



School of Exercise and Nutrition Sciences

2020 Honours Projects

Bachelor of Food and Nutrition Sciences (Honours)
H418

Bachelor of Exercise and Sport Science (Honours)
H442

deakin.edu.au

Deakin University CRICOS Provider Code: 00113B

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TEDDY ANG

Bachelor of Food and Nutrition Sciences (Honours)

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 and Nutrition Sciences (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

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 for employment 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.

What types of Honours projects can I do in SENS?

Food and nutrition science

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.

*****Refer to the back of this handbook for the 2020 Honours projects*****

KEREN BEST

Bachelor of Food and Nutrition Science (Honours)

Current role/position: Project manager 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 your preferred projects during the application process. 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.

*****Refer to the back of this handbook for the 2020 Honours projects*****

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?

Bachelor Degree or major in a related discipline with a WAM of at least 65 in all level 3 and level 4 Deakin units (or in final year units for awards from other providers).

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. Submit a Course Application

- You will need to submit a course application via the [Deakin applicant portal](#) by Friday 15 November 2019 and submit your project preferences (see below) in addition to your other supporting documents. Supporting documents can 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 application portal, please email health-enquire@deakin.edu.au or call 9251 7777

2. Review Project Offerings and Complete Your Project Preference Form

- Please review carefully the list of Honours research projects that the School is offering in 2020. This project booklet will be available on the course sites:
 - [Bachelor of Food and Nutrition Sciences \(Honours\)](#)
 - [Bachelor of Exercise and Sport Science \(Honours\)](#)
- 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 complete the online [project preference form](#).
- Please direct queries related to the project preference selection to Dr Lukar Thornton (lukar.thornton@deakin.edu.au)

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 2019.

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

Project number: FN_1

Project title: Food insecurity and hunger in Australia

Primary supervisor: Dr Rebecca Lindberg

Phone: 03 9246 8947

Email: r.lindberg@deakin.edu.au

Co-supervisor/s: TBC

Research mentor:

Supervisor profile

Committed nutrition leader with 10 years of experience in Australian policy, programs, applied and academic research. I achieve success by working with people, delivering on time and always aspiring to the highest standard. Currently a Lecturer in Population Nutrition and Early Career Researcher at the Institute for Physical Activity and Nutrition at Deakin University and Director of The Community Grocer.

Broad project topic area

Public health nutrition; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

Project description

In Australia, an estimated 3 million adults and children experience food insecurity and hunger. I'd welcome the chance to work with students interested in undertaking research on food insecurity, in terms of its causes, consequences and solutions. I have a range of evaluation and applied projects with community organisations, including food rescue organisations, children's charities and hospitals, in Australia and an honours project could be co-designed with a community partner. I also undertake qualitative studies on the lived experience of food insecurity and policy and advocacy investigations using a human rights framework. An honours project could also link in with this work.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Qualitative analysis;

Project number: FN_2

Project title: Chocolate and chips to cope with exams? Exploring stress, emotions and food intakes in young adults.

Primary supervisor: Georgie Russell

Phone: 92468503

Email: georgie.russell@deakin.edu.au

Co-supervisor/s: Anne Turner and Susan Torres

Research mentor:

Supervisor profile

Dr Georgie Russell is a Lecturer in Food Innovation. She has expertise in the psychosocial determinants of food choices and intake including the development of emotional eating in childhood.

Associate Professor Susan Torres is an Accredited Practising Dietitian and has expertise in the independent and combined effects of diet and physical activity, on mental health and well-being and quality of life across the lifespan.

Dr Anne Turner is a Senior Lecturer, and has expertise in the physiology and endocrinology of stress and its impact on human health.

Broad project topic area

Food and nutrition science; Sensory and consumer science; Public health nutrition; Biomechanics;

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

Project is based at: Melbourne Burwood campus

Project description

University students regularly experience stress. Some individuals will use food to help cope with stress, and this can result in overconsumption of discretionary (junk) food and excess energy consumption, which can lead to weight gain and negative health outcomes. This project will explore the use of foods to help manage stress amongst a Deakin University student cohort. In particular, we will use a questionnaire to explore who is more likely to engage in stress related eating and the reasons underlying this by examining possible psychological and physiological pathways. This information will help identify the prevalence and impact of stress-eating amongst this cohort and provide evidence towards possible directions for prevention and intervention.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics);

Project number: FN_3

Project title: Ultra-processed food intakes in Australian adults

Primary supervisor: Dr Katherine Livingstone and Dr Julie Woods (joint primary supervisors)

Phone: +61 3 9244 5416

Email: k.livingstone@deakin.edu.au

Co-supervisor/s: Ms Priscila Machado

Research mentor: NA

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 adults and how these link with health outcomes. She has expertise in quantitative and qualitative research and has published over 50 peer-reviewed journal articles. Katherine is committed to developing the next generation of researchers and has experience supervising Honours, Masters and PhD students. Dr Julie Woods is the Associate Head of Teaching and Learning and is a senior lecturer and researcher within the School. Her interests include food policy, food regulation and food supply issues and their impact on food consumption. Julie has successfully supervised previous Honours, Masters and PhD students and is committed to a high standard of support and supervision. 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 have the opportunity to publish their research findings.

Broad project topic area

Food and nutrition science; Public health nutrition; Health promotion (including policy);

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

Project is based at: Melbourne Burwood campus

Project description

Dr Livingstone and Dr Julie undertake research in this area and will have two projects on offer. There is potential to develop the scope of the project with the student. This project will involve analysis of existing data from the Australian Health Survey 2011-13. This is a nationally representative survey of over 12,000 Australian adults and children. It collected information of dietary intakes, health outcomes and socio-demographic characteristics. This project will focus on adults only.

What are some potential projects? To investigate how intakes of processed and ultra-processed foods are linked to cardiometabolic health in Australian adults. To examine how intakes of processed and ultra-processed foods vary by participant demographics, such as age, sex and rurality.

Why is this project novel? High intakes of ultra-processed foods has been identified as a critical public health issue globally. This project will investigate what drives high intakes of ultra-processed foods in Australia and how this is linked to health outcomes. This will inform future dietary interventions and healthy eating policies.

Skills/attributes required by the student

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

Skills specific to this project the student will develop

Quantitative analysis (statistics); Skills working with large population group data and the potential to publish in a peer-reviewed journal

Project number: FN_4

Project title: How do we measure salt taste preference in humans?

Primary supervisor: Dr Sze-Yen Tan

Phone: 03-9246 8977

Email: szeyen.tan@deakin.edu.au

Co-supervisor/s: Prof Russell Keast

Research mentor:

Supervisor profile

Dr Sze-Yen Tan is a Senior Lecturer at the School of Exercise and Nutrition Sciences and he is an Accredited Practising Dietitian. His research is primarily in obesity management. He is passionate about understanding how human taste function and preference can influence food intake, and subsequently health. He has extensive research publications and experience in supervising PhD and Honours students.

Prof Russell Keast is a Professor in sensory and food science. The majority of Professor 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 'Alimentary' taste responsive to fat and carbohydrate and have identified an associations between Alimentary tastes and diet.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

Taste is often cited as the primary determinant of food choice and driver of dietary intake. Therefore, our taste function may be a useful predictor of what we eat. For example, we are interested to find out if salt taste function can predict salt intake in humans. To answer this question, individual's salt taste sensitivity, measured as thresholds, can be quantified. However, research has repeatedly shown that taste sensitivity is a poor predictor of dietary intake. Instead, understanding one's liking and preference for salt taste may be more meaningful. However, to-date, there is no method to assess individual's preferred salt taste concentration. Therefore, this research project aims to adapt an existing method used to assess sweet taste preference to measure salt taste preference, and to validate this new method. The method developed from this project will be used in future studies to understand the associations between salt taste preference and dietary salt intake.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Knowledge and background in a sensory or consumer science; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Laboratory techniques; Quantitative analysis (statistics);

Project number: FN_5

Project title: How do visual, verbal and written guides improve portion size selection for nutritional education?

Primary supervisor: Dr Sze-Yen Tan

Phone: 03-9246 8977

Email: szeyen.tan@deakin.edu.au

Co-supervisor/s: Dr Brenton Baguley

Research mentor:

Supervisor profile

Dr Sze-Yen Tan is a Senior Lecturer at the School of Exercise and Nutrition Sciences and he is an Accredited Practising Dietitian. His research is primarily in obesity management. He has conducted several studies that examined the effects of various dietary factors e.g. eating patterns, dietary protein and fat, nuts, sensory perception, and food-structure on body weight regulation and health biomarkers. His current research focuses on understanding how food intake and choices are regulated, and how these influence health in the long term. He has extensive research publications and experience in supervising PhD and Honours students.

Dr Brenton Baguley is an Accredited Practising Dietitian & Lecturer in Nutrition and Dietetics. Brenton's research focuses on improving disease- and treatment-related outcomes for cancer survivors. He has experience in several dietetic and exercise interventions in cancer patients investigating cardiac, metabolic, and body composition parameters that are often compromised from treatment. Brenton has a strong clinical dietetics background and has experience in supervising PhD and nutrition and exercise honours students.

Broad project topic area

Dietetics; Food and nutrition science;

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

Project is based at: Melbourne Burwood campus

Project description

Humans are poor at predicting food portion sizes. Our previous study found that adults overestimated how much they can eat (1), which has important implications on overeating and obesity in the long term. Strategies to improve the accuracy of portion size selection are needed.

The Australian Guide to Healthy Eating (AGHE) advises the Australian population on the number of serves for daily consumption of 5 major food groups and discretionary foods. In dietetic practice, dietary food serves advice is delivered to patients in either visual (i.e. food models and pictures), verbal (through nutrition counselling), and written material. In all cases, food serve sizes are often described as household measurements e.g. ½ cup cooked pasta and ¼ cup muesli. The AGHE further provides visual guides typical food serve sizes.

In this project, the student will investigate if visual or verbal/written food serve size guides will improve the accuracy of food portion selection by adults.

(1) Nguyen, A.; Chern, C.; Tan, S.-Y. Estimated portion size versus actual intake of eight commonly consumed foods by healthy adults. *Nutrition & Dietetics* 2016, 73, 490-497

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;

Skills specific to this project the student will develop

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

Project number: FN_6

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

Research mentor:

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; Metabolism, nutritional physiology

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, endocrinology 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 and Exercise and Sport Science students as well those in the area of Biomedical Sciences.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

Project number: FN_7

Project title: Personalised nutrition: what drives our food choices?

Primary supervisor: Dr Katherine Livingstone and Dr Georgie Russell (joint supervisors)

Phone: +61 3 9244 5416

Email: k.livingstone@deakin.edu.au

Co-supervisor/s: NA

Research mentor: NA

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 personalized nutrition approaches can improve these. She has expertise in quantitative and qualitative research and has published over 50 peer-reviewed journal articles. Katherine is committed to a high standard of support and supervision and has experience supervising Honours, Masters and PhD students. Dr Georgie Russell, the joint supervisor, is a lecturer in Food Innovation. She is an active researcher in the area of psychosocial and biological determinants of food choices and intakes and has published more than 35 peer reviewed journal articles in this area. Georgie teaches in the areas of healthy and sustainable food systems as well as in food innovation. Georgie supervises Honours, Masters and PhD students in topics related to food behaviours.

Broad project topic area

Food and nutrition science; Public health nutrition; Health promotion (including policy); Personalised nutrition

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

Project is based at: Melbourne Burwood campus

Project description

Dr Livingstone and Dr Russell lead research in the area of personalised nutrition and food choice behaviours. There are projects on offer that can be tailored to the interests of the student. This projects will involve the collection of new quantitative data.

What are some potential projects? The student will design an online survey and choice experiment to better understand what drives intentions to adopt personalised nutrition. Information on dietary intakes, eating behaviours/perceptions and demographics will be collected. Food choice attitudes, motivations and aspirations will be used to create an online choice experiment. Participants will chose between different offerings of personalised nutrition advice to identify which design of personalised advice is most preferred and by which participants. Other projects may explore the role of social, psychological and biological factors influencing food choices and intakes.

Why is this project area novel? Current one-size-fits-all dietary interventions are not achieving sufficient improvements in dietary behaviours. This project will inform the design of personalised nutrition interventions and policies aiming to improve diet.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Skills working with large population group data and potential to publish in a peer-reviewed journal

Project number: FN_8

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

Primary supervisor: Anne Turner

Phone: +61 3 9244 6950

Email: anne.turner@deakin.edu.au

Co-supervisor/s: Susan Torres

Research mentor:

Supervisor profile

Between them, the supervisory team are well versed in all of the clinical and analytical 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.

Associate Professor Susan Torres is an Accredited Practicing Dietitian and 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.

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 of the stress hormone 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, blood and urine samples will be collected every 10-20 min from 1 h before to 3 h after ingestion of soup. We will measure hormone profiles in biological samples using enzyme-linked immunosorbent assay (ELISA).

Findings will help define the relationship between salt intake and cortisol production and may help us determine if reducing salt intake should be part of dietary advice in weight loss programs. 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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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: FN_9

Project title: Using a fatty-acid based mouth wash to suppress acute appetite and ad libitum food intake

Primary supervisor: Dr Andrew Costanzo

Phone: 03 9246 8207

Email: andrew.costanzo@deakin.edu.au

Co-supervisor/s: Prof Russell Keast

Research mentor:

Supervisor profile

Dr Andrew Costanzo is a researcher at the Centre for Advanced Sensory Science. His research interests are around the role of the taste system on nutrition and health. His expertise is in the use of human trials to understand how variation in taste perception influences food intake. One of his more prominent trials involved using twin pairs on separate diets to identify the genetic and environmental factors that influence the perception of tastes in foods, and in turn, how these factors influence the quantity and quality of food consumption. His most recent research involved the idea of exploiting the taste system to deceive the body into thinking it has consumed food. This concept, known as sham feeding, might aid in obesity prevention, management and treatment.

Prof Russell Keast leads the Centre for Advanced Sensory Science, and will be co-supervising on this project. He has many years of experience in the field and is at the forefront of research on the relationship between taste and nutrition.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

The gustatory (taste) system plays an important role in influencing the quantity of food that is consumed. Specific tastes regulate the quantity of food consumed containing the respective tastant (ie, sweet taste regulates sugar intake, umami taste regulates protein intake). Taste cells are able to detect nutrients in food and inform the body that food has been consumed, which begins the satiety cascade in order to slow subsequent food consumption. This mechanism works much in the same way as in the gastrointestinal tract.

A newly identified taste, fatty acid taste, has been shown to regulate fat intake. Preliminary data shows that oral exposure (or sham feeding) of fat or fatty acid leads to slowed gastric emptying and an increased feeling of satiety or fullness. This project aims to determine if oral exposure/sham feeding of fatty acid can be used as an acute appetite suppressant to reduce subsequent food intake. To do this, the study will involve providing participants with a mouth wash containing fatty acid or a placebo mouth wash 1-hour prior to an ad libitum (all-you-can-eat) lunch, and to determine if the fatty acid mouth wash reduces lunch intake compared to the placebo.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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); Safe preparation and handling of food for research

Project number: FN_10

Project title: Cancer malnutrition prevalence and association with clinical outcomes

Primary supervisor: Dr Nicole Kiss

Phone: 9246 8858

Email: nicole.kiss@deakin.edu.au

Co-supervisor/s: Dr Brenton Baguley, Belinda Steer

Research mentor:

Supervisor profile

Dr Nicole Kiss is an Advanced Accredited Practising Dietitian and Victorian Cancer Agency Senior Clinical Research Fellow 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 sarcopenia, and the evaluation of novel models of health care delivery to inform evidence-based clinical dietetic practice in oncology.

Belinda Steer is an Accredited Practising Dietitian and Joint Head of Nutrition and Speech Pathology at Peter MacCallum Cancer Centre. Belinda is the principal investigator for the Victorian cancer malnutrition point prevalence study.

Dr Brenton Baguley is an Accredited Practising Dietitian and Lecturer in Nutrition and Dietetics in the School of Exercise and Nutrition Sciences. Brenton's research focuses on improving disease- and treatment-related outcomes for cancer survivors through nutrition and exercise interventions.

Broad project topic area

Dietetics; Clinical nutrition

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

Project is based at: Other, please specify Opportunity to attend Peter MacCallum Cancer Centre to observe clinical management of cancer malnutrition.

Project description

Malnutrition in cancer patients is associated with reduced survival, poorer tolerance to treatment, and increased hospital admissions. Early identification and treatment of malnutrition is important to prevent poor patient outcomes. Consensus regarding diagnostic criteria for malnutrition is required at an international level.

This project will analyse data on 2600 patients from the 2016 and 2018 cancer malnutrition point prevalence studies conducted across 12 Victorian health services in 2016 and 15 in 2018. Data collected enables the classification of patients as malnourished according to definitions proposed three international organisations. 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. Outcomes of the research will provide important insight for dietitians and other health professionals working with cancer patients regarding appropriate definitions and identification of cancer malnutrition to support optimal nutrition care.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Quantitative analysis (statistics); Interpreting and presenting data for health professionals, an understanding of the pathophysiology of malnutrition in the cancer setting, an understanding of the impact of malnutrition on people with cancer

Project number: FN_11

Project title: A new technique for flavour analysis

Primary supervisor: Assoc Prof Robert Shellie

Phone: 92445233

Email: robert.shellie@deakin.edu.au

Co-supervisor/s: Dr Snehal Jadhav, Prof Russell Keast

Research mentor: N/A

Supervisor profile

Rob Shellie is Associate Professor, Food Chemistry and Flavour Science. His innovative analytical science research has demonstrable impact across academia and industry. He has deep industry links and >135 publications shared with \geq 150 co-authors. Rob has supervised 7 Hons students, 2 MSc (1 current), and 27 PhD (4 current). Examples of positions which his research students are employed are Proteomics Scientist at Crown Research Institute, Assistant Professor at University of Natural Resources and Life Sciences, Applications Specialist at SCIEX, Post Doc at Australian Wine Research Institute.

Snehal Jadhav is Lecturer in Food Safety. Her current research focuses on microbial food safety, active packaging, and food omics. Snehal has experience working on industry linked food safety projects, supervising and mentoring research students.

Russell Keast is Professor in Sensory and Food Science. The majority of Russell'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.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

Flavour extraction is a critical step in flavour analysis investigations because one cannot introduce food directly into an analytical instrument. Parliament described the advantages of miniaturised liquid-liquid extraction (LLE) for flavour analysis many years ago (Parliament 1986). LLE is faster and / or more environmentally friendly than competing modern technologies (Gras et al. 2014), but widespread adoption has hitherto been hampered by lack of automation. We recently patented a device which facilitates automated LLE using a robotic sampler (Shellie et al. 2019). An opportunity exists for an honours student to investigate, and be first to report, this new sample preparation technology for food and flavour analysis. The project will explore the advantages and limitations of a new technology for flavour research and food quality assurance.

R Shellie, M Tehrani Rokh, M Van Den Bronk, (2019) Liquid-liquid mixing device suitable for sample preparation by liquid-liquid extraction, World Intellectual Property Organization, WO 2019000042; TH Parliament, Perfumer & Flavorist, 11 (1986) 1-8; K Gras, J Luong, R Gras, H Cortes, R Shellie, Journal of Chromatography A 1362(2014) 43-48

Skills/attributes required by the student

Knowledge and background in a sensory or consumer science; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Quantitative analysis (statistics); Qualitative analysis; Mass Spectrometry, Separation Science

Project number: FN_12

Project title: Influence of milk processing on microbial safety, flavour and consumer perception.

Primary supervisor: Dr Snehal Jadhav

Phone: +61 392468606

Email: snehal.jadhav@deakin.edu.au

Co-supervisor/s: Dr. Georgie Russell and Dr. Robert Shellie

Supervisor profile

Dr Snehal Jadhav is working with the Centre for Advanced Sensory Science (CASS) in the School of Exercise and Nutrition Sciences. Her current research focuses on developing solutions for maintenance of microbial food safety in food and food processing environments. Her previous research experience in the area of food microbiology has been linked with the dairy and meat industry in Victoria working on developing proteomics and metabolomics based approaches to characterise foodborne pathogens using mass spectrometry-based platforms.

Dr Georgie Russell, the joint supervisor, is a Lecturer in Food Innovation. She is an active researcher in the area of psychosocial and biological determinants of food choices and intakes and has published more than 35 peer reviewed journal articles in this area. Georgie teaches in the areas of healthy and sustainable food systems as well as in food innovation. Georgie supervises Honours, Masters and PhD students in topics related to food behaviours. Associate Professor Shellie is new to Deakin but has supervised 23 PhD students elsewhere. He has deep industry links, a strong record of attracting competitive funding (\$11.3 M incl 11 ARC grants)

Broad project topic area

Food and nutrition science; Sensory and consumer science; Food Safety, Flavour Analysis

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

Project is based at: Melbourne Burwood campus

Project description

Milk is considered as a highly nutritious commodity that is consumed globally. However its is also highly perishable which makes processing a necessity. Processing of milk can be performed using thermal (pasteurised or ultra-high temperature) or non-thermal (e.g. high pressure processing) methods. Different types of processing may have a different effect on the overall flavour and microbial safety of the milk products. In addition, there is a growing interest in consumers about minimally processed or unprocessed milk. For instance many consumers believe that raw milk consumption comes with many natural benefits. However, raw milk consumption is considered illegal in Australia due to food safety reasons. The current project will study the microbial safety of different milk processing techniques such as pasteurisation, ultra-high temperature and high-pressure processing and also study consumer perception of these techniques and their overall impact on flavour. The project will focus on studying the microbial profile of the milk under different conditions of storage using conventional and advanced microbiological techniques. It will also involve performing a survey based investigation of consumer perception of the different milk processing technologies. Lastly, it will also explore the changes in flavour composition associated with the different processing technologies using analytical techniques such as gas-chromatography coupled to mass spectrometry.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Knowledge and background in a sensory or consumer science; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Willingness to learn new laboratory skills (e.g. microcopy or mass-spectrometry)

Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Laboratory techniques; Survey development; Quantitative analysis (statistics); Qualitative analysis; Advanced Microbiology skills and using analytical instruments such as gas chromatography coupled to mass spectrometry

Project number: FN_13

Project title: Investigation of the antimicrobial and biofilm-inhibitory of plant-based antimicrobials.

Primary supervisor: Dr Snehal Jadhav

Phone: +613 92148606

Email: snehal.jadhav@deakin.edu.au

Co-supervisor/s: Dr. Robert Shellie

Research mentor:

Supervisor profile

Dr Snehal Jadhav is working with the Centre for Advanced Sensory Science (CASS) in the School of Exercise and Nutrition Sciences. Her current research focuses on developing solutions for maintenance of microbial food safety in food and food processing environments. Her previous research experience in the area of food microbiology has been linked with the dairy and meat industry in Victoria working on developing proteomics and metabolomics based approaches to characterise foodborne pathogens using mass spectrometry-based platforms.

Associate Professor Shellie is new to Deakin but has supervised 23 PhD students elsewhere. He has deep industry links, a strong record of attracting competitive funding (\$11.3 M incl 11 ARC grants), and >135 publications shared with >150 co-authors. A few examples of positions in which his PhD graduates are gainfully employed are Assistant Professor at University of Natural Resources and Life Sciences, Austria; Proteomics Scientist at Crown Research Institute, NZ; Associate R&D Scientist at Dow Chemical, Canada; Applications Specialist at SCIEX, USA, Post Doc at Australian Wine Research Institute, Adelaide.

Broad project topic area

Food and nutrition science; Food Safety

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

Project is based at: Melbourne Burwood campus

Project description

Maintenance of microbial food safety in the supply chain is a major challenge for the food industry. Not only are foodborne pathogens a threat to public health but they can also lead to major product recalls that are economically very damaging to the food industry. In addition, some pathogenic bacteria also have the ability to colonise abiotic surfaces in the processing plant forming 'biofilms'. Bacterial biofilms can frequently contaminate food products and the production environment and are generally known to be quite resistant to disinfection. Considering the increase in incidence of antimicrobial resistance in pathogens and the inclination of consumers towards products derived from natural sources, plant-based antimicrobials seem a useful alternative. In this project, various plant-based antimicrobials will be explored for their antimicrobial and biofilm inhibitory effects. The project will involve using basic aseptic techniques in microbiology as well as using some advanced laboratory techniques (e.g. biofilm formation assays, scanning electron microscopy) to assess the effect of the antimicrobials against biofilms formed by some common foodborne pathogens. In addition, it will also focus on characterising the composition of the antimicrobial components of the plant-based antimicrobials using advanced analytical techniques such as gas chromatography coupled to mass spectrometry.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Willingness to learn new laboratory skills (e.g. microscopy or mass-spectrometry)

Skills specific to this project the student will develop

Laboratory techniques; Quantitative analysis (statistics); Qualitative analysis; Advanced Microbiology Skills, mass spectrometry and imaging using scanning electron microscopy

Project number: FN_14

Project title: Healthy and sustainable food systems: challenges and solutions

Primary supervisor: Georgie Russell

Phone: +61 3 924 68503

Email: georgie.russell@deakin.edu.au

Co-supervisor/s: Dr Rebecca Lindberg

Research mentor: 3122

Supervisor profile

Dr Georgie Russell is a Lecturer in Food Innovation. She is an active researcher in the area of psychosocial and biological determinants of food choices and intakes and has published more than 35 peer reviewed journal articles in this area. Georgie teaches in the areas of healthy and sustainable food systems as well as in food innovation. Georgie supervises Honours, Masters and PhD students in topics related to food behaviours.

Dr Lindberg is a mixed methods public health researcher with applied and academic experience. Expertise in not-for-profit food programs, food policy and nutrition inequities.

Broad project topic area

Sensory and consumer science; Public health nutrition; Health promotion (including policy);

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

Project is based at: Melbourne Burwood campus

Project description

Drs Lindberg and Russell are keen to supervise capable and motivated students in topics related to healthy and sustainable food systems. This could include examining the acceptability of various policy options or exploring healthy and sustainable food behaviours and their predictors. Please get in touch to discuss possible projects.

Skills/attributes required by the student

Knowledge and background in a nutrition related field;

Skills specific to this project the student will develop

Project number: FN_15

Project title: Young children's diets

Primary supervisor: Dr Alison Spence

Phone: 03 9244 5481

Email: a.spence@deakin.edu.au

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

Supervisor profile

Dr Alison Spence is a Senior Lecturer in Population Nutrition, Community Dietetics co-ordinator, and Advanced Accredited Practising Dietitian (APD). Her research focusses on promoting nutrition and health for young children, including understanding and improving young children's diet quality, parental feeding practices, and family meals.

Dr Jazzmin Zheng is an NHMRC Research Fellow and 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. Dr Penny Love is a Senior Lecturer in Population Nutrition and APD. The focus of her research is identifying and addressing research-practice gaps for the implementation of childhood obesity prevention interventions at scale. The supervisors ultimately involved from this team would be determined by the student's project choice and location

Broad project topic area

Dietetics; Public health nutrition; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Young children's dietary intakes have an important impact on their current and future health. Describing and understanding young children's diets and foods served, in a variety of settings, is important to inform public health nutrition strategies. There are two datasets available for the student to choose from for secondary analysis:

Dietary intake data from the InFANT Program is available for 500 children aged 9mo-5y. This is the only Australian study with multiple 24hr diet recall data for children under 2y, representing a unique opportunity to investigate intakes in this age group. The research question can be informed by the student's interests & could include:

- Do young children eat differently on weekends compared to weekdays?
- What foods do Australian toddlers eat most?
- How do macronutrient intakes during infancy influence body weight in early childhood?

Alternatively, a database of menus from daycare centres & survey responses regarding menu planning support strategies is available. A project using this dataset will provide valuable insights into practical ways to work with & support daycare centres in improving menu quality, aiming to inform work of Nutrition Australia's Healthy Eating Advisory Service. The research question can be informed by the student's interests and could include:

- Do menus in daycare centres meet the recommended menu planning guidelines?
- What support do daycare centres need and use to improve the nutritional quality of foods served?

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; In-depth knowledge of early childhood nutrition, plus skills in analysing, interpreting and presenting dietary data or qualitative data in a way which informs health professionals as well as researchers.

Project number: FN_16

Project title: Food and nutrition education

Primary supervisor: Tony Worsley

Phone: 0392446743

Email: tonyw@deakin.edu.au

Co-supervisor/s: Claire Margerison & Alison Booth

Research mentor:

Supervisor profile

Prof Worsley has successfully supervised over 40 PhD and Masters theses (as principal supervisor) in nutrition promotion and behavioural nutrition. Nutrition education is the major focus of Worsley's research which involves colleagues in Canada, Ireland, Indonesia, the UK, Sweden and the USA. Worsley has published over 280 papers in public health nutrition and nutrition promotion.

Dr Claire Margerison is an Accredited Practising Dietitian and Senior Lecturer. Her broad research interests include nutrition and dietetics education. Current research includes: nutrition education curriculum in secondary schools; food literacy; mental health. She has supervised four honours students and three PhD students to completion. She currently co-supervises one PhD student, and two Master students with Prof Worsley and Dr Booth.

Dr Alison Booth is a senior lecturer and Registered Nutritionist and specialises in nutrition promotion. Her research focuses on food and nutrition education in schools. She has supervised six honours students to completion and currently co-supervises three PhD students two Master students with Prof Worsley and Dr Margerison.

Broad project topic area

Food and nutrition science; Public health nutrition; Nutrition promotion and education

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

Project is based at: Melbourne Burwood campus

Project description

We are happy to discuss possible projects that relate to:

- a) Surveys of parents about their views of school food and nutrition education curriculum programs.
- b) Surveys of parents' views of the services provided by schools particularly those relating to food service provision. E.g. canteens, lunches, cafeteria, gardens, etc.
- c) Determination of the social and psychological influences on young people's food consumption (intake and behaviours).
- d) Exploration of adults' acceptance of food and nutrition communications.
- e) Other proposals relating to nutrition promotion/education, school food environment and curriculum or adolescent eating behaviours.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: FN_17

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

Research mentor:

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 National Heart Foundation Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). His research focuses on using innovative information technologies for improving healthy lifestyle behaviours. Shariful has supervised to completion 7 Doctor of Medicine and 12 Masters students and has skills in research design and development, implementation, data analysis and reporting.

Broad project topic area

Dietetics; Food and nutrition science; Public health nutrition; Sports nutrition; Exercise and sport science; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

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 years 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

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Qualitative analysis;

Project number: FN_18

Project title: Nutritional status and memory in older people

Primary supervisor: Helen Macpherson

Phone: 03 92445317

Email: helen.macpherson@deakin.edu.au

Co-supervisor/s: Rachel Duckham

Research mentor:

Supervisor profile

Dr Helen Macpherson completed undergraduate studies in Psychology and Psychophysiology. She conducts research looking at how memory changes as people get older and ways diet and exercise can improve memory. Dr Macpherson has conducted numerous randomised controlled trials to investigate the cognitive, mood and health effects of dietary supplements, dietary supplements combined with exercise and whole diet change. Her research investigates mechanisms of action including cardiovascular changes and direct effects on brain function using a range of brain imaging techniques.

Broad project topic area

Public health nutrition; Physical activity; Psychology

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

Project is based at: Melbourne Burwood campus

Project description

Projects are available using secondary data from a recently completed study which investigated the combined effects of dietary supplementation and a gym based exercise program on memory in older people, who were at risk of dementia. Potential projects could look at whether nutrient intake can predict changes in memory over time, the relationship between nutrient intake and other health or psychological parameters such as body composition, cardiovascular health, strength, physical function, personality and mood or how these measures interact with memory in older people.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Ability to conduct interviews; Quantitative analysis (statistics);

Project number: FN_19

Project title: How do Australian fathers see themselves as food providers for young families

Primary supervisor: Adam Walsh

Phone: 9251 7788

Email: adam.walsh@deakin.edu.au

Co-supervisor/s: Karen Campbell

Research mentor: N/A

Supervisor profile

Dr Adam Walsh is an Accredited Practising Dietitian and senior lecturer in nutrition and dietetics in the School of Exercise and Nutrition Sciences (SENS) and a member of the Institute for Physical Activity and Nutrition (IPAN). Adam's research focuses on the dietary and physical activity relationships between fathers and their young (0-5 years) children.

Dr Karen Campbell is a Professor of Population Nutrition in SENS/IPAN with a well-developed profile nationally and internationally for her work in the area of childhood obesity prevention. Karen's 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; Family & young child nutrition

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

Project is based at: Melbourne Burwood campus

Project description

Children's learning about food is considerable during the first five years of life, with parental influence considered pivotal to this learning. Research has focused predominantly on maternal influences with little known about the relationships between fathers' and young children's dietary behaviours. A greater understanding of how fathers view their role as food providers for their families is important to inform the design and delivery of future child-focussed interventions aiming to improve parent and child diet and health. This project aims to qualitatively examine fathers' views regarding how they provide food for their young families with findings informing the design and delivery of future child-focussed health promotion interventions.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Qualitative analysis;

Project number: FN_20

Project title: The effect of one week of sleep restriction on the muscle biological clock

Primary supervisor: Severine Lamon

Phone: 9244 5571

Email: severine.lamon@deakin.edu.au

Co-supervisor/s: Brad Aisbett

Research mentor: Olivia Knowles

Supervisor profile

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.

A/Prof Brad Aisbett's research investigates interactions between the physical activity, sleep and physiology of shiftworkers. He conducts laboratory and field trials to understand how irregular work and sleep patterns influence workers' physical activity at work, and how exercise (and training) can be used to improve the health and safety of shiftworkers.

Ms Liv Knowles is the PhD candidate in charge of the broader project and will act as a research mentor for the student.

Broad project topic area

Exercise and sport science; Exercise physiology; Molecular Biology

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

Project is based at: Melbourne Burwood campus

Project description

Sleep is fundamental for human health. However, insufficient sleep is a global epidemic, and 45% of Australians sleep less than 7 h per night. The health risks associated with shortened sleep are severe. Sleeping 4-7 h per night increases the relative risks of type 2 diabetes, obesity, coronary heart disease and all-cause mortality. Skeletal muscle is the largest tissue of the body. On the top of allowing the body to maintain posture and perform movements, it plays a major role in energy metabolism and nutrient storage. However, the effects of suboptimal sleep on the structure and function of this important organ, and how this contributes to whole-body metabolic dysfunctions, are unknown.

Eleven female human participants underwent nine consecutive nights of sleep restriction (5hrs sleep per night). On alternate days, blood and muscle samples were collected at rest as well as following a 45-minute resistance exercise session. Approximately three months later, the same protocol was repeated but participants slept normally at home.

The "clock" genes are the molecular switches that regulate the muscle biological clock. Disrupting the expression of these genes prevents the muscle to grow and function normally. This project will investigate the expression of the muscle "clock" genes following a week of sleep restriction in humans, and compare how this relates to the control condition.

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

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

Project number: FN_21

Project title: Get on the toilet and taste. How virtual reality alters our taste perception

Primary supervisor: Dr Gie Liem

Phone: 03 92446039

Email: gie.liem@deakin.edu.au

Co-supervisor/s: Dr Georgie Russell

Research mentor:

Supervisor profile

Dr Gie Liem supervised 10 honours students to completion and is an active researcher in the Centre for Advanced Sensory Science (CASS). His research focuses on Sensory Marketing, which is the interface of marketing research and sensory science. Besides his research, he teaches Sensory Marketing and Advanced Sensor Methods, in the undergraduate and post graduate nutrition/food science course at Deakin University.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

The way we perceive food is highly influenced by the environment. Eating a chocolate bar in a kitchen is just different from eating the same bar in a toilet. Virtual reality aims to immerse consumers in an environment, which mimics the real environment. Pilot data shows that people indeed appreciate food less in a virtual toilet, than in a virtual kitchen. It remains to be investigated if this effect is unique to Virtual reality or could you obtain the same results with a more simplistic method of just showing a photo of a toilet, or having people imagining being in a toilet? In this honours project you will investigate how different virtual reality environments alter taste perception. You will use state of the art Virtual Reality equipment, make 360 degree video recordings with our top of the line camera, test subjects and analyse the data. This project suits students who are interested in innovative sensory and consumer science.

Skills/attributes required by the student

Knowledge and background in a sensory or consumer science;

Skills specific to this project the student will develop

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

Project number: FN_22

Project title: That makes me sad....where is the chocolate? How virtual environments influences food desires.

Primary supervisor: Dr Gie Liem

Phone: 03 92446039

Email: gie.liem@deakin.edu.au

Co-supervisor/s: Dr Georgie Russell

Research mentor:

Supervisor profile

Dr Gie Liem supervised 10 honours students to completion and is an active researcher in the Centre for Advanced Sensory Science (CASS). His research focuses on Sensory Marketing, which is the interface of marketing research and sensory science. Besides his research, he teaches Sensory Marketing and Advanced Sensor Methods, in the undergraduate and post graduate nutrition/food science course at Deakin University.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

Eating high calorie foods, which are sweet, salty and fatty triggers our reward centres and immediately makes us feel good. Self-control enables us to decide that it is better not to eat unhealthy food, because it might harm us in the long term, despite it being nice in the short term. Emotional distress is one of the reasons why people can lose their self-control. They feel bad and want instantly feel better, so they want to do something that is immediately satisfying and eat that chocolate. Emotional distress can be induced by bringing people to stressful environments. However, this is often not feasible due to logistic and practical reasons. Virtual reality enables the participant to be emerged in an alternative reality. This honours project will investigate how such immersive stressful environments might alter people's food consumption and desire to eat foods which are immediately rewarding, such as chocolate

In this project you will investigate how different virtual reality environments alter taste perception. You will use state of the art Virtual Reality equipment, make 360 degree video recordings, test subjects and analyse the data. This project suits students who are interested in innovative sensory and consumer science.

Skills/attributes required by the student

Knowledge and background in a sensory or consumer science;

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: Designing the tastiest food with a new approach to sensory science

Primary supervisor: Dr Gie Liem

Phone: 0392446039

Email: gie.liem@deakin.edu.au

Co-supervisor/s: Prof Russell Keast

Research mentor:

Supervisor profile

Dr Gie Liem supervised 10 honours students to completion and is an active researcher in the Centre for Advanced Sensory Science (CASS). His research focuses on Sensory Marketing, which is the interface of marketing research and sensory science. Besides his research, he teaches Sensory Marketing and Advanced Sensor Methods, in the undergraduate and post graduate nutrition/food science course at Deakin University.

Broad project topic area

Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

The traditional view in sensory science is that consumers are only able to tell you if they like a product (hedonic judgement) and a highly trained panel is only able to provide you with insights in the sensory profile of products (analytical judgement). In this honours project we want to test a new approach in which we combine the hedonic judgement with the analytical judgement. Such approach should lead to an ideal product, which we then will test with consumers

As an honours student in this project you will be testing consumers and become familiar with a sensory computer program, which is widely used in the food industry. You will gain organisational, analytical and critical thinking skills in the area of sensory and consumer science. This project suits students who are interested in innovative sensory and consumer science. Especially for students who are thinking of getting a job in food industry this is a very valuable honours project.

Skills/attributes required by the student

Knowledge and background in a sensory or consumer science;

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: A critical analysis of the 5 year review of the Health Star Rating System

Primary supervisor: Prof Mark Lawrence

Phone: 92443789

Email: lawrence@deakin.edu.au

Co-supervisor/s: Dr Phil Baker

Research mentor: Ms Sarah Dickie

Supervisor profile

Mark is Professor of Public Health Nutrition at the Institute for Physical Activity and Nutrition, Deakin University. He has 35 years' experience working as a practitioner and academic in food and nutrition policy at local, state, national and international levels. Mark's research interests focus on investigating the science and politics of healthy and sustainable food systems, dietary guidelines, ultra-processed foods, Nutrient Reference Values and food regulation. He is:

- External advisor to the WHO (dietary patterns for health);
- External advisor to the FAO (sustainable healthy diets);
- Member of the IUNS Task Force on Sustainable Diets;
- Chair of the Advisory Board for Cochrane Nutrition;
- Board member at Food Standards Australia New Zealand;
- Member of NHMRC's Synthesis and Translation of Research Evidence committee;
- Team leader, ARC project, 'Reforming evidence synthesis and translation for food and nutrition policy';
- Former member of NHMRC's Dietary Guidelines Working Committee.

Broad project topic area

Dietetics; Food and nutrition science; Public health nutrition; Health promotion (including policy);

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

Project is based at: Melbourne Burwood campus

Project description

The Health Star Rating System (HSR) is a controversial food labelling policy activity. It is intended to help consumers select the healthier alternative between two otherwise similar food products. Some of the reasons it is controversial are: i) the algorithm used to calculate the health stars lacks a firm scientific basis, eg which nutrients are included and the 'cut-off' levels for awarding points has some arbitrariness; ii) It displays 'health' stars and does not discriminate if they appear on nutritious or discretionary foods, research has shown it creates a 'health halo' that can help market discretionary food products; iii) it appears to be diverting resources and political will away from other food policy activities.

In mid-2019 the HSR had been implemented for 5 years and it was reviewed to determine if it should continue.

This project aims to understand the decision-making involved with the review and what the outcome means for future food policy and public health nutrition.

Objectives: i) Identify who were the submitters and their nutrition worldviews; ii) Analyse how they framed the problem/solution and what evidence was used to support their view; iii) Assess how the food reg system synthesised and translated the evidence in these submissions

Method: Data will be collected from all review submissions available on-line to be read and analysed. Data analysis will be conducted against a theory framework.

Skills/attributes required by the student: Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Food policy analysis

Project number: FN_25

Project title: The impact of ultra-processed foods on liking and food consumption

Primary supervisor: Shirani Dr Gamlath

Phone: 92517267

Email: shirani.gamlath@deakin.edu.au

Co-supervisor/s: Dr Georgie Russell

Research mentor: 3149

Supervisor profile

Dr Shirani Gamlath has actively established a research program on the use of novel functional/healthful ingredients in product development and application of novel processing technologies such as extrusion technology and high-Pressure processing to retain nutritional and bioactive components in foods. This field encompasses knowledge and expertise in a number of areas including product development, novel process technologies and product evaluation. Shirani has experience in product development with cereals, legumes and fruits and also product evaluation based on nutritional, physicochemical and sensory analysis.

Dr Georgie Russell, the joint supervisor, is a Lecturer in Food Innovation. She is an active researcher in the area of psychosocial and biological determinants of food choices and intakes and has published more than 35 peer-reviewed journal articles in this area. Georgie teaches in the areas of healthy and sustainable food systems as well as in food innovation. Georgie supervises Honours, Masters and PhD students in topics related to food behaviours.

Broad project topic area

Food and nutrition science; Sensory and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

Recent research highlights that ultra-processed foods have an impact on energy consumption and weight gain than minimally processed foods. The project aims to identify the effect of different processing levels on the liking and consumption of foods. The student will develop a selected product at different processing levels and measure the structural changes in foods and its impact on liking and consumption.

Skills/attributes required by the student

Knowledge and background in a sensory or consumer science; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects);

Skills specific to this project the student will develop

Recruitment of participants; Laboratory techniques; Quantitative analysis (statistics);

Project number: FN_26

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

Research mentor:

Supervisor profile

Dr Shirani Gamlath has established a research program on the use of bioactive/functional ingredients in designing sustainable and healthy products. Her current research focusses on the 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 physicochemical 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 and consumer science;

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

Project is based at: Melbourne Burwood campus

Project description

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 or consumer science; Ability to learn relevant software programs (e.g. Excel, statistical software program);

Skills specific to this project the student will develop

Primary data collection skills; Quantitative analysis (statistics);

Project number: FN_27

Project title: Health status, diet pattern and consumer experience of health & lifestyle advice in people with PTSD

Primary supervisor: Claire Margerison

Phone: 92517293

Email: claire.margerison@deakin.edu.au

Co-supervisor/s: Tracie McRorie & Lauren Le Fevre, Dietitians Austin Health

Research mentor: Kate Desneves, Dietitian Austin Health

Supervisor profile

Dr Claire Margerison is an Accredited Practising Dietitian and Senior Lecturer. Her broad research interests include nutrition and dietetics education. Current research includes: nutrition education curriculum in secondary schools; food literacy; mental health. She has supervised four honours students and three PhD students to completion. She currently co-supervises one PhD student, and two Master students.

Tracie McRorie, Senior Clinician, clinical educator Austin Health with over 30 years of clinical and community dietetic experience. She has worked in the mental health field for over 20 years, seeing individual clients and conducting healthy lifestyle programs with community mental health clients. She has experience supervising a Deakin University Hounours student back in 2006 at Austin Health. Lauren Le Fevre, Grade 2 clinician has been practising in the field of chronic disease and mental health for 10 years. In 2014 she was awarded the DAA small grant for research and in conjunction with her colleague, completed a research study "Is two days of intermittent energy restriction per week a feasible weight loss approach in obese males? A randomised pilot study".

Broad project topic area

Dietetics;

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

Project is based at: Melbourne Burwood campus and Ward 17 & Nutrition & Dietetics Dept, Heidelberg Repatriation Hospital

Project description

Clients with mental health conditions have higher rates of mortality and morbidity from chronic disease and higher rates of preventable risk factors. Patients admitted to the psychiatric ward with PTSD experience challenges maintaining a healthy weight and lifestyle. A pilot survey in ward patients with PTSD found that 50% missed breakfast, 94% skipped meals, 69% consumed alcohol and 63% had a BMI >30. Healthier food and healthy eating information on the ward resulted in weight loss, improved meal patterns, diet quality and patient confidence in following a healthy diet. The aim of this project is to further describe the health status and dietary patterns of patients with PTSD, to explore the consumer experience of participating in health and lifestyle counselling and how consumers would like dietetic services provided. This is a qualitative descriptive study. Patients who are admitted to ward 17 with PTSD between March and August 2020 will be eligible to participate. Clinical data (weight, weight history, medications and lipids) will be collected. Patients will be interviewed to explore their dietary pattern, enablers and barriers to healthy eating and to explore their experience of participating in health and lifestyle counselling and what mode of follow up they would prefer. Interviews will be transcribed verbatim and analysed using a pragmatic inductive approach;thematic content analysis. The findings will inform how health and lifestyle information is provided to patients with PTSD.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); Interpersonal skills and ability to communicate directly with participants and other project contacts; Ability to work as a team member; Ability to perform qualitative data collection through patient interviews and analyse the results

Skills specific to this project the student will develop

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

Project number: FN_28

Project title: Designing technologies for delivering exercise and/or dietary programs

Primary supervisor: Dr Jonathan Rawstorn

Phone: 92468461

Email: jonathan.rawstorn@deakin.edu.au

Co-supervisor/s: Dr Elena George & Prof Ralph Maddison

Supervisor profile

Jonathan is an exercise/behavioural scientist at the Institute for Physical Activity and Nutrition (IPAN) with research interests in technology-based exercise and lifestyle programs for improving health and performance. His research skills include eHealth intervention design and evaluation, validation studies, & systematic reviews/meta-analysis.

Elena is an Accredited Practising Dietitian with >7 years clinical experience, and Lecturer in Nutrition and Dietetics at the School of Exercise and Nutrition Sciences. Elena has research interests in developing novel dietary interventions for managing chronic diseases and optimising health. Ralph is a Professor of Physical Activity & Disease Prevention at IPAN with research interests in technology-based lifestyle interventions for health and disease management.

We will collectively provide expert support to help you develop key research skills including reviewing and critiquing literature; designing eHealth interventions; analysing/interpreting data; and scientific writing. A key goal will be submitting study findings for publication in a scientific journal to boost your track record ahead of post-graduate study or future employment.

Broad project topic area: Dietetics; Exercise and sport science; Physical activity; eHealth; health technology

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

Project is based at: Melbourne Burwood campus

Project description

Are you interested in using digital technologies to help people improve their health via exercise & dietary programs? If so, we have some that could be perfect for you!

You know exercise & dietary professionals do a great job helping people improve their health by providing individualised evidence-based advice, but many barriers stop people from accessing traditional face-to-face consultations. Digital technologies let us connect with people anywhere, at any time, in many different formats. The trouble is we don't really know how people want to use digital technologies to connect with exercise & dietary professionals, so we don't know how to design interventions that people really value.

We're interested in finding different ways that people want to use digital technologies to receive exercise &/or dietary support. We'll help you to find out what people really want, & then create some innovative designs for digital exercise &/or diet programs that could seamlessly integrate best-practice advice & support into people's everyday lives.

You'll develop knowledge & practical skills that help you understand how client/consumer preferences should shape the design & delivery of health programs. You'll also learn a number of key research skills that are equally valuable whether you're thinking about post-graduate study, enrolment into a clinical degree, or working as an exercise or dietary professional.

If this sounds like your kind of thing, let's meet to talk about your options.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: FN_29

Project title: Does the type and timing of protein intake before bed impact on sleep in well trained people?

Primary supervisor: Dr Dominique Condo

Phone: 03 9244 5487

Email: dominique.condo@deakin.edu.au

Co-supervisor/s: A/Prof Brad Aisbett, Dr Michele Lastella (CQU)

Research mentor: Spencer Roberts

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 research interests include investigating the relationship between diet and sleep in athletes as well as energy availability in female athletes.

A/Prof Brad Aisbett is the Deputy Head of School, Exercise and Sports 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

Food and nutrition science; Sports nutrition; Exercise and sport science;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

The importance of sleep is well well-documented, given its wide-ranging benefits for cognition, physical health, emotional well-being, and mental health. Dietary composition and meal timing are thought to influence sleep quantity and quality, with recent observational studies from our group suggesting that the timing of meals and evening protein intake has the biggest influence on sleep in elite athletes. The mechanisms explaining these findings are unknown, however it is thought that ingestion of whey based protein close to bedtime may benefit sleep due to the high typtophan content, potentially leading to an increase in melatonin and promoting sleepiness. Further research is required to better understand the impact of protein type and timing on sleep in well trained populations, which will, in turn, improve their recovery to optimise sporting performance and well-being. The aim of the proposed study is to investigate whether the type (whey vs non-whey) and timing (4 hours vs 1 hour) of protein intake before bed impacts on sleep quality and quantity. This information will help guide future dietary prescription is well trained populations to optimise sleep.

Skills/attributes required by the student

Knowledge and background in a nutrition related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_1

Project title: Does exercise-intensity and volume effect post-exercise muscle microvascular blood flow?

Primary supervisor: Dr Lewan Parker

Phone: +61 3 9246 8740

Email: lewan.parker@deakin.edu.au

Co-supervisor/s: A/Prof Michelle Keske

Research mentor:

Supervisor profile

Dr Parker is supported by a NHMRC and National Heart Foundation 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, can be used to improve health outcomes and quality of life in various healthy and clinical populations. The successful honours student will be co-supervised by Associate Professor Michelle Keske, an expert in vascular health and cardiometabolic disease research. The honours student will learn specialised state-of-the-art ultrasound and exercise physiology techniques which only few laboratories world-wide have optimised for research in humans. Furthermore, the student will learn fundamental exercise physiology techniques including graded exercise tests (VO₂max tests), exercise prescription, and various biochemical techniques for measuring markers of health and disease in blood.

Broad project topic area

Applied Sports Science; Exercise physiology; Biomedicine; Physical activity;

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

Project is based at: Melbourne Burwood campus

Project description

The microvascular system (small blood vessels) in skeletal muscle is the most important vascular site for the delivery and exchange of nutrients and hormones within the human body (e.g., delivery of oxygen, glucose and insulin to skeletal muscle). Microvascular blood flow increases after muscular contraction (e.g., during exercise) which assists with oxygen and nutrient delivery (and waste removal) to the muscle, thereby improving their capacity to perform work during exercise, as well as aid recovery processes following exercise. However, current research has focused on simple exercise protocols (e.g. hand grip strength/leg extension) and/or measured microvascular blood flow via indirect methods that are unable to measure the functional capacity of the microvasculature system. As such, the effects of whole-body exercise on microvascular blood flow remains largely unknown. Furthermore, the manipulation of exercise-intensity and volume has yet to be investigated. This project will, for the first time, measure the effects of manipulating exercise intensity and volume on skeletal muscle microvascular blood flow, cardiac function, and blood biomarkers of vascular health and disease.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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); Intravenous infusion of an ultrasound contrast agent to directly measure blood flow in skeletal muscle Ultrasound assessment of the heart (echocardiography) and large arteries

Project number: ESS_2

Project title: The behaviour and activities of coaches during training and match-play.

Primary supervisor: Will Vickery

Phone: +61392445674

Email: will.vickery@deakin.edu.au

Co-supervisor/s: Simon Feros

Research mentor: -

Supervisor profile

Dr Will Vickery is a Lecturer of Sport Coaching based at the Melbourne Burwood campus. His research focuses on the impact of coaching on athlete performance, with a specific focus on practice design. Dr Vickery has experience working within a more applied (field-based) setting, using mainly quantitative analysis techniques (GPS, variety of associated software, SPSS). In more recent times he has taken a more qualitative approach to his work (interviews, questionnaires) and is currently working on projects that look to improve the effectiveness of training sessions from the coach's perspective.

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.

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

In an attempt to more precisely understand the unique qualities and characteristics that coaches in various sports possess and use, previous research has utilised systematic behavioural observation. In many cases, common behaviours and actions are used by all coaches, however, more current research has highlighted various differences between sports (Cushion et al., 2012; Hall et al., 2016). Very limited information exists which provides an insight into the behaviours and actions of a coach – from any sport – when comparing match-play to the training environment. The general focus of this study is to observe, and examine the behaviours and actions of cricket coaches during both training sessions and match-play.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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 project related tasks;

Skills specific to this project the student will develop

Recruitment of participants; Primary data collection skills; Ability to conduct interviews; Image and/or video analysis; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_3

Project title: The home and neighbourhood environment and preschool children's physical activity and screen time

Primary supervisor: Jill Hnatiuk

Phone: 03 9246 8776

Email: jill.hnatiuk@deakin.edu.au

Co-supervisor/s: Lauren Arundell; Katherine Downing

Research mentor:

Supervisor profile

Dr Jill Hnatiuk is a Lecturer in Physical Activity and Health. Her research interests include physical activity promotion in early childhood (birth – 5 years old). Jill works alongside community organisations and families to understand, promote and incorporate healthy movement behaviours into everyday life.

Dr Katherine Downing is a postdoctoral research fellow in 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.

Dr Lauren Arundell is an Alfred Deakin Postdoctoral Research Fellow within IPAN. Her research investigates children's physical activity and sedentary behaviours (e.g. screen time) and their impact on health and wellbeing. Lauren's research focuses on identifying the unique influences that the home- and school- environments have on children's health behaviours.

Broad project topic area

Physical activity; Health promotion (including policy);

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

Project is based at: Melbourne Burwood campus

Project description

Students involved in this research project will use data from the Screen Time, Physical Activity in Children's Environments Study (SPACES), a cross-sectional study of approximately 500 parents of 2-5 year old children. Students can select their topic depending on their interests. Some examples of research questions include: (1) examining the relationship between children's physical activity, screen time and social connectedness in the community; (2) examining the relationship between the home physical environment (e.g., the number and availability of screen devices, the size and type of indoor and outdoor spaces in the home) and children's physical activity and/or screen time; or (3) examining how the social features of the neighbourhood interact with physical environmental characteristics to influence children's physical activity and/or screen time. Additional research questions are possible; this can be discussed further when the student meets with the supervisor(s). Opportunities for fieldwork may also be possible throughout the duration of the honours year.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Knowledge and background in a health science related field

Skills specific to this project the student will develop

Quantitative analysis (statistics); Possible fieldwork experience

Project number: ESS_4

Project title: Where is the Game Sense in Coach Education?

Primary supervisor: Dr Fraser Carson

Phone: 72388

Email: f.carson@deakin.edu.au

Co-supervisor/s: Dr Will Vickery

Research mentor:

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 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.

Dr Will Vickery

Will's research focuses on the impact of coaching on athlete performance, with a specific focus on practice design. Dr Vickery has experience working within a more applied (field-based) setting, using mainly quantitative analysis techniques (GPS, variety of associated software, SPSS). In more recent times he has taken a more qualitative approach to his work (interviews, questionnaires) and is currently working on projects that look to improve the effectiveness of training sessions from the coach's perspective.

Broad project topic area

Applied Sports Science; Sports coaching;

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

Project is based at: Either Burwood or Waurn Ponds

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.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program);

Skills specific to this project the student will develop

Primary data collection skills; Qualitative analysis; Discourse analysis

Project number: ESS_5

Project title: Systematic Observation of the Behaviours of Unique Coaching Contexts.

Primary supervisor: Will Vickery

Phone: +61392445674

Email: will.vickery@deakin.edu.au

Co-supervisor/s: Fraser Carson

Research mentor: -

Supervisor profile

Dr Will Vickery is a Lecturer of Sport Coaching based at the Melbourne Burwood campus. His research focuses on the impact of coaching on athlete performance, with a specific focus on practice design. Dr Vickery has experience working within a more applied (field-based) setting, using mainly quantitative analysis techniques (GPS, variety of associated software, SPSS). In more recent times he has taken a more qualitative approach to his work (interviews, questionnaires) and is currently working on projects that look to improve the effectiveness of training sessions from the coach's perspective.

Dr 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 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

Sports coaching;

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

Project is based at: Melbourne Burwood campus

Project description

Common behaviours and actions are used by all coaches, however, more current research has highlighted various differences between sports (Cushion et al., 2012; Hall et al., 2016). The information that currently exists relating to the typical behaviours of coaches that is expressed and passed on through accreditation schemes and academia has focused mainly on field- and court-based team sports such as soccer, rugby union, and basketball. It is unclear though whether these common coaching behaviours are also witnessed within other sports that do not necessarily fit within this context. That being the case, the general focus of this study is to examine the behaviours of coaches from sports that typically do not have as much exposure within the Australian sport environment (e.g. rowing, surfing, gymnastics). Using available systematic observation analysis software (e.g. CAIS) key features of how coaches interact with the performers will be critically analysed, and effective and ineffective behaviours determined. The benefits of this study will enhance the applicability of coaching theory to the education of novice coaches in these less interactive sports.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_6

Project title: The acute responses to blood flow restricted exercise using static versus dynamic pressure cuffs

Primary supervisor: Dr Stuart Warmington

Phone: (03) 9251 7013

Email: stuart.warmington@deakin.edu.au

Co-supervisor/s: Dr Matthew Clarkson

Research mentor:

Supervisor profile

Dr Warmington's research focus is to better understand and apply exercise to benefit muscle health. The principal direction in this respect is to understand the mechanisms governing blood flow restriction (BFR) exercise as a model, and to develop this exercise method to improve muscle health and functional outcomes in populations where loss of muscle is highly prevalent. His research group's projects include acute assessments of haemodynamic stress in young, older adult, and clinical populations as well as training studies to identify the effects of BFR exercise on muscle growth, strength and fatigue. Dr Warmington has a long-standing track record in research student supervision, with 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 Clarkson is an accredited exercise physiologist with a research focus on the utilization of BFR exercise to improve muscle health and physical function among clinical populations, most recently patients with end-stage kidney disease.

Broad project topic area

Applied Sports Science; Strength and Conditioning; Exercise physiology; Clinical exercise;

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

Project is based at: Melbourne Burwood campus

Project description

Blood flow restriction (BFR) exercise is a novel technique that employs dynamically inflated pressure cuffs to limited blood flow to active muscles during exercise. BFR exercise augments muscle mass and strength increases beyond what is otherwise achievable with low-intensity exercise. This may be most applicable to more clinical populations unsuited to high-intensity strength training, but is also currently being used in musculoskeletal rehabilitation and high-performance sport. However, practical applications among the general public have somewhat limited accessibility due to the cost of the necessary equipment and a lack of understanding around the technique. More cost-effective alternatives such as traditional blood pressure cuffs are sometimes substituted for the high-cost dynamically inflated cuffs. However, this may create a substantially different physiological response to applications of BFR using dynamic pressure cuffs.

The purpose of this project is to investigate the physiological responses to BFR exercise with static compared with dynamic cuff pressures, with a view to increasing the understanding and accessibility of the technique among the general public.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Laboratory techniques; Exercise prescription and monitoring; Quantitative analysis (statistics); Clinical monitoring techniques during exercise

Project number: ESS_7

Project title: Characterising the blood flow response to blood flow restricted resistance exercise

Primary supervisor: Dr Stuart Warmington

Phone: (03) 9251 7013

Email: stuart.warmington@deakin.edu.au

Co-supervisor/s: Dr Andrew Betik; Dr Matthew Clarkson

Research mentor:

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. Specifically, this relates to the use of blood flow restriction exercise 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 multiple PhD students and 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 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.

Dr Clarkson is an accredited exercise physiologist with a research focus on the utilization of BFR exercise to improve muscle health and physical function among clinical populations, most recently patients with end-stage kidney disease.

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 (BFR) exercise is a training method with growing recognition for its use in stimulating gains in muscle size and strength despite the use of light training loads. BFR exercise is not only effective with light resistance exercise but even aerobic exercise such as walking. However, the actual effect of BFR exercise 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 BFR exercise on muscle blood flow, limiting our understanding of the mechanisms by which it may stimulate 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 BFR exercise 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.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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);

Project number: ESS_8

Project title: Does naturally-occurring testosterone determine athletic performance in females?

Primary supervisor: Severine Lamon

Phone: 9244 5571

Email: severine.lamon@deakin.edu.au

Co-supervisor/s: Glenn Wadley

Research mentor: Sarah Alexander

Supervisor profile

Dr Severine Lamon's primary research interest is to understand how human skeletal muscle adapts to health and disease conditions at the molecular level. Dr Lamon also has a background in anti-doping research. A key focus of A/Prof Glenn Wadley's research program is investigating the molecular mechanisms regulating skeletal muscle adaptations following exercise. Dr Lamon and Wadley both have extensive experience running human exercise trials involving blood and muscle sampling, followed by molecular analyses. They have supervised several Honours students together over the last five years. Most of their previous Honours students have been successful in obtaining entry to competitive postgraduate programs including PhD, Medicine and Master of Dietetics. Ms Sarah Alexander is the PhD candidate in charge of the broader project and will act as a research mentor for the student.

Broad project topic area

Exercise and sport science; Exercise physiology; Molecular Biology

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

Project is based at: Melbourne Burwood campus

Project description

Hyperandrogenism is a female disorder that is characterized by elevated, naturally-occurring levels of the androgenic hormone testosterone and results in masculine traits. It is known that the anabolic phenotype (traits) effected by testosterone doping is beneficial for athletic performance. Over the recent years, hyperandrogenism has become a contentious topic that has gained substantial media attention and raised ethical issues regarding whether hyperandrogenic females should be allowed to compete in elite female competition. There is however no available evidence demonstrating that naturally-occurring levels of testosterone in females increases muscle anabolic response and performance. This project will start addressing this gap, with the overarching aim to investigate whether naturally occurring testosterone levels, alone or in combination with other factors, can predict the muscle anabolic response and performance in females. To achieve this aim, we are analysing muscle gene, protein and epigenetic markers pre-and-post a 12-week strength training protocol that maximises the muscle anabolic response in females. This Honours project will focus on the analysis of epigenetic markers (DNA methylation and non-coding RNAs). By identifying potential new predictors of the anabolic response in females, this project will provide the building blocks for implementing new regulations aimed at protecting, and providing a fairer treatment to hyperandrogenic athletes in elite sports.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Quantitative analysis (statistics);

Project number: ESS_9

Project title: Active Places and Spaces for Adolescents

Primary supervisor: Dr Jenny Veitch

Phone: 03 9251 7723

Email: jenny.veitch@deakin.edu.au

Co-supervisor/s: Alfred Deakin Professor Anna Timperio; Dr Venurs Loh

Research mentor:

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.

Alfred Deakin Professor Anna Timperio is the HDR Coordinator for the School of Exercise and Nutrition Science. Her research is focused on understanding the range of influences on physical activity, sedentary behaviour and eating behaviours, particularly among children and adolescents. Much of her work focuses on the built environment.

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 (including policy);

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 and spend time in 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 environments in which adolescents spend time (e.g. home, neighbourhood and school) may influence physical activity among this important age group.

This project will involve exploring secondary data from the NEArbY study. The NEArbY study collected a range of information about the neighbourhood, school and home environments, transport modes, physical activity, sedentary behaviour, social support, self-efficacy and use of personal electronics.

The student will be able to choose which environmental features and individual-level influences they wish to focus on in relation to physical activity or sedentary behaviour. They will code and analyse data with the aim of understanding factors influencing physical activity or sedentary behaviour among youth. This project would suit applicants with a background in exercise science, health science, health promotion or urban design.

Skills/attributes required by the student

Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_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)

Research mentor: Meghan Keast

Supervisor profile

Dr Aaron Fox is a research fellow in the Centre for Sport Research and has expertise in neuromechanics and human performance. Aaron's work uses a range of technologies (including motion capture, force plates, electromyography, and two-dimensional ultrasound) and computational techniques to identify optimal neuromuscular and biomechanical strategies for improving performance and reducing injury risk.

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

Meghan Keast is a PhD student in the Centre for Sport Research. Her honours studies focused on identifying aspects of netball-specific landing technique that contributed to knee loading and the implications for ACL injury risk. Meg's PhD involves using computational models of the musculoskeletal system to investigate tibial stress during running.

Broad project topic area

Exercise and sport science; Applied Sports Science; Strength and Conditioning; Biomechanics;

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 improving program compliance while maintaining an injury prevention benefit. 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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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: The effect of one week of sleep restriction on the muscle biological clock

Primary supervisor: Severine Lamon

Phone: 9244 5571

Email: severine.lamon@deakin.edu.au

Co-supervisor/s: Brad Aisbett

Research mentor: Olivia Knowles

Supervisor profile

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.

A/Prof Brad Aisbett's research investigates interactions between the physical activity, sleep and physiology of shiftworkers. He conducts laboratory and field trials to understand how irregular work and sleep patterns influence workers' physical activity at work, and how exercise (and training) can be used to improve the health and safety of shiftworkers.

Ms Liv Knowles is the PhD candidate in charge of the broader project and will act as a research mentor for the student.

Broad project topic area

Exercise and sport science; Exercise physiology; Molecular Biology

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

Project is based at: Melbourne Burwood campus

Project description

Sleep is fundamental for human health. However, insufficient sleep is a global epidemic, and 45% of Australians sleep less than 7 h per night. The health risks associated with shortened sleep are severe. Sleeping 4-7 h per night increases the relative risks of type 2 diabetes, obesity, coronary heart disease and all-cause mortality. Skeletal muscle is the largest tissue of the body. On the top of allowing the body to maintain posture and perform movements, it plays a major role in energy metabolism and nutrient storage. However, the effects of suboptimal sleep on the structure and function of this important organ, and how this contributes to whole-body metabolic dysfunctions, are unknown.

Eleven female human participants underwent nine consecutive nights of sleep restriction (5hrs sleep per night). On alternate days, blood and muscle samples were collected at rest as well as following a 45-minute resistance exercise session. Approximately three months later, the same protocol was repeated but participants slept normally at home.

The "clock" genes are the molecular switches that regulate the muscle biological clock. Disrupting the expression of these genes prevents the muscle to grow and function normally. This project will investigate the expression of the muscle "clock" genes following a week of sleep restriction in humans, and compare how this relates to the control condition.

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

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

Project number: ESS_12

Project title: The effect of viewing perspective and perceptual-action coupling on decision making in AR Football

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Will Vickery, Pete Varszeghy (GFC)

Research mentor:

Supervisor profile

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.

Dr Will Vickery is a Lecturer of Sport Coaching based at the Melbourne Burwood campus. His research focuses on the impact of coaching on athlete performance, with a specific focus on practice design. Dr Vickery has experience working within a more applied (field-based) setting, using mainly quantitative analysis techniques (GPS, variety of associated software, SPSS). In more recent times he has taken a more qualitative approach to his work (interviews, questionnaires) and is currently working on projects that look to improve the effectiveness of training sessions from the coach's perspective.

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

Exercise and sport science; Applied Sports Science; Sports coaching;

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

Project is based at: Melbourne Burwood campus

Project description

This project will be conducted in collaboration with the Geelong Cats AFL club (GFC) and is designed to assess the differences in decision making performance of athletes across different viewing perspectives (e.g., first person, broadcast) and/or with different levels of perceptual-action coupling. Athletes are regularly required to watch footage of matches (either their own or opponents) and this is most often from a broadcast perspective (i.e. high angle). However, athletes do not have this perspective when playing and this may affect their visual processing capabilities. This project will explore different viewing angles on a players decision making performance.

Furthermore, previous research has shown that when athletes are afforded the opportunity to interact with their environment, their performance improves. An extension of this project will be examining different levels of interaction with the environment and the affect this has on decision making performance.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_14

Project title: Autophagy and muscle metabolism in health and disease

Primary supervisor: Dr Chris Shaw

Phone: 5227 3394

Email: chris.shaw@deakin.edu.au

Co-supervisor/s: Dr Kirsten Howlett and Dr Lee Hamilton

Research mentor:

Supervisor profile

Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences/IPAN. 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 also interested in the mechanisms that contribute to the development of metabolic diseases associated with obesity and inactivity. He performs research in humans and animal models, and uses a combination of whole body and tissue specific techniques to examine fuel use and storage.

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 Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the basic molecular mechanisms by which we adapt to exercise and nutrition.

Broad project topic area

Exercise and sport science; Exercise physiology; Biomedicine;

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

Project is based at: Geelong Waurin Ponds campus

Project description

Autophagy is a quality control system which recycles old or damaged proteins and therefore maintains cellular function. As autophagy is activated by exercise it may play a role in the muscle adaptations that occur with exercise training. On the other hand, autophagy is impaired with age and may explain the decline in tissue function (e.g. mitochondrial dysfunction, lipid accumulation) and risk of chronic diseases as we get older. It has been proposed that autophagy can also specifically target proteins involved in carbohydrate and fat metabolism but few studies have explored its relevance for metabolism in skeletal muscle. We are currently performing studies in humans and animal models to explore the role of autophagy in metabolism, the adaptations to regular exercise and the development of metabolic disease associated with obesity and ageing. Please contact me for more information on the projects available.

Skills/attributes required by the student

Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques;

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;

Project number: ESS_16

Project title: Is a high fat oxidation capacity advantageous for endurance athletes?

Primary supervisor: Dr Chris Shaw

Phone: 5227 3394

Email: chris.shaw@deakin.edu.au

Co-supervisor/s: Dr Kirsten Howlett

Research mentor:

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

Sports nutrition; Exercise and sport science; Exercise physiology;

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

Project is based at: Geelong Waurn Ponds campus

Project description

We know that the capacity to utilise fat during exercise varies greatly amongst individuals. Even amongst similar groups of professional athletes, fat oxidation capacity can vary ~5-fold. Aerobic capacity, habitual diet, physical activity, body composition and muscle fibre type are believed to explain some, but not all, of this variation. This poses the question as to whether such differences in metabolism are important for athletic performance and whether they are dependent upon nutritional status?

This project will categorise trained cyclists as either a 'high' or 'low' fat burners by performing an incremental exercise test to determine their maximal fat oxidation capacity. Secondly we will determine the impact of fat oxidation capacity on fuel use and performance during prolonged exercise in the fasted and fed state. These results will test the relevance of metabolic profiling for individual athletes which could have implications for developing 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; 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; Exercise prescription and monitoring;

Project number: ESS_17

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)

Research mentor:

Supervisor profile

Sam Hoffmann is a Lecturer in Applied Exercise and Sport Science. Sam's broad research areas are sport and exercise physiology, prescription and performance, with a specific focus on female-specific demands and considerations. Students working with Sam will gain an understanding of the methods used to train and assess athletic performance, and the impacts of exercise on health and well-being.

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 holds a Faculty of Health Postdoctoral Research Fellowship 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 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. His research involves analysis on technology and products and how people interact with them.

Broad project topic area

Exercise and sport science; Applied Sports Science; Sport / exercise psychology;

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

Project is based at: Either Burwood or Waurin Ponds

Project description

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. It is a collaborative project incorporating elements of athletic apparel design, and the physical and psychological responses to exercising in this apparel.

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.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_18

Project title: Dose-response relationship of resistance training in older adults with type 2 diabetes

Primary supervisor: Professor Robin Daly

Phone: 9244 6040

Email: rmdaly@deakin.edu.au

Co-supervisor/s: Dr Jackson Fyfe

Research mentor: n/a

Supervisor profile

Professor Rob Daly holds the position of Chair in Exercise and Ageing within the School of Exercise and Nutrition Sciences. He conduct human intervention studies to understand how exercise and nutritional approaches can prevent and manage common chronic diseases such as type 2 diabetes, osteoporosis, sarcopenia, falls, certain cancers and neurological disorders. A strong focus of his work is the translation of evidence-based, scientific findings into 'real-world' clinical and practical guidelines and applications to ensure the best care and treatment available actually reach people that need it.

Dr Jackson Fyfe is a Lecturer in Strength & Conditioning Sciences in the School of Exercise and Nutrition Sciences. His research is focused on developing practical strategies to optimise improvements in skeletal muscle mass, strength, and related health and performance outcomes with exercise training in variety of population groups. He also has a keen interest in understanding the physiological basis for changes in muscle mass and function with exercise training, disuse, and ageing.

Broad project topic area

Exercise and sport science; Strength and Conditioning; Exercise physiology; Clinical exercise; Physical activity;

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

Project is based at: Melbourne Burwood campus

Project description

Type 2 diabetes is the epidemic of the 21st century, and in Australia is it estimated that more than 1 million people have this disease (with many more undiagnosed). Regular exercise, including progressive resistance (strength) training, is widely recommended to help manage blood glucose levels as well as improve body composition and cardiovascular health outcomes, including blood pressure and blood lipids. Current exercise prescription guidelines for type 2 diabetes recommend moderate to high intensity resistance training performed 2 or more times per week (2-4 sets of 8-10 repetitions) for at least 60 minutes in total. Despite these recommendations, it remains uncertain if there is a minimum dose of resistance training necessary to improve glycaemic control, body composition and cardiovascular risk factors in older adults with type 2 diabetes. This project will utilize data from a previous community-based resistance training trial in older adults with type 2 diabetes to evaluate if there is a graded dose-response relationship between the volume, intensity and frequency of resistance training on glycaemic control and body composition in older adults with type 2 diabetes.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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); Body composition assessment, including DXA and pQCT muscle/fat analysis

Project number: ESS_19

Project title: The effect of aerobic exercise intensity on brain plasticity

Primary supervisor: Ashlee Hendy

Phone: 92446221

Email: a.hendy@deakin.edu.au

Co-supervisor/s: Samantha Hoffman

Research mentor:

Supervisor profile

Ashlee Hendy is a Lecturer in Motor Learning, with a particular interest in the effects of exercise on the brain and nervous system. She conducts research in the field of Exercise Science and Neuroscience, investigating changes in the brain (neuroplasticity) that occur following exercise programs. She also uses a variety of non-invasive brain stimulation techniques to enhance strength gains, motor performance, cognition and mood.

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.

Students working with Ashlee and Sam will gain comprehensive knowledge of state of the art methods and technology used to test neurological function and measure brain plasticity. They will also gain an insight into the exciting and rapidly growing field of 'exercise neuroscience', bridging the gaps between cognitive psychology, neuroscience, health and fitness.

Broad project topic area

Exercise and sport science; Exercise physiology;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

The benefits of regular exercise on brain health and neural functional are well documented. Specifically, aerobic exercise produces acute changes in excitability and inhibition of the motor cortex, which can be measured directly using non-invasive brain stimulation. These changes create an enhanced environment for neuroplasticity, and have been shown to improve cognitive function and motor learning in healthy individuals, as well as in stroke rehabilitation settings. At present, there is no indication as to the optimal intensity to prescribe aerobic exercise in order to facilitate brain plasticity.

This project will compare the effects of a single bout of aerobic exercise at high, moderate and low intensities on plasticity of the motor cortex. The honours student will be responsible for recruiting sedentary participants, supervising exercise sessions, and delivering transcranial magnetic stimulation (TMS) to assess function of the central nervous system before and after training.

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;

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);

Project number: ESS_20

Project title: The effect of verbal cues on force output and neuromuscular activation

Primary supervisor: Ashlee Hendy

Phone: 92446221

Email: a.hendy@deakin.edu.au

Co-supervisor/s: Fraser Carson, Kris Hinck

Research mentor:

Supervisor profile

Ashlee is a Lecturer in Motor Learning, with interest in the effects of exercise on the brain and nervous system. She conducts research in the field of Exercise Science and Neuroscience, investigating exercise-induced neuroplasticity.

Fraser is a lecturer in sport coaching, with fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. He currently provides psychological support for the Melbourne Boomers, and has previously worked as performance psychologist with a number of professional teams, coaches and athletes.

Kris is a Lecturer in Applied Sport Science at Deakin University. Kris is an associate member of Deakin's Centre for Sport Research. He has 15 years of industry experience working in high performance, sport science and strength & conditioning, spanning from the VIS, Geelong Football Club, and Adelaide Football Club.

Working with this team will allow students to gain comprehensive knowledge of state of the art technology used to test neuromuscular function, and contribute to the rapidly growing field of 'Exercise Neuroscience', bridging the gap between sports performance and neuroscience.

Broad project topic area

Exercise and sport science; Sports coaching; Sport / exercise psychology; Exercise physiology;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Recent work in our laboratory has shown that the verbal cues delivered during maximal intensity muscle contractions influence the outcome of training sessions. Specifically, cues that encourage an athlete to move at high speed are associated with increased development of muscular power, even when actual contraction speed is controlled. Furthermore, these changes are associated with differences in activation of the neuromuscular pathway and changes in brain plasticity that may optimise power gains for athletes.

This project will assess the effects of various types of verbal cueing that are typically delivered by strength and conditioning coaches on the properties of force output and neuromuscular activation. The honours student will be responsible for recruiting recreationally active participants, delivering verbal cues during muscle contractions, and conducting assessments of neuromuscular function using peripheral nerve stimulation and transcranial magnetic stimulation (TMS).

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 to learn relevant software programs (e.g. Excel, statistical software program); 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; Laboratory techniques; Exercise prescription and monitoring; Quantitative analysis (statistics);

Project number: ESS_21

Project title: Women in sport coaching

Primary supervisor: Dr Fraser Carson

Phone: 03 52272388

Email: f.carson@deakin.edu.au

Co-supervisor/s: Shannon Sahlqvist

Research mentor:

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, wellbeing, stress and coping, and coach education.

Dr Shannon Sahlqvist

Shannon Sahlqvist is a Senior Lecturer in Physical Activity and Health (based at Waurn Ponds). Shannon's research is primarily focused on understanding and promoting physical activity. She has considerable experience in qualitative methods and data analysis.

Broad project topic area

Sports coaching; Sport / exercise psychology; Women in Sport

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

Project is based at: Either Burwood or Waurn Ponds

Project description

In the last few years there has been an increase in 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). In this project we are interested in examining what constitutes effective coaching as reflected in the material provided to attendants of these coaching qualifications. We are focusing on understanding what key knowledges are currently shaping coach education programs.

Skills/attributes required by the student

Ability to learn relevant software programs (e.g. Excel, statistical software program); Interpersonal skills and ability to communicate directly with participants and other project contacts;

Skills specific to this project the student will develop

Qualitative analysis; Discourse analysis

Project number: ESS_22

Project title: How are female S&C Coaches coping in a "man's world"?

Primary supervisor: Dr Fraser Carson

Phone: 03 52272388

Email: f.carson@deakin.edu.au

Co-supervisor/s: Dr Samantha Hoffmann

Research mentor:

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, wellbeing, stress and coping, and coach education.

Dr Samantha Hoffmann

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. Sam has experience as a Strength and Conditioning Coach and her research takes an applied approach to understanding the influences of physiology and coaching and their impact on exercise performance outcomes.

Broad project topic area

Exercise and sport science; Applied Sports Science; Strength and Conditioning; Sports coaching; Sport / exercise psychology;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Female strength and conditioning (S&C) coaches face a number of unique challenges, which can be vastly different to their male counterparts. There are limited role models for women pursuing careers within S&C and a number of gender ideologies to overcome. Traditional socially constructed gender ideology in sport has dictated that femininity is associated with more nurturing roles such as teaching, while masculinity is associated with competition and demonstrating sporting dominance. This has created barriers for females both entering S&C and their continued and prolonged engagement with S&C coaching (Norman, 2012). Opportunities for women to enter the S&C coaching field are limited. It is rare to see a woman hired to work with male athletes, whilst it is common for men to coach female athletes. For women who do enter such a male-dominated environment they are often left isolated and unsupported. This project will involve interviewing female strength and conditioning coaches working in high performance sport to identify the challenges they face, the unique stressors of working in a male dominated industry, the language used regarding their performance, their normative / expectant behaviours, the organisational support they receive, and the impact all of these factors have on their performance. The results of this project should enable better support of women in the industry and greater recruitment of women into S&C roles.

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_23

Project title: What do parents really think about young children's physical activity, screen time and nutrition?

Primary supervisor: Dr Katherine Downing

Phone: 9244 6088

Email: k.downing@deakin.edu.au

Co-supervisor/s: Dr Jill Hnatiuk, Dr Alison Spence

Research mentor:

Supervisor profile

Dr Katherine Downing is a Postdoctoral Research Fellow in the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on physical activity and sedentary behaviour (including screen time, time spent in situations that restrict movement and objectively assessed sitting) in early childhood (birth - 5 years). Katherine has a particular interest in how we can best educate and support parents to increase their children's physical activity and reduce their sedentary behaviour.

Dr Jill Hnatiuk is a Lecturer in Physical Activity and Health. Her research interests include physical activity promotion in early childhood (birth – 5 years old). Jill works alongside community organisations and families to understand, promote and incorporate healthy movement behaviours into everyday life.

Dr Alison Spence is a Senior Lecturer in Population Nutrition, Community Dietetics co-ordinator, and Advanced Accredited Practising Dietitian (APD). Her research focuses on promoting nutrition and health for young children, including understanding and improving young children's diet quality, parental feeding practices, and family meals.

Broad project topic area

Public health nutrition; Physical activity; Health promotion (including policy);

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 unsolicited (i.e., unsought) views of parents around screen time, physical activity and nutrition of young children (under the age of 5 years). In qualitative studies, there is often participant and researcher bias. For example, participants may respond inaccurately (often as a result of social desirability), and researchers may ask questions in a way that leads or prompts participants to respond in the way they desire. This project will use text-mining techniques to gather parents' comments around young children's physical activity, screen time and nutrition on a parenting Facebook page or blog, in order to ascertain their unsolicited and unbiased views. Thematic analyses will be used to analyse the qualitative data.

There is scope to tailor the project to the student's interests (either the project described above or a different project using available secondary quantitative data).

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); Knowledge and background in a health science related field

Skills specific to this project the student will develop

Qualitative analysis; Text-mining

Project number: ESS_24

Project title: Investigating mental health and wellbeing in high performance sport coaches

Primary supervisor: Dr Fraser Carson

Phone: 03 52272388

Email: f.carson@deakin.edu.au

Co-supervisor/s: Dr Peter Kremer

Research mentor:

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, wellbeing, stress and coping, and coach education.

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.

Broad project topic area

Exercise and sport science; Sports coaching; Sport / exercise psychology;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Sport coaches working in high performance environments are unique (Mallett, 2010). They are forced to deal with often uncontrollable, unpredictable, complex and nonlinear nature of elite sport, which can subject them to significant stressors (Kellman, Altfeld & Mallett, 2015). These stressors may contribute to high stress levels, burnout and critical health situations such as depression. Research has highlighted that excessive exposure to stress has led to coaches suffering emotional exhaustion and withdrawal from sport. Despite some growing awareness of the mental health of high performance coaches, there is still a dearth of empirical literature in this area. Furthermore, the research that has been conducted has not explored elite-amateur or professional coaches. However there is considerable anecdotal evidence to warrant concern and further investigation (Ruddock-Hudson & Knights, 2014). This project will interview 20 high performance coaches, using qualitative semi-structured interviews. The aim of the research is twofold: 1) to identify factors that facilitate and hinder mental health and wellbeing in high performance coaches; and 2) ascertain simple methods coaches can employ to become autonomous in the management of their own mental health and wellbeing.

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; 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_25

Project title: Wearable device for measuring physical activity, sleep and blood pressure 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

Research mentor:

Supervisor profile

Shariful Islam is a Physician Scientist and National Heart Foundation Senior Research Fellow at the Institute for Physical Activity and Nutrition (IPAN). Shariful's research focuses on innovative information technologies (eHealth, sensors, wearable devices) for improving chronic health conditions. He designed and conducted several large-scale epidemiological studies and clinical trials. He has published >80 peer-reviewed articles. Shariful has supervised to completion 7 Doctor of Medicine and 12 Masters students, and currently supervises 1 PhD student as principal supervisor and 2 PhD students as co-supervisor at IPAN.

Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at the Institute for Physical Activity and Nutrition (IPAN). He is the direct supervisor for 3 Postdoctoral Fellows and 6 PhD student at Deakin University. Several previous students have gone on to promising careers in research. Professor Maddison has specific expertise and success in the topic area of disease management and digital health. He has considerable expertise in the development and evaluation of digital interventions and has >175 peer reviewed publications.

Broad project topic area

Exercise and sport science; Clinical exercise; Physical activity; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Heart disease is the leading cause of death and disability among older population. Monitoring of risk factors such as physical inactivity, high blood pressure 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, 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 learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_26

Project title: Characterising injury situations in the women's Australian Football League (AFLW)

Primary supervisor: Dr Aaron Fox

Phone: 5247 9720

Email: aaron.f@deakin.edu.au

Co-supervisor/s: Dr Natalie Saunders

Research mentor:

Supervisor profile

Dr Aaron Fox is a research fellow in the Centre for Sport Research 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.

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.

Broad project topic area

Exercise and sport science; Applied Sports Science; Strength and Conditioning;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Understanding the characteristics of sporting injuries is an important step in designing effective injury prevention strategies. Examining video occurrences of injury in sports such as basketball, handball, netball and men's Australian football has taken place – with this information being used to further understand the scenarios where players are injured. This project will follow a similar process to characterising injuries across the initial seasons of the AFLW from broadcast footage. A specific focus of the project will be on anterior cruciate ligament (ACL) injuries, as these have been identified as a prominent problem within the league. Additional injuries (e.g. concussions, shoulder instability) may also be examined. This project will require the student to design a coding system and use this to characterise the scenario(s) during which injuries in the AFLW occur.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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); Notational/video analysis

Project number: ESS_27

Project title: Pain tolerance: psychological and physical determinants

Primary supervisor: A/Prof. Daniel Belavy

Phone: 92446606

Email: d.belavy@deakin.edu.au

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

Research mentor:

Supervisor profile

A/Prof Belavy is the leader of the Spine Research Group and an Associate Professor of Exercise and Musculoskeletal Health within the Institute of Physical Activity and Nutrition. He is interested in research that leads to significant advances in how we conceptualise and manage back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics.

Dr Miller is a research-clinician (accredited exercise physiology) and Lecturer of Exercise Physiology. His research primarily stems from the question: how can we maximise the effects of exercise. He also has >15yr of experience working as an exercise physiologist in private practice, as well as within Deakin's Clinical Exercise Centre. He is a member of Deakin's Spine Research Group.

Dr Owen is a Postdoctoral Researcher. His current research focuses on exercise and musculoskeletal health, with particular interests in the spine, intervertebral discs, back pain, magnetic resonance imaging and biostatistics.

Together, Dr Miller, A/Prof Belavy and Dr Owen, have supervised three Honours students to completion, with two subsequently awarded PhD scholarships and another accepted to study medicine.

Broad project topic area

Exercise and sport science; Clinical exercise;

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

Project is based at: Melbourne Burwood campus

Project description

Chronic pain affects 19% of Australians. Our group focusses on back pain, with a special interest in chronic back pain and how it is best managed. This particular honours project is about understanding the mechanisms of pain and hence provide insight into how best to impact the sensation of pain. In this project you will examine potential psychological and physical determinants of pain tolerance in people without chronic pain. Understanding these relationships in healthy populations will underpin the clinical application in future studies on patients with chronic back pain. Potential psychological determinants include depressive symptoms, social support and work satisfaction. Potential physical determinants include magnetic resonance imaging measures of muscle size and subcutaneous fat, muscle strength, endurance and aerobic capacity. The project will be integrated into a wider ongoing study which has been started in November 2018. You will be involved in collection of the data and will analyse the data collected along with data collected to date.

Skills/attributes required by the student

Knowledge and background in anatomy and/or physiology; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_28

Project title: Do spine MRI factors and psychological factors relate to physical function and performance?

Primary supervisor: A/Prof. Daniel Belavy

Phone: 92446606

Email: d.belavy@deakin.edu.au

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

Research mentor:

Supervisor profile

A/Prof Belavy is the leader of the Spine Research Group and an Associate Professor of Exercise and Musculoskeletal Health within the Institute of Physical Activity and Nutrition. He is interested in research that leads to significant advances in how we conceptualise and manage back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics.

Dr Miller is a research-clinician (accredited exercise physiology) and Lecturer of Exercise Physiology. His research primarily stems from the question: how can we maximise the effects of exercise. He also has >15yr of experience working as an exercise physiologist in private practice, as well as within Deakin's Clinical Exercise Centre. He is a member of Deakin's Spine Research Group.

Dr Owen is a Postdoctoral Researcher. His current research focuses on exercise and musculoskeletal health, with particular interests in the spine, intervertebral discs, back pain, magnetic resonance imaging and biostatistics.

Together, Dr Miller, A/Prof Belavy and Dr Owen, have supervised three Honours students to completion, with two subsequently awarded PhD scholarships and another accepted to study medicine.

Broad project topic area

Exercise and sport science; Exercise physiology;

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

Project is based at: Melbourne Burwood campus

Project description

We assume that physical performance, such as back muscle strength, local muscle endurance and aerobic fitness, is related to both the anatomical characteristics of the person and their psychological status. But which of these factors better predict physical performance in healthy adults is unknown. Understanding this relationship may have clinical application in the management of those with back pain. This particular honours project is about understanding the relative association between MRI factors (e.g. muscle size, muscle composition) and physical function (e.g. trunk muscle strength, local muscle endurance, Vo2max) and psychosocial factors (e.g. depressive symptoms, social support, work satisfaction). This project will be integrated into a wider ongoing study which has been started in November 2018. You will be involved in collection of the data and will analyse the data collected along with data collected to date.

Skills/attributes required by the student

Knowledge and background in anatomy and/or physiology; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_29

Project title: Determine if 2XU compression tights improve muscle blood flow during 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

Research mentor:

Supervisor profile

Dr Andrew Betik is a Research Fellow in the Institute for Physical Activity and Nutrition (IPAN) with expertise in exercise physiology, metabolism and cardiovascular physiology. 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 research team includes: 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

Exercise and sport science; Applied Sports Science; Exercise physiology;

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 oxygen is essential. Compression garments are often used to improve performance or recovery – how they actually do this is not known, but it may be by improving blood flow within the muscle. We have the capacity to measure capillary blood flow in exercising muscle using sophisticated ultrasound techniques. Combined with near-infrared spectroscopy to measure oxygen consumption, this project will design a study that will determine if compression garments (2XU) improve muscle blood flow during exercise and recovery.

The student will learn integrative physiological (blood flow, oxygen consumption) techniques that can be of great value in the health and sport science fields. They will develop skills in data acquisition and interpretation, scientific writing and presentation and will enhance their understanding of exercise 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; 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; Image and/or video analysis; 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_30

Project title: Physical activity and memory in older people

Primary supervisor: Helen Macpherson

Phone: 03 92445317

Email: helen.macpherson@deakin.edu.au

Co-supervisor/s: Rachel Duckham

Research mentor:

Supervisor profile

Dr Helen Macpherson completed undergraduate studies in Psychology and Psychophysiology. She conducts research looking at how memory changes as people get older and ways diet and exercise can improve memory. Dr Macpherson has conducted numerous randomised controlled trials to investigate the cognitive, mood and health effects of dietary supplements, dietary supplements combined with exercise and whole diet change. Her research investigates mechanisms of action including cardiovascular changes and direct effects on brain function using a range of brain imaging techniques.

Broad project topic area

Physical activity; Psychology

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

Project is based at: Melbourne Burwood campus

Project description

Projects are available using secondary data from a recently completed study which investigated the combined effects of dietary supplementation and a gym based exercise program on memory in older people, who were at risk of dementia. Potential projects could look at whether participation in physical activity can predict changes in memory over time, the relationship between memory and strength and physical function, or how taking part in an exercise intervention alters older people's involvement in physical activity over the longer term.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Ability to conduct interviews; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_31

Project title: The impact of dietary intake and pre-race anxiety on ultra-marathon runners

Primary supervisor: Dr Rhiannon Snipe

Phone: 0392446737

Email: r.snipe@deakin.edu.au

Co-supervisor/s: Dr Luana Main and Dr Dominique Condo

Research mentor: Spencer Roberts

Supervisor profile

Dr Rhiannon Snipe is an Accredited Sports Dietitian, lecturer and researcher in sports nutrition. Her research aims to enhance the health and performance of athletes through applied exercise physiology and sports nutrition. Her current research investigates the causes and prevention of exercise associated gastrointestinal issues, including diet, hydration, thermoregulation, psycho-physiological stress, sleep and sex hormones.

Dr Luana Main is a senior lecturer in applied exercise and sports science. She has expertise in the psycho-physiological monitoring of athlete well-being. Her research investigates the relationship between stress exposure (physical and/or psychological), the resultant fatigue, and impact on well-being and physical performance.

Dr Dominique Condo is an Accredited Sports Dietitian, lecturer in sports nutrition and consults at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Her current research investigates the relationship between diet and sleep in athletes and energy availability in female athletes.

Spencer Roberts' is a PhD candidate. His current research focuses on the relationship between sleep and exercise performance.

Broad project topic area

Sports nutrition; Applied Sports Science; Sport / exercise psychology; Exercise physiology;

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

Project is based at: Melbourne Burwood campus

Project description

It is common for athletes to experience pre-competition anxiety and modify dietary intake to meet the fueling demands of ultra-marathon running competition. However, pre-competition anxiety and changes in dietary intake are likely contributing to impaired sleep leading into competition and gastrointestinal issues during competition, both of which have adverse effects on athletic performance.

This research project therefore aims to explore the relationship between pre-race diet and psychological well-being with pre-event sleep and exercise-associated gastrointestinal symptoms during an ultra marathon running event. The successful applicant will have the opportunity to focus their Honours research project on a specific area in relation to these topics and contribute to the broader research project. The successful applicant will gain a wide variety of research skills including survey development, study planning and coordination, participant recruitment, sports nutrition and exercise research experience, field-based data collection, dietary assessment, sample collection and analysis, working as part of a research team and with the sports industry.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Laboratory techniques; Survey development; Quantitative analysis (statistics); Field-based data collection, dietary assessment, sample collection and analysis, hydration assessment, anthropometry measurements

Project number: ESS_32

Project title: The impact of the menstrual cycle and hormonal contraceptives on female athletes

Primary supervisor: Dr Rhiannon Snipe

Phone: 0392446737

Email: r.snipe@deakin.edu.au

Co-supervisor/s: Dr Amelia Carr

Research mentor: Spencer Roberts

Supervisor profile

Dr Rhiannon Snipe is an Accredited Sports Dietitian, lecturer and researcher in sports nutrition. Rhiannon's research aims to enhance the health and performance of athletes through applied exercise physiology and sports nutrition. Her previous research has included investigating the prevention of exercise-associated gastrointestinal issues and hydration in athletes. Rhiannon's current and future research is focused on investigating the impact of the menstrual cycle and hormonal contraceptive use on female athletes and how female hormones affect sports nutrition requirements.

Dr Amelia Carr's research focuses on the effects of various nutritional and training interventions on athletes' performance and physiology. Amelia completed her PhD at the AIS, investigating buffering agents and their effects in athletes. Recent research projects have been conducted in collaboration with the AIS, National Sporting Organisations and international collaborators. Spencer Roberts' is a PhD candidate. His current research focuses on relationship between sleep and exercise performance.

Broad project topic area

Food and nutrition science; Sports nutrition; Exercise and sport science; Sport / exercise psychology; Exercise physiology;

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

Project is based at: Melbourne Burwood campus

Project description

Female and male athletes are physiologically different yet the majority of sport and exercise research has been conducted on male athletes and findings applied to female athletes. One major physiological differences between male and female athletes is the sex hormone profile, which in female athletes also fluctuates across the menstrual cycle. Approximately 50% of female athletes use hormonal contraceptives which contain varying amounts of exogenous hormones and suppress endogenous hormone production. These naturally fluctuating endogenous and exogenous hormones have significant effects on many body systems and subsequently impact the well-being and athletic performance of female athletes.

Monitoring of menstrual cycle phases is becoming more common in sport and exercise with many exercise apps now including menstrual cycle tracking. However, the very limited research in this space diminishes the use and application of this data. The successful applicant of this Honours project will have the opportunity to select an area of investigation relating to the impact of the menstrual cycle and/or hormonal contraceptives on the well-being of female athletes, and contribute to a larger research project in this area. The successful applicant will gain hands-on experience in sport and exercise nutrition research, survey development, participant recruitment, dietary assessment, laboratory skills, sample collection and analysis, fitness testing and anthropometry assessment.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); dietary assessment, sample collection and analysis, Fitness (VO₂max) testing, anthropometry measurements

Project number: ESS_33

Project title: Regulation and role of exosomes in response to endurance exercise

Primary supervisor: Glenn Wadley

Phone: 92446018

Email: glenn.wadley@deakin.edu.au

Co-supervisor/s: Dr Severine Lamon, Dr Adam Trewin

Research mentor:

Supervisor profile

A key focus of A/Prof Wadley's 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 20 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. Dr Adam Trewin is an expert on the effects of exercise on skeletal muscle mitochondria.

Broad project topic area

Exercise physiology; Biomedicine;

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

Project is based at: Melbourne Burwood campus

Project description

This project will examine mechanisms that stimulate muscle to adapt to endurance training. The skills students would develop from this Honours project are ideally suited to students wishing to pursue postgraduate study or a future career in biomedical or exercise physiology research (such as a PhD), medicine or physiotherapy.

Mounting evidence suggests that during exercise tissues such as skeletal muscle release factors into the circulation that are bundled up in "exosomes", which contain nucleic acids and peptides and these are delivered to other tissues. It is hypothesised that the release of the exosomes into the circulation is then able to stimulate adaptations to exercise to other organs in the body, especially the heart, and are thus potentially cardio protective.

Healthy active participants will be recruited and first complete a VO₂max test. On a separate day they will complete a bout of endurance exercise with blood samples taken before, during and after exercise. The exosomes will be isolated from the blood samples and the levels of some of the factors within the exosomes will be measured. All laboratory techniques will be taught to the student as part of the honours training. Students will become proficient at exercise screening and VO₂max testing of healthy volunteers. Students will also become proficient at laboratory techniques that are common in biomedical and physiology research such as RNA and protein extraction, qPCR and immunoblotting.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program);

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; Quantitative analysis (statistics);

Project number: ESS_34

Project title: Does endurance exercise in juvenile life increase the proliferation of muscle cells in the heart?

Primary supervisor: Glenn Wadley

Phone:

Email: glenn.wadley@deakin.edu.au

Co-supervisor/s: Dr Shaun Mason, Dr Adam Trewin

Research mentor:

Supervisor profile

A key focus of A/Prof Wadley's 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 20 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 Shaun Mason is an expert in clinical trials and measurement of stable isotopes in tissues using mass spectrometry. Dr Adam Trewin is an expert on the effects of exercise on muscle metabolism.

Broad project topic area

Exercise physiology; Biomedicine;

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 heart muscle to adapt to endurance exercise training in juvenile life. The skills students would develop from this Honours project are ideally suited to students wishing to pursue postgraduate study or a future career in biomedical or exercise physiology research (such as a PhD), medicine or physiotherapy.

Endurance exercise training is well established to be very beneficial for the heart and is well documented to increase heart mass. Much of this increase is due to an increase in the size of each muscle fiber in the heart (called cardiomyocyte hypertrophy). We have now established that endurance training in juvenile life also results in an increase in cardiomyocyte number. Changes in cardiomyocyte number are due to a balance between proliferation (new cells) and apoptosis (loss of existing cells). Therefore, the aim of the project is to examine if the increase in cardiomyocyte number following juvenile exercise are due to proliferation.

Using heart tissue from endurance trained rats that has already been collected the project will measure cell proliferation by mass spectrometry. All laboratory techniques will be taught to the student as part of the honours training. By completing this project, students will become proficient at laboratory techniques that are common in biomedical and physiology research such as mass spectrometry and immunoblotting.

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;

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_35

Project title: Understanding the Talent Development Environment in Australia

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Luana Main

Research mentor:

Supervisor profile

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.

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.

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

Exercise and sport science; Sports coaching; Sport / exercise psychology;

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

Project is based at: Melbourne Burwood campus

Project description

A large amount of time and effort is placed upon selecting the 'best' talent for further development in sporting environments. However, little understanding is placed upon the environment these talented athletes are placed into. The aim of this project is to understand the talent development environment and the impact this may be having on an athletes development. There will be an opportunity to examine the talent development environment across different sports, genders and/or age groups dependent on the interest of the student.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_36

Project title: Interactions between athlete motivation & performance: A comparison of coach & athlete perspective

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Luana Main

Research mentor:

Supervisor profile

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.

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.

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

Exercise and sport science; Sports coaching; Sport / exercise psychology;

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

Project is based at: Melbourne Burwood campus

Project description

Previous research has indicated that future sport performance can be predicted by a coaches perspective of an athletes motivation. The broad aim of this project is to extend this research to investigate whether Coach perceptions of athlete motivation at early entry to a new development squad can predict match selection once the season commences. A secondary aim is to investigate whether athlete measures of session rating of perceived exertion (RPE) have a moderating effect on this prediction.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_37

Project title: Exercise and pain: Can we enhance the hypoalgesic effect of exercise?

Primary supervisor: Dr Clint Miller

Phone: 92446605

Email: c.miller@deakin.edu.au

Co-supervisor/s: A/Prof Daniel Belavy, Dr Patrick Owen

Research mentor:

Supervisor profile

Dr Miller is a research-clinician and Lecturer of Exercise Physiology within the school of exercise and nutrition sciences. His research primarily stems from the question: how can we maximise the effects of exercise. He also has >15yr of experience working as an exercise physiologist in private practice, as well as within Deakin's Clinical Exercise Centre.

A/Prof Belavy is the Leader of Deakin's Spine Research Group and an Associate Professor of Exercise and Musculoskeletal Health within the school of exercise and nutrition sciences. He is interested in research that leads to significant advances in how we conceptualise and manage back pain and the spine. He has specialist expertise in back pain, musculoskeletal imaging and data analytics. Dr Owen is a Postdoctoral Researcher within Deakin's Spine Research Group. His current research focuses on exercise and musculoskeletal health, with particular interests in the spine, intervertebral discs, back pain, magnetic resonance imaging and biostatistics.

Together, Dr Miller, A/Prof Belavy and Dr Owen, have supervised three Honours students to completion, with two awarded PhD scholarships and another accepted to study medicine.

Broad project topic area

Applied Sports Science; Exercise physiology; Clinical exercise;

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

Project is based at: Melbourne Burwood campus

Project description

Persistent pain affects approximately 20% of the Australian population and interferes with their ability to participate fully in occupational, sporting and general activities of daily living. But managing pain is very complex. Pain is moderated by a number of factors beyond the intervention chosen to treat pain. An athlete or client's beliefs, expectations, the environment, and the coach or clinician moderate the experience of pain. These factors are consistent with the placebo effect. A nervous system driven effect which appears to be unrelated to the intended intervention but influences one's perception, emotion and physiology.

What if you could manipulate the factors associated with the placebo effect? What if you could maximise the placebo effect of a specific exercise to provide an hypoalgesic effect for an athlete or client?

The purpose of this research project is to determine whether a unique exercise stimulus with a placebo maximization approach increases a clients pain threshold when exposed to a painful stimuli to a greater extent than the same exercise without a placebo maximization approach. Findings from this study may be used to inform future research in athletic and clinical populations where increased pain tolerance or pain reduction is required. We have two honours projects available on this topic.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; 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; Exercise prescription and monitoring; Quantitative analysis (statistics);

Project number: ESS_38

Project title: "Seeing is believing" - what kind of activity are people with heart failure undertaking?

Primary supervisor: Dr Susie Cartledge

Phone: (03) 92446667

Email: susie.cartledge@deakin.edu.au

Co-supervisor/s: Professor Ralph Maddison, Professor Andrea Driscoll, Dr Jonathan Rawstorn

Research mentor:

Supervisor profile

Dr Susie Cartledge is a Research Fellow and Registered Nurse, specialising in cardiac populations. 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. 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; Health promotion (including policy); 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.

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

Ability to learn relevant software programs (e.g. Excel, statistical software program); Ability and willingness to learn intermediate quantitative statistics (recommended for secondary data analysis projects); Ability to work as a team member; ability to trial new software techniques

Skills specific to this project the student will develop

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

Project number: ESS_39

Project title: Does residual fatigue from high-intensity interval training (HIIT) ruin strength training quality?

Primary supervisor: Dr Jackson Fyfe

Phone: 03 5227 8779

Email: jackson.fyfe@deakin.edu.au

Co-supervisor/s: Dr Simon Feros

Research mentor:

Supervisor profile

Dr Jackson Fyfe is a Lecturer in Strength & Conditioning Sciences in the School of Exercise and Nutrition Sciences. His research is focused on practical strategies to optimise improvements in skeletal muscle mass, strength, and related health and performance outcomes with exercise training across a variety of population groups. He also has a keen interest in understanding the physiological basis for changes in muscle mass and function with exercise training, disuse, and ageing.

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.

Broad project topic area

Exercise and sport science; Strength and Conditioning;

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

Project is based at: Melbourne Burwood campus

Project description

Optimising the performance and health benefits of exercise training requires performing both resistance (i.e., strength) and endurance (i.e., aerobic) training, an approach termed concurrent training. While concurrent training has many clear benefits, it can impair the development of strength, power, and potentially muscle mass, compared to performing resistance training alone - a phenomenon termed the 'interference effect'. Although the mechanisms responsible for this 'interference effect' are unclear, it may result from residual neuromuscular fatigue from endurance training negatively influencing performance during resistance training, consequently resulting in impaired long-term adaptation. Little is known, however, about factors influencing fatigue from endurance training, and particularly how any residual fatigue may influence subsequent strength training performance. This Honours project will build on a previous study from our laboratory that examined neuromuscular fatigue following running-based high-intensity interval training (HIIT) protocols, and will determine the influence of these HIIT protocols on strength training and neuromuscular performance, as well as the associated time course. It is anticipated this project will provide new knowledge that can inform recommendations for integrating HIIT within concurrent training programs.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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);

Project number: ESS_40

Project title: Assessing changes in skeletal muscle mass with resistance training: does the measure matter?

Primary supervisor: Dr Jackson Fyfe

Phone: 03 5227 8779

Email: jackson.fyfe@deakin.edu.au

Co-supervisor/s: Professor Robin Daly

Research mentor:

Supervisor profile

Dr Jackson Fyfe is a Lecturer in Strength & Conditioning Sciences in the School of Exercise and Nutrition Sciences. His research is focused on practical strategies to optimise improvements in skeletal muscle mass, strength, and related health and performance outcomes with exercise training across a variety of population groups. He also has a keen interest in understanding the physiological basis for changes in muscle mass and function with exercise training, disuse, and ageing.

Professor Rob Daly holds the position of Chair in Exercise and Ageing within the School of Exercise and Nutrition Sciences. He conducts human intervention studies to understand how exercise and nutritional approaches can prevent and manage common chronic diseases such as type 2 diabetes, osteoporosis, sarcopenia, falls, certain cancers and neurological disorders. A strong focus of his work is the translation of evidence-based, scientific findings into 'real-world' clinical and practical guidelines and applications to ensure the best care and treatment available actually reach people that need it.

Broad project topic area

Strength and Conditioning; Exercise physiology; Clinical exercise;

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

Project is based at: Melbourne Burwood campus

Project description

Skeletal muscle plays a critical role in health and disease, and reduced muscle mass is associated with an increased risk for falls, fractures, type 2 diabetes, cardiovascular disease, and mortality. Various imaging techniques can non-invasively estimate muscle (lean) mass, and therefore assess changes following exercise training, in various disease states, and with ageing. While MRI (magnetic resonance imaging) and CT (computed tomography) are considered 'gold standard' measures of muscle mass, other techniques including pQCT (peripheral quantitative computed tomography), DXA (dual x-ray absorptiometry), and BIA (bioelectrical impedance analysis) are routinely used. However, differences in the accuracy of these techniques can lead to errors when estimating changes in muscle mass with exercise training, disease states, or ageing. For example, DXA can overestimate thigh lean mass compared to MRI, and can underestimate differences in muscle mass between younger and older individuals. However, no studies have compared changes in muscle mass following exercise training using these common techniques. This project will use data from randomised controlled trials involving resistance (strength) training to determine relationships between muscle mass estimated by pQCT, DXA, and BIA, both at baseline and following resistance training. Whether other individual characteristics, such as baseline muscle mass and body fatness (obesity), influence changes in muscle mass with resist

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 to learn relevant software programs (e.g. Excel, statistical software program); 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); Data management and body composition assessment (including DXA and pQCT muscle/fat analysis)

Project number: ESS_41

Project title: Assessment of the Developmental History of Athlete Questionnaire in a youth athlete population

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Fraser Carson

Research mentor:

Supervisor profile

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.

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.

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

Exercise and sport science; Sports coaching;

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

Project is based at: Either Burwood or Waurn Ponds

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. Gaining insight into the backgrounds of elite and current pathway athletes assists in understanding which experiences may contribute to the development of sporting expertise. One way to assess the developmental histories of athletes is through the Developmental History of Athlete Questionnaire (DHAQ). This tool has been validated and assessed for reliability in an adult athlete population. However, the usefulness of this tool is currently unknown in a youth athlete population. The purpose of this project is to validate and assess the reliability of the DHAQ in a youth athlete population. This will then allow the questionnaire to be used in the youth sporting context as well as adult athlete populations.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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 project related tasks;

Skills specific to this project the student will develop

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

Project number: ESS_42

Project title: Smart Home program for improving healthy lifestyle behaviors in people with chronic conditions

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

Research mentor:

Supervisor profile

Shariful Islam is a National Heart Foundation 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 innovative information technologies for improving chronic health conditions. He has experience in design and conduct of large-scale epidemiological studies, clinical trials and implementation research. Shariful has supervised to completion 7 Doctor of Medicine and 12 Masters students, and currently supervises 3 PhD students at IPAN.

Ralph Maddison is a behavioural scientist and Professor at IPAN. He has substantial skills 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 eHealth design and evaluation, experimental design and implementation research. Susie Cartledge is a Research Fellow and Registered Nurse specialising in cardiac care. Susie has supervised masters levels students, and has skills in survey research, quantitative, qualitative and Delphi methodologies.

Broad project topic area

Food and nutrition science; Public health nutrition; Exercise and sport science; Physical activity; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Smart homes that use network-connected sensors and medical devices are a promising way to improve healthy lifestyle for people with chronic conditions. However, to-date most Smart Homes have not been designed to support healthy lifestyle and behaviour change.

This world-first project aims to design and develop an information technology supported Smart-Home with end-users as co-designers. We will conduct a Delphi survey among healthcare professionals and 2 focus group discussions in people with chronic conditions to identify their needs to support self-management and improve healthy lifestyle behaviours at home.

This project will provide an opportunity for the selected student to develop an understanding about how information technologies supported Smart Homes could help to improve physical exercise and diet in people with chronic conditions. The selected student will also develop skills in data collection, data analysis, and scientific writing.

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

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

Project number: ESS_43

Project title: Motor control mechanisms underlying cricket fast bowling

Primary supervisor: Lyndell Bruce / Liz Bradshaw

Phone: 03 9246 8967 / 039244 6646

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Simon Feros

Research mentor:

Supervisor profile

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.

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 curve-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

Broad project topic area

Exercise and sport science; Applied Sports Science; Sports coaching; Biomechanics; Motor Control

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

Project is based at: Either Burwood or Waurn Ponds

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_44

Project title: Exercise Performance Following Immunisation

Primary supervisor: Craig Wright

Phone: 0352479266

Email: craig.wright@deakin.edu.au

Co-supervisor/s: Garth Stephenson

Research mentor: Giselle Allsopp

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

Exercise physiology; Biomedicine;

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

Project is based at: Geelong Waurin Ponds campus

Project description

The fear of an adverse reaction to a and/or cold and flu symptoms are more often than not, the reason why 60% of Australians do not receive vaccinations. During a flu endemic this leads to an increase in incidence rates amongst the entire population leaving those susceptible more vulnerable. Exercise is known to improve the efficacy of the vaccine. However, little is known about exercise tolerance and susceptibility to URTI post vaccination in healthy active individuals. Anecdotal evidence suggests not to “push yourself” and participate in high intensity exercise and to rest if you have cold and flu like symptoms following a vaccination. However, others suggest it is subjective and up to the individual. Despite the anecdotal evidence, no one has investigated exercise tolerance and incidences of URTI following vaccination. Therefore there are no exercise-immunisation guidelines and providing this data may improve the efficacy of vaccines and increase vaccination rates amongst the Australian population which may reduced the morbidity and mortality of seasonal flu endemics and the burden on the Australian health care system. This study seeks to collect pilot data on the interaction between immunisation and exercise tolerance.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_45

Project title: Glucose Responses to Resistance Exercise in Hypoxia

Primary supervisor: Craig Wright

Phone: 0352479266

Email: craig.wright@deakin.edu.au

Co-supervisor/s: Lee Hamilton, Garth Stephenson

Research mentor: Giselle Allsopp

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

Exercise and sport science; Biomedicine;

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

Project is based at: Geelong Waurin 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; Knowledge and background in anatomy and/or physiology; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_46

Project title: Female Responses to Exercise in Hypoxia

Primary supervisor: Craig Wright

Phone: 52479266

Email: craig.wright@deakin.edu.au

Co-supervisor/s: Sam Hoffmann

Research mentor: Giselle Allsopp

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

Exercise physiology; Biomedicine;

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

Project is based at: Geelong Waurin 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 literature that resistance exercise in hypoxia increases muscle strength and muscle growth associated to elevated hormone levels. However these experiments have only been investigated in the male population. This project aims to investigate and compare the responses in males and females.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_47

Project title: Can breakfast program your metabolic response to lunch?

Primary supervisor: Lee Hamilton

Phone: 92445207

Email: lee.hamilton@deakin.edu.au

Co-supervisor/s: Dr Kirsten Howlett / Dr Chris Shaw

Research mentor:

Supervisor profile

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research is focused on understanding the basic molecular mechanisms by which we adapt to exercise and nutrition. His research has utilised models ranging from cells in a dish to humans in a lab with a focus on unpicking how nutrition and exercise interact to improve health and performance outcomes.

Dr Kirsten Howlett is a Senior Lecturer in the School of Exercise and Nutrition Sciences. Her research 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 Exercise Physiology in the School of Exercise and Nutrition Sciences/IPAN. 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 also interested in the mechanisms that contribute to the development of metabolic diseases associated with obesity and inactivity.

Broad project topic area

Food and nutrition science; Sports nutrition;

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

Project is based at: Geelong Waurin Ponds campus

Project description

Metabolic flexibility is a key marker of metabolic health. In other-words having a metabolism that is able to rapidly shift between lipids and carbohydrates depending upon the demand seems to be linked to metabolic health. Low carbohydrate diets and fasting approaches have become very popular weight loss strategies. However, we know that if our body is going to effectively utilise carbohydrates and maintain metabolic flexibility, then we must supply carbohydrates on a regular basis. Long term low carbohydrate diets are associated with impaired metabolic flexibility and an impaired ability to utilise carbohydrates when they are made available. How long does it take for this impairment to occur? Can changing the macronutrient composition of breakfast influence the metabolic response to lunch? This project will explore the role that breakfast plays in programming the metabolic response to lunch.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Quantitative analysis (statistics);

Project number: ESS_48

Project title: What are the key determinants of maximal skeletal muscle size.

Primary supervisor: Lee Hamilton

Phone: 92445207

Email: lee.hamilton@deakin.edu.au

Co-supervisor/s: Dr Chris Shaw / Dr Kirsten Howlett

Research mentor:

Supervisor profile

Dr Lee Hamilton is a Lecturer in the School of Exercise and Nutrition Sciences. His research program is focused on understanding the basic molecular mechanisms by which we adapt to exercise and nutrition. His research has utilised models ranging from cells in a dish to humans in a lab with a focus on unpicking how nutrition and exercise interact to improve health and performance outcomes.

Dr Chris Shaw is a Senior Lecturer in Exercise Physiology in the School of Exercise and Nutrition Sciences/IPAN. 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 also interested in the mechanisms that contribute to the development of metabolic diseases associated with obesity and inactivity.

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 and sport science; Strength and Conditioning; Exercise physiology;

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

Project is based at: Geelong Waurin Ponds campus

Project description

Compare the physical appearance of Eluid Kipchoge to Phil Heath. The most notable difference is their skeletal muscle mass. Two athletes adapted for very different sports. Each will follow a distinct training regime and each will have a distinct diet. Their genetic differences combined with their environmental differences (exercise and nutrition) have led to two very different physiques. So what is it about Phil Heath's genetics and lifestyle that has led to him achieving such a massive bulk? This project will be aimed at unpicking some of the key determinants of maximal skeletal muscle mass.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Ability to work with blood and/or muscle biopsy samples; Laboratory techniques; Exercise prescription and monitoring; Quantitative analysis (statistics);

Project number: ESS_49

Project title: Comparisons between off-water and on-water physiological predictors of rowing performance.

Primary supervisor: Dr Jackson Fyfe

Phone: 03 5227 8779

Email: jackson.fyfe@deakin.edu.au

Co-supervisor/s: TBC

Research mentor:

Supervisor profile

Dr Jackson Fyfe is a Lecturer in Strength & Conditioning Sciences in the School of Exercise and Nutrition Sciences. His research is focused on practical strategies to optimise improvements in skeletal muscle mass, strength, and related health and performance outcomes with exercise training across a variety of population groups. He also has a keen interest in understanding the physiological basis for changes in muscle mass and function with exercise training, disuse, and ageing.

Broad project topic area

Exercise and sport science; Applied Sports Science; Exercise physiology;

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

Project is based at: Melbourne Burwood campus

Project description

Rowing is a unique sport characterised by high metabolic requirements combined with high force and power demands that must be sustained for ~5-7 min during world championship and Olympic distance races. While a number of physiological factors have been identified as being important to on-water rowing performance, the physiological capacities and rowing performance of athletes is commonly assessed off-water in the laboratory (e.g., on rowing ergometers). Whether off-water assessments of physiological capacities via rowing ergometry provides an accurate representation of the physiological capacities dictating on-water rowing performance is currently unclear. This project will therefore aim to determine physiological factors important to rowing ergometer performance and whether these factors differ from those influencing on-water rowing performance. The findings of this project could identify specific physiological factors that should be accounted for when comparing off-water rowing ergometer performance to on-water rowing performance, which may have implications for talent identification and training prescription.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Basic familiarisation with laboratory techniques; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_50

Project title: High-intensity exercise performance in athletes: the effect of nutritional interventions.

Primary supervisor: Dr Amelia Carr

Phone: 03 9251 7309

Email: amelia.carr@deakin.edu.au

Co-supervisor/s: Dr Dominique Condo; Dr Rhiannon Snipe

Research mentor: Mr Charles Urwin (PhD Candidate)

Supervisor profile

Dr Amelia Carr's research focuses on the effects of various nutritional and training interventions on athletes' performance and physiology. Amelia completed her PhD at the AIS, investigating buffering agents and their effects in athletes. Prior to her current role at Deakin, Amelia worked as a sport scientist for the Department of Defence, providing support to the Australian Army and Navy. Recent research projects have been conducted in collaboration with the AIS, National Sporting Organisations and international collaborators.

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. Her current interests include energy availability in female athletes and the relationship between diet and sleep in athletes. Dr Rhiannon Snipe is an accredited sports dietitian, lecturer and researcher in sports nutrition. Her research interests include endurance sports nutrition, applied exercise physiology and the investigation of exercise-induced gastrointestinal disturbances.

Broad project topic area

Sports nutrition; Exercise and sport science; Applied Sports Science; Exercise physiology;

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

Project is based at: Melbourne Burwood campus

Project description

The study will investigate the effects of nutritional interventions, on high intensity exercise performance, in athletes. Buffering agents such as sodium bicarbonate have been demonstrated to improve athletic performance, particularly in the context of short-duration, high-intensity events (<10 minutes duration), and can also enhance the body's natural buffering capacity. Sodium phosphate supplementation is another nutritional intervention strategy that can also enhance endurance capacity and performance. However, it has yet to be determined how these two safe and legal supplementation strategies may work together, in terms of the effect on athletes' 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 required to actively recruit research participants, and will be responsible for the management and coordination of lab testing, and conducting data collection and statistical analysis. Laboratory work will include baseline testing protocols such as anthropometry and VO₂max testing, in the exercise testing lab, and nutrition laboratories will be used for the preparation of nutritional supplements and standardised meals prior to testing sessions. The primary experimental testing sessions will require conducting high intensity exercise performance tests. Outcome measures will focus on the physiological effects of nutritional 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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Laboratory techniques; Quantitative analysis (statistics);

Project number: ESS_51

Project title: Measuring exercise performance to improve prescription and training

Primary supervisor: Dr Jonathan Rawstorn

Phone: 92468461

Email: jonathan.rawstorn@deakin.edu.au

Co-supervisor/s: Prof Ralph Maddison, Dr Clint Miller

Research mentor:

Supervisor profile

Jonathan is an exercise/behavioural scientist at the Institute for Physical Activity and Nutrition (IPAN). His research explores the use of technologies for monitoring & delivering exercise/lifestyle programs to help improve health and performance. His research skills include intervention design/evaluation, exercise testing, validation studies, & systematic reviews/meta-analysis.

Ralph is a behavioural scientist & Professor of Physical Activity & Disease Prevention at IPAN with research interests in exercise interventions for health and disease management. Clint is a research-clinician (AEP) and Lecturer of Exercise Physiology in the School of Exercise and Nutrition Sciences with research interests in exercise for health and performance. He has >15yr of experience as a practitioner in Deakin's Clinical Exercise Centre and private practice.

We will collectively provide expert support to help you develop key research skills including reviewing and critiquing literature; measuring exercise performance; analysing and interpreting data; and scientific writing. A key goal will be submitting study findings for publication in a scientific journal

Broad project topic area

Exercise and sport science; Applied Sports Science; Strength and Conditioning; Exercise physiology; Clinical exercise;

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

Project is based at: Melbourne Burwood campus

Project description

Are you interested in measuring exercise performance and helping people get the most benefit out of their exercise training? If so, we have some research projects that could be perfect for you!

You know exercise-induced adaptations depend on numerous exercise prescription variables—no matter whether you're working with high performance athletes or clinical populations—but if you don't understand their exercise performance capacity it's hard to prescribe and monitor training programs that are properly individualised. That's easy to do in an exercise lab, but much harder when we don't have the same fancy measurement equipment.

We're interested in comparing different exercise testing methods and protocols to find out which ones are most useful in the real-world. We'll help you look at differences in the way exercise performance is captured by different test protocols, as well as how those data can help you to prescribe individualised exercise training programs and monitor training workloads. You'll develop knowledge and practical skills in exercise testing and prescription that will help you become a better practitioner, as well as a number of key research skills that are equally valuable whether you're thinking about post-graduate study, enrolment into a clinical degree, or working in industry

If this sounds like your kind of thing, let's meet to talk about your options.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Exercise prescription and monitoring; Quantitative analysis (statistics); Exercise performance measurement

Project number: ESS_52

Project title: Designing technologies for delivering exercise and/or dietary programs

Primary supervisor: Jonathan Rawstorn

Phone: 92468461

Email: jonathan.rawstorn@deakin.edu.au

Co-supervisor/s: Dr Elena George, Prof Ralph Maddison

Research mentor:

Supervisor profile

Jonathan is an exercise/behavioural scientist at the Institute for Physical Activity and Nutrition (IPAN) with research interests in developing technology-based exercise & lifestyle programs to improve health and performance. His research skills include eHealth intervention design and evaluation, validation studies, & systematic reviews/meta-analysis.

Elena is an Accredited Practising Dietitian with >7 years clinical experience, and Lecturer in Nutrition and Dietetics at the School of Exercise and Nutrition Sciences. Elena has research interests in developing novel dietary interventions for managing chronic diseases and optimising health. Ralph is a Professor of Physical Activity & Disease Prevention at IPAN with research interests in technology-based lifestyle interventions for health and disease management.

We will collectively provide expert support to help you develop key research skills including reviewing and critiquing literature; designing eHealth interventions; analysing/interpreting data; and scientific writing. A key goal will be submitting study findings for publication in a scientific journal to boost your track record ahead of post-graduate study or future employment.

Broad project topic area: Dietetics; Exercise and sport science; Physical activity; eHealth; health technology

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

Project is based at: Melbourne Burwood campus

Project description

Are you interested in using digital technologies to help people improve their health via exercise & dietary programs? If so, we have some that could be perfect for you!

You know exercise & dietary professionals do a great job helping people improve their health by providing individualised evidence-based advice, but many barriers stop people from accessing traditional face-to-face consultations. Digital technologies let us connect with people anywhere, at any time, in many different formats. The trouble is we don't really know how people want to use digital technologies to connect with exercise & dietary professionals, so we don't know how to design interventions that people really value.

We're interested in finding different ways that people want to use digital technologies to receive exercise &/or dietary support. We'll help you to find out what people really want, & then create some innovative designs for digital exercise &/or diet programs that could seamlessly integrate best-practice advice & support into people's everyday lives.

You'll develop knowledge & practical skills that help you understand how client/consumer preferences should shape the design & delivery of health programs. You'll also learn a number of key research skills that are equally valuable whether you're thinking about post-graduate study, enrolment into a clinical degree, or working as an exercise or dietary professional. If this sounds like your kind of thing, let's meet to talk about your options.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics); Qualitative analysis;

Project number: ESS_53

Project title: The relationship between force-velocity profile and change-of-direction in elite AFL athletes

Primary supervisor: Eric Drinkwater

Phone: 9244 6136

Email: eric.drinkwater@deakin.edu.au

Co-supervisor/s: Dr Liz Bradshaw; Dr Simon Feros

Research mentor: Brad Morris

Supervisor profile

Dr Drinkwater's research involves investigating modifications of strength training programs to improve strength and power specifically to improve sports performance. He is an accomplished sports researcher with over 60 peer-reviewed research publication, 90% of which involve sport and 75% specifically involving strength and conditioning programming, often with Australian international and professional athletes. He is also an experienced research supervisor, having successfully supervised 14 honours and master's students and 4 PhD students.

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

The relationship between an athlete's muscular strength and power, and change of direction (COD) ability is inconsistent in the research, perhaps because the relationship between strength and speed are traditionally considered as dichotomous. Strength and speed cannot be considered separately and should be considered on a continuum: the force-velocity curve. Each athlete has a different force-velocity profile and how an athlete uses ballistic strength changes with training. This project will assess changes in the use of ballistic strength (force-velocity profiles, dynamic strength index, and reactive strength index) of AFL athletes during pre-season training, and if these changes relate to COD ability. It will involve monitoring of athletes' ballistic strength profiles over the course of the pre-season and relating changes to periodic COD testing. This project will be conducted in conjunction with the Geelong Cats' Strength & Conditioning staff and athletes.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Exercise prescription and monitoring; Quantitative analysis (statistics);

Project number: ESS_54

Project title: Jumping to Health: Evaluating the National Heart Foundation Jump Rope for Heart Program

Primary supervisor: Shannon Sahlqvist

Phone: 03 9251 7782

Email: shannon.sahlqvist@deakin.edu.au

Co-supervisor/s: Rachel Duckham

Research mentor:

Supervisor profile

Shannon Sahlqvist is a Senior Lecturer in Physical Activity and Health (based at Waurn Ponds). Shannon's research is primarily focused on understanding and promoting physical activity. She has considerable expertise in the design, delivery and evaluation of large-scale physical activity interventions, including those in the school setting.

This project is co-supervised by Rachel Duckham, a Lecturer in Exercise, Growth & Development (based at Burwood). Dr Duckham's research focuses on the influence of exercise and nutrition for optimising musculoskeletal health, in particular during childhood and adolescence. She has considerable expertise in interventions aimed at focusing on the maintenance of bone and muscle health and fitness.

Broad project topic area

Exercise and sport science; Physical activity; Health promotion (including policy);

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

Project is based at: Either Burwood or Waurn Ponds

Project description

The Heart Foundation's Jump Rope for Heart Program has been implemented in Australian schools since 1983. Each year it reaches over 300,000 students from 1,300 schools. The Program focuses on developing children's skipping skills and, in turn, helps to ensure children have a positive attitude towards physical activity, healthy eating and heart health. Using a quasi-experimental design, a team of researchers within the School are evaluating the impact of the Program on (a) physical activity, (b) fundamental movement skills, (c) fitness and (d) behavioral outcomes.

Together with the researchers the student will assist with the evaluation. The student will visit schools for data collection which will involve field tests of children to determine changes in fitness and fundamental movement. Measures of body composition will also be taken and each child will be provided with an accelerometer to measure their physical activity.

Together with the supervisory team the student will be able to identify an aspect of the evaluation that is of interest to them. In undertaking the project students will gain practical experience in field testing, data collection, data analysis & interpretation and working within a team. Importantly, this project provides an exciting opportunity to work directly with an existing well recognized community organisation and will provide opportunities to engage and network with the Heart Foundation team.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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 project related tasks;

Skills specific to this project the student will develop

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

Project number: ESS_55

Project title: The effect of footwear and cadence on patellofemoral joint kinetics

Primary supervisor: Dr Jason Bonacci

Phone: 5227 2634

Email: jason.bonacci@deakin.edu.au

Co-supervisor/s: Dr Natalie Saunders, Dr Aaron Fox

Research mentor:

Supervisor profile

Dr Jason Bonacci is a senior lecturer in Biomechanics in the School of Exercise and Nutrition Sciences. Dr Bonacci's 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.

Dr Natalie Saunders is co-director of the Centre for Sport Research and has research expertise in lower limb biomechanics.

Dr Aaron Fox is a Dean's Research Fellow and has research expertise in the area of neuromechanics and human performance.

Broad project topic area

Exercise and sport science; Biomechanics;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Patellofemoral pain is a chronic musculoskeletal condition that is thought to be related to elevated patellofemoral joint stress. Evidence suggests that both footwear and cadence can influence patellofemoral joint kinetics during running, however the effect of these interventions on patellofemoral joint kinetics during walking is unclear. The aim of this study to examine the effect of footwear and cadence on patellofemoral joint kinetics during walking.

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); 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_56

Project title: Tackle impact biomechanics in rugby

Primary supervisor: Dr Elizabeth Bradshaw

Phone: 03 9244 6646

Email: liz.bradshaw@deakin.edu.au

Co-supervisor/s: Dr Lyndell Bruce and Dr Eric Drinkwater

Research mentor:

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 and injury mechanisms.

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 Eric Drinkwater is a Senior Lecturer of Sports Science in School of Exercise & Nutrition Sciences. He completed a PhD at Victoria University (2006) and is an accomplished researcher with over 60 peer-reviewed research publications.

Broad project topic area

Biomechanics;

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

Project is based at: Melbourne Burwood campus

Project description

This Honours project is investigating the Biomechanics of tackling related to a high risk of injury in community-level rugby league, under the guidance of the National Rugby League. The study will use three dimensional motion analysis technology in combination with high load inertial measurement units and electromyography. The study is being completed in collaboration with the Rugby Codes Research Group at the Auckland University of Technology including Professor Patria Hume and Dr Doug King.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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: ESS_57

Project title: Internal load estimates and low back pain prevalence in the growing competitive female gymnasts

Primary supervisor: Dr Elizabeth Bradshaw

Phone: 03 9244 6646

Email: liz.bradshaw@deakin.edu.au

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

Research mentor:

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 and injury mechanisms. Liz was an early user of microsensors in sport and presented a technical report on using microsensors when load monitoring on differing viscoelastic surfaces at the International Society of Biomechanics in Sport conference in Auckland 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 three honours students to completion to date. 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; Epidemiology

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

Project is based at: Melbourne Burwood campus

Project description

This Honours project includes two parts; (1) an epidemiological survey on the prevalence and severity of low back pain (LBP) in female competitive gymnasts, and (2) a pilot study on internal load estimates in key gymnastics skills of growing gymnasts with and without LBP symptoms. This study will employ online survey software (e.g. Qualtrics), anthropometry measures of growth, microsensor and video technology.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Survey development; Quantitative analysis (statistics);

Project number: ESS_58

Project title: Effect of self-reported height by Australian parents on biological maturation estimates in athletes

Primary supervisor: Dr Elizabeth Bradshaw

Phone: 03 9244 6646

Email: liz.bradshaw@deakin.edu.au

Co-supervisor/s: Dr Lyndell Bruce

Research mentor:

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 and injury mechanisms.

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; Growth and maturation

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

Project is based at: Melbourne Burwood campus

Project description

This study seeks to (1) identify the accuracy of self-reports of height in parents of young athletes, (2) to determine the effect of errors in these self-reports on the prediction of biological maturation in young athletes, and (3) to examine the variation in maturation (biological age) for each chronological year from 9 to 16 years in male and female youth athletes. Families will be recruited from local sporting clubs. The data collection will include self-reports and anthropometry measures. The measures will include the youth athlete and their biological parents. The athletes predicted adult height and maturation will be estimated based on the methods of Cumming, Lloyd, Oliver, Eisenmann, Malina (2017) using a spreadsheet known as the Bio-Banding calculator.

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 to learn relevant software programs (e.g. Excel, statistical software program); 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; Quantitative analysis (statistics);

Project number: ESS_59

Project title: Biomechanical loads in netball landings

Primary supervisor: Dr Elizabeth Bradshaw

Phone: 03 9244 6646

Email: liz.bradshaw@deakin.edu.au

Co-supervisor/s: Dr Lyndell Bruce

Research mentor:

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 and injury mechanisms.

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; Biomechanics;

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

Project is based at: Melbourne Burwood campus

Project description

It is well-documented that the knee and ankle are the most commonly injured areas of the body in netball, with almost half of these injuries occurring during landing. Due to the dynamic and fast-paced nature of this sport, the body is subjected to high forces, particularly through the lower body. The faster these actions need to be performed before coming to an immediate stop, the greater the forces acting on the bones, muscles and joints. In addition to this, if the player is required to jump or leap to catch a pass, their lower body will be exposed to greater ground reaction forces (GRF) upon landing. As such, it is important for players to use the correct landing technique in order to reduce the effect these stresses and forces can have on the lower body, and thus minimise the risk of injury.

The primary purpose of this project is to investigate the different landing techniques used in netball to determine which technique is the least stressful on the body. In this study, we will examine the peak acceleration loads and ground reaction forces acting on the lower back and legs during various landing techniques using inertial measurement units (IMU) and a force plate. The landings will include simultaneous two foot landings with and without a step out, sequential two foot landings with and without a step out, straight and 45 degree cut leap landings, and leap landings with a pivot.

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; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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_60

Project title: The prevalence and severity of joint pain in youth athletes

Primary supervisor: Dr Elizabeth Bradshaw

Phone: 03 9244 6646

Email: liz.bradshaw@deakin.edu.au

Co-supervisor/s: Dr Eric Drinkwater

Research mentor:

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 pre-adolescent and adolescent athletes, sports performance, and injury mechanisms. 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, 90% of which involve sport and exercise. He is also an experienced research supervisor, having successfully supervised 13 honours and master's students and 4 PhD students.

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 the prevalence and severity of joint pain (e.g. knee, low back) in male and female youth athletes. Participants will be recruited from specialist sport high/secondary schools and local sports clubs. Participants will complete a monthly online questionnaire adapted from the OSTRC overuse injury questionnaire for a period of 6 months. This study will identify the joint regions that represent the greatest burden to training and performance overall for this population and in specific sports (e.g. soccer, volleyball, netball, gymnastics).

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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 project related tasks;

Skills specific to this project the student will develop

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

Project number: ESS_61

Project title: How does inadequate sleep affect strength and power adaptations to resistance training?

Primary supervisor: Associate Professor Brad Aisbett

Phone: 03 9244 6474

Email: brad.aisbett@deakin.edu.au

Co-supervisor/s: Dr Severine Lamon; Dr Eric Drinkwater

Research mentor: Liv Knowles

Supervisor profile

A/Prof Brad Aisbett is 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 and he has supervised twelve honours students through to completion, with many receiving research awards from within and outside the university.

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 Eric Drinkwater is a Senior Lecturer in Strength and Conditioning, specialising in resistance training and power development in athletes. He is an accredited coach with the Australian Strength and Conditioning Association, a Certified Strength & Conditioning Specialist and accredited through Fitness Australia.

Ms Liv Knowles is the PhD candidate in charge of the broader project and will act as a research mentor for the student.

Broad project topic area: Exercise and sport science; 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

Sleep is fundamental for human health and performance. Many groups within our population, including shiftworkers and athletes are suffering from inadequate sleep. For shiftworkers, the lack of sleep comes from irregular work hours, including night-time work, whilst for athletes, late night games, early morning trainings and international travel can all disrupt sleep. Athletes and some shiftworking groups like soldiers and firefighters rely on resistance training to condition their muscles for their sport or job. Inadequate sleep has been shown to decrease resistance training performance, and theoretically could slow muscle adaptation to training through increases in cortisol and lowered testosterone. However, no study has investigated how inadequate sleep affects resistance training adaptations such as gains in strength or power following training.

This project (part of a larger research program) will test the strength and power adaptations that 13 women experience during one-week of resistance training with either normal (> 8 h) or inadequate (< 5 h) sleep each night. During both test weeks, the women will complete resistance training on alternative days in the exercise prescription laboratory on the Burwood Campus. The honours student selected for this project will help supervise the training sessions and conduct performance testing pre- and post-training to evaluate whether the level of strength and power adaptation is altered by the women's quantity of sleep.

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

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

Project number: ESS_62

Project title: Various projects with Geelong Cats FC in training load monitoring and game analysis

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Dependent on project. May include Luana Main, Dan Dwyer, Chris Young

Research mentor:

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.

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

Exercise and sport science; Applied Sports Science;

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

Project is based at: Either Burwood or Waurn Ponds

Project description

Up to 4 projects are available within the areas of training load monitoring and game analysis. These projects will be completed in consultation with Geelong Football Club staff and may be based upon data from previous seasons and/or current season data. Projects may include examination of academy player training loads and the relationship to AFL matches played, relationship between the characteristics of training and match performance, understanding of the maximal demands required to complete an AFL match, draft screening as a predictor of Australian Rules football and profiling of Australian Rules football, individual performance and the relationship to team performance.

If you are interested in one of these projects, please contact the primary supervisor, Lyndell Bruce to organise a time to discuss the project/s and your interest.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Exercise prescription and monitoring; Image and/or video analysis; Quantitative analysis (statistics);

Project number: ESS_63

Project title: Impact of training loads on cognitive performance capacity: Implications for athlete management.

Primary supervisor: Dr Luana Main

Phone: 9244 5030

Email: luana.main@deakin.edu.au

Co-supervisor/s: Dr Jamie Tait

Research mentor: Sean Corrigan

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 eight 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 an interest in the capacity of physically demanding work and exercise to affect cognitive health and wellbeing, and similarly, the utility of cognitive performance measures and well-being to act as potential markers of overtraining. Dr Tait has experience working with a diverse range of populations, including emergency service workers, soliders and older adults.

Broad project topic area

Exercise and sport science; Applied Sports Science; Cognitive function & Decision making

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

Project is based at: Melbourne Burwood campus

Project description

An imbalance between physical training/non-training stress and recovery in athletes can lead to short-term performance impairments, which can result in 'overtraining' if these imbalances continue over time. Overtraining syndrome is associated with a sustained decrease in physical performance, as well as a number of negative psychological symptoms and hormonal alterations. In addition, there are also potential negative effects of physical overload on cognitive performance. However, the impact of (controlled) physical overload on cognitive performance and decision making has not been investigated, and similarly, it is unclear as to whether current load monitoring tools are sensitive enough to predict changes in cognitive performance. A better understanding of the influence of physical overload on cognitive performance is warranted to improve athlete management. Findings of this research will also be relevant for occupations that are highly physical, and cognitively demanding (e.g., first responders, emergency service personnel, military). The primary aims of this project center around examining the influence of physical overload on a range of cognitive performance measures and well-being, and the ability of these current load monitoring tools to predict training status.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Recruitment of participants; Primary data collection skills; Exercise prescription and monitoring; Survey development; Administration & interpretation of cognitive function tests

Project number: ESS_64

Project title: Development of a multi-component assessment tool for measuring adaptation to training loads in Army

Primary supervisor: Dr Luana Main

Phone: 9244 5030

Email: luana.main@deakin.edu.au

Co-supervisor/s: Dr Jamie Tait

Research mentor: Sean Bulmer

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 eight honours students. Three have gone onto PhDs with scholarship, one into Masters of Clinical Exercise Physiology, and the others went to industry positions. Dr. Main presently leads the Deakin University partnership with Defence Science and Technology's Human Performance Research Network.

Dr Jamie Tait has an interest in the capacity of physically demanding work and exercise to affect cognitive health and wellbeing, and similarly, the utility of cognitive performance measures and well-being to act as potential markers of overtraining. Dr Tait has experience working with a diverse range of populations, including emergency service workers, soliders and older adults.

Broad project topic area

Exercise and sport science; Applied Sports Science; Sport / exercise psychology;

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

Project is based at: Melbourne Burwood campus

Project description

Australian Basic Recruit Training is a twelve week course of physical, mental, skills, attitude and teamwork training that begins any career in Army. This is anecdotally the most challenging period of training undertaken by Army personnel, outside of special forces. It is known that imbalance between training load and recovery can lead to short-term maladaptation, which if not address with adequate recovery, can lead to long term decrements in performance and overtraining. High physical load can also raise injury and illness incidence if not managed effectively. All of these affect the wellbeing of individuals. In sport contexts, athlete self-report measures are widely used to monitor adaptation to training loads. Therefore, the aim of this honours project is to develop a context specific psychophysiological self-report measure for use in military training contexts. The honours research is nested within a larger project investigating the utility of various psychological and physiological measures to assist in improving the understanding and management of soldier's load management.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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

Recruitment of participants; Primary data collection skills; Exercise prescription and monitoring; Survey development; Quantitative analysis (statistics);

Project number: ESS_65

Project title: Does training design and practice replicate match parameters?

Primary supervisor: Lyndell Bruce

Phone: 03 9246 8967

Email: lyndell.bruce@deakin.edu.au

Co-supervisor/s: Will Vickery, Noni Taylor (NMFC), Olivia Mills (NMFC)

Research mentor:

Supervisor profile

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.

Dr Will Vickery is a Lecturer of Sport Coaching based at the Melbourne Burwood campus. His research focuses on the impact of coaching on athlete performance, with a specific focus on practice design. Dr Vickery has experience working within a more applied (field-based) setting, using mainly quantitative analysis techniques (GPS, variety of associated software, SPSS). In more recent times he has taken a more qualitative approach to his work (interviews, questionnaires) and is currently working on projects that look to improve the effectiveness of training sessions from the coach's perspective.

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

Exercise and sport science; Applied Sports Science; Sports coaching; Skill acquisition, performance analysis

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

Project is based at: Melbourne Burwood campus

Project description

This project will be conducted in collaboration with North Melbourne Football Club (NMFC) and is designed to assess the training environment and how closely it represents the demands players are exposed to in a competitive match. The student will determine the characteristics of match performance for Australian Football League (AFL) athletes to enable comparison to the training environment. The training environment will be analysed to enable the comparison between training and competition to happen. The comparison may include physical, technical and/or tactical parameters.

Skills/attributes required by the student

Knowledge and background in an exercise or sports science related field; Ability to learn relevant software programs (e.g. Excel, statistical software program); 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; Image and/or video analysis; Quantitative analysis (statistics);