatory and neurological bio-markers with measures of well-being and mental health, and the consequences of these relationships for broader health outcomes. Dr Tait has experience working with a diverse range of populations, including emergency service workers.

### **Broad project topic area**

Applied Sports Science; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Members of the Australian defence force are frequently exposed to physically and cognitively demanding situations, in operational deployment, active duty, and daily living. This exposure can negatively impact psychological well-being and physiological health and performance in both the short and long-term. Excessive training loads and insufficient recovery within military training may also contribute to poor health outcomes. These psychophysiological effects may be experienced as early as basic training in new recruits, and therefore this period provides a unique opportunity to observe and track any consequences of these stressors through objective and subjective measurement. Depressed mood is a typical response to overtraining and stress exposure, while inflammatory cytokines have also been linked to periods of physical overload and stressful experiences. These are also associated with chronic conditions such as Depression, CVD, and Post Traumatic Stress Disorder. Therefore, identifying whether the period of basic training may elicit behavioural and biological symptoms suggestive of training mal-adaptation is important for the maintenance of physical and mental health in recruits.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS);

### **Skills specific to this project the student will develop**

Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Exercise prescription and monitoring; Qualitative analysis;

## **Project number: ESS\_40**

**Project title:** Exercise rehabilitation, load monitoring, and its impact on wellbeing and function low back pain.

**Primary supervisor:** Dr Luana Main

**Phone:** 9244 5030

**Email:** luana.main@deakin.edu.au

**Co-supervisor/s:** A/Prof. Daniel Belavy

### **Supervisor profile**

Dr Main has expertise in the psycho-physiological monitoring of individuals wellbeing. Her research investigates the relationship between stress exposure (physical and/or psychological), the resultant fatigue, and impact on wellbeing and physical performance. Specifically in the areas of sport and physically demanding occupations. In each context, the goal has been to identify early warning signs of excessive stress exposure to mitigate risk of injury, illness, and compromised long-term health. She has supervised six honours students. Three have gone onto PhDs with scholarship, one into Masters of Clinical Exercise Physiology, and the others went to industry positions.

Associate Professor Daniel Belavy focusses on exercise, the spine and back pain. His interest is in conducting research that leads to significant advances in how we conceptualise back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics. He has supervised two honours students to completion to date with one student currently enrolled in 2018. One prior student received a PhD scholarship and the other student achieved her chosen goal of going on to study medicine.

### **Broad project topic area**

Applied Sports Science; Exercise physiology; musculoskeletal health

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This honours project will look at how measures of perceived wellbeing change over the course of the two different rehabilitation programs. Similar to load monitoring in sport, fortnightly training, mood and pain data will be collected using the athlete monitoring ("Smartabase") and survey (Qualtrics) software. In addition to this, questionnaire data about participant's injury and its impact on their work and quality of life will be collected at baseline, 3 months and 6 months. This data will be compared to available physiological and functional outcomes data. This honours project will be embedded in a larger study of 6 months exercise treatment for chronic back pain: either an exercise physiologist led approach versus physiotherapy treatment.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Analytical and critical analysis skills

## **Project number: ESS\_41**

**Project title:** The relationship between athlete wellbeing, training load and illness over an AFL season.

**Primary supervisor:** Dr Luana Main

**Phone:** 9244 5030

**Email:** luana.main@deakin.edu.au

**Co-supervisor/s:** Dr Lyndell Bruce and Dr Eric Drinkwater

### **Supervisor profile**

Dr. Luana Main has expertise in the psycho-physiological monitoring of individuals wellbeing. Her research interest is the relationship between stress exposure (e.g. training load), fatigue, and its impact on wellbeing and physical performance in sport and occupation contexts (i.e. Firefighters, Army). Ultimately with the goal to identifying early warning signs of excessive stress exposure to minimise risk of injury, illness, and compromised long-term health. She has supervised six honours students. Three have gone onto PhDs with scholarship, one into Masters of Clinical Exercise Physiology, and the others went to industry positions.

Dr. Lyndell Bruce has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

Dr Eric Drinkwater's research primarily involves collaborating with high-performance sporting organisations such as the Geelong Cats or Australian Institute of Sport, and investigating appli

### **Broad project topic area**

Applied Sports Science; Exercise physiology; Sports Medicine

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Illness, particularly upper respiratory tract infections (URTI) are commonly experienced in athletes during periods of heavy training, travel and the cooler months of the year. It is also known that succumbing to an illness can be more common in times of stress. There are a number of indicators related to stress exposure and coping that may suggest an increased risk of illness. Many of these have only recently been routinely collected in AFL and therefore the correlation with illness outcomes are unknown. The aim of this study will be to 1) assess the correlation between coping or wellness indicators including heart rate variability (HRV), sleep metrics and jumps with illness prevalence; and 2) identify whether these indicators change over an AFL season. This project will be conducted in collaboration with the Geelong Cats AFL club, using wellness and performance (i.e. jumps) data from the 2018 and 2019 seasons in players with the EMFIT sleep mats. The outcomes of this study will assist Geelong FC staff with understanding the warning signs for illness, possibly being able to intervene at an opportune time to prevent illness.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Exercise prescription and monitoring; Qualitative analysis;

## **Project number: ESS\_42**

**Project title:** Developing a home audit tool for measuring physical activity and sedentary environments for children

**Primary supervisor:** Dr Jill Hnatiuk

**Phone:** 03 9246 8776

**Email:** jill.hnatiuk@deakin.edu.au

**Co-supervisor/s:** A/Prof Kylie Hesketh; Dr Katherine Downing

### **Supervisor profile**

Dr Jill Hnatiuk is a Lecturer in Physical Activity and Health. Her research interests focus on understanding and promoting physical activity in young children and their families. Jill is particularly interested in examining the patterns of physical activity observed in young children and investigating the role of the family, community and early learning settings in shaping these behaviours.

A/Prof Kylie Hesketh is a senior researcher in IPAN. Her research centres on public health approaches to the promotion of children's physical activity, reduced sedentary behaviours, and prevention of obesity. She has a particular focus on providing children with a healthy start to life through the promotion of obesity-preventive behaviours during early childhood and the development of programs with 'real world' public health utility.

Dr Katherine Downing is a postdoctoral research fellow in the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on sedentary behaviour (screen time, restricted movement and sitting) in early childhood. Katherine has a particular interest in how we can best educate and support parents to reduce their children's sedentary behaviour.

### **Broad project topic area**

Physical activity; Health promotion; Sedentary behaviour

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

A growing body of research suggests that many Australian children are not physically active enough, and engage in too much sedentary time, even in early childhood (birth - 5 years old). The home environment is where children are first exposed to physical activity and sedentary behaviours, and is an environment that has the potential to impact their health throughout childhood. To date, research has found few consistent home environmental factors that influence young children's physical activity in the early years (birth - 5 years old). This is possibly due to few studies thoroughly examining a number of home physical environment related factors using objective measurement tools. This project will focus on developing and evaluating an audit tool to objectively capture the home physical activity and sedentary behaviour environment relevant to families with young children. This project is unique as it allows the student to create something new for use in future physical activity and sedentary behaviour projects focused on families with young children.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks; Knowledge and background in a health science related field

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics);

## **Project number: ESS\_43**

**Project title:** More than just the sum of the parts: Understanding physical activity in families with young children

**Primary supervisor:** Dr Jill Hnatiuk

**Phone:** 03 9246 8776

**Email:** jill.hnatiuk@deakin.edu.au

**Co-supervisor/s:** A/Prof Kylie Hesketh

### **Supervisor profile**

Dr Jill Hnatiuk is a Lecturer in Physical Activity and Health. Her research interests focus on understanding and promoting physical activity in young children (predominantly aged 0-5 years) and their families. In particular, Jill is interested in examining the patterns of physical activity observed in young children as well as investigating the role of the family, community and early learning settings in shaping these behaviours.

A/Prof Kylie Hesketh is a senior researcher in IPAN. Her research centres on public health approaches to the promotion of children's physical activity, reduced sedentary behaviours, and prevention of obesity. She has a particular focus on providing children with a healthy start to life through the promotion of obesity-preventive behaviours during early childhood and the development of programs with 'real world' public health utility.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

A growing body of research suggests that physical inactivity begins early in life, with only 30% of Australian children meeting physical activity recommendations by the start of primary school. The home environment is where children are first exposed to physical activity and is one that continues to have a strong influence throughout childhood. Despite the prominence of the ecological model in understanding health behaviour change, little research has been conducted to understand the combined influence of the home and neighbourhood social and physical environments with individual factors. This project seeks to better understand how these influences are associated with children's physical activity, particularly in at risk groups. This project will use secondary data from the Healthy, Active Preschool and Primary Years Study, a cohort study of approximately 1000 Victorian children. Students will have the opportunity to tailor the study to their interests (particularly in defining 'at risk' groups). For example, the student may compare how children with low physical activity and high sedentary behaviour compare to those with more desirable behaviours.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member; Knowledge and background in a health science related field

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); Knowledge of/experience with physical activity promotion in early childhood

## **Project number: ESS\_44**

**Project title:** How can the Geelong Cats Football Club engage women and girls in sport and active recreation?

**Primary supervisor:** Dr Shannon Sahlqvist

**Phone:** 03 9251 7782

**Email:** shannon.sahlqvist@deakin.edu.au

**Co-supervisor/s:** Dr Jill Hnatiuk, Sarah Costigan

### **Supervisor profile**

Shannon Sahlqvist is a senior lecturer in Physical Activity and Health. Shannon's research is primarily focused on understanding and promoting physical activity. She has considerable expertise in the design, delivery and evaluation of physical activity interventions and in qualitative and mixed methods research design methods.

Jill Hnatiuk is a lecturer in Physical Activity and Health. Her research interests focus on understanding and promoting physical activity in children and their families. In particular, Jill is interested in examining the patterns of physical activity observed in young children as well as investigating the role of the family, community and early learning settings in shaping these behaviours.

Sarah Costigan is a lecturer in Physical Activity and Health. Sarah's area of research focuses on physical activity promotion for adolescents. Her recent research has examined the impact of different physical activity intensities on fitness, mental health and cognitive outcomes in adolescents.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Wearn Ponds campus

### **Project description**

There is considerable local, national and global interest in increasing participation of women and girls in sport and active recreation thereby addressing the current gender gap. Participation in sport and active recreation has many benefits for women and girls including health, mental well-being and social interaction. Recently, professional football clubs have successfully engaged men in lifestyle programs promoting physical activity and weight loss. Whether they can empower women and girls to participate in sport and active recreation is unknown. The student will undertake qualitative work with women and girls to understand the best ways to engage them in sport and active recreation with a specific focus on the role of professional sporting clubs. The findings from this work will help to inform a program specifically tailored to women and / or girls delivered in partnership with the Geelong Cats Football Club.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Qualitative analysis;

## **Project number: ESS\_45**

**Project title:** Do as I say, not as I do: how do parents influence their child's sitting behaviours?

**Primary supervisor:** Dr Lauren Arundell

**Phone:** 9244 6278

**Email:** lauren.arundell@deakin.edu.au

**Co-supervisor/s:** Kate Parker and Prof. Anna Timperio

### **Supervisor profile**

Dr Lauren Arundell is a Postdoctoral Research Fellow within IPAN. Her research focusses on the measurement and correlates of physical activity and sedentary behaviours, and developing and evaluating interventions that promote health enhancing behaviours. She has experience supervising Honours and PhD students.

Kate Parker is a researcher at IPAN with seven years experience teaching undergraduate students in the physical activity and health field. Her research focuses on clustering of physical activity and sedentary behaviours amongst youth and the factors that contribute to participation over time.

Alfred Deakin Professor Anna Timperio's research expertise centres on examining the contextual influences on children's and adult's health behaviours, and evaluation of behaviour change interventions in a variety of settings (e.g. schools, homes, workplaces etc). Prof Timperio has won numerous awards for her contributions to research and has extensive experience supervising honours and PhD students over the last 16 years.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Across the lifespan, most people spent too much time being sedentary (sitting), which has been linked to a range of poor health outcomes including obesity, diabetes, cardiovascular disease, and poor social and mental health. Parents may influence their child's sitting behaviours at home through a variety of ways including role modelling, encouragement, beliefs and rules. However, does having these in place mean their child actually sits less?

This project will involve secondary data analysis from The SIT Study, an online survey of home-based sedentary behaviours among children and their parents. Approximately 600 parents of children aged 8-16 years completed the survey in 2017. Participants provided information about the sitting behaviours they, and their child, perform at home, and the potential influence they have on their child's sitting behaviours.

By determining if, and how, parents influence their child's sitting behaviours, the findings from this project will help inform intervention strategies to reduce the alarming levels of children's sitting in the home.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics)

## **Project number: ESS\_46**

**Project title:** Active wear: Do 'compression' qualities result in a happy runner?

**Primary supervisor:** Dr Samantha Hoffmann

**Phone:** 5227 3398

**Email:** s.hoffmann@deakin.edu.au

**Co-supervisor/s:** Dr Jason Bonacci, Dr Aaron Fox, Dr Peter Kremer, A/Prof Paul Collins (School of Engineering)

### **Supervisor profile**

Sam Hoffmann is a Lecturer in Applied Exercise and Sport Science. Sam's broad research areas are exercise physiology, exercise prescription and sports performance, with a specific focus on female-specific demands and considerations in exercise and sport.

Jason Bonacci is a Senior Lecturer in Anatomy and Biomechanics and his research expertise is in the area of mechanical and neuromuscular adaptations to training and injury.

Aaron Fox is a Lecturer in Applied Sports Science and has research expertise in the area of neuromechanics and human performance.

Peter Kremer is a Senior Lecturer in Sport and Exercise Behaviour. He has extensive research experience, broad knowledge and skills in academic and applied sport and exercise psychology and expert knowledge of both quantitative and qualitative research methods.

Paul Collins is an Associate Professor in Design and Product Development. He has extensive experience in designing, developing and delivery of products. He works almost exclusively with industry partners for his research. His research involves analysis on technology and products and how people interact with them.

### **Broad project topic area**

Applied Sports Science; Biomechanics; Athletic apparel design and evaluation

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Although the results are conflicting, there is evidence surrounding the use of compression garments for the purpose of improving exercise performance, reducing the perception of effort, reducing muscle damage, and enhancing recovery. However, for the recreational exerciser, there may be additional benefits in terms of a more positive exercise experience, and enhanced comfort and confidence when wearing garments that have compression qualities.

This study will be conducted in collaboration with Lululemon Athletica, and will investigate the experiences and perceptions of female exercisers when wearing garments with compression qualities around the abdominal region and lower body whilst running. Additionally, these perceptions will be compared to soft tissue movement around these areas, as assessed by motion sensors.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; A keen interest in the collaboration between sport science and product design

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); Biomechanical and athletic apparel evaluation

## **Project number: ESS\_47**

**Project title:** How does muscle fibre type influence lipid content and metabolism?

**Primary supervisor:** Dr Chris Shaw

**Phone:** 03 5227 3394

**Email:** chris.shaw@deakin.edu.au

**Co-supervisor/s:** Dr Kirsten Howlett and A/Prof Clinton Bruce

### **Supervisor profile**

Dr Shaw's research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He is particularly interested in how muscle fibre type can influence fat metabolism.

Dr Howlett's research program is focused on understanding the physiological and metabolic responses to exercise with the aim of providing insight into the role of exercise in the maintenance of good health, and prevention and treatment of disease, in particular insulin resistance and type 2 diabetes.

Dr Bruce's research is focussed on understanding the regulation of lipid and glucose metabolism in skeletal muscle. An area of particular interest is in identifying the role of lipids in regulating skeletal muscle function. The supervisory team have complementary research interests and skills and have successfully collaborated previously on honours research projects.

### **Broad project topic area**

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Project can be completed at either the Burwood or Waurn Ponds campus

### **Project description**

It is well known that excess lipid storage in adipose tissue, muscle and liver is associated with negative health outcomes, such as metabolic and cardiovascular disease. However, dietary fat is also essential and different types of lipids play a vital role in cell function through fuel provision for metabolism, the structure and function of cellular membranes and as molecules that influence cell signaling pathways.

In skeletal muscle, lipid metabolism is more complex than other tissues as it is highly dependent upon muscle fibre type composition. For example, intramuscular triacylglycerol stores are 2-3-fold higher in type I muscle fibres and muscle lipid use during exercise is specific to type I muscle fibres. Therefore, muscle fibre type specific measurements are essential when investigating muscle lipid metabolism, however, no studies have investigated the fibre type differences in the type of lipids stored within skeletal muscle. This project will use cutting edge techniques to isolate and characterise individual muscle fibres from banked samples, and assess the lipid composition and expression of related metabolic enzymes in different fibre types.

### **Skills/attributes required by the student**

Knowledge and background in anatomy and/or physiology;

### **Skills specific to this project the student will develop**

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques;

## **Project number: ESS\_48**

**Project title:** What can individual metabolic profiling tell us about athletic performance?

**Primary supervisor:** Dr Chris Shaw

**Phone:** 03 5227 3394

**Email:** chris.shaw@deakin.edu.au

**Co-supervisor/s:** Dr Kirsten Howlett

### **Supervisor profile**

Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences. His research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He has particular expertise in the assessment of fat metabolism and its regulation during exercise

Dr Kirsten Howlett is a Senior Lecturer in the School of Exercise and Nutrition Sciences. Her research program is focused on understanding the physiological and metabolic responses to exercise with the aim of providing insight into the role of exercise in the maintenance of good health, and prevention and treatment of disease, in particular insulin resistance and type 2 diabetes.

Dr Howlett and Dr Shaw have complementary research interests and skills and have successfully collaborated and supervised numerous honours research projects.

### **Broad project topic area**

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

Recent studies have shown a remarkable individual variation in the capacity to utilise fat during exercise, even amongst similar groups of professional athletes. Factor such as aerobic capacity, habitual diet, physical activity, body composition and muscle fibre type are believed to explain some, but not all, of this variation.

This variability in fat oxidation poses the question as to whether such differences in metabolism are important for athletic performance? This project will categorise individual athletes as having either a 'high' or 'low' capacity for fat oxidation by performing an incremental Fat-max exercise test. Secondly we will determine the impact of fat oxidation capacity on performance and fatigue. These results will test the usefulness of individual metabolic profiling which could have implications for personalised training and nutrition strategies.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills;

## **Project number: ESS\_49**

**Project title:** Body composition (weight and skinfold) changes of AFL players over the academy program

**Primary supervisor:** Dominique Condo

**Phone:** 03 9244 5487

**Email:** dominique.condo@deakin.edu.au

**Co-supervisor/s:** Mr Chris Young

### **Supervisor profile**

Dr Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dominique is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in team sports. Her current interests include energy availability in female athletes and the relationship between diet and sleep in athletes.

Mr Chris Young is completing his PhD exploring the Relationships between performance and outcomes in Australian Football. He offers expertise in the management and analysis of data.

### **Broad project topic area**

Sports nutrition; Applied Sports Science;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The first year that players are drafted into the AFL program is often a big change in training loads, including a consistent strength program that many have not been exposed to. This change also comes with a change in weight and body composition, often resulting in a gain of weight with either an increase or decrease in skinfolds, depending on the players and starting point. Although some gain in mass is expected, a significant increase in weight in a short time frame can potentially increase the risk of injury. Thus, the ideal proportion and rate of weight gain is unknown. This study will aim to investigate the average weight gain and body composition changes in Academy players from Geelong Football Club over the academy program and the correlation with injury risk and performance.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: ESS\_50**

**Project title:** Exercising your anxiety away: Investigating the link between physical activity and anxiety symptoms

**Primary supervisor:** Dr Megan Teychenne

**Phone:** 9244 6910

**Email:** mteych@deakin.edu.au

**Co-supervisor/s:** Dr Shannon Sahlqvist and Sarah Costigan

### **Supervisor profile**

Dr Megan Teychenne is a Senior Lecturer in the School of Exercise and Nutrition Sciences at Deakin University (Melbourne, Australia), undertaking her research at the Institute for Physical Activity and Nutrition (IPAN). Dr Teychenne's research investigates the links between physical activity, sedentary behaviour and mental health, particularly amongst women (including pregnant and postpartum). Dr Teychenne has supervised a number of Honours, Masters and PhD students and has a passion for teaching students about all aspects of research, from writing to data analysis right through to presentation skills.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Physical activity is linked to many health benefits for women (including reducing the risk of overweight/obesity, type 2 diabetes and cardiovascular disease). Of recent interest, is the link physical activity has with mental health, namely anxiety and/or depression. Since risk of anxiety may be particularly prevalent in mothers with young children, it is important to investigate the association between lifestyle factors such as physical activity and risk of anxiety.

This cross-sectional study will involve secondary statistical analyses using survey data previously collected from approximately 500 women involved in the Mums, Dads and Kids (MDK) study (2013-2014). Should the student wish to have experience in the 'field' (such as recruitment and data collection), this can also be arranged as the project has the flexibility to be developed into a prospective study.

### **Skills/attributes required by the student**

Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

# Project number: ESS\_51

**Project title:** Glucose Responses to Resistance Exercise in Hypoxia

**Primary supervisor:** Craig Wright

**Phone:** 79266

**Email:** craig.wright@deakin.edu.au

**Co-supervisor/s:** Lee Hamilton

## Supervisor profile

Craig Wright is a member of the Institute for Physical Activity and Nutrition (IPAN) and a lecturer at Deakin University in Exercise and Sport Science. His long term research goal is to understand how the immune system regulates skeletal muscle health, how the immune system becomes suppressed following intense exercise and how modulating the immune system through exercise and nutritional interventions can contribute to skeletal muscle health and healthy ageing. His current research projects utilise a range of approaches from human exercise trials down to animal and cell culture experiments to investigate these areas. Craig has previously supervised research students, all of whom have achieved first class honours research degrees and are now completing PhD research.

## Broad project topic area

Strength and Conditioning; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

## Project description

Hypoxia has been targeted towards elite athletes to improve exercise performance. There are two main accepted training strategies; 1) live high - train high and 2) live high - train low. The outcome of such strategies enhances red blood cell numbers and improves endurance capacity of the individual when returning to sea level. However, as technology advances and becomes more readily available, the general population are trying to gain an advantage to improve health and fitness. There is growing evidence that resistance exercise combined with hypoxia increases muscle strength, muscle growth, muscular endurance and our preliminary data suggests that the glucose response post exercise may be improved. Therefore the aim of this study will be to investigate the post exercise glucose response after an acute resistance exercise training session in hypoxia.

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

## Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_52**

**Project title:** Hypoxic Resistance Exercise and Post Exercise Induced Immunosuppression

**Primary supervisor:** Craig Wright

**Phone:** 52479266

**Email:** craig.wright@deakin.edu.au

**Co-supervisor/s:** Garth Stephenson

### **Supervisor profile**

Craig Wright is a member of the Institute for Physical Activity and Nutrition (IPAN) and a lecturer at Deakin University in Exercise and Sport Science. His long term research goal is to understand how the immune system regulates skeletal muscle health, how the immune system becomes suppressed following intense exercise and how modulating the immune system through exercise and nutritional interventions can contribute to skeletal muscle health and healthy ageing. His current research projects utilise a range of approaches from human exercise trials down to animal and cell culture experiments to investigate these areas. Craig has previously supervised research students, all of whom have achieved first class honours research degrees and are now completing PhD research.

### **Broad project topic area**

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Geelong Waurn Ponds campus

### **Project description**

The immune system is often overlooked when designing exercise interventions. Exercise induced immunosuppression occurs immediately following exercise, especially if the exercise is physically demanding and/or long in duration, which leaves individuals susceptible to illness and infection. Therefore many supplements, diets and interventions are designed to improve the immune system. Interestingly, exposure to hypoxia (a low oxygen environment) for only 1 hour per day for 7-14 days improves non-specific immunity. Similarly, there is growing literature to suggest that resistance exercise in hypoxia increases muscle strength, muscle growth, muscle endurance and improves weight loss and insulin sensitivity. Therefore the immunosuppression seen following exercise may be alleviated with hypoxia, allowing for a higher training load while simultaneously augmenting the beneficial gains associated with traditional resistance exercise. This project aims to characterise the circulating immune cells following a single bout of resistance exercise in a hypoxic environment.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## Project number: ESS\_53

**Project title:** Can whole-body vibration therapy improve muscle blood flow and glucose in type 2 diabetes patients?

**Primary supervisor:** Dr Lewan Parker

**Phone:** +61 3 9246 8740

**Email:** lewan.parker@deakin.edu.au

**Co-supervisor/s:** A/Prof. Michelle Keske and Dr Andrew Betik

### Supervisor profile

Dr Parker is supported by an Alfred Deakin Postdoctoral Research Fellowship (2018) and NHMRC Fellowship (2019-2022) and has dedicated his research career to exploring exercise, inflammation, bone metabolism, and microvascular blood flow as important mediators of cardiometabolic health. Dr Parker is also currently exploring whether interventions targeting the improvement of microvascular blood flow, such as exercise training and whole-body vibration therapy, can be used to improve health outcomes and quality of life in cardiometabolic disease patients. The successful honours student will be co-supervised by Associate Professor Michelle Keske, an expert in vascular health and cardiometabolic disease research, and Dr Andrew Betik, an expert in muscle physiology. The honours student will learn specialised state-of-the-art ultrasound and biochemical vascular imaging techniques which only few laboratories world-wide have optimised for research in humans. Furthermore, the student will learn various clinical techniques for measuring blood sugar control in patients with Type 2 Diabetes.

### Broad project topic area

Food and nutrition science; Exercise physiology; Biomedicine; Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Our research team previously established that impaired skeletal muscle microvascular blood flow (impaired blood flow through small blood vessels) is linked to poor blood sugar control in patients with Type 2 Diabetes (T2D). Although exercise improves microvascular blood flow and blood sugar levels, few patients are referred to an exercise program and many are unable to comfortably exercise. Our recent research indicates that whole-body vibration therapy increases microvascular blood flow in healthy individuals. However, whether vibration therapy can be used to improve microvascular blood flow and blood sugar levels in T2D patients is unknown, and will be the aim of the Honours project.

The successful student will learn advanced ultrasound imaging techniques, develop critical research skills including project design, data acquisition and analysis, and disseminate their research findings through scientific publications and conference presentations. The skills gained through this Honours project will be valuable for anyone pursuing a career, or PhD, in clinical exercise physiology.

### Skills/attributes required by the student

Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Exercise prescription and monitoring; Image and/or video analysis; Quantitative analysis (statistics); Ultrasound techniques for measuring cardiac function, arterial blood flow, and skeletal muscle blood flow.

## Project number: ESS\_54

**Project title:** Skeletal muscle blood flow techniques to determine benefits of 2XU garments on exercise and recovery

**Primary supervisor:** Dr Andrew Betik

**Phone:** +61 3 9246 8608

**Email:** Andrew.Betik@deakin.edu.au

**Co-supervisor/s:** A/Prof Michelle Keske, Dr Lewan Parker

### Supervisor profile

Dr Andrew Betik is a Research Fellow in the Institute for Physical Activity and Nutrition (IPAN) with expertise in muscle and cardiovascular physiology, biochemistry and molecular biology. Andrew has a broad range of experience publishing in areas of applied physiology, health, diet, disease and exercise. Andrew's current projects investigate how blood flow to and within the muscle is regulated by measuring the effects of a meal (carbohydrates, fat), hormones (eg. insulin), body composition, exercise and exercise mimetics (eg. vibration platforms) to improve the delivery of oxygen, glucose and insulin.

By using state-of-the-art ultrasound imaging techniques (limited to a select few in the world) the team is able to measure capillary blood flow, essential for understanding the actual blood dynamics within the muscle.

The close-knit research team also consists of: Assoc/Prof Michelle Keske (expert in ultrasound imaging of blood vessels), Dr Lewan Parker (applied exercise physiology background) and Dr James Broatch (Australian Institute of Sport, 2XU), with particular expertise in measuring muscle oxygenation (NIRS) and use of compression garments.

### Broad project topic area

Applied Sports Science; Exercise physiology; Physical activity;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### Project description

Measuring blood flow and oxygen use in an intact muscle in humans is difficult. Yet in metabolic disease and elite sport performance, understanding the muscles ability to receive and utilize blood components is essential to improving performance or health outcomes. Near-infrared spectroscopy (NIRS) is a technique that can be used to estimate muscle oxygen consumption. Some have claimed it represents blood flow within the muscle, although this is lacking direct evidence. We have the capacity to measure capillary blood flow in exercising muscle by visualising capillary blood flow patterns using ultrasound. This project will design a study that will use ultrasound imaging to determine if NIRS can estimate muscle blood flow. Another aim will determine if compression garments (2XU) alter blood flow during exercise and recovery.

The student will learn integrative physiological techniques that can be of great value in the health and sport science. They will develop skills in data acquisition and interpretation, scientific writing and presentation and will enhance their understanding of metabolism and cardiovascular physiology.

### Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics); Capacity to learn other laboratory techniques working on other projects the team is undertaking if the student is motivated and keen

## **Project number: ESS\_55**

**Project title:** Influence of food matrix on leucine amino acid absorption patterns in athletes

**Primary supervisor:** Dr Ramon Hall

**Phone:** 9246 8777

**Email:** ramon.hall@deakin.edu.au

**Co-supervisor/s:** Dr Rhiannon Snipe

### **Supervisor profile**

Dr Ramon Hall: Nutrition and Dietary Intervention Studies; Dairy and Food Industry Research Experience; Regulatory Dossiers Supporting Health and Nutrition Claims; Systematic Review and Meta-analyses; Nutritional Product Development and Nutritional Innovation.

Dr Rhiannon Snipe has research experience in sports nutrition, exercise gastroenterology and exercise physiology, including thermoregulation and sex differences.

### **Broad project topic area**

Food and nutrition science; Sports nutrition;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

We know that leucine is a very important amino acid in terms of helping to switch on muscle protein synthetic pathways. There has been a plethora of studies conducted on athletes and non-athletes investigating the absorption patterns of leucine and other essential amino acids using mainly a beverage food matrix. There is very little data looking at other food matrices on leucine absorption.

This project will investigate the absorption patterns of leucine in a group of athletes after undertaking an intensive training session in a number of food matrices. This study will involve running a number of exercise based sessions and feeding the athletes different food matrices containing elevated levels of leucine. Additionally, there will be some involvement in analysing leucine samples.

This project will be of great interest to food companies making high quality protein foods for athletes and will also be of interest to sports nutrition practitioners, coaches and athletes.

### **Skills/attributes required by the student**

Knowledge and background in a nutrition related field; Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Understanding of sports nutrition and amino acid absorption and metabolism

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_56**

**Project title:** I want to get back into physical activity after having a baby, but my body is just NQR.

**Primary supervisor:** Dr Natalie Saunders

**Phone:** 92468284

**Email:** natalie.saunders@deakin.edu.au

**Co-supervisor/s:** Dr Luana Main; Dr Jason Bonacci

### **Supervisor profile**

Dr Natalie Saunders is a lecturer in Clinical Exercise Physiology and is currently also working as an Accredited Exercise Physiologist. Her research interests include neuromuscular control and biomechanics in a functional context, in particular understanding the various loads on the human body that results in injury, prevents injury or is related to the rehabilitation of various structures. She also has a strong interest in Women in Sport and Exercise.

Dr Luana Main has research expertise in the psycho-physiological monitoring of individuals wellbeing in response to stress.

Dr Jason Bonacci has research expertise in clinical biomechanics, particularly relating to the lower limb. It is expected that students will learn the process of qualitative analysis in a clinical context to assist in developing a clinical intervention for returning to exercise in the post natal period.

### **Broad project topic area**

Exercise physiology; Physical activity; Women in Sport and Exercise

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

The data for this study stems from a larger project that is examining the biopsychosocial determinants of women returning to physical activity and exercise after childbirth. This project relies on qualitative data stemming from interviews conducted with health professionals working with post natal women to identify common themes in the physical capacity for women to return to exercise. The student will be expected to analyse the relevant interview data, conduct analyses and interpret findings of results.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Qualitative analysis;

## **Project number: ESS\_57**

**Project title:** Understanding the neuromuscular demands of running-based high-intensity interval training (HIT).

**Primary supervisor:** Dr Jackson Fyfe

**Phone:** 03 5227 8779

**Email:** jackson.fyfe@deakin.edu.au

**Co-supervisor/s:** Dr Eric Drinkwater, Mr Kris Hinck

### **Supervisor profile**

Dr Jackson Fyfe is a Lecturer in the School of Exercise and Nutrition Sciences. His research interests include developing practical strategies to optimise adaptations to exercise programs (particularly improvements in muscle mass and strength), and understanding the underlying cellular basis for these adaptations in skeletal muscle.

Dr Eric Drinkwater is a senior lecturer of sports science. Dr Drinkwater is an accomplished researcher with over 60 peer-reviewed research publications, mostly collaborating with high-performance sporting organisations such as the Geelong Cats or Australian Institute of Sport investigating applied sport science questions.

Mr Kris Hinck is a Lecturer in Applied Sport Science at Deakin University, Waurin Ponds campus. Kris is an associate member of Deakin's Centre for Sport Research. He has had 15 years of industry experience working in high performance, sport science and strength & conditioning, spanning from the Victorian Institute of Sport, Geelong Football Club, and Adelaide Football Club.

### **Broad project topic area**

Applied Sports Science; Strength and Conditioning;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

High-intensity interval training (HIT) is highly effective for improving cardiorespiratory fitness. Prescribing HIT requires manipulation of up to nine variables, each of which can influence the cardiorespiratory and neuromuscular demands of HIT sessions. An important consideration with HIT prescription is the residual influence of the neuromuscular demands on performance during subsequent training sessions, particularly those requiring high force/power outputs (e.g., strength training). Excessive neuromuscular fatigue from HIT may also increase injury risk during subsequent activities. Recently, GPS-embedded accelerometers have shown utility for assessing the neuromuscular demands of running-based activity in the field. A better understanding of the influence of HIT prescription on neuromuscular fatigue is essential to inform strategies to optimise the integration of both endurance and strength training within the overall program (termed concurrent training). This project will therefore seek to assess the neuromuscular demands of various running-based HIT formats using GPS-embedded accelerometers, and provide recommendations for integrating HIT within concurrent training program.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Exercise prescription and monitoring; Quantitative analysis (statistics);

## **Project number: ESS\_58**

**Project title:** Influence of concurrent training on skeletal muscle force transfer proteins.

**Primary supervisor:** Dr Jackson Fyfe

**Phone:** 03 5227 8779

**Email:** jackson.fyfe@deakin.edu.au

**Co-supervisor/s:** Dr Severine Lamon, Dr Lee Hamilton

### **Supervisor profile**

Dr Jackson Fyfe is a Lecturer in the School of Exercise and Nutrition Sciences. His research interests include developing practical strategies to optimise adaptations to exercise programs (particularly improvements in muscle mass and strength), and understanding the underlying cellular basis for these adaptations in skeletal muscle.

Dr Severine Lamon is a Senior Lecturer with expertise in skeletal muscle physiology, molecular biology and biochemistry. Her main research interest is to understand the physiological and cellular mechanisms underlying skeletal muscle health and disease.

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the molecular processes by which exercise and nutrition alter whole body physiology. The goal is to contribute research that ultimately allows us to more effectively treat or manage diseases linked to poor lifestyle behaviours such as diabetes, dementia and sarcopenia (sarcopenia concurrent with obesity).

### **Broad project topic area**

Exercise physiology; Exercise biochemistry

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Incorporating both resistance and endurance exercise into a training program, termed concurrent training, can improve multiple aspects of health and performance. Despite these benefits, concurrent training often results in less strength gain versus resistance exercise alone - a phenomenon known as the 'interference effect'. Despite being first described in 1980, the mechanisms underlying the interference effect are still unclear. Interestingly, muscle hypertrophy is often not blunted by concurrent training, suggesting interference to strength gain is caused by mechanisms other than changes in muscle fibre size. Aside from muscle size itself, proteins involved in the transfer of contractile force both within and between muscle fibres and the surrounding extracellular matrix play an important role in muscle strength.

This study aims to determine whether blunted strength gain after concurrent training (versus resistance training alone) is associated with changes in the expression of force transfer proteins in human skeletal muscle. It is anticipated this study may provide new insights into the potential mechanisms underlying blunted strength gain with concurrent training.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability to work as a team member; Ability and willingness to learn basic molecular biology laboratory techniques (e.g., Western blotting, immunohistochemistry)

### **Skills specific to this project the student will develop**

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics); Development of basic molecular biology laboratory skills

## **Project number: ESS\_59**

**Project title:** Investigating the link between screen use and depressive symptoms among mothers

**Primary supervisor:** Dr Megan Teychenne

**Phone:** 9244 6910

**Email:** mteych@deakin.edu.au

**Co-supervisor/s:** Dr Lauren Arundell and Dr Katherine Downing

### **Supervisor profile**

Dr Megan Teychenne is a Senior Lecturer in the School of Exercise and Nutrition Sciences at Deakin University (Melbourne, Australia), undertaking her research at the Institute for Physical Activity and Nutrition (IPAN). Dr Teychenne's research investigates the links between physical activity, sedentary behaviour and mental health, particularly amongst women (including pregnant and postpartum). Dr Teychenne has supervised a number of Honours, Masters and PhD students and has a passion for teaching students about all aspects of research, from writing to data analysis right through to presentation skills.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Sedentary behaviour (including screen time) is linked to a number of chronic health conditions (including increased risk of overweight/obesity, type 2 diabetes and cardiovascular disease), independent of physical activity. Of recent interest, is the link screen time (including TV viewing, computer and electronic device use [i.e. smartphones and tablets]) has with mental health. Since risk of depression may be particularly prevalent in mothers with young children, it is important to investigate the association between lifestyle factors such as screen time and risk of depressive symptoms.

This cross-sectional study will involve secondary statistical analyses using survey data previously collected from approximately 500 women involved in the Mums, Dads and Kids (MDK) study (2013-2014). Should the student wish to have experience in the 'field' (such as recruitment and data collection), this can also be arranged as the project has the flexibility to be developed into a prospective study.

### **Skills/attributes required by the student**

Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); If student wishes, they can also have experience with recruitment and data collection

## **Project number: ESS\_60**

**Project title:** Effects of exercise training on vascular calcification and cardiovascular disease risk factors

**Primary supervisor:** Professor Robin Daly

**Phone:** 92446040

**Email:** rmdaly@deakin.edu.au

**Co-supervisor/s:** Associate Professor Steve Fraser

### **Supervisor profile**

Professor Robin Daly holds the position of Chair in Exercise and Ageing within the Institute for Physical Activity and Nutrition. He conducts clinical and community based intervention trials and translational research that focuses on the integration of exercise and nutritional approaches to prevent and manage common chronic diseases in older adults, particularly musculoskeletal conditions (osteoporosis, sarcopenia, falls and fractures), cardiometabolic disorders including type 2 diabetes, certain cancers and cognitive related disorders.

Associate Professor Steve Fraser is Discipline Leader: Clinical Exercise, and is interested in the role of accredited exercise physiologist led exercise programs for individuals with chronic disease such as cancer, diabetes, obesity, and chronic kidney disease. The primary aim of this body of research is to provide the evidence base for the incorporation of exercise to improve the usual care of individuals with chronic disease. This will likely improve their clinical status, fitness, function, and quality of life. He has supervised >10 honours students with 3 receiving the Vice Chancellor's prize for best thesis.

### **Broad project topic area**

Exercise physiology; Biomedicine; Physical activity;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Cardiovascular disease is one of the leading causes of mortality among older adults. While exercise is widely promoted to improve cardiovascular health outcomes in older adults, including blood pressure and blood lipids, many people who suffer morbid or fatal cardiovascular disease events are not at high risk when judged by these risk factors. The presence of abdominal aortic calcification (AAC), in which calcium deposits form on the aorta wall, has been shown to be a marker of subclinical atherosclerotic disease and an independent predictor of subsequent vascular morbidity and mortality. Whether exercise training can improve abdominal aortic calcification remains uncertain. Therefore, this project will evaluate the effects of a multi-component exercise program on abdominal aortic calcification assessed from lateral vertebral scans as well as traditional cardiovascular disease risk factors.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: ESS\_61**

**Project title:** High-intensity cycling performance in athletes: the effect of two different nutritional supplements

**Primary supervisor:** Dr Amelia Carr

**Phone:** 03 9251 7309

**Email:** amelia.carr@deakin.edu.au

**Co-supervisor/s:** Dr Dominique Condo

### **Supervisor profile**

Dr Amelia Carr's interest is in the implications of nutritional and training interventions, in athletes. Her previous research has focused on the effects of nutritional supplementation with buffering agents, and altitude training interventions, on physiology and performance. Amelia completed her PhD in Physiology at the Australian Institute of Sport, and in her previous professional role, conducted research into performance testing for the Australian Army and Australian Navy.

Dr Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dominique is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in female athletes. Her current interests include assessing the dietary intake of athletes and the association with injury and health outcomes.

### **Broad project topic area**

Sports nutrition; Applied Sports Science; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

This 2019 Honours project is a part of a larger research project being conducted in collaboration with the Australian Institute of Sport. The study will investigate the combined effects of two nutritional supplements; sodium bicarbonate and sodium phosphate, on cycling performance. Sodium bicarbonate has been demonstrated to improve athletic performance, particularly in high-intensity events of 1-7 minutes' duration, and can also enhance the body's natural buffering capacity. Sodium phosphate can also enhance endurance capacity and performance. However, it has yet to be determined how these two supplements may work together, in terms of the effect on performance, and the associated mechanisms. This will be a lab-based study, conducted at the Burwood campus. The Honours student who conducts this project will be involved in the recruitment of participants, data collection and statistical analysis. Laboratory work will include the preparation of nutritional supplements and standardised meals prior to testing sessions, and conducting cycling-specific performance tests. Outcome measures will focus on the physiological effects of both supplements, and the effects on performance.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_62**

**Project title:** Gait patterns in stroke with lower limb spasticity

**Primary supervisor:** Dr Elizabeth Bradshaw

**Phone:** 9244 6646

**Email:** liz.bradshaw@deakin.edu.au

**Co-supervisor/s:** Dr Anna Murphy (Monash Health) and Dr Corey Joseph (Monash Health)

### **Supervisor profile**

Dr Elizabeth (Liz) Bradshaw has returned to Deakin in 2018 after working at the New Zealand Academy of Sport (now known as Sport Performance Research New Zealand), and the Australian Catholic University. She has extensive experience in supervising Honours and Higher Degree Research students. Her research is focused upon biomechanics and motor control of human movement with a specific interest in sports performance, injury mechanisms, movement variability, and human gait.

Dr Anna Murphy is the Manager and Head Biomechanist for Kingston Gait Centre at Monash Health in Moorabbin. She's also an Adjunct Senior Lecturer at both Deakin and Monash University.

Dr Corey Joseph is a Level 2 Biomechanist at Kingston Gait Centre.

### **Broad project topic area**

Biomechanics;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Stroke affects approximately 370,000 Australians per year, and can have detrimental effects on mobility, mental status and quality of life. In particular, lower limb spasticity can cause considerable mobility and gait dysfunction. However, spasticity can also play a beneficial role in gait, as some stroke survivors may rely on this spasticity to compensate for weakened musculature. One of the ways to most objectively measure this impact is through the use of three-dimensional gait analysis as it can provide a precise profile of the movements of specific muscles and joints during gait. This information can be vital for the targeted management of patients with mobility deficits caused by upper motor neuron lesions.

Very little is known about the impact that the location of lower limb spasticity has on the gait of adults who have had a stroke. Therefore, the aim of this project is to assess the impact of post-stroke lower limb spasticity on gait characteristics of adult patients.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to travel to offsite for data collection and other projected related tasks;

### **Skills specific to this project the student will develop**

Primary data collection skills; Laboratory techniques; Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: ESS\_63**

**Project title:** One size doesn't fit all: assessing variation in consumer preferences for cardiac rehabilitation

**Primary supervisor:** Dr Jonathan Rawstorn

**Phone:** 92468461

**Email:** jonathan.rawstorn@deakin.edu.au

**Co-supervisor/s:** Prof Ralph Maddison, Prof Chris Dubelaar, Dr Susie Cartledge

### **Supervisor profile**

Jonathan is an exercise/behavioural scientist at the Institute for Physical Activity and Nutrition (IPAN). His research uses novel technologies to enhance exercise & lifestyle programmes for people with heart disease. His research skills include intervention design/evaluation, validation studies, & systematic reviews/meta-analysis.

Ralph is a behavioural scientist & Professor of Physical Activity & Disease Prevention at IPAN. His research skills include design/evaluation of health-tech interventions for heart disease.

Chris is a Professor of Marketing at Deakin Business School. His research skills include quantitative analysis of consumer behaviour/preferences.

Susie is a registered nurse, specialising in cardiac care. Her research investigates novel education and disease prevention interventions for people with heart disease.

This experienced supervisory team will help students to develop skills reviewing/critiquing literature and collecting/analysing/interpreting data, with the aim of producing a scientific publication.

### **Broad project topic area**

Applied Sports Science; Physical activity; Cardiac rehabilitation

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Cardiac rehabilitation (CR) is a critical part of coronary heart disease (CHD) secondary prevention that has numerous benefits, but only ~30% of people attend. Many people cannot access traditional programmes in hospitals/rehabilitation centres' particularly in regional/rural areas. We need to improve CR accessibility but don't understand how to design new delivery models that will satisfy the unmet needs of people who don't benefit from traditional CR. This project will apply an innovative quantitative consumer science research approach to understand peoples' CR preferences. The study will involve the development/conduct of a web-based discrete choice experiment, and quantitative class-based analysis to identify participant preferences across CHD population sub-groups. Findings will help us 1) design new CR delivery models that are tailored to the preferences of specific CHD population sub-groups, and 2) match people to CR programmes that will most likely satisfy their preferences. The project can be tailored for exercise/sport science and nutrition science students, and for students living/based in different locations. Please contact us to discuss options.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS);

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Quantitative analysis (statistics); scientific writing and preparation of a scientific paper

# Project number: ESS\_64

**Project title:** Where is the Game Sense in Coach Education?

**Primary supervisor:** Julia Walsh

**Phone:** 92468729

**Email:** Julia.walsh@deakin.edu.au

**Co-supervisor/s:** Fraser Carson

## Supervisor profile

Dr Julia Walsh

Julia is a senior lecturer in sport coaching on the Burwood campus and a member of the Deakin Women in Sport and Exercise Hub (WISE). Her expertise and research is in coach expertise, female leadership in sport, coach wellbeing, and sport pedagogy. Julia has worked in sport and taught in schools and is an active coach in high performance sport.

Dr Fraser Carson

Fraser is a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He has previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. He has a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

We provide support to help you think and act like a sport scientist, and develop the values required for that profession. In this research project you will learn how to design, structure and analysis results using a discourse analysis. Other learning includes development of mixed method research methodologies.

## Broad project topic area

Sports coaching;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

## Project description

Effective coaches are also effective teachers with many coaches seeing themselves more as educators than trainers (Jones, 2006). Coaches use a variety of teaching approaches, one alternative approach being advocated is Game Sense (GS). GS focuses on making training more game like through small-sided games that teach athletes how to play the game (Pill, 2010). Although GS is being promoted how coaches learn about GS is less visible. Research has identified the importance of coach education and resources in improving coaching practice. As a result, most sports in Australia have developed resources for coaches to help improve their practice. This research investigates coach education resources from the five sports with the highest participation rates in Australia (Australian football, basketball, netball, rugby and soccer) to ascertain how GS content is delivered. A discourse analysis provides the framework for exploring the language and teaching approaches that dominate particular sports and what is privileged and communicated to the learners/coaches.

Research Question: Do coach education resources adequately prepare coaches to use a GS approach?

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability and willingness to learn qualitative methodologies.

## Skills specific to this project the student will develop

Primary data collection skills; Quantitative analysis (statistics); Qualitative analysis; Qualitative methodologies

## **Project number: ESS\_65**

**Project title:** Is playing golf good for muscles, mobility and the mind of older adults?

**Primary supervisor:** Professor Robin Daly

**Phone:** 9244-6040

**Email:** rmdaly@deakin.edu.au

**Co-supervisor/s:** Dr Jenny Gianoudis

### **Supervisor profile**

Professor Robin Daly holds the position of Chair in Exercise and Ageing within the Institute for Physical Activity and Nutrition. He conducts clinical and community based intervention trials and translational research that focuses on the integration of exercise and nutritional approaches to prevent and manage common chronic diseases in older adults, particularly musculoskeletal conditions (osteoporosis, sarcopenia, falls and fractures), type 2 diabetes, certain cancers and cognitive related disorders. He has a specific interest in the interplay between muscle, mind and mobility, and improving the quality of life of older adults.

Dr Jenny Gianoudis is a qualified physiotherapist and Research Fellow within the School of Exercise and Nutrition Sciences. Her research focuses on the role of exercise to optimize musculoskeletal health and function in older adults. She also has a special interest in the role of exercise in the prevention and management of chronic disease conditions.

### **Broad project topic area**

Exercise physiology; Physical activity; Healthy ageing

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Golf is one sport that is popular worldwide and is played by more than one million Australians with more than 500,000 players being aged 55 years and older. Since a typical 18-hole game of golf can take 4 to 5 hours to complete and involve walking 8 to 10 km, often over hilly and uneven ground, one might expect that regular participation in golf would lead to numerous physical, functional and mental health/cognitive benefits. While there are some reports that regular participation in golf is beneficial for health and well-being, there are few studies which have quantified the long-term effects of playing golf regularly on muscle, mobility and mind in older adults. Therefore, the aim of this study is to gain an understanding of the physical health, functional and mental/cognitive benefits of regular participation in golf in male and female golfers aged 55 years and older.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Quantitative analysis (statistics);

## **Project number: ESS\_66**

**Project title:** Optimising exercise prescription for cardiac rehab: dose-response analysis of wearable sensor data

**Primary supervisor:** Professor Ralph Maddison

**Phone:** 92446218

**Email:** ralph.maddison@deakin.edu.au

**Co-supervisor/s:** Dr Jonathan Rawstorn, Dr Shariful Islam

### **Supervisor profile**

Ralph is a behavioural scientist and Professor of Physical Activity and Disease Prevention at the Institute for Physical Activity and Nutrition (IPAN). His world-leading research investigates innovative eHealth physical activity & lifestyle interventions for the prevention/management of chronic disease. Prof Maddison has substantial experience in the design/conduct/reporting of eHealth interventions & large-scale clinical trials.

Jonathan is a Research Fellow at IPAN. His research investigates mobile/web technologies for improving the accessibility/delivery of chronic disease secondary prevention interventions like cardiac rehabilitation. He has skills in experimental design, systematic review/meta-analysis, and eHealth intervention design.

Shariful is a Senior Research Fellow at IPAN. His research uses innovative information technologies for the prevention & management of chronic diseases. He has skills in research design, conduct, analysis, and reporting. This experienced supervisory team will help students to develop skills reviewing/critiquing literature and processing/analysing/interpreting wearable sensor data with the aim of producing a scientific publication.

### **Broad project topic area**

Applied Sports Science; Physical activity; Wearable sensors; Cardiac rehabilitation

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Exercise-based cardiac rehabilitation (exCR) is a critical part of managing coronary heart disease (CHD) but optimal exercise prescription methods are not well defined as studies investigating dose-response relationships are often limited by poor measurement of training load. We developed a telerehabilitation platform that uses wearable sensors to measure physiological responses throughout exercise to enable real-time remote supervision/coaching. Previous clinical trial data provide a rare opportunity to accurately assess relationships between measured training load (i.e. dose) and subsequent outcome effects (e.g. change in VO<sub>2</sub>max). This project will apply data processing/analysis methods to an existing wearable sensor dataset in order to assess dose-response relationships. Findings will 1) inform optimal exercise prescription approaches for people undertaking cardiac rehabilitation, and 2) contribute a new data processing methodology to facilitate future research in this area.

The project is well suited to exercise/sport science students interested in quantifying exercise performance, exercise prescription, cardiac rehabilitation, and eHealth. Please contact us to discuss options.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics); scientific writing and preparation of a scientific paper

## **Project number: ESS\_67**

**Project title:** What is the 'perfect' women in sport and exercise facility?

**Primary supervisor:** Dr Natalie Saunders

**Phone:** 92468284

**Email:** natalie.saunders@deakin.edu.au

**Co-supervisor/s:** Dr Katie Rowe; Prof Pamm Phillips; Dr Julia Walsh; Dr Amanda Mooney; Dr Luana Main

### **Supervisor profile**

The supervisory is an interdisciplinary team across Sport and Exercise Science (Natalie, Julia and Luana) Education (Amanda) and Sports Management (Katie and Pamm). All members of the supervisory team collaborate within the Deakin Women in Sport and Exercise (WISE) hub working to make a difference to advance women and girls in sport across all sectors.

This project will provide a student with the opportunity to immerse themselves in the women in sport domain. It will examine women and girls in sport from diverse perspectives and conduct a case study review that examines models of best practice for a women and girls sport and exercise facility.

### **Broad project topic area**

Women in Sport and Exercise

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Understanding women and girls engagement with sport and exercise has been a growing research field in recent times. A number of initiatives have also been implemented to address improved engagement of women and girls in sport and exercise. At Deakin, we have an opportunity to develop a model of inclusion including but not limited to facilities, leadership, governance, programming, pedagogy and culture that can be applied to a women in sport and exercise facility.

This project involves working across an interdisciplinary team to conduct a case study review. The review will examine problems with current exercise facilities and propose a model of best practice for a women and girls sport and exercise facility that addresses issues of inequity and improves engagement for women and girls in sport. . This review will consolidate recommendations for best practice that could be applied to a women in sport and exercise facility and will form the basis for a future model of practice to be implemented and evaluated within a Deakin context.

### **Skills/attributes required by the student**

Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Conducting a cross disciplinary case study review that will influence a evidence-based model of practice.

## **Project number: ESS\_68**

**Project title:** Can exercise training reduce muscle mass loss in women undergoing breast cancer chemotherapy?

**Primary supervisor:** Associate Professor Steve Fraser

**Phone:** 03 9244-6012

**Email:** steve.fraser@deakin.edu.au

**Co-supervisor/s:** Professor Robin Daly

### **Supervisor profile**

Associate Professor Steve Fraser is Discipline Leader: Clinical Exercise, and is interested in the role of accredited exercise physiologist led exercise programs for individuals with chronic disease such as cancer, diabetes, obesity, and chronic kidney disease. The primary aim of this body of research is to provide the evidence base for the incorporation of exercise to improve the usual care of individuals with chronic disease. This will likely improve their clinical status, fitness, function, and quality of life. He has supervised >10 honours students with 3 receiving the Vice Chancellor's prize for best thesis.

Professor Robin Daly holds the position of Chair in Exercise and Ageing within the Institute for Physical Activity and Nutrition. He conducts clinical and community based intervention trials and translational research that focuses on the integration of exercise and nutritional approaches to prevent and manage common chronic diseases in older adults, particularly musculoskeletal conditions (osteoporosis, sarcopenia, falls and fractures), cardiometabolic disorders including type 2 diabetes, certain cancers and cognitive related disorders.

### **Broad project topic area**

Exercise physiology; Clinical Exercise

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Breast cancer (BC) is the most frequently diagnosed cancer among women. Early-stage BC is cured in >90% of cases and patients are prone to treatment induced adverse effects. Chemotherapy, the mainstay of adjuvant BC treatment, is associated with numerous adverse effects including a decline in muscle mass, function and increased fatigue. This study will evaluate the effects of chemotherapy on thigh muscle mass (MRI) as well as muscle function and fatigue. This study will evaluate the efficacy of an exercise training program to ameliorate any adverse muscle effects during chemotherapy. Breast cancer patients will be randomized to a 3-month training program or usual care. Muscle mass measures (MRI, DXA), muscle function and fatigue assessments will be undertaken before and after completion of chemotherapy. This study will suit eligible applicants with an interest in one or more of cancer, exercise physiology and muscle function. The project is in collaboration with the Baker Institute.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts;

### **Skills specific to this project the student will develop**

Exercise prescription and monitoring; Quantitative analysis (statistics);

## **Project number: ESS\_69**

**Project title:** Can exercise training modify 'chemobrain' in women treated with breast cancer chemotherapy?

**Primary supervisor:** Associate Professor Steve Fraser

**Phone:** 92446012

**Email:** steve.fraser@deakin.edu.au

**Co-supervisor/s:** Ms Niamh Mundell

### **Supervisor profile**

Associate Professor Steve Fraser is Discipline Leader: Clinical Exercise, and is interested in the role of accredited exercise physiologist led exercise programs for individuals with chronic disease such as cancer, diabetes, obesity, and chronic kidney disease. The primary aim of this body of research is to provide the evidence base for the incorporation of exercise to improve the usual care of individuals with chronic disease. This will likely improve their clinical status, fitness, function, and quality of life. He has supervised >10 honours students with 3 receiving the Vice Chancellor's prize for best thesis.

Ms Niamh Mundell is a lecturer and AEP with broad industry experience. Her research areas include exercise during cancer recovery, and exercise for optimising ageing, mental health and cognitive function.

### **Broad project topic area**

Exercise physiology; Clinical Exercise

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Breast cancer (BC) is the most frequently diagnosed malignancy among women. Early-stage BC is cured in >90% of cases and patients are prone to treatment induced adverse effects. Chemotherapy, the mainstay of adjuvant BC treatment, is associated with numerous adverse effects including a decline in cognitive function. The mechanisms underpinning decreases in cognitive function in BC patients are not well understood. This study will evaluate the effects of chemotherapy on a range of cognitive tasks and evaluate the efficacy of an exercise training program training program (6 months supervised and 6 months maintenance) or usual care. Exercise and cognitive assessments will be repeated at completion of chemotherapy and at 12 months. This study will suit eligible applicants with an interest in one or more of cancer, exercise physiology and cognition. The project is in collaboration with the Baker Institute.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field;

### **Skills specific to this project the student will develop**

Exercise prescription and monitoring;

## **Project number: ESS\_70**

**Project title:** Seeing is believing: what kind of activity are people with heart failure undertaking?

**Primary supervisor:** Dr Susie Cartledge

**Phone:** 92446667

**Email:** susie.cartledge@deakin.edu.au

**Co-supervisor/s:** Prof Ralph Maddison, Prof Andrea Driscoll, Dr Jonathan Rawstorn

### **Supervisor profile**

Dr Susie Cartledge is a Registered Nurse, specialising in cardiac care. Susie has a passion for researching novel solutions using mobile health for people with cardiovascular disease both to aid patient education and disease prevention. This project will allow students the opportunity to work alongside Susie and Professor Ralph Maddison, an expert in mobile health, physical activity and disease prevention. Professor Andrea Driscoll will also provide heart failure speciality input and Dr Jonathan Rawstorn will provide exercise science knowledge. A student who undertakes this project will develop skills in; using data from wearable cameras, rapid image review, data synthesis with the aim to produce a scientific publication.

### **Broad project topic area**

Physical activity; technology (lifelogging, wearable cameras), sedentary behaviour

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

It is now well established that physical activity is critical to health and an essential component to chronic disease management. The rise in technologies in healthcare offers opportunities to objectively assess physical activity and sedentary behaviour in a chronic disease population. We have tested the feasibility of using images captured by wearable cameras (known as lifelogging) to assist in objectively identifying and describing nutrition behaviours in this population. We also have access to accelerometry and location data to complement image data.

This project would consist of accessing our database of lifelogging images to describe activity patterns in a heart failure population around both physical activity and sedentary behaviour and the context that these occur in for this chronic disease group. The scope of this project is broad but could include a student designing a coding framework to better evaluate and assess physical activity and sedentary behaviour related images from lifelogging data.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); ability to trial new software techniques

### **Skills specific to this project the student will develop**

Image and/or video analysis; Quantitative analysis (statistics); coding framework development; data synthesis; scientific writing- preparation of paper

# Project number: ESS\_71

**Project title:** How does muscle adapt to endurance training?

**Primary supervisor:** Glenn Wadley

**Phone:** 92446018

**Email:** glenn.wadley@deakin.edu.au

**Co-supervisor/s:** Severine Lamon

## Supervisor profile

A key focus of A/Prof Wadleys research program is investigating the molecular mechanisms regulating skeletal and cardiac muscle adaptations following exercise. These topics have important implications for the treatment and prevention of Type 2 diabetes and cardiovascular disease. His research utilizes a range of approaches from human exercise trials down to animal and cell culture experiments to investigate these areas. He has successfully supervised over 17 Honours students to completion and most of his previous Honours students have been successful in obtaining entry to competitive postgraduate programs including PhD, Medicine and Master of Dietetics.

Dr Severine Lamon is a world expert in the regulation of muscle adaptations and function by small RNA species.

## Broad project topic area

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

## Project description

This project will provide important insights into the mechanisms that stimulate muscle to adapt to endurance exercise training. The skills students would develop from this Honours project are ideally suited to students wishing to pursue postgraduate study in biomedical or exercise physiology research (such as a PhD) or even medicine. Some of the major health benefits of endurance training are increased mitochondrial content (synthesis), antioxidant defences and insulin sensitivity and reduced oxidative stress in skeletal muscle. microRNA are small non-coding ribosomal nucleic acid (RNA) molecules that are expressed in skeletal muscle and are involved in regulating these adaptive responses of muscle to endurance training. Furthermore, we have shown that the expression levels of many microRNA's are increased following exercise in skeletal muscle of humans. There is now evidence in cell culture that microRNA move (translocate) from the cytosol of the cell to the mitochondria to help stimulate mitochondrial synthesis. Therefore, studies are now required to examine if microRNA's translocate to the mitochondria in human skeletal muscle following endurance exercise.

## Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

## Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Exercise prescription and monitoring; All laboratory techniques will be taught to the student as part of the honours training.

## **Project number: ESS\_72**

**Project title:** Neighbourhood Environment and Physical Activity among Adolescents: Does it Matter for All?

**Primary supervisor:** Dr Jenny Veitch

**Phone:** +61 3 925 17723

**Email:** jenny.veitch@deakin.edu.au

**Co-supervisor/s:** Prof Anna Timperio and Dr Venurs Loh

### **Supervisor profile**

Dr Jenny Veitch is a National Heart Foundation of Australia Future Leader Fellow in the Institute for Physical Activity and Nutrition (IPAN). She is an active researcher in understanding how aspects of the neighbourhood built environment may influence physical activity and sedentary behaviour in populations. She has a particular research focus on how features and design of places such as public open spaces may promote opportunities for physical activity.

Professor Anna Timperio is an Alfred Deakin Professor within the Institute for Physical Activity and Nutrition (IPAN). Prof Timperio's research expertise centres on examining the contextual (individual, social and environmental) influences on children's and adult's health behaviours. Prof Timperio has extensive experience supervising honours and PhD students over the last 16 years.

Dr Venurs Loh is a postdoctoral research fellow at IPAN. She is interested in looking at the mechanisms in which the neighbourhood environment is associated with behaviours and health among adolescents.

### **Broad project topic area**

Physical activity; Health promotion;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

It has been suggested that your postcode may have a greater influence on your health and physical activity than your genetic code. The neighbourhood in which we live has the ability to shape our behaviours and health. Alarming, 90% of Australian adolescents do not do enough physical activity each day. It is therefore critical to better understand how the neighbourhood environment may influence physical activity among this important age group. This project will explore how attributes of the neighbourhood environment and psychosocial factors such as self-efficacy or enjoyment for physical activity interact to influence physical activity among adolescents. This project involves secondary analysis using data from the NEArbY study. The NEArbY study is a study of neighbourhood environment and physical activity among 468 adolescents living in Melbourne. Better understanding for whom neighbourhood exert the most influence will help to design strategies to promote physical activity in this age group.

### **Skills/attributes required by the student**

Competent with numerical data and ability to work with or learn relevant software programs (e.g. Excel, statistical software program such as SPSS); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: ESS\_73**

**Project title:** The relationship between the characteristics of training and match performance in the AFL

**Primary supervisor:** Dr Lyndell Bruce

**Phone:** 03 5227 3476

**Email:** lyndell.bruce@deakin.edu.au

**Co-supervisor/s:** Dr Dan Dwyer

### **Supervisor profile**

Dr Lyndell Bruce is a Senior Lecturer in Sports Science within the School of Exercise and Nutrition Science and a member of the Centre for Sport Research at Deakin University. She has multidisciplinary research interests including sports analytics, expertise development, talent identification, sports technology and load monitoring. Lyndell's research projects use a range of technologies (including wearables, applications and software) and analytical techniques to offer insights into the research questions.

### **Broad project topic area**

Applied Sports Science;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** The supervisors are at Burwood and Geelong, so there is flexibility.

### **Project description**

The Geelong Football Club has approached our school to explore their training and match performance data to determine whether there are any relationships. The physical preparation department of the club have the difficult task of designing training programs for individual players that will optimise their performance in each match. While they are able to implement the well established principles of training program design, they are looking for opportunities to optimise their program design even more. The data they have collected over the last five years present an opportunity to discover relationships between characteristics of training (e.g. load, training type) and measures of match performance (e.g. best and fairest votes).

This project proposes to explore a large database in order to answer specific questions about the relationships between training and performance.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Quantitative analysis (statistics);

## **Project number: ESS\_74**

**Project title:** Sprint interval training plus ketogenic diet- Is it a feasible option?

**Primary supervisor:** Dr Clint Miller

**Phone:** +61 3 9244 6605

**Email:** c.miller@deakin.edu.au

**Co-supervisor/s:** A/Prof Clinton Bruce, Dr Greg Kowalski

### **Supervisor profile**

Dr Clint Miller's research is focussed on the use of clinical exercise for improvements in physical function, fitness and body composition in adults with musculoskeletal and metabolic disease. Dr Clinton Bruce's research is focused on understanding the regulation of glucose metabolism in skeletal muscle and liver in health and disease. He is particularly interested in identifying mechanisms underlying the development of glucose intolerance and insulin resistance. Dr Greg Kowalski's research interests lie broadly in the areas of metabolic biochemistry, integrative physiology, endocrinology and analytical chemistry.

This project provides the student an opportunity to experience and better understand research processes while enhancing their skills as an exercise scientist in the area of conducting physiological testing, implementing a structured exercise intervention, data collection and analytics, and project management.

### **Broad project topic area**

Dietetics; Applied Sports Science; Strength and Conditioning; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Research in low carbohydrate ketogenic diets show that they are effective for reducing fat mass while retaining lean mass. We know that there are important health and fitness-related benefits to exercise training in adults with metabolic diseases such as obesity, but there are few exercise training studies in adults following a low carbohydrate ketogenic diet. Sprint interval training (SIT) is similar to high intensity interval training (HIIT) but benefits like reduced visceral adipose tissue and improved metabolic function can be achieved in less time than HIIT. This makes SIT an appealing exercise choice for many individuals. It is not known whether SIT is a feasible exercise approach in a diet which is very low in carbohydrates.

The purpose of this project is to investigate whether SIT in addition to a ketogenic diet is a feasible combination when used together. You will have the opportunity to assist in the development of your research question within this theme. You will have the opportunity to gain skills in DEXA, biochemical analysis, metabolic carts, Polar team kits, blood sampling, statistical software, online data collection tools, and participant management.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Exercise prescription and monitoring; Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: ESS\_75**

**Project title:** The effect of diet plus energy restriction on the health of women with clinically severe obesity

**Primary supervisor:** Dr Clint Miller

**Phone:** +61 3 9244 6605

**Email:** c.miller@deakin.edu.au

**Co-supervisor/s:** A/Prof Steve Fraser

### **Supervisor profile**

Dr Clint Miller has been an Accredited Exercise Physiologist in private practice for over 14 years and has worked predominately with musculoskeletal injury and disease. His research is focussed on the use of clinical exercise for improvements in physical function, fitness and body composition in adults with musculoskeletal and metabolic disease. He is interested in determining the most effective yet least demanding exercise and diet approaches to improve body composition, physical fitness and physical function in adults.

Associate Professor Steve Fraser is Discipline Leader: Clinical Exercise, and is interested in the role of accredited exercise physiologist led exercise programs for individuals with chronic disease such as cancer, diabetes, obesity, and chronic kidney disease. The primary aim of this body of research is to provide the evidence base for the incorporation of exercise to improve the usual care of individuals with chronic disease. This will likely improve their clinical status, fitness, function, and quality of life. He has supervised >10 honours students with 3 receiving the Vice Chancellor's prize for best thesis.

The student will also have an opportunity to engage with the collection of data for these measures as part of ongoing projects within this research team.

### **Broad project topic area**

Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Rapid weight loss results in improvement in health outcomes but less is known about the impact on aerobic power (VO<sub>2</sub>max), muscular strength and body composition. Lifestyle modification is considered to be a key strategy for the management of health in overweight, obese and severely obese individuals, yet many individuals fail to meet the minimum physical activity guidelines for general health, and even less meet the minimum target of exercise required for weight loss. There is a perception in the community that regular exercise is difficult to maintain during rapid weight loss (induced by a very low energy diet), and that rapid weight loss leads to excessive lean mass loss. In collaboration with the Baker IDI Heart and Diabetes Institute, this Honours project will determine the effect of adding supervised exercise to obese adults undergoing rapid weight loss.

The data for this study has been collected and the student will work with the research team to create a research question around the interest of the student within this theme.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member;

### **Skills specific to this project the student will develop**

Primary data collection skills; Exercise prescription and monitoring; Image and/or video analysis; Quantitative analysis (statistics);

## **Project number: ESS\_76**

**Project title:** Characterising the blood flow response to blood flow restricted resistance exercise

**Primary supervisor:** Dr Stuart Warmington

**Phone:** 92517013

**Email:** Stuart.Warmington@deakin.edu.au

**Co-supervisor/s:** Dr Andrew Betik

### **Supervisor profile**

Dr Warmington's research interests are focused on interrelated areas that attempt to better understand the physiological, logistical and functional benefits of exercise related to health. For this Honours project, this relates to the use of blood flow restriction exercise that is a training technique used to improve muscle mass, strength, and functional outcomes, often in populations less suited to high-intensity strength training. Dr Warmington has a long-standing track record in research student supervision with a current team of students comprising 4 Ph.D. students, and usually between 1-3 Honours students each year, demonstrating a commitment to further training of students interested in enhancing their knowledge and skills, and interests in research to further their career goals.

Dr Betik is a research fellow within the School of Exercise and Nutrition Sciences and specializes in the measurement of human blood flow. As such, his skills are unique to the research team and will provide invaluable training and advice on the critical skills required for this proposed Honours project.

### **Broad project topic area**

Applied Sports Science; Strength and Conditioning; Exercise physiology;

**Course code:** H442 Bachelor of Exercise and Sport Science (Honours)

**Project is based at:** Melbourne Burwood campus

### **Project description**

Blood flow restriction exercise (BFRE) is a novel training method that stimulates gains in muscle size and strength despite the use of light training loads. Remarkably, BFRE is also effective when undertaken during light aerobic exercise such as walking. However, the actual effect of BFRE on muscle blood flow itself is unknown, both at rest and while exercising, given the technical difficulties in the measurement of blood flow. As such, researchers have only been able to speculate on the effect of BFRE on muscle blood flow, thus limiting our understanding of the mechanisms by which BFRE may stimulate muscle increases in muscle size and strength.

Given the unique skills of the research team, we are now well placed to make substantial inroads to understanding the blood flow response to BFRE and answer questions in the field that no other researchers have attempted. This will be the focus of this Honours project. For a student with particular skills and interests in exercise training to enhance muscle size and strength, this project can be expanded to form the basis of a Ph.D. project following successful completion of Honours.

Make an appointment to explore this project and more.

### **Skills/attributes required by the student**

Knowledge and background in an exercise or sports science related field; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member;

### **Skills specific to this project the student will develop**

Recruitment of participants; Primary data collection skills; Laboratory techniques; Exercise prescription and monitoring; Quantitative analysis (statistics);