HONOURS HANDBOOK 2017

Information and projects for prospective students

Bachelor of Food Science and Nutrition (Honours) H418

Bachelor of Exercise and Sport Science (Honours) H442

SCHOOL OF EXERCISE AND NUTRITION SCIENCES

FACULTY OF HEALTH

deakin.edu.au

Deakin University CRICOS Provider Code: 00113B

DEAKIN UNIVERSITY

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HONOURS OVERVIEW

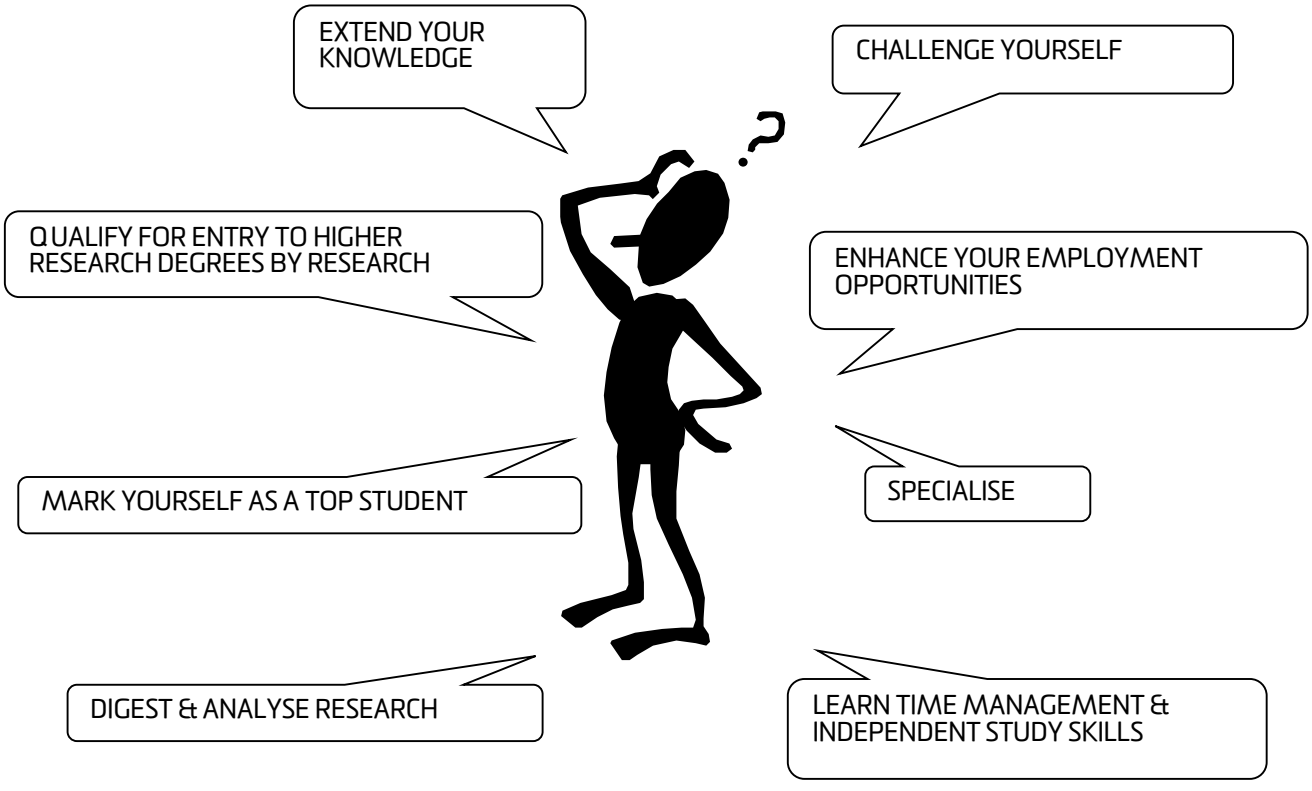
The honours program in the School of Exercise and Nutrition Sciences (SENS) builds upon the foundations provided by a three year undergraduate degree. The aim of the program is to provide students with the necessary knowledge and skills to enable them to undertake higher degree studies and advance their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

The School offers the following Type A Honours degrees:

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

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

- Coursework units and a written thesis
- Undertaken over one year full time
- Allocation of a supervisor and co-supervisor



WHY DO HONOURS?

Extend your knowledge

Honours allows you to broaden your understanding of university life and to understand the role of academic research. Students are encouraged to take part in research seminars and forums and to present their research at conferences.

Challenge yourself

Undergraduate learning is not a lot different from high school; you have set concepts you need to know and these are assessed at the end of each unit. On the other hand honours, as in all research, requires you to go and find the answers to questions that are not always clear cut and then work out what you found and why. Not only that you then have to present it in written and oral forms for others to understand. It is a challenge that will not only help you learn more about your chosen field, but also more about yourself.

Qualify for entry to higher degrees by research (PhD and Masters Programs)

Your honours year will provide you with training in all aspects of research; this will prepare you for further research degrees but also up skill you in understanding the complexities of research and its application to industry.

Enhance your employment opportunities

Graduates with a four year degree are sought after in the industry because of their superior skills in research, analysis and communication. The honours degree also allows you to specialise more than your undergraduate degree; having specialist knowledge can be very attractive to potential employers.

Specialise

There are a range of areas that you can specialise in. Your undergraduate degrees in Exercise and Sports Science or Food Science and Nutrition are broad degrees, covering a wide range of topic areas; however Honours lets you develop more specialist knowledge in an area of interest. In exercise and sports science you can investigate aspects of biomechanics, coaching, skill acquisition, motor control, physiology, physical activity and molecular biology. In nutrition and food sciences you can investigate aspects of nutrition, food choice, eating patterns, health effects, food policy and the composition of food.

Mark yourself as a top student

The honours degree makes you different from other graduates: first you have to be a top student to get into the honours program; and second it stamps you as a person willing to pursue the challenges of research and shows that you can operate independently and at a high level of performance.

Digest and analyse research

The skills that you acquire in honours will make you a consummate consumer of research in your area of work but also in general life. When the media quotes statistics and findings from research you will be able to critically evaluate it and draw your own conclusions about the research and to pass accurate information onto your family and work colleagues.

Learn time management and independent study skills

In your honours year the major assessment task, your thesis, is not due for 10 months! As the thesis is worth 50% of your overall grade, a good thesis mark goes a long way to securing a good honours grade overall. Although the thesis is due in October, many critical tasks must be completed well before and often these tasks do not have formal deadlines to motivate you. Through your honours year you will learn the value of pre-planning, setting smaller 'deadlines' for yourself (your supervisor will help, but won't enforce deadlines) and being disciplined to set aside time to work on the important tasks, not just the urgent ones. Self-discipline to work independently is a skill highly sought after by all employers.

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.

Students who complete honours also have the opportunity of undertaking research positions within the School or other universities. Such positions allow you to participate in research, including data collection and analysis, in paid employment without committing to a postgraduate research degree.

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 as a research officer or assistant, you can gain employment in industry such as in physiology, nutrition, fitness, and in government posts. In sport, you can work in player and team management, sports administration and development, strength and conditioning, sports science, and in coaching. The honours degree allows you to gain some specialist knowledge in one of these areas and apply that knowledge.

SEAN BULMER
Bachelor of Exercise and Sport Science (Honours) completed in 2015 graduated 2016
Current role/position: Human Performance Science, Research Assistant at Defence Science and Technology

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

"My honours project investigated: The utility of subjective measures to monitor firefighters' stress and fatigue during a simulated deployment. This involved development of a questionnaire with the potential to predict firefighting task performance, via subjective measures pre-deployment."

GISELLA MAZZARINO
Bachelor of Food and Nutrition Science (Honours) graduated 2015
Current role/position: Undertaking PhD in Molecular Physiology at Deakin University

"My honours project investigated: The role of miRNA in Physiological Cardiac Hypetrophy"

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

BRENT MANSON
Bachelor of Exercise & Sports Science (Honours) – graduated 2014
Current role: Football Technology Assistant at Carlton Football Club

"Undertaking the honours program at Deakin was the perfect progression following my undergraduate degree. I was able to experience working in a research team and gain a greater understanding of what it takes to undertake a research project. Further, I gained a vast set of skills working closely with my supervisor, which have assisted me in my current position.

My honours project investigated the impact of surgical management methods for shoulder instability in elite AFL players."

SAM SHEARMAN
Bachelor of Exercise & Sports Science (Honours) – graduated 2014

"Completing the honours program at Deakin was the most enjoyable and rewarding year of my education to date. Having the opportunity to work one with my supervisors to complete my own project I believe significantly developed my skill set and has now opened many doors for me."

"My project involved investigating the effect of hypoxia on the ability of a mathematical model to predict intermittent exercise performance."

WHAT TYPES OF HONOURS PROJECTS CAN I DO IN SENS?

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.

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; and strength and conditioning.

Food science and nutrition

Topic areas in food science and nutrition include: nutrition choices and eating patterns; salt, appetite control and blood pressure regulation; fatty acids, inflammation, cognition and blood pressure regulation; proteins, sport performance and muscle gain; nutrition and ageing; health effects of phytochemicals and minerals; nutrition and gut bacteria; food choice and perceptions; food policy and safety; and early childhood influences on eating.

How do I choose a topic?

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

Can I develop my own project?

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

*****Refer to the back of this handbook for next years' Honours projects*****

WHAT HAPPENS IN THE HONOURS YEAR?

This intense year means that you should be able to commit 35 hours a week to your honours qualification. The honours degree is 50% course work and 50% research; both parts count towards your final mark and both are therefore important. The course work is directed towards giving you the necessary research skills to complete your research project, and provides you with research training. There is an emphasis both on writing and presenting your research. 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 research project is conducted in second trimester 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.

Course work

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 present your literature review and research proposal to your peers as an oral presentation.

Research methods (HBS400)

This unit examines the ethics of research, research design and statistics. Again 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.

Research project

Data collection and analysis

After you have planned your research and received ethics approval (if required), you are ready to collect your data.

Thesis (HSE402/HSN414)

The final step is to 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 Faculty honours day at the end of the year.

WHAT ARE THE ADMISSION REQUIREMENTS?

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

HOW DO I APPLY FOR HONOURS?

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

1. Choose a project

You should carefully examine the list of honours research projects that the School is offering in 2017(listed from page 18). For those projects in which you are interested, it is very important that you personally contact the named supervisor (contact details are provided with each project) to discuss the proposed project. 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.

2. Complete the preference form

You must complete the online preference form by **Friday 25 November 2016.** If you have any queries about the admission process please contact ens-enquire@deakin.edu.au or phone 9244 5436

- **Applicants are required to contact the Supervisors of the projects you nominated below before submitting this form**.

3. Submit an online application

To apply for honours you will need to submit the online application at http://www.deakin.edu.au/future-students/applications-enrolments/applications/honours.php.
The closing date for timely applications is **25 November 2016.** When applying online you will be required to upload all supporting documents at the last step of the application process. If you are unable to upload your documents, please email the certified documents to ens-enquire@deakin.edu.auNote: Only students with degrees from institutions other than Deakin need to attach a copy of their academic transcripts. Late applications will be received until Tuesday 6 December 2016.

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 acquire 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 Faculty of Health 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?

The closing date for timely applications is 25 November 2016. It is anticipated that successful **candidates will be advised of their offer mid-December 2016.**

ADDITIONAL INFORMATION

Scholarships

Continuing students may be eligible for a general Deakin Honours Scholarship if they have achieved outstanding academic results throughout their undergraduate studies. To be eligible you must be an Australian citizen, or holder of an Australian permanent humanitarian visa, and enrolled full time in an end-honours degree at Deakin. Students do not apply for these scholarships; rather they are selected by the Faculty based on your results in your undergraduate degree.

Timelines

February to October: 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.

HOW DO I FIND OUT MORE ABOUT HONOURS FOR NEXT YEAR?

Call for information

The honours *supervisors* are happy to discuss any aspect of honours with you. Their contact details can be found under the relevant honours project at the end of this handbook.

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

Dr Clinton Bruce
(Honours Coordinator)
Ph.: (03) 9244 6684
Email: clinton.bruce@deakin.edu.au

Dr Jason Bonacci
(Deputy Honours Coordinator)
Ph.: (03) 5227 2634
Email: jason.bonacci@deakin.edu.au

Bachelor of Food Science and Nutrition (Honours) (H418)

Bachelor of Exercise and Sport Science (Honours) (H442)

DEAKIN GRADUATE LEARNING OUTCOMES

Learning Outcomes

Deakin Graduate Learning Outcomes describe the knowledge and capabilities graduates have acquired and are able to apply and demonstrate at the completion of their course. They consist of outcomes specific to a particular discipline or profession as well as transferable generic outcomes that all graduates should have acquired irrespective of their discipline area. Learning outcomes are not confined to the knowledge and skills acquired within a course, but also incorporate those that students bring with them upon entry to the course consistent with the Australian Qualifications Framework pathways policy. Deakin's courses are designed to ensure that students develop systematic knowledge and understanding of their discipline or chosen profession appropriate to their level of study. Outcomes are specified at the course level, mapped to course components and are assessed. In professionally-accredited courses, discipline-specific learning outcomes may be defined in part by the relevant professional body.

DEAKIN GRADUATE LEARNING OUTCOMES

1. **Discipline-specific knowledge and capabilities:** appropriate to the level of study related to a discipline or profession
2. **Communication:** using oral, written and interpersonal communication to inform, motivate and effect change
3. **Digital literacy:** using technologies to find, use and disseminate information
4. **Critical thinking:** evaluating information using critical and analytical thinking and judgment
5. **Problem solving:** creating solutions to authentic (real world and ill-defined) problems
6. **Self-management:** working and learning independently, and taking responsibility for personal actions

7. **Teamwork:** working and learning with others from different disciplines and backgrounds
8. **Global citizenship:** engaging ethically and productively in the professional context and with diverse communities and cultures in a global context

Deakin graduates will be able to evidence these capabilities as appropriate to the relevant level criteria of the Australian Qualifications Framework.

The 'Deakin Difference'

Deakin's courses use a combination of cloud and located learning to provide accessible, media-rich, interactive educational experiences which integrate new-media literacy, experiential learning and interdisciplinary teamwork. Work-integrated learning and exposure to international perspectives prepare graduates for employment and life-long-learning in an ever-changing globalised world. These learning experiences and the development and evidencing of graduate learning outcomes create the 'Deakin Difference' — empowering learners for the jobs and skills of the future.

Deakin's professional coursework and research programs develop additional knowledge and capabilities which, depending on the level and professional context, may include leadership, management, independent research, entrepreneurship and personal resourcefulness.

* (Schedule A: Deakin Graduate Learning Outcomes); Approved by Academic Board 2013)

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FOOD SCIENCE AND NUTRITION PROJECTS 2017

1. PROJECT TITLE: UNDERSTANDING HOW ENDOGENOUS GLUCOSE PRODUCTION IS REGULATED IN RESPONSE TO MULTIPLE MIXED MEALS

Principal supervisor: **Dr Clinton Bruce**
Contact details: **clinton.bruce@deakin.edu.au**
(03) 9244 6684

Supervisor's profile
Our research group is focused on understanding the regulation of carbohydrate and lipid metabolism in skeletal muscle and liver. Within this broad area, we have two themes: 1) understanding and defining the mechanisms which contribute to impaired glucose metabolism in obesity, insulin resistance and type 2 diabetes; and 2) examining the role of lipids in regulating skeletal muscle function.

Co-supervisor
Dr Greg Kowalski

Project is based at: Burwood

Project description
Blood glucose represents an important fuel source for the body. The tight regulation of blood glucose levels is essential for good health. Indeed, when control of glucose metabolism is disrupted, as in diabetes, the risk of complications such as cardiovascular disease increases dramatically. The key organ in controlling blood glucose levels is the liver. Under fasting conditions, glucose levels are maintained by a constant supply from the liver. Following a meal, glucose production by the liver is suppressed while hepatic glucose uptake and disposal are increased. The liver therefore plays a critical role in regulating glucose homeostasis and any impairment in hepatic glucose handling can lead to excessively high glucose levels, emphasising the importance of understanding the regulation of hepatic glucose metabolism in both health and disease. Studies examining the regulation of hepatic glucose production have been limited to examining the response following a single mixed meal. While this has yielded important information, it does not accurately represent what happens throughout the course of day where multiple mixed meals are consumed. Therefore, the aim of this project is to examine what happens to endogenous glucose production in response to multiple mixed meals consumed throughout the course of a day.

Methodological approach

• Recruitment of healthy individuals.

• Mixed meal feeding studies including the addition of a glucose stable isotope to measure endogenous glucose.

• Blood sampling for the measurement of hormones (insulin, glucagon) and substrates (free fatty acids, triglycerides).

• Gas chromatography mass spectrometry for the analysis of the glucose stable isotope in blood samples.

Necessary skills/knowledge
It is desirable (but not essential) for the selected student to have:
An interest in the area of nutritional physiology, glucose metabolism and/or biochemistry is required. Some experience with human testing and analytical laboratory skills are desirable but not essential. All techniques will be taught as part of honours training.

2. PROJECT TITLE: INTRODUCTION OF SOLIDS: SOCIODEMOGRAPHIC PREDICTORS OF THE TIMING AND QUALITY OF SOLIDS INTRODUCED AND SOURCES OF INFORMATION AND ADVICE USE BY PARENT

Principal supervisor: **Dr Rachel Laws,**
Contact details: **r.laws@deakin.edu.au**
(03) 9244 5574

Supervisor's profile
Dr Rachel Laws is a Research Fellow within Institute for Physical Activity and Nutrition. Her research interests include developing and testing obesity prevention interventions in early life including the use of smart phone applications and social media. Rachel has an interest in translating effective interventions into practice and policy.

Co-supervisor
A/Prof Karen Campbell

Project is based at: Burwood

Project description
The Australian Infant Feeding guidelines recommend the introduction of solids to infants at around 6 months of age with first solid foods recommended to be high in iron. However little is known in Australia about whether there are differences in adherence to these guidelines according to mothers' sociodemographic characteristics. Furthermore, there is a lack of research about where parents seek information/advice on the introduction of solids and whether the preferred sources of advice are related to mothers' sociodemographic characteristics, such as level of education or ethnicity.
This project will involve secondary analyse of data collected as part of the Baby's First Food study, a cohort of parents recruited when their babies were aged less than 3 months and followed up when their babies were aged 6 months and 9 months. This research will provide important new information about how parents introduce solids to their infants in Australia, sources of advice and sociodemographic predictors. This will help inform how to tailor interventions to better support parents in optimal complementary feeding practices.

Methodological approach
The project will undertake secondary analysis of an existing dataset – Baby's First Food Study, a cohort of 345 parents who have completed surveys when their babies were less than 3 months old and again when their babies where 6 months and 9 months. The analysis will involve two stages:
1) basic descriptive analysis of the time of introduction of solids, types of solids introduced and the sources and usefulness of various sources of advice on the introduction of solids
2) examining the relationship between sociodemographic characteristics (e.g. maternal education, ethnicity, age etc.) and the time of introduction of solids, the types of solids introduced and the sources of advice on introduction of solids
This project will provide the opportunity to develop:

- Skills in analysing, interpreting and presenting quantitative data, including basic statistical analysis
- Skills in critical analysis of infant feeding literature
- In depth knowledge of optimal complementary feeding practices and how these can be promoted

Necessary skills/knowledge

The selected student should demonstrate:

- Good organisational and time management skills
- No previous statistical analysis skills required

3. PROJECT TITLE: MATERNAL CARDIOMETABOLIC RISK FACTORS FOLLOWING PREGNANCY: THE IMPLICATION OF PREGNANCY WEIGHT GAIN IN FIRST TIME MOTHERS

Principal Supervisor: **Dr Paige van der Pligt**
Contact Details: **p.vanderpligt@deakin.edu.au**
03 9246 8738

Supervisor's profile
Dr Paige van der Pligt is a lecturer in Nutrition & Dietetics and teaches across a number of different units as part of the Master of Dietetics course including research skills, professional practice and clinical dietetics. Her research is focused on the obstetric implications and health consequences of excess weight gain during pregnancy and maternal overweight and obesity across the perinatal period. She is interested in developing opportunities to support women to eat healthily and exercise regularly both during and following pregnancy, thereby reducing risk factors for chronic disease. Paige has collaborations throughout Australia as well as the UK and is a member of the Perinatal Society of Australia and New Zealand position statement team on maternal obesity.
Associate Professor Karen Campbell is a senior researcher and unit chair in public health nutrition and obesity prevention. She has a well-developed profile nationally and internationally for her research in the area of maternal and childhood obesity prevention; impacts of parenting and home environments on child lifestyle behaviours; and the design and evaluation of complex interventions. These randomised controlled trials include interventions to promote the development of healthy eating and active play from birth; interventions to reduce children's sodium intake; and interventions that seek to promote healthy gestational weight outcomes. Scalability is a key feature of Karen's research. This is evidenced by the state level adoption of Melbourne InFANT Program, a program that seeks to support families with young children to get healthy eating and active play behaviours embedded from the beginning of life and her current trialling of the Growing health app targeting best practice feeding in the first year of life.

Co-supervisors
A/Prof Karen Campbell

Project based at: Burwood

Project description
Excess weight gain during pregnancy increases the risk for multiple, serious pregnancy complications and can lead to significant weight retention following childbirth. Weight retention has been associated with an increased risk for the development of maternal overweight and obesity and future cardiovascular disease. In determining the risk factors for obesity related chronic disease in women following childbirth, assessment of maternal weight, diet and physical activity is key. This research will assist in informing the development of strategies to promote optimal maternal health across the perinatal period.

Methodological approach
This project will involve secondary analysis using data from the Melbourne InFANT Extend Program, which recruited over 400 mother-child pairs. Maternal anthropometric, diet and physical activity data were collected when women were approximately 18 months postpartum. These data will be analysed to describe maternal weight, BMI and waist circumference, as well as intake of total fat, saturated fat and sodium, physical activity and sedentary time, allowing us to describe risk factors for cardiovascular disease and type 2 diabetes in these women. We will also compare these data in women who gained within recommendations for weight gain during pregnancy vs those who exceeded recommendations allowing us describe associations between excess weight gain during pregnancy and risk factors for cardiometabolic disease following childbirth.

Necessary skills/knowledge
This project is suited to a student interested in maternal health, pregnancy and the postpartum period. It will require excellent organisational skills and high level attention to detail. Previous experience in data analysis is desirable but not essential, though the student should understand basic statistics and be keen to learn about the data analysis process. Previous work with SPSS will be considered desirable.

4. PROJECT TITLE: ARE HEALTH CLAIMS AND FOOD FORTIFICATION PROMOTING A HEALTHY FOOD SUPPLY OR THE MARKETING OF JUNK FOOD?

Principal Supervisor: **Mark Lawrence**
Contact Details: **lawrence@deakin.edu.au**
03 9244 3789

Supervisor's profile:
Mark is a public health nutritionist with over 30 years experience in food policy. He is actively involved in public health nutrition research analysing the development of policies and programs, such as the Dietary Guidelines, designed to protect and promote the nutritional health of populations. He is particularly interested in how and why evidence is used in food sustainability and food systems policy research. Mark has published the equivalent of over 80 scientific papers and currently is an investigator on 5 research projects totalling over $6million. He is an advisor to the WHO and FSANZ, a member of the Commonwealth Department of Health's NRV advisory committee, and a former member of the NHMRC's Dietary Guidelines working committee.
Julie is a senior lecturer in public health nutrition with an interest in food policy, food regulation and food supply issues and their impact on food consumption. She is the Co-Convener of the Food and Nutrition Special Interest Group of the Public Health Association of Australia and is involved in a range of advocacy and research activities in relation to food policy and food supply.

Co-supervisor
Dr Julie Woods

Project based at: Burwood

Project description
Many food products are fortified with a number of nutrients and/or make nutrition and health claims. But is the fortification and the use of claims motivated by public health or marketing objectives? This project will involve extracting data from an extensive and up-to-date database of 10s of thousands of food products to analyse the profile of food products that display nutrition and health claims and/or are fortified against Dietary Guideline recommendations.

Methodological approach
The project has 2 research questions:
i) Is there an association between food group classification (five food group foods versus discretionary foods) and use of fortification/claims over time?
ii) Is there a trend in use of fortification/claims over time with change in food standards?

The methodological approach for this project will involve monitoring the use of nutrition and health claims on food products as well as monitoring the food product fortification.

Data collection will involve interrogation of and then data extraction from the Mintel database of food products
Data analysis will involve analysing the use of claims and fortification on food products and profiling such products in accordance with Dietary Guideline/Australian Guide to Healthy Eating (AGTHE) recommendations.

Necessary skills/knowledge:

Good writing and communication skills
Basic statistical analysis skills

5. PROJECT TITLE: A CRITICAL ANALYSIS OF VOLUNTARY VITAMIN D FORTIFICATION OF BREAKFAST CEREALS

Principal Supervisor: **Mark Lawrence**
Contact Details: **lawrence@deakin.edu.au**
03 9244 3789

Supervisor's profile
Mark is a public health nutritionist with over 30 years experience in food policy. He is actively involved in public health nutrition research analysing the development of policies and programs, such as the Dietary Guidelines, designed to protect and promote the nutritional health of populations. He is particularly interested in how and why evidence is used in food sustainability and food systems policy research. Mark has published the equivalent of over 80 scientific papers and currently is an investigator on 5 research projects totalling over $6million. He is an advisor to the WHO and FSANZ, a member of the Commonwealth Department of Health's NRV advisory committee, and a former member of the NHMRC's Dietary Guidelines working committee.
Julie is a senior lecturer in public health nutrition with an interest in food policy, food regulation and food supply issues and their impact on food consumption. She is the Co-Convener of the Food and Nutrition Special Interest Group of the Public Health Association of Australia and is involved in a range of advocacy and research activities in relation to food policy and food supply.

Co-supervisors
Dr Julie Woods

Project based at: Burwood

Project description
In 2016 Food Standards Australia New Zealand (FSANZ) recommended that breakfast cereal manufacturers be permitted to add vitamin D to their products as a public health intervention. However, many public health experts have pointed out that there is a lack of evidence that the intervention is needed or effective. Instead, they are concerned that the recommendation was based not so much on public health grounds but supporting the marketing objectives of certain food manufacturers. For example, if this was a genuine public health intervention why has FSANZ developed a recommendation that lets manufacturers choose if and when it will be implemented? This project will be a critical analysis of the policy making process that resulted in the policy decision.

Methodological approach
The methodological approach for this project is 'critical policy analysis'. This approach will involve a case study research design: voluntary vitamin D fortification of breakfast cereals being the case.
Data collection will involve text and key informant interviews.
Data analysis will involve thematic analysis of collected data.

Necessary skills/knowledge
Good writing and communication skills
Qualitative research skills competency will be a strong advantage though not essential

6. PROJECT TITLE: ANALYSING THE HEALTH STAR RATING SCHEME AGAINST THE DIETARY GUIDELINE RECOMMENDATIONS

Principal Supervisor: **Mark Lawrence**
Contact Details: **lawrence@deakin.edu.au**
03 9244 3789

Supervisor's profile
Mark is a public health nutritionist with over 30 years experience in food policy. He is actively involved in public health nutrition research analysing the development of policies and programs, such as the Dietary Guidelines, designed to protect and promote the nutritional health of populations. He is particularly interested in how and why evidence is used in food sustainability and food systems policy research. Mark has published the equivalent of over 80 scientific papers and currently is an investigator on 5 research projects totaling over $6million. He is an advisor to the WHO and FSANZ, a member of the Commonwealth Department of Health's NRV advisory committee, and a former member of the NHMRC's Dietary Guidelines working committee.
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Co-supervisors
Dr Julie Woods

Project is based at: Burwood

Project description
The Health Star Rating (HSR) scheme awards 'health' stars to foods based on their nutrient composition and in particular the salt, added sugar, saturated fat composition. However, the Dietary Guidelines are based on evidence that it is total dietary patterns that are relevant to health outcomes. This project will involve extracting data from an extensive and up-to-date database of 10s of thousands of food products to analyse the profile of food products that display health stars against Dietary Guideline recommendations.

Methodological approach
The methodological approach for this project will involve monitoring the use of health stars on food products.
Data collection will involve interrogation of and then data extraction from the Mintel database of food products

Data analysis will involve analysing the health star ratings on food products in accordance with Australian Guide to Healthy Eating (AGTHE) recommendations as well as analysing the profile of food products without ratings.

Necessary skills/knowledge
Good writing and communication skills
Basic statistical analysis skills

7. PROJECT TITLE: THE EFFECT OF EXERCISE COMBINED WITH CALCIUM-VITAMIN D3 ENRICHED MILK ON HEALTH-RELATED QUALITY OF LIFE IN OLDER MEN AT RISK OF FALLING

Principal Supervisor: **Dr Susan Torres**
Contact Details: **storres@deakin.edu.au**
9244 6189

Supervisor's profile
Dr Susan Torres is an accredited practicing dietitian and senior lecturer in Nutrition and Dietetics in the School of Exercise and Nutrition Sciences. Her current research assesses the relationship between indicators of mental health and dietary intake. She has conducted intervention studies assessing the impact of dietary modifications and weight loss on mood, anxiety and blood pressure responses to stress. Recently, Dr Torres has been investigating how stress response differs in lean versus obese individuals and the impact of lifestyle interventions on quality of life.

Co-supervisors
Dr Catherine Milte
Dr Stella O'Connell

Project is based at: Burwood

Project description
The effect of exercise and calcium-vitamin D3 enriched milk on health-related quality of life in older men at risk of falling

Methodological approach
In this 18-month randomised controlled trial, 180 men aged 50-79 years were randomised to four groups, two that included an exercise intervention: exercise plus calcium-vitamin D3 enriched milk and exercise alone (the exercise intervention group*), and two that did not: calcium-vitamin D3 enriched milk alone and a control group (the control group*). SF36 questionnaires were completed at baseline, 6 and 12 months to measure quality of life. Demographic details and anthropometric measurements, medical history, 3-day food diary, and CHAMPS physical activity questionnaires were completed along with serum vitamin D and parathyroid levels.

Hypothesis
Health-related quality of life as measured by the SF36v1 subscales and the summary Physical and Mental Component Score will improve in older men who undergo a 12-month program of exercise and calcium/vitamin D supplementation administered separately and together.

Necessary skills/knowledge
Good communication and organisational skills.

8. PROJECT TITLE: THE EFFECT OF EXERCISE COMBINED WITH CALCIUM-VITAMIN D3 ENRICHED MILK ON DEPRESSIVE SYMPTOMS IN OLDER MEN AT RISK OF FALLING

Principal Supervisor: **Dr Susan Torres**
Contact Details: **storres@deakin.edu.au**
9244 6189

Supervisor's profile
Dr Susan Torres is an accredited practicing dietitian and senior lecturer in Nutrition and Dietetics in the School of Exercise and Nutrition Sciences. Her current research assesses the relationship between indicators of mental health and dietary intake. She has conducted intervention studies assessing the impact of dietary modifications and weight loss on mood, anxiety and blood pressure responses to stress. Recently, Dr Torres has been investigating how stress response differs in lean versus obese individuals and the impact of lifestyle interventions on quality of life.

Co-supervisor
Dr Catherine Milte
Dr Stella O'Connell

Project is based at: Burwood

Project description
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Methodological approach
In this 18-month randomised controlled trial, 180 men aged 50-79 years were randomised to four groups, two that included an exercise intervention: exercise plus calcium-vitamin D3 enriched milk and exercise alone (the exercise intervention group*), and two that did not: calcium-vitamin D3 enriched milk alone and a control group (the control group*). The Centre for Epidemiologic Studies Depression Scale (CES-D) was completed at baseline, 6 and 12 months to measure depressive symptoms. Demographic details and anthropometric measurements, medical history, 3-day food diary, and CHAMPS physical activity questionnaires were completed along with serum vitamin D and parathyroid levels.

Hypothesis
Depressive symptoms as measured by the CES-D will improve in older men who undergo a 12-month program of exercise and calcium/vitamin D supplementation administered separately and together.

Necessary skills/knowledge
Good communication and organisational skills.

9. PROJECT TITLE: RELATIONSHIP BETWEEN FOOD LIKING, DIET QUALITY AND BMI

Principal supervisor: **Dr Alison Booth**
Contact details: **alison.booth@deakin.edu.au**

(03) 9251 7211

Supervisor's profile
Alison Booth is a Lecturer in Nutritional Sciences within the School of Exercise and Nutrition Sciences. She teaches both undergraduate and postgraduate nutrition students. Dr Booth is a member of the Institute for Physical Activity and Nutrition (IPAN) and her current research focuses on using technologies to improve dietary-related behaviour.

Co-supervisors
Dr Katherine Livingstone
A/Prof Lynn Riddell

Project is based at: Burwood

Project description
This project will investigate the relationship between food liking, diet quality and BMI in a sample of young adults attending university.

Methodological approach
Data required for this project have already been collected. Using a cross-sectional study design, young adults studying food and nutrition have completed a food frequency questionnaire, a food habits survey and a questionnaire asking about like and dislike of food items. Demographic data such as age, gender, height, weight and cultural identity were also collected. Data collected from March 2015 to May 2017 will be available for analysis, which will include approximately 1,500 participants. This project will involve 1) investigating the relationships between the liking of certain foods/food groups, diet quality and BMI and 2) exploring the relationships between liking of certain foods, limiting intake of certain foods and BMI. Demographic characteristics associated with food liking will also be explored.

Necessary skills/knowledge

Skills required for completing this project (e.g. use of SPSS) will be developed throughout the program, as required.

10. PROJECT TITLE: SUSHI STORES AND SALAD BARS OR BURGERS AND BURRITOS? DO THE TYPES OF TAKEAWAY FOOD STORES IN MELBOURNE NEIGHBOURHOOD VARY BY SOCIOECONOMIC DISADVANTAGE?

Principal supervisor: **Dr Lukar Thornton**
Contact details **lukar.thornton@deakin.edu.au**
(03) 9244 5029

Supervisor's profile
Dr Thornton is a Senior Research Fellow within the Institute of Physical Activity and Nutrition Research (IPAN) at Deakin University, Australia. His expertise spans the disciplines of geography, behavioural epidemiology and public health. Dr Thornton's current program of research predominantly explores associations between neighbourhood environments and health behaviours. He also conducts work that investigates socioeconomic determinants. The results of his research have been cited in key policies and programs aimed at the development of health-promoting built environments.

Co-supervisor
Dr Karen Lamb.

Project is based at: Burwood

Project description

The types of food store located within our neighbourhood play a role in our food purchasing decisio research suggests that variations in food store availability by neighbourhood disadvantage socioeconomic inequalities in health. There have been a number of published studies which differences in the number of food store types between neighbourhoods of varying levels o disadvantage, with most focusing on supermarkets and fast food chains. Studies that have cons food stores have tended to groups these into a single category without consideration of the different ty food stores that may exist. By exploring the types of takeaway food stores in neighbourhoods and by area-level socioeconomic disadvantage, this study will make a novel contribution to the fo literature.

Methodological approach
Using an audit tool developed by the supervisors, the student will be required to undertake audits of neighbourhoods to assess the number and type of takeaway outlets present. Neighbourhoods will be sampled from the least, mid and most socioeconomically disadvantaged areas of Melbourne. Data will be analysed to investigate whether socioeconomic differences exist.

Necessary skills/knowledge
The prospective student will need to have the ability to work independently, problem-solve, undertake fieldwork, and have good attention to detail. Statistical training in appropriate analytical approaches will be provided.

11. PROJECT TITLE: TOPICS IN SENSORY NUTRITION

Principal supervisor: **Professor Russell Keast**
Contact details: **russell.keast@deakin.edu.au**
(03) 9244 6944

Supervisor's profile
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 taste responsive to fat and have identified an association between fat taste and diet. The link between taste, diet and obesity is also a research area within his research program utilizing satiety protocols.

Co-supervisors
Dr Sara Cicerale
Dr Gie Liem
Dr Megan Thornton

Project is based at: Burwood

Project description
Projects will look at the relationship between taste and diet. For example, is there an association between dietary sugar, carbohydrate, fat or salt and taste function? Projects will be based around these research questions.

Methodological approach
You will be involved in the organization and management of a lab based sensory/nutrition study, from data collection through to analysis and interpretation. You will be part of the CASS team that includes multiple PhD students and researchers.

Necessary skills/knowledge
Understand basic concepts of sensory testing, along with food and nutritional knowledge. Must have excellent work ethic and time management skills.

12. PROJECT TITLE: GESTATIONAL DIABETES CARE AT THE WOMEN'S HOSPITAL: IDENTIFYING WOMEN WHO NEED MORE DIETETIC INTERVENTION

Principal supervisor: **Dr Sharleen O'Reilly**
Contact details: **sharleen.oreilly@deakin.edu.au**
(03) 9244 6778

Supervisor's profile
Dr Sharleen O'Reilly is a NHMRC TRIP Fellow, Advanced Accredited Practising Dietitian and Senior Lecturer in Nutrition and Dietetics. She teaches into the Master of Dietetics and supervises honours and PhD students. Sharleen's research area is chronic disease prevention, particularly heart disease and diabetes, through improved nutrition and lifestyle behaviours. Her current research focuses on translating diabetes prevention research into practice, particularly for women who have had gestational diabetes (diabetes that develops during pregnancy and typically goes away after the baby is born).

Co-Supervisors:
Julia Zinga is an Accredited Practising Dietitian. She currently works at the Diabetes Unit, Royal Women's Hospital. Julia has 11 years experience working in the field of diabetes, and has an interest in effective models of care and education methods for women with gestational diabetes.

Dr Paige van der Pligt is a lecturer in Nutrition & Dietetics and teaches across a number of different units as part of the Master of Dietetics course including research skills, professional practice and clinical dietetics. Her research is focused on the obstetric implications and health consequences of excess weight gain during pregnancy and maternal overweight and obesity across the perinatal period. She is interested in developing opportunities to support women to eat healthily and exercise regularly both during and following pregnancy, thereby reducing risk factors for chronic disease. Paige has collaborations throughout Australia as well as the UK and is a member of the Perinatal Society of Australia and New Zealand position statement team on maternal obesity.

Dr Claire Margerison is an Accredited Practising Dietitian and Senior Lecturer in Dietetics. She teaches into the Master of Dietetics (principles of dietetics and clinical dietetics) and supervises honours and PhD students. Her research area is chronic disease prevention, focusing on sources of nutrients and dietary patterns. More recently Claire has focused on nutrition and dietetics education and food literacy.

Project is based at: Burwood

Project description
The Women's Hospital is the biggest speciality hospital for women's health and obstetric care in Australia -delivering on average 170 babies per week. Gestational diabetes is a large and growing health issue for Australian women. In the past 24 months, the number of gestational diabetes diagnoses at The Women's has increased by 84%. Current dietetic care for gestational diabetes is one group session for initial

patient contact followed by an individual review appointment. The continued increase in women being diagnosed with gestational diabetes means this structure is difficult to sustain and requires investigation.
Identifying women who require low, moderate or high levels of dietetic support following their diagnosis will enable more appropriate care to be provided to women with high needs, athletes' self-awareness and may lead to an improved ability to self-regulate.

Methodological approach
The project will consist of a retrospective audit of medical records to gather information on patient characteristics, such as age, preconception BMI, gestational weight gain, number of children, English language speaking, medication use, BGLs at diagnosis, any relevant blood tests, breastfeeding intention. This information will be linked with pregnancy outcomes and dietetic service usage.
Focus groups will be conducted with women following their gestational diabetes group education session. Questions will focus on the women's experience of the education session and anticipated requirements for further dietetics support.

Necessary skills/knowledge
Essential
Interest in maternal health and/or diabetes (particularly gestational diabetes)
Excellent organisational skills and a high level of attention to detail.
Understanding of basic statistics
Keen to learn about the data analysis process
Desirable
Previous experience in data analysis
Previous work with SPSS

13. PROJECT TITLE: ATHLETES' DIETARY STRATEGIES: WHAT ARE THE PHYSIOLOGICAL AND PERFORMANCE IMPLICATIONS?

Principal supervisor: **Dr. Amelia Carr**
Contact details: **amelia.carr@deakin.edu.au**
(03) 9251 7309

Supervisor's profile
Amelia's interest is in athletes' performance, and the implications of applied sports science and nutrition. Her previous research has focused on the performance effects of nutritional supplements, and other interventions such as altitude training, in athletes. She has also performed research for the Australian Army and Australian Navy, in the development of physical performance tests. She completed her PhD in Physiology at the AIS, and has also worked as an applied scientist with the Australian Defence Force.

Co-supervisor:
Dr. Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dominique is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in team sports. Her current interests include understanding the factors that influence food choice and dietary habits in athletes as well as their beliefs, perceptions and usage of supplementation since the recent events in Australian sport.

Project is based at: Burwood

Project description
This project will examine the implications of different nutritional strategies in elite athletes, and will focus on the physiological and performance effects in those athletes. Potentially, athletes' dietary intake can have significant effects on their performance. It has been suggested that different diets (e.g., high-fat or high-carbohydrate diets) can affect acid-base balance in the body, increasing overall alkalinity or acidity. These changes may improve or impair performance, and may also have an impact if athletes are using safe and legal supplements. The specific changes to athletes' physiology or performance when they implement specific diets over a period of time has yet to be determined. This study will assess and examine these changes, in the context of the training environment of elite athletes. This project will be conducted in collaboration with the Australian Institute of Sport.

Methodological approach
This study will involve conducting field-based performance testing, and lab-based testing and analysis of samples. Students will also be required to conduct statistical analysis on an existing data set.

Necessary skills/knowledge
Students should have a keen interest in applied sport science, good attention to detail, and have good organizational and communication skills.

14. PROJECT TITLE: FOOD FLAVOUR ANALYSIS

Principal supervisor: **Dr. Megan Thornton**
Contact details: **megan.t@deakin.edu.au**
(03) 9251 7261

Supervisor's profile
Dr Thornton is a Lecturer in the area of Food Chemistry and Food Analysis in the School of Exercise and Nutrition Sciences. She teaches at an undergraduate level, and is a member of the Centre for Advanced Sensory Science (CASS). Her research involves the analysis and identification of the chemical compounds which make up the aroma of foods, and how these can differ between varieties and over time. This research is strongly related to sensory science and consumer acceptability of foods.

Co-supervisor
Prof Russell Keast

Project is based at: Burwood

Project description
What makes up the smell and taste of a food? Why does smell and taste change over time, especially in the production of off-flavours?
This project seeks to answer just that. You will analyse the aroma of a particular food or beverage (yet to be decided due to our links with industry collaborators), to identify compounds which contribute to the smell of that product, as well as any differences that occur over time. Analysis will be conducted using Gas Chromatography-Olfactory analysis, and results will be linked with sensory analysis being conducted by a current PhD student. This project will develop your skills in the use of GC instrumentation and Olfactometry, as well as your understanding of the link between sensory science and analytical chemistry. This project is ideal for anyone looking for a future in food research or analytical chemistry, sensory science, or in an analytical flavour laboratory.

Methodological approach
Gas Chromatography-Olfactory analysis, using both SAFE and SPME extraction of food aroma.

Necessary skills/knowledge

A basic understanding of Gas Chromatography.

15. PROJECT TITLE: UNDERSTANDING PATTERNS IN DIETARY BEHAVIOURS, LIFESTYLE AND HEALTH AS WE AGE

Principal supervisor: **Dr Catherine Milte**
Contact details: **catherine.milte@deakin.edu.au**
(03) 9246 8280

Supervisor's profile
Dr Catherine Milte is a Lecturer in Nutritional Sciences, and teaches into both undergraduate and postgraduate nutrition courses. Her research focuses on understanding dietary patterns, and investigating how consuming a healthy diet can protect against chronic disease, mental illness and dementia in older age.

Co-supervisors
A/Prof Sarah McNaughton
Dr Katherine Livingstone

Project is based at: Burwood

Project description
Australia has an ageing population and this will have significant economic and social impacts. During older adult life, there are a number of transitions that can lead to substantial lifestyle changes which may directly or indirectly impact on health and people at the age of retirement are a key target group for interventions influencing health behaviour. The risk of chronic disease and dementia increases with age. With Australia's increasing older population, maintenance of health in older age is an important focus for public health intervention. There is some evidence that consumption of a healthy diet may reduce the risk of poor health and chronic disease in older age. However, large-scale studies of diet and lifestyle behaviours in older age in the Australian population are rare.

Potential research projects include:
• Examining influences of retirement and other life milestones on diet and lifestyle behaviours
• Examining associations between lifestyle behaviours, physical and mental health, such as overweight and obesity, depression and cognitive function.
• Understanding socioeconomic differentials in dietary behaviours of older adults

This project will provide the opportunity to develop:
• in-depth knowledge and understanding of nutrition and health concerns in the ageing population
• skills in analyzing, presenting and interpreting population-based health data, particularly dietary intake data
• skills in use of statistical analysis software
• an understanding of the conduct of epidemiological studies

Methodological approach

This project involves secondary analysis of data collected from the Wellbeing, Eating and Exercise for a Long Life (WELL) study. The WELL study is a longitudinal cohort study of 4082 adults aged 55-65 years living in urban and rural areas of Victoria recruited in 2010. Self-report questionnaires were used to collect information on food intake, physical activity, anthropometry and health status in 2010, 2012 and 2014. In 2014, participants also completed a follow-up questionnaire to collect information on self-reported depression symptoms and a subgroup of 745 participants underwent an assessment of memory and cognitive function during a short telephone interview. Analysis approach will be determined depending on the potential project and student's interests.

Necessary skills/knowledge

This project is suited to someone with a background in nutrition, attention to detail and good organisational skills. Some experience in the analysis of data is desirable or a willingness and interest in acquiring these skills. Further training and support will be provided.

16. PROJECT TITLE: INVESTIGATING THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE AND DIETARY INTAKE IN ELITE VS. SUB-ELITE ATHLETES

Principal supervisor: **Dr. Dominique Condo**
Contact details: **dominique.condo@deakin.edu.au**
(03) 9244 5487

Supervisor's profile
Dr. Dominique Condo is a lecturer in sports nutrition. She is an Accredited Practicing Dietitian and Accredited Sports Dietitian, consulting at Geelong Football Club and the WNBL Deakin Melbourne Boomers. Dominique is passionate about nutrition in the athletic population and optimising overall health and wellbeing as well as performance, with a specific interest in team sports. Her current interests include understanding the factors that influence food choice and dietary habits in athletes as well as their beliefs, perceptions and usage of supplementation since the recent events in Australian sport.

Co- supervisor:
Dr Amelia Carr

Amelia's interest is in athletes' performance, and the related implications of applied sports science and nutrition. Her previous research has focused on the performance effects of nutritional supplements, and other interventions such as altitude training, in athletes. She has also performed research for the Australian Army and Australian Navy, in the development of physical performance tests. She completed her PhD in Physiology at the AIS, and has also worked as an applied scientist with the Australian Defence Force.

Project is based at: Burwood

Project description
It is often assumed that elite athletes have a good understanding of nutritional and supplement information that is required to meet their needs and the degree of this knowledge is translated to dietary intake. However the evidence to support this assumption in Australian athletes, in particular AFL/VFL players and female athletes, is limited. In addition, the factors that influence food and supplement choice in athletes as well as their perceptions and beliefs of supplementation are not well documented.
Compared to high profile elite sports in Australia, such as AFL, where there are support staff who provide nutritional advice, sub-elite and less high profile elite sports such as Women's leagues do not receive this same support or information. Little is known about the differences in dietary intake, nutritional and supplement knowledge and factors that influence food choice between these different Australian athletes.
This project will be conducted in collaboration with Geelong Football Club and the WNBL Deakin Melbourne Boomers as is part of a larger project.
The aims of this project include to investigate the differences that exist between elite vs. sub-elite athletes in the:
- Dietary intake compared to requirements
- Level of nutritional knowledge
- Factors influencing food choice

- Relationship between nutritional knowledge and dietary intake in elite and sub-elite athletes

This information gathered from this project is important for practice as it can assist in shaping specialised nutrition education programs at both Geelong Football Club and the WNBL Deakin Melbourne Boomers.

This project will enable the student to develop skills and experience in:

- Analysis and interpretation of dietary data
- Managing large data sets
- An understanding of athletes diets and nutritional knowledge and factors that may contribute to this

Methodological approach

Data is going to be collected from Geelong AFL and VFL players. For this project, you will conduct statistical analysis on this collected data to meet the aims of the project, investigating the dietary intake, nutritional knowledge and the relationship between these two factors in elite vs. sub-elite athletes.

Necessary skills/knowledge

- An interest and knowledge in sports nutrition
- Attention to detail
- Good organisational skills
- Good interpersonal skills
- Some experience in the analysis of data using SPSS or STATA is desirable or a willingness and interest in acquiring these skills. Further training and support will be provided.

17. PROJECT TITLE: USE OF LEGUMES AND VEGETABLES IN NEW FOOD PRODUCTS - HELPING WITH OUR CONSUMPTION??

Principal supervisor: **Dr. Julie Woods**
Contact details: **j.woods@deakin.edu.au**
(03) 9251 7272

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

Co-supervisor
Dr Dana Olstad
Dana is a dietitian and Research Fellow at the Institute for Physical Activity and Nutrition. Her research focusses on the impact of nutrition policies on food environments, and on the dietary behaviours and body weights of children and adults. Of particular priority is to investigate the impact of policies on socioeconomic inequities in dietary behaviours and body weights at a population level, with a goal to narrowing health inequities.

Project is based at: Burwood

Project description
2016 is the Year of the Legume and legumes are now appearing as added value ingredients in a range of new food products. There is also a need for our populations to increase vegetable intake which the inclusion of vegetables in new products will aid. This project will investigate the use of legumes and vegetables in new products in Australia and New Zealand over the past 5 years, the use of nutrition and health claims to promote these products, the price differential between products containing legumes and vegetables and equivalent foods and determine whether these products are in keeping with Australian Dietary Guidelines.

Methodological approach
The project has 2 research questions:
i) Is there a trend in use of legumes and vegetables in processed food products over 5 years?
ii) Is there an association between content of legumes/vegetables and nutrition/health claims, pricing and consistency with the Australian Dietary Guidelines.
Data collection will involve interrogation of and then data extraction from the Mintel Global New Products database.
Data analysis will involve describing the use of legumes/vegetables and analysing the use of claims and pricing on these products as well as profiling them in accordance with Dietary Guideline/Australian Guide to Healthy Eating (AGTHE) recommendations.

Necessary skills/knowledge
Good writing and communication skills
Basic statistical analysis skills

18. PROJECT TITLE: TRENDS IN NEW FOOD PRODUCTS- HOW ARE MANUFACTURERS MEASURING UP?

Principal supervisor: **Dr. Julie Woods**
Contact details: **j.woods@deakin.edu.au**
(03) 9251 7272

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

Co-supervisor
Dr Dana Olstad
Dana is a dietitian and Research Fellow at the Institute for Physical Activity and Nutrition. Her research focusses on the impact of nutrition policies on food environments, and on the dietary behaviours and body weights of children and adults. Of particular priority is to investigate the impact of policies on socioeconomic inequities in dietary behaviours and body weights at a population level, with a goal to narrowing health inequities.

Project is based at: Burwood

Project description
Australian's diets are increasingly comprised of manufactured food and foods eaten away from home. These products are constantly changing, may have excess energy, saturated fat, sugar and salt levels and have significant nutrition and health implications. Public health researchers and practitioners face major complexities in understanding what these changes are and their relationships to diet and health outcomes.
The food processing industry have made a number of commitments and participate in a number of initiatives to improve and optimise the nutritional quality of their food products. This project will compare and critique new product categories, nutritional composition, use of claims and price over the past 15 years as well as specifically compare results from 2015 (from a previous hons project) and 2016 to determine any differences in products, composition, use of claims and price.

Methodological approach

The project has 2 research questions:

i) Is there a trend towards healthier new food products over time?

ii) Is there an association between use of nutrition/health claims, pricing and consistency with the Australian Dietary Guidelines in new food products

Data collection will involve interrogation of and then data extraction from the Mintel Global New Products database.

Data analysis will involve describing the trends in new product release and analysing the use of claims and pricing on new products as well as profiling them in accordance with Dietary Guideline/Australian Guide to Healthy Eating (AGTHE) recommendations.

Necessary skills/knowledge

Good writing and communication skills

Basic statistical analysis skills

19. PROJECT TITLE: MATERNAL CREATINE LOADING CAN PROTECT THE FETUS FROM BRAIN DAMAGE BUT WHAT IS THE OPTIMAL DOSE AND DURATION OF MATERNAL LOADING TO MAXIMISE FETAL TISSUE CREATINE LOADING.

Principal supervisor: **Professor Rod Snow**
Contact details: **rsnow@deakin.edu.au**
(03) 9251 7315

Supervisor's profile
Professor Snow is an internationally recognised expert in creatine metabolism.

Co-supervisor
Dr Paul Della Gatta.
Dr Paul Della Gatta is a post-doctoral researcher in IPAN with extensive biochemical and molecular biology experience.

Project is based at: Burwood

Project description
Creatine is an amino acid derivative, and when phosphorylated (phosphocreatine, PCr) is involved with replenishing ATP without the requirement for oxygen. Creatine is necessary for placental and fetal health. We have shown that when dietary creatine intake is supplemented in pregnant animals, creatine prevents birth asphyxia induced damage to the fetus. The optimum dose and duration of maternal dietary creatine for fetal transfer remains unclear. Whether maternal dietary creatine intake influences placental creatine synthesis is also unknown. The proposed project will aim to establish the lowest dose of dietary creatine that can be delivered to pregnant spiny mice, over the shortest period of gestation to obtain equivalent levels of fetal organ loading known to provide protection against birth asphyxia. The second aim is to establish if maternal dietary creatine supplementation affects levels of placental in vitro creatine synthesis.

Methodological approach
All tissues for this project have been previously collected and stored at Monash Medical Centre. Pregnant spiny mice were maintained on standard chow or fed chow supplemented with 2%, 3% or 5% w/w creatine from 20, 25, 30 or 35 days' gestation. At 37 days gestation (term 38-39 days) placentas and fetal tissues (plasma, brain, heart, liver, kidney, diaphragm and skeletal muscle) were flash frozen in liquid nitrogen and stored at -80 □C. A fluorom
the level of creatine loading in fetal tissues. RT-qPCR will be used to determine the mRNA expression levels of key enzymes (AGAT and GAMT) involved in de novo creatine synthesis in placental samples. Western blotting will be undertaken to determine AGAT and GAMT protein expression in the placenta. Gas Chromatography and Mass Spectroscopy will then be used to determine the in vitro maximal activity rate of the two enzymes (AGAT and GAMT) involved in creatine de novo synthesis in placental samples.

Necessary skills/knowledge
Biochemical and molecular biology skills are desirable.

20. PROJECT TITLE: FAMILY MEALS FOR NUTRITION PROMOTION - A QUALITATIVE STUDY

Principal supervisor: **Dr. Alison Spence**
Contact details: **a.spence @deakin.edu.au**
(03) 9244 5481

Supervisor's profile
Alison is a Lecturer in Nutrition and Population Health, with a passion for promoting the nutrition and health of young children and their families. She teaches into both undergraduate and postgraduate nutrition courses. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, maternal modelling and feeding practices, and family meals.

Co-supervisor
Dr Rachel Laws

Project is based at: Burwood

Project description
Early childhood is a vital time for developing eating patterns and behaviours which are likely to influence health throughout life. Promotion of family meals is a practical strategy to engage parents to improve child nutrition, but there has been no previous qualitative research exploring parents' views of family meals as an opportunity for nutrition promotion.
This project will involve conducting interviews with parents of young children, particularly from low socio-economic backgrounds, in order to assess facilitators and barriers of family meals, and the feasibility of potential strategies to promote family meals.
This project will provide the opportunity to develop:
- Practical skills in undertaking research, such as would be required in a Research Assistant role, including research planning, qualitative interviewing, and engaging with research participants
- Skills in qualitative data analysis
- In depth knowledge of strategies to promote family meals and child nutrition, which will be useful for any future health promotion work related to this topic.

Methodological approach

A qualitative study will be conducted including interviews with 10 - 20 parents of young children. The student will have the opportunity to be involved in a variety of practical aspects of the research, including preparing interview questions, participant recruitment and interviewing, qualitative data analysis and publication of findings.

Necessary skills/knowledge
Applicants should have high-level skills in inter-personal communication, writing, organisation and initiative, should understand the basic concepts of qualitative research, and ideally would have completed at least one unit related to public health nutrition, e.g. HSN302 (Population Nutrition) or HSN210 (Nutrition Promotion).

21. PROJECT TITLE: A LONGITUDINAL STUDY OF FAMILY MEALS AND OPPORTUNITIES FOR NUTRITION PROMOTION

Principle supervisor: **Dr. Alison Spence**
Contact details: **a.spence@deakin.edu.au**
(03) 9244 5481

Supervisor's profile
Alison is a Lecturer in Nutrition and Population Health, with a passion for promoting the nutrition and health of young children and their families. She teaches into both undergraduate and postgraduate nutrition courses. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, maternal modelling and feeding practices, and family meals.

Co-supervisor
Dr Rachel Laws

Project is based at: Burwood

Project description
Early childhood is a vital time for developing eating patterns and behaviours which are likely to influence health throughout life. Promotion of family meals is a practical strategy to engage parents to improve child nutrition, but there have been no previous longitudinal studies examining characteristics of family meals with young children. This project aims to fill this research gap by describing changes in family meal behaviours over two years, in order to understand opportunities for nutrition promotion.
This project will involve secondary analysis using data collected in the Family Meals with Kids Online Study (conducted 2014-2016). There will be some opportunity for the student to determine the particular focus of their work within the available date, for example, to look at socio-economic differences.
This project will provide the opportunity to develop:
- Skills in analysing and interpreting longitudinal data, and presenting this in a way which informs health professionals and researchers
- Skills in critical analysis of nutrition promotion literature
- In depth knowledge of child mealtime behaviours and strategies to promote family meals and child nutrition, which will be useful for any future health promotion work related to this topic.

Methodological approach
An online study of 1000 parents, with 0-5 year old children, was conducted in 2014. Of these, 400 completed the survey again two years later. The analysis will focus on assessing differences and changes in characteristics of family meals over the two year period. Depending on the student's interests, analyses may look at differences between population groups, such as differences by socioeconomic position, residential location or child age.

Necessary skills/knowledge

This project is suited to a student interested in childhood nutrition. Applicants should have high-level skills in writing, organisation, initiative, and attention to detail, as well as confidence with programs like excel. Applicants should understand the basic concepts of quantitative research and critical analysis of literature, be keen to learn about data analysis, and ideally would have completed at least one unit related to public health nutrition, e.g. HSN302 (Population Nutrition) or HSN210 (Nutrition Promotion).

22. PROJECT TITLE: ASSESSING WHETHER YOUNG CHILDREN EAT DIFFERENTLY ON WEEKENDS COMPARED TO WEEKDAYS - INFORMING NUTRITION PROMOTION

Principle supervisor: **Dr. Alison Spence**
Contact details: **a.spence@deakin.edu.au**
(03) 9244 5481

Supervisor's profile
Alison is a Lecturer in Nutrition and Population Health, with a passion for promoting the nutrition and health of young children and their families. She teaches into both undergraduate and postgraduate nutrition courses. Her research focusses on understanding children's dietary behaviours, and investigating practical strategies to promote and improve young children's diet quality, maternal modelling and feeding practices, and family meals.

Co-supervisor
Dr Katie Lacy
A/Prof Sarah McNaughton

Project is based at: Burwood

Project description
As diets of young children are likely to influence their intakes and health throughout life, research into the eating habits of young children is vital. Understanding whether children eat less healthily on the weekends may help to inform nutrition messages for parents, and public health approaches to improve young children's nutrition. This project will examine whether the diets of young children differ between weekdays and weekend days.
This project will involve secondary analysis using data from the Melbourne InFANT Program (2008-2013). This was a novel health promotion trial involving young children, which was then implemented across Victoria as part of the Healthy Together program in 2013-2015. This is the only Australian study with multiple 24 hour recall data available for children under two years of age – the data has been used by FSANZ as well as for multiple publications.
This project will provide the opportunity to develop:
• in-depth knowledge of early childhood nutrition and nutrition promotion for this age group, which will be useful for any future health promotion work related to this topic
• skills in critical analysis of public health nutrition evidence
• skills in analysing and interpreting dietary intake data, and presenting this in a way which informs health professionals and researchers

Methodological approach
Dietary data has been collected via multiple 24 hour recalls for 300-500 children at ages 9 months, 1.5 years, 3.5 years and 5 years. Data from one or more of these age groups will be analysed to determine whether intakes differ between weekdays and weekend days at each age. The analysis will focus on intakes of energy, discretionary foods, and the five food groups. Depending on the student's interests, analyses may

also assess whether any differences are associated with factors such as socioeconomic position.

Necessary skills/knowledge

This project is suited to a student interested in childhood nutrition. Applicants should have high-level skills in writing, organisation, initiative, and attention to detail, as well as confidence with programs like excel. Applicants should understand the basic concepts of quantitative research and critical analysis of literature, and should be keen to learn about data analysis.

23. PROJECT TITLE: EXPLORING THE OPPORTUNITIES TO USE SOCIAL MEDIA FOR PROMOTING OBESITY PREVENTION IN EARLY CHILDHOOD: A CONTENT ANALYSIS OF POPULAR PARENTING FACEBOOK PAGES

Principal supervisor: **Dr Rachel Laws**
Contact details: **r.laws@deakin.edu.au**
(03) 9244 5574

Supervisor's profile
Dr Rachel Laws is a Research Fellow within Institute for Physical Activity and Nutrition. Her research interests include developing and testing obesity prevention interventions in early life including the use of smart phone applications and social media. Rachel has an interest in translating effective interventions into practice and policy.

Co-supervisor
Dr Alison Spence

Project is based at: Burwood

Project description
Social media, in particular Facebook pages, are increasingly being used by parents as a source of information, advice and support on parenting. Social media offers a low cost and scalable means to deliver messages to parents on healthy infant feeding practices and active play, however little is known about how parents engage with these topics on social media and the level of misinformation provided. Social media is seen as a novel yet untested mode of delivering obesity prevention messages to parents.
This project will undertake a qualitative content analysis of a few key parenting Facebook pages to explore how parents discuss topics related to healthy weight gain in young children. This will inform how to engage parents in obesity prevention interventions and the potential for using social media as a form of intervention delivery.

Methodological approach
A qualitative content analysis of selected key parenting Facebook pages will be undertaken to explore:
• How frequently topics and questions related to obesity prevention in young children are discussed by parents, including infant feeding, active play, screen time, growth and overweight and obesity.
• The context in which these topics are raised
• The accuracy and type of information and support offered by other parents and the influence or outcome of peer advice.

This project will provide the opportunity to develop:
• Practical skills in undertaking qualitative research including qualitative data analysis
• In depth understanding of parental views about infant feeding, active play, and screen time and how best to engage parents around healthy lifestyle behaviours for the family
• In depth understanding of how social media could potentially be used to delivery obesity prevention messages/interventions to parents.

Necessary skills/knowledge

Experience in using Facebook

Good organisational and time management skills

No prior knowledge or experience in qualitative research required.

24. PROJECT TITLE: A PRELIMINARY INVESTIGATION INTO AN OMEGA-3 FATTY ACID DPA AND ITS EFFECTS ON INFLAMMATORY MARKERS IN HIGH FAT DIET FED ANIMALS.

Principal supervisor: **Dr Gunveen Kaur**
Contact details: **Gunveen.Kaur@deakin.edu.au**
(03) 9246 8288

Supervisor's profile
Dr Gunveen Kaur is a Lecturer in Nutritional Sciences at the School of Exercise and Nutrition Sciences, Deakin University. Gunveen obtained her PhD in 'Nutrition and Molecular Biology' and her research mainly focuses on fatty acid and lipid metabolism. Gunveen is interested in investigating relationship between nutrition and impairments in muscle metabolism, and how these relate to lifestyle diseases such as obesity and type 2 diabetes. She is particularly interested in a long chain polyunsaturated fatty acid known as Docosapentaenoic acid (DPA), its metabolism and health effects.

Co-supervisor
TBA

Project is based at: Burwood

Project description
Docosapentaenoic acid (DPA) is a long chain n-3 polyunsaturated fatty acid found in our diet through fish and lean red meat. Recent studies have shown that DPA is an important bioactive fatty acid that improves lipid metabolism and reduces inflammation in various cell culture and cancer models. Previous animal studies have shown that after DPA supplementation, DPA accumulates in tissues such as adipose, liver, muscle and heart. However unlike other two well-known omega-3 fatty acids (EPA and DHA), little is known about how DPA supplementation influences the lipid profile, glucose metabolism and inflammatory markers in muscle and liver tissues. We are currently investigating how DPA influences the glucose metabolism and lipid profile of these tissues in animals fed a high fat diet. This honours project will involve analysing blood and tissue samples from these ongoing studies to investigate DPA's effects on serum and tissue inflammatory markers.
This project will provide the student with knowledge in lipid metabolism, skills in animal experimentation in the field of nutrition and lipid metabolism, scientific writing and a possible publication.

Methodological approach
Undertaking this project will involve animal (in vivo) experiments. Our group routinely uses advanced physiological and molecular biology techniques that involve metabolite, protein, RNA and DNA analysis.

Necessary skills/knowledge
An interest in the area of nutritional physiology, metabolism, biochemistry and molecular biology is required. All techniques will be taught as part of honours training.

25. PROJECT TITLE: HEALTHY SNACKS WITH LEGUMES AND HERBS: LOW FAT, HIGH FIBRE AND HIGH PROTEIN

Principal supervisor: **Dr Shirani Gamlath**
Contact details: **shirani.gamlath@deakin.edu.au**
Phone: (03) 9251 7267

Supervisor's Profile:
Dr Shirani Gamlath has actively established a research program on 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.

Co-supervisor
Dr Megan Thornton

Project is based at: Burwood

Project description
In recent years there has been an increased focus on new food structures with reduced fat, salt and sodium contents. The snack food market continues to grow as it accommodates for the current food trends however, the snack food market mainly consists of unhealthy and energy dense food products. Previous studies indicate that legumes can be used to replace starchy cereals and potato flour that have been mostly used in existing snack products. Legumes contain both macronutrients and micronutrients and are one of the plant sources of high protein and essential amino acids. Legumes are also good source of dietary fibre and resistant starch. Herbs are an important food group which contains essential oils, vitamins, antioxidants and many other plants derived nutrient substances. This project focuses on developing functional/heath promoting legume and herbs based snack products and understanding the product characteristics based on physical and nutritional composition.

Methodological approach
• Develop snack products using different combination of legume and herb combinations.
• Determine the best processing condition to develop the product.
• Products will be evaluated based on physical (colour, texture, water solubility) characteristics and consumer acceptability.
• Screen products based on physical and consumer acceptability for nutritional analysis

Necessary skills/knowledge

The student will need to be confident in laboratory skills, to be well organised. All training will be undertaken by Dr Shirani Gamlath but a basic knowledge of product development, laboratory skills and statistical analysis would be useful.

26. PROJECT TITLE: PREDICTORS OF ENERGY DENSITY AMONG PRESCHOOL-AGED CHILDREN

Principal supervisor: **Dr Katie Lacy**
Contact details: **katie.lacy@deakin.edu.au**
(03) 5227 3477

Supervisor's profile
Dr Katie Lacy holds the position of Senior Lecturer in Nutritional Science and is a member of the Institute for Physical Activity and Nutrition (IPAN) within the School of Exercise and Nutrition Sciences. Dr Lacy's primary research interests are children's eating behaviour, childhood obesity, child-feeding strategies and children's fruit and vegetable intakes.

Co-supervisor:
Associate Professor Karen Campbell
Associate Professor Karen Campbell is a senior researcher and unit chair in public health nutrition and obesity prevention. She has a well-developed profile nationally and internationally for her research in the area of maternal and childhood obesity prevention; impacts of parenting and home environments on child lifestyle behaviours; and the design and evaluation of complex interventions. These randomised controlled trials include interventions to promote the development of healthy eating and active play from birth; interventions to reduce children's sodium intake; and interventions that seek to promote healthy gestational weight outcomes. Scalability is a key feature of Karen's research. This is evidenced by the state level adoption of Melbourne InFANT Program, a program that seeks to support families with young children to get healthy eating and active play behaviours embedded from the beginning of life and her current trialling of the Growing health app targeting best practice feeding in the first year of life..

Project is based at: Waurn Ponds

Project description
Childhood obesity is a concern in Australia and strategies to prevent it are needed. One potential strategy that could help to prevent childhood obesity is to reduce dietary energy density. Dietary energy density is the concentration of energy in a portion of food and is usually expressed as kilojoules per gram or kilojoules per 100 grams. Consuming energy-dense foods and beverages (e.g. eating cake instead of fruit or drinking sugary drinks instead of water) may lead to excess energy intake and promote the development of obesity.
The factors early in a child's life that predict the energy density of their diet during the preschool years are not understood. Understanding the factors that influence the development of an energy-dense diet among preschool-aged children is vital for identifying future children who are most likely to be at risk of consuming energy-dense diets and developing appropriate obesity prevention strategies targeting the parents of these children. This project will examine the predictors of dietary energy density among children aged 3.5 years.

Methodological approach
Secondary data analyses will be conducted using data from the Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program. Questionnaire data from when children were ~3, ~9 and ~18 months of age will be used as predictors of energy density at ~3.5 years of age. Energy density will be calculated using data from two or three 24-hour dietary recalls collected from approximately 250 children.
This project will provide the opportunity for the student to develop an understanding of dietary intake among young children. Additionally, the student will learn skills in calculating energy density and using statistical software as well as analysing and interpreting dietary data from children.

Necessary skills/knowledge
This project is suitable for someone with knowledge of nutrition and a willingness and interest in acquiring statistical analysis skills. Attention to detail and good organisational skills are necessary for this project.

27. PROJECT TITLE: DOES A REDUCED CARBOHYDRATE INTAKE MINIMISE THE RISK OF REFEEDING SYNDROME IN AN ADOLESCENT INPATIENT EATING DISORDER PROGRAM?

Principal supervisor **A/Prof. Tim Crowe**
Contact details: **tim.crowe@deakin.edu.au**
(03) 9251 7266

Supervisor's profile:
Tim is a nutrition academic and Accredited Practising Dietitian. He teaches across the undergraduate and postgraduate programs in nutrition dietetics in the areas of nutritional physiology and biochemistry as well as the applied role of nutrition in disease prevention and management, particularly obesity, diabetes and cancer. He is actively involved in several areas of nutrition research including specialised nutrition in the prevention of surgical complications; malnutrition identification; and nutrition support in wound healing.

Co-supervisor
Dr Rachel Duckham

Project is based at: Burwood

Project description
Weight restoration is an essential part of recovery from anorexia nervosa. Historically a low calorie approach has been used to minimise the risk of patients developing refeeding syndrome. Refeeding syndrome is a potentially life threatening, complex condition that occurs as a result of electrolyte and fluid shifts that may occur due to refeeding.
Under feeding a malnourished adolescent can be just as risky as overly aggressive refeeding and these approaches have recently been linked to poor weight gain and prolonged length of stay. While aggressive feeding in mild to moderately malnourished patients is safe, there is limited data available about the effect of nutrient content on refeeding outcomes. Though reduced carbohydrate feeding has been suggested as a means to reduce risk of refeeding syndrome, to date this hypothesis has not been tested.

Methodological approach
This project (based at Austin Health) aims to determine if a low carbohydrate aggressive feeding protocol reduces the risk of refeeding syndrome in an adolescent inpatient eating disorder program. Over a 12-month period, patients will be randomised to receive either a standard carbohydrate feeding plan based on the Australian Guide to Healthy Eating (50-60% energy from carbohydrate) or a low carbohydrate feeding plan (<45% energy from carbohydrate). The following data will be collected on all participants for the duration of their inpatient stay; age, gender, eating disorder diagnosis, length of stay, percentage of expected body weight on admission, anthropometric data, nutritional intake, weight changes, phosphate levels and use of phosphate supplementation.

Necessary skills/knowledge

Dietary analysis, IT skills, understanding of the role of nutrition in disease, and the ability to work in a hospital environment as part of a medical research team. This work will be performed within the Nutrition and Dietetics Department, Austin Health.

28. PROJECT TITLE: TOPICS IN CONSUMER SCIENCE & FOOD CHOICE BEHAVIOUR

Principal supervisor: **Dr Sara Cicerale**
Contact details: **sara.cicerale@deakin.edu.au**
(03) 9251 7282

Supervisor's profile
Dr Cicerale's research interests include: Consumer and Sensory Science and Consumer Food Choice Behaviour.

Co-supervisor
Prof Russell Keast
Dr Gie Liem

Project is based at: Burwood

Project description
Projects will center around the investigation of consumer and sensory science-related factors that influence consumer food choice and behaviour. For example, is there a relationship between how important a person perceives the taste of food to be and their food choice and consumption?

Methodological approach
You may be involved in either:
a) The organisation and management of a survey/laboratory-based consumer/sensory study, from data collection through to analysis and interpretation.
b) Secondary analysis of previously collected data and interpretation of this data.
You will be part of the CASS team that includes multiple PhD students and researchers.

Necessary skills/knowledge
Excellent work ethic and time management skills, ability to work independently and as part of a team, and an interest in consumer and sensory science.

29. PROJECT TITLE: A CRITICAL ANALYSIS OF THE HEALTHY FOOD PARTNERSHIP

Principal supervisor: **Mark Lawrence**
Contact details: **lawrence@deakin.edu.au**
(03) 9244 3789

Supervisor's profile
Mark is a public health nutritionist with over 30 years experience in food policy. He is actively involved in public health nutrition research analysing the development of policies and programs, such as the Dietary Guidelines, designed to protect and promote the nutritional health of populations. He is particularly interested in how and why evidence is used in food sustainability and food systems policy research. Mark has published the equivalent of over 80 scientific papers and currently is an investigator on 5 research projects totaling over $6million. He is an advisor to the WHO and FSANZ, a member of the Commonwealth Department of Health's NRV advisory committee, and a former member of the NHMRC's Dietary Guidelines working committee.

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

Project is based at: Burwood

Project description
In 2009 the Federal Government established the Food and Health Dialogue (the Dialogue) as a public-private partnership to help promote healthy eating in Australia. The Dialogue lapsed in 2015 without strong evidence of achieving public health benefits. In November 2015, the government announced a successor to the Dialogue, the 'Healthy Food Partnership.' Public health experts are raising important questions about the governance of the Partnership (and previous Dialogue) and whether better options are available to promote healthy and sustainable eating. For example, the Health Star Rating system is one component of the Partnership and it has been criticised for rewarding certain junk foods with higher number of stars than nutritious 5 food group foods. This project is a critical analysis of the Partnership (and Dialogue) with the aim of gaining insights and learning lessons for improving food and nutrition policy making in Australia to formulate policies to protect and promote public health.

Methodological approach
The methodological approach for this project is 'critical policy analysis'. This approach will involve a case study research design: The Healthy Food Partnership being the case.
Data collection will involve text and key informant interviews

Data analysis will involve thematic analysis of collected data against a schema of health promotion paradigms.

Necessary skills/knowledge

Good writing and communication skills

Qualitative research skills competency will be a strong advantage though not essential.

30. PROJECT TITLE: INFANT FEEDING PRACTICES AMONG MOTHERS OF VARIOUS ETHNIC GROUPS COMPARED TO AUSTRALIAN-BORN MOTHERS CURRENTLY LIVING IN AUSTRALIA

Principal supervisor: **Dr Karen Campbell**
Contact details: **karen.campbell@deakin.edu.au**
(03) 52278414

Supervisor's profile
Karen Campbell is a senior researcher and unit chair in population nutrition and obesity prevention. She has a well-developed profile nationally and internationally for her research in the area of childhood obesity prevention; impacts of parenting and home environments on child lifestyle behaviours; and the design and evaluation of complex interventions. These randomised controlled trials include interventions to promote the development of healthy eating and active play from birth; interventions to reduce children's sodium intake; and interventions that seek to promote healthy gestational weight outcomes. Scalability is a key feature of Karen's research. This is evidenced by the state level adoption of Melbourne InFANT Program, a program that seeks to support families with young children to get healthy eating and active play behaviours embedded from the beginning of life.

Co-supervisors
Dr. Kirsty Bolton
Kristy is a researcher and unit chair in obesity prevention. Her research focuses on obesity prevention; particularly in infants, children and adolescents. Kristy has been involved in evaluating a large scale multi-setting, multi-site community-based obesity prevention intervention in Victoria; she has examined the relationship between dietary behaviours and health-related quality of life in adolescents by geographic locale; and was involved in mapping and evaluating community-based obesity prevention initiatives across Australia. She is currently working with Karen and other IPAN colleagues investigating infant feeding practices and the subsequent risk of overweight and obesity.

Project is based at: Burwood or Geelong. Note that this project may be led by Associate Professor Karen Campbell or Dr Kristy Bolton and meetings will be held via skype and in Geelong.

Project description
Australia has a large immigrant population (28.2%)[i]. The prevalence of overweight and obesity in Australian children is high (25.1% of children aged 2-17 years)[ii], however little is known about prevalence or predictors in ethnic subgroups. A number of factors have been associated with rapid weight gain in infancy and later obesity such as early feeding practices and maternal factors. Data on the rates of breastfeeding, formula feeding and timing of introducing solids to infants with various ethnic backgrounds living in Australia is scarce or outdated. This project will examine

infant feeding practices in infants of mothers from a key immigrant ethnic group compared to infants of mothers born in Australia. This project will investigate potential obesity promoting behaviours (e.g. early introduction of solids, high use of infant formula) in immigrant populations to identify opportunities to improve early infant nutrition and establish health promoting behaviours early in life.

This project will involve secondary analysis using data from the Australian National Infant Feeding Survey ((NIFS) 2010-2011)[iii], a large scale, national survey of infant feeding practices and behaviours.

This project will provide the opportunity to develop:

- in-depth knowledge on feeding practices in early infancy and nutrition promotion in early childhood
- skills in critical analysis of public health nutrition evidence
- skills in analyzing, presenting and interpreting data

Methodological approach

In 2010-2011 The Australian Institute of Health and Welfare conducted The Australian National Infant Feeding Survey (NIFS). This was a national survey of infant feeding practices and behaviours (e.g. prevalence and duration of breastfeeding, feeding practices, and the barriers to initiating and continuing breastfeeding) with infants 0-24 months of age. Demographic information collected included mother and spouse. Data from the largest maternal immigrant ethnic group in the dataset will be examined to compare infant feeding practices to infants of Australian-born mothers living in Australia. Depending on the student's interests, analyses may also assess whether any differences are associated with other maternal and spousal demographic factors (e.g. socioeconomic status). Additionally, the findings will be compared to breastfeeding and timing of the introduction of solids recommendations.

Necessary skills/knowledge

This project is suited to a student interested in early infant feeding practices (breastfeeding, infant formula, other liquids, solids; and timing of the introduction of these foods). It will require good organisational skills, attention to detail and confidence with programs like excel. Previous experience in data analysis is desirable but not essential, though the student should understand basic statistics and be keen to learn about data analysis.

31. PROJECT TITLE: BREASTFEEDING INTENTIONS, SUPPORT AND REASONS FOR CESSATION IN MOTHERS OF VARIOUS ETHNIC GROUPS COMPARED TO AUSTRALIAN-BORN MOTHERS CURRENTLY LIVING IN AUSTRALIA

Principal supervisor: **Dr Karen Campbell**
Contact details: **karen.campbell@deakin.edu.au**
(03) 52278414

Supervisor's profile
Karen Campbell is a senior researcher and unit chair in population nutrition and obesity prevention. She has a well-developed profile nationally and internationally for her research in the area of childhood obesity prevention; impacts of parenting and home environments on child lifestyle behaviours; and the design and evaluation of complex interventions. These randomised controlled trials include interventions to promote the development of healthy eating and active play from birth; interventions to reduce children's sodium intake; and interventions that seek to promote healthy gestational weight outcomes. Scaleability is a key feature of Karen's research. This is evidenced by the state level adoption of Melbourne InFANT Program, a program that seeks to support families with young children to get healthy eating and active play behaviours embedded from the beginning of life.

Co-supervisor
Dr Kirsty Bolton
Kristy is a researcher and unit chair in obesity prevention. Her research focuses on obesity prevention; particularly in infants, children and adolescents. Kristy has been involved in evaluating a large scale multi-setting, multi-site community-based obesity prevention intervention in Victoria; she has examined the relationship between dietary behaviours and health-related quality of life in adolescents by geographic locale; and was involved in mapping and evaluating community-based obesity prevention initiatives across Australia. She is currently working with Karen and other IPAN colleagues investigating infant feeding practices and the subsequent risk of overweight and obesity.

Project is based at: Burwood or Geelong. Note that this project may be led by Associate Professor Karen Campbell or Dr Kristy Bolton and meetings will be held via skype and in Geelong.

Project description
Australia has a large immigrant population (28.2%)[iv]. The prevalence of overweight and obesity in Australian children is high (25.1% of children aged 2-17 years)[v], however little is known about prevalence or predictors in ethnic subgroups. A number of factors have been associated with rapid weight gain in infancy and later obesity such as early feeding practices (supplementation or substitution of breast milk with formula) and maternal factors. This project will investigate the mothers' breastfeeding intentions, the reasons why mothers discontinue breastfeeding and the level of spousal and other support for breastfeeding in infants of mothers from a key immigrant ethnic group compared to infants of mothers born in Australia. The project will also

examine whether maternal breastfeeding intentions predict breastfeeding practice. This project will identify opportunities to improve breastfeeding support and duration; and hence enhance early infant nutrition in various ethnic groups.

This project will involve secondary analysis using data from the Australian National Infant Feeding Survey ((NIFS) 2010-2011)[vi], a large scale, national survey of infant feeding practices and behaviours.

This project will provide the opportunity to develop:

- in-depth knowledge on feeding practices in early infancy and nutrition promotion in early childhood
- skills in critical analysis of public health nutrition evidence
- skills in analyzing, presenting and interpreting data

Methodological approach

In 2010-2011 The Australian Institute of Health and Welfare conducted The Australian National Infant Feeding Survey (NIFS). This was a national survey of infant feeding practices and behaviours (e.g. prevalence and duration of breastfeeding, feeding practices, and the barriers to initiating and continuing breastfeeding) with infants 0-24 months of age. Demographic information collected from the mother and spouse. Data from the largest maternal immigrant ethnic group in the dataset will be examined to compare maternal breastfeeding intentions (prior to birth and reasons for breastfeeding), spousal support, and reasons for breastfeeding cessation to that of infants of Australian-born mothers living in Australia. Additionally, this project will also examine whether maternal breastfeeding intentions predict breastfeeding practice. Depending on the student's interests, analyses may also assess whether any differences are associated with other maternal and spousal demographic factors (e.g. socioeconomic status).

Necessary skills/knowledge

This project is suited to a student interested in early infant feeding practices (e.g. breastfeeding, infant formula). It will require good organisational skills, attention to detail and confidence with programs like excel. Previous experience in data analysis is desirable but not essential, though the student should understand basic statistics and be keen to learn about data analysis.

EXERCISE AND SPORT SCIENCE PROJECTS H442

32 PROJECT TITLE: SLEEPING WITH ONE EAR OPEN I: HOW WORKING 'ON-CALL' IMPACTS OVERNIGHT STRESS LEVELS IN LABORATORY SETTINGS.

Principal supervisor: **Dr Brad Aisbett**
Contact details: **brad.aisbett@deakin.edu.au**
(03) 9244 6474

Supervisor's profile
My research uses exercise science research to enable workplaces to promote and preserve the health and safety of workers in physically demanding occupations, such as firefighters, soldiers and construction workers. In the past five years, I have worked with over 20 separate organizations across eight Australian states and territories in the areas of job-specific fitness, hydration, and fatigue. In that time I have published 37 journal articles (including 11 with my honours students) that have helped inform policy and practice for fire and emergency service agencies across Australia. The research performed by my previous honours students has been recognized through awards from Deakin University, Exercise and Sports Science Australia, The Physiological Society (UK), and the National Heart Foundation.

Co-supervisor
Dr Sarah Jay
Dr Grace Vincent

Project is based at: Burwood

Project description
The project will evaluate whether participants experience increased stress levels, as measured by pre-bedtime and overnight measures of stress, when they are expecting to be woken overnight by an alarm or 'call'.

The project is part of a larger, federally-funded research project investigating whether our 'on-call' workers (e.g., firefighters, SES volunteers, doctors, etc.) actually sleep well when they 'know' they could get called overnight. At present, two-million Australians are on-call providing essential 24-hour services. Right now we assume that all sleep is created equal, but some workers report feeling less rested after an on-call night, regardless of whether they have been called or not. The honours project will help the research team determine if on-call workers are actually under more stress when on-call and whether this stress negatively affects their sleep. If participants' stress levels are higher when waiting for an overnight call, then workplaces need to consider revising their fatigue management systems for on-call workers.

Methodological approach
The honours student would work as a part of a larger research team. Data collection would happen across four trips (all flights and accommodation would be paid for by the research team) at the Appleton Institute sleep laboratory in Adelaide, South Australia. During data collection, the student would help the team collect a variety of physiological measures, including overnight measures of stress and sleep, and daytime measures of mental performance. Between data collection trips, the student would focus their analysis on measures of stress. Data analysis, writing and face-to-face meetings would primarily occur at the Deakin University Burwood Campus.

The skills and knowledge attained through working on the honours project would be applicable to a range of employment and further education contexts. Specifically, the understanding, measurement and analysis of sleep and stress markers would provide good grounding for future work in the occupational health and safety teams of organisations where shift-work is common. Further, sleep and stress measurements are becoming increasingly prevalent in elite sport. Finally, the honours experience provides an excellent grounding for future research training through masters or PhD pathways.

Necessary skills/knowledge
It is desirable (but not essential) for the selected student to have

- An interest in applying exercise science knowledge to occupational settings;
- An interest in sleep physiology / circadian rhythms;
- Good communication and organisational skills; and
- Some understanding of statistical techniques

33 PROJECT TITLE: SLEEPING WITH ONE EAR OPEN II: HOW WORKING 'ON-CALL' IMPACTS OVERNIGHT STRESS LEVELS IN FIELD SETTINGS.

Principal supervisor: **Dr Brad Aisbett**
Contact details: **brad.aisbett@deakin.edu.au**
(03) 9244 6474

Supervisor's profile
My research uses exercise science research to enable workplaces to promote and preserve the health and safety of workers in physically demanding occupations, such as firefighters, soldiers and construction workers. In the past five years, I have worked with over 20 separate organizations across eight Australian states and territories in the areas of job-specific fitness, hydration, and fatigue. In that time I have published 37 journal articles (including 11 with my honours students) that have helped inform policy and practice for fire and emergency service agencies across Australia. The research performed by my previous honours students has been recognized through awards from Deakin University, Exercise and Sports Science Australia, The Physiological Society (UK), and the National Heart Foundation.

Co-supervisor
Dr Anne Turner

Project is based at: Burwood

Project description
The project will evaluate the impacts that working 'on-call' has on the sleep and the stress physiology of fire and emergency service workers.

The project is part of a larger, federally-funded research project investigating whether our 'on-call' workers (e.g., firefighters, SES volunteers, doctors, etc.) suffer impaired sleep and elevated stress levels whilst waiting for an overnight call. Our previous research suggests that our fire and emergency workers 'feel' more stressed during periods of on-call work and believe that they don't sleep as well. The honours project will help the research team determine if on-call work actually disturbs sleep and stress physiological responses for fire and emergency service duty co-ordinators. These workers are responsible for making decisions about when, where and the number of resources that should be deployed to an emergency response. These decisions often occur after the duty co-ordinator has been woken up (by a pager or phone-call) and yet must be made quickly and precisely. If our study finds that stress levels are higher and sleep is lower when waiting for an overnight call, then their workplaces need to consider revising their policies to protect the occupational health and safety of this important work group.

Methodological approach
The honours student would work as a part of a larger research team. The student could have the opportunity to recruit duty co-ordinators from across Australia to add to the existing, but as yet, not-analyzed bank of sleep and stress physiology data already collected. The student will learn to analyse duty co-ordinators' sleep data (collected using wrist-worn activity monitors) and cortisol levels from saliva samples. Data analysis, writing and face-to-face meetings would primarily occur at the Deakin University Burwood Campus.

The skills and knowledge attained through working on the honours project would be applicable to a range of employment and further education contexts. Specifically, the understanding, measurement and analysis of sleep and stress markers would provide good grounding for future work in the occupational health and safety teams of organizations where shift-work is common. Further, sleep and stress measurements are becoming increasingly prevalent in elite sport. Finally, the honours experience provides an excellent grounding for future research training through masters or PhD pathways.

Necessary skills/knowledge
It is desirable (but not essential) for the selected student to have
- An interest in applying exercise science knowledge to occupational settings;
- An interest in sleep or stress physiology;
- Good communication and organisational skills; and
- Some understanding of statistical techniques.

34 PROJECT TITLE: UNDERSTANDING THE ROLE OF LIPID METABOLISM IN REGULATING SKELETAL MUSCLE AND MITOCHONDRIAL FUNCTION.

Principal supervisor: **Dr. Clinton Bruce**
Contact details: **clinton.bruce@deakin.edu.au**
(03) 9244 6684

Supervisor's profile
Our research group is focused on understanding the regulation of carbohydrate and lipid metabolism in skeletal muscle and liver. Within this broad area, we have two themes: 1) understanding and defining the mechanisms which contribute to impaired glucose metabolism in obesity, insulin resistance and type 2 diabetes; and 2) examining the role of lipids in regulating skeletal muscle function.

Co-supervisors
Dr Ahrathy Selathurai
Dr Chris Shaw

Project is based at: Burwood

Project description
Skeletal muscle represents ~40% of total body mass, making it the largest organ in the body. Muscle is composed of different fibre types which vary in their contractile and metabolic properties. As muscle function is in part regulated by its fibre composition and size, it is critical to gain a better understanding of what controls these factors. Using mouse models, we have identified a lipid metabolic pathway that is involved in regulating muscle mass, mitochondrial content, oxidative capacity and muscle performance. Importantly we have shown this same pathway is altered in muscle from human patients with Duchenne muscular dystrophy, highlighting the clinical importance of this pathway in muscle pathology. To gain further insight into this pathway, key regulatory enzymes will be genetically modified (over-expressed and knocked out) to examine effects on muscle function, mitochondrial content and metabolic responses.

Methodological approach
Undertaking this project will involve animal (in vivo) experiments. Our lab routinely uses advanced physiological, biochemical (metabolomics/lipidomics/flux analysis) and molecular biology techniques that involve metabolite, protein, RNA and DNA analysis. We also use a broad range of imaging/microscopy techniques as well as approaches to manipulate gene expression in skeletal muscle of mice.

Necessary skills/knowledge

Course work in exercise physiology/metabolism, biochemistry and/or molecular biology. All laboratory techniques will be taught to the student as part of the honours training.

35 PROJECT TITLE; MENTAL TOUGHNESS, SELF-EFFICACY AND MOTIVATION IN COMPETITIVE TRIATHLETES

Principle supervisor: **Dr Fraser Carson**
Contact details: f.carson@deakin.edu.au
(03) 52272388

Supervisor's profile
Dr Fraser Carson
I am a lecturer in sport coaching, with over fifteen years delivering coach education and psychological skills training to high performance athletes and coaches. I have previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. I have a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

Co-supervisor
Dr Peter Kremer
I am a senior lecturer in sport and exercise behaviour with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. I have 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.

Project is based at: Waurn Ponds

Project description
Mental toughness refers to an individual's resilience and inner drive to succeed – especially in challenging situations. It is a collection of values, attitudes, behaviours and emotions that enable a performer to persevere and overcome obstacles, adversity or pressure (Nicholls et al., 2015). Further it is the ability to maintain concentration, focus and motivation when things are going well to consistently achieve goals (Gucciardi & Gordon, 2011). There are some key characteristics of mentally tough individuals (Clough et al. 2002): a) the capacity to remain calm and relaxed; b) to regulate lower anxiety levels; c) higher levels of self-belief; d) an inner confidence that they will be successful; and e) and a capacity to remain unaffected by competition or adversity.
There are over 12,000 individual members of Triathlon Australia and over 185 triathlon clubs affiliated with the organisation. There are also over 120 sanctioned triathlon events in Victoria each year, with participation numbers rapidly increasing each year. However, there is little evidence about the factors that motivate and drive people to participate in triathlon racing. The purpose of this study is to explore elite junior and competitive senior triathletes' mental toughness, the belief in their ability and levels of intrinsic and extrinsic motivation.

Methodological approach
Participants will be recruited with the assistance of Triathlon Victoria and include ~45 adolescent athletes from the Triathlon Victoria Performance and Development Program. All participants will complete three online standardised questionnaires in order to assess their mental toughness, self-efficacy and motivation. Mental toughness will be assessed using the MTQ48. The 10-item General Self-Efficacy Scale (GSE) will be used to assess self-efficacy. The Sport Motivation Scale-6 (SMS-6) will be used to assess sport motivation in the present study. Descriptive analysis will be conducted on these responses, followed by a regression analysis to establish relationships among variables using Baron and Kenny's procedures for mediation analysis.

Necessary skills/knowledge
Some knowledge of analysing quantitative survey tools would be useful but not essential

36 PROJECT TITLE: COACH MENTAL HEALTH AND WELLBEING

Principal supervisor: **Dr Fraser Carson**
Contact details: **f.carson@deakin.edu.au,**
(03) 52272388

Supervisor's 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.

Co-supervisor
Dr Julia Walsh
Julia is a senior lecturer in sport coaching on the Burwood campus. Her expertise is in coach development, communication, and mentoring. She has been instrumental in shaping coach education macro structures in the UK. Current research includes understanding issues of health and wellbeing in a sport coaching population, and coach education signature pedagogies.

Project is based at: Waurn Ponds

Project description
Despite the increase in resources within sport designed to focus on mental health and wellbeing, sports coaches as a population have been relatively overlooked. There is an expectation for coaches to continuously perform at a high level and dedicate as much time as is required to the development of their athletes, with particular emphasis on results. Coaches are regularly performing in highly stressful environments and can spend up to 20 hours per day planning, analysing, strategizing, and performing. Currently no provision is made for them to manage their own mental health and wellbeing. Further little support is made from the sporting organizations / clubs to ensure they are able to continually perform at their peak. The coach's role is generally highly stressful and under constant scrutiny from a wide range of sources (athletes; senior managers; supporters; board of directors; sponsors; etc.). In order to allow for coaches to constantly perform at their best we need to provide opportunity for them to 1) manage their own mental health and wellbeing; and 2) be supported by their organisation in promoting positive mental health initiatives. The focus of this project is to provide the first stage of this assessment and to obtain an understanding of the psychological and social factors that impact coaches' mental health and wellbeing.

Methodological approach
Participants will complete an online survey questionnaire that will include a number of validated scales. An overall measure of wellbeing will be measured using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWS); level of stress will be measured by the

Perceived Stress Scale (PSS); and Ryff's Psychological Well-Being Scale (PWB) will be used to measure social and psychological measures of health related behaviours. Initially a descriptive analysis will be conducted to examine the main findings in relation to psychological and social factors that impact coach mental health and wellbeing, followed by a subgroup analysis to identify differences between sports, coach experience, and level of performance.

Necessary skills/knowledge

Some knowledge of analysing quantitative survey tools would be useful but not essential

37 PROJECT TITLE: A NOVEL EXERCISE REHABILITATION PROGRAM, LOAD MONITORING, AND ITS IMPACT ON WELLBEING AND FUNCTION IN CLIENTS WITH LOW BACK PAIN

Principal supervisor: **A/Prof. Daniel Belavy,**
Contact details: **d.belavy@deakin.edu.au**
(03) 9244 6606

Supervisor's profile:
After posts at The University of Queensland, Charité University Medical School in Berlin, Germany, A/Prof Daniel Belavy joined Deakin in 2014. His work in the last 10 years has focused on the impact of exercise and disuse on muscle, bone, neuromuscular function and the intervertebral disc. At Deakin, his work focusses on exercise, the spine and back pain.

Co-supervisors
Dr Clint Miller
Dr. Clint Miller has been an Accredited Exercise Physiologist in private practice for over 10 years and has worked predominately with musculoskeletal injury and disease. His research is focused on the use of clinical exercise for improvements in physical function, performance, body composition, and work productivity in adults with musculoskeletal and cardiometabolic disease. He is interested in the relationship between lifestyle related factors, exercise participation and its influence on measures of physical function and performance with a particular emphasis on ADL's including those related to occupational demands.

Project is based at: Burwood

Project description
This honours project is to be conducted as part of a larger study investigating the impact of two different rehabilitation programs for recovery of musculoskeletal injury. In this study, patients will be treated for 6 months and adaptations in a series of body systems such as muscle and disc changes (via magnetic resonance imaging scanning), muscle strength, performance and endurance, spine bone density, body composition, and the assessment of how muscle activation occurs in the brain will be investigated.

Methodological approach
This honours project will look at how measures of perceived wellbeing change over the course of the two different rehabilitation programs. Similar to load monitoring in sport, fortnightly training, mood and pain data will collected using the athlete monitoring software "Smartabase". In addition to this, questionnaire data about participant's injury and its impact on their work and quality of life will be collected at baseline, 3 months and 6 months. This data will be compared to available physiological and functional outcomes data.

Necessary skills/knowledge
An interest in exercise rehabilitation would be valuable and an appreciation for various athlete monitoring techniques.

38 PROJECT TITLE: CAN EXERCISE IMPACT THE INTERVERTEBRAL DISC AND VERTEBRAL BODY?

Principal supervisor: **A/Prof. Daniel Belavy,**
Contact details: **d.belavy@deakin.edu.au**
(03) 9244 6606

Supervisor's profile
After posts at The University of Queensland, Charité University Medical School in Berlin, Germany, A/Prof Daniel Belavy joined Deakin in 2014. His work in the last 10 years has focused on the impact of exercise and disuse on muscle, bone, neuromuscular function and the intervertebral disc. At Deakin, his work focusses on exercise, the spine and back pain.

Co-supervisors
Dr Timo Rantalainen
Dr Timo Rantalainen joined Deakin in August 2013 as a lecturer in biomechanics from the Department of Health Sciences, University of Jyväskylä, Finland. He completed his PhD (2010) at The University of Jyväskylä, Finland. Since January 2014 Dr Rantalainen has worked on an Alfred Deakin Postdoctoral Research Fellowship on effects of dual-task training program on dual-task gait performance. His work has been mainly on estimating lower body skeletal loading with methods varying from examining cross-sectional associations to flexible multibody dynamics full-body modelling. During his PhD, and post-doctoral research he has acquired skills in implementing various image analysis methods, which will be applied in developing computer-assisted segmentation methods to be used in this honours project.

Project is based at: Burwood

Project description
Back pain is a major source of disability. Understanding the impact of exercise on the spine will help us advise the community on back health. There are animal and in vitro studies which can help to guide us. Ironically, however, there have been only limited numbers of studies investigating the impact of exercise on different tissues of the spine, such as the intervertebral disc and vertebral body. Such studies have been performed on for muscle a number of times over the years, but why not for tissues such as the vertebral body and disc? The reason for this is that quantifying these structures can be difficult. Magnetic resonance imaging (MRI) offers a number of tools to investigate the IVD. The aim of this project is to, for the first time; conduct an interventional exercise study on the impact of different loading protocols on the disc and vertebral body.

Methodological approach
Your project will be conducted as part of an exercise intervention study, begun in 2015 with the tail end of data collection to occur in 2017. Two types of exercise intervention 'core muscle' training and 'general trunk strengthening' were implemented. Magnetic resonance imaging will be used for quantifying the structures of the spine. The honours

student will assist in data collection, and will analyse a sub-section of the overall MR-data for their honours thesis

Necessary skills/knowledge
Interest in research

39 PROJECT TITLE: IS INDIVIDUAL VENTILATORY THRESHOLD AFFECTED BY METABOLIC PROFILE?

Principal supervisor: **Dr Clint Miller,**
Contact details: **c.miller@deakin.edu.au**
(03) 9244 6605

Supervisor's profile
Dr Clint Miller has been an Accredited Exercise Physiologist in private practice for over 10 years and has worked predominately with musculoskeletal injury and disease. His research is focussed on the use of clinical exercise for improvements in physical function, performance, body composition, and work productivity in adults with musculoskeletal and cardiometabolic disease. He is interested in the relationship between lifestyle related factors, exercise participation and its influence on measures of physical function and performance with a particular emphasis on ADL's including those related to occupational demands.

Co-supervisor
Dr Steve Fraser

Project is based at: Burwood

Project description
Around one quarter of Australians are classified as obese. Further, there is evidence of an acceleration in prevalence of those approaching Class III obesity (body mass index, BMI ≥ 40 kg·m-2), compared to overweight and moderately obese individuals (BMI 25-34.9 kg·m-2). These individuals are at a higher risk of developing metabolic and cardiovascular disease compared to those with overweight and grade I obesity. VO2max or VO2peak are used extensively as a measure of fitness and physical function, however many activities of daily living only require submaximal workloads below ventilatory threshold. Some evidence shows that ventilitory threshold is lower in T2D compared with otherwise healthy obese adults with comparable VO2max. This study aims to determine which metabolic parameters are associated with alterations in individual ventilatory threshold in obese individuals.

Methodological approach
This Honours project is part of a larger study in collaboration with the Baker IDI Heart and Diabetes Institute and will investigate whether which markers of metabolic health are associated with individual ventilatory threshold in severely obese women.

Necessary skills/knowledge
Interest in research.

40 PROJECT TITLE: EXERCISE REHABILITATION FOR BACK PAIN

Principal supervisor: **Dr Clint Miller,**
Contact details: **c.miller@deakin.edu.au**
(03) 9244 6605

Supervisor's profile
Dr Clint Miller has been an Accredited Exercise Physiologist in private practice for over 10 years and has worked predominately with musculoskeletal injury and disease. His research is focussed on the use of clinical exercise for improvements in physical function, performance, body composition, and work productivity in adults with musculoskeletal and cardiometabolic disease. He is interested in the relationship between lifestyle related factors, exercise participation and its influence on measures of physical function and performance with a particular emphasis on ADL's including those related to occupational demands.

Co-supervisor
A/Prof Daniel Belavy
After posts at The University of Queensland, Charité University Medical School in Berlin, Germany, A/Prof Daniel Belavy joined Deakin in 2014. His work in the last 10 years has focused on the impact of exercise and disuse on muscle, bone, neuromuscular function and the intervertebral disc. At Deakin, his work focusses on exercise, the spine and back pain.

Project is based at: Burwood

Project description
Chronic lower back pain is the most common cause of job-related disability and a leading contributor to absenteeism. The best form of rehabilitation and how it modifies disc function has not been clearly elucidated. This honours project is part of a larger study investigating the impact of an exercise physiologist led approach versus physiotherapy treatment for low back pain. In this study, patients will be treated for 6 months and adaptations n a series of body systems such as muscle and disc changes (via magnetic resonance imaging scanning), muscle strength, performance and endurance, spine bone density, body composition, and muscle activation will be investigated. Specifically for this honours project, depending on your interests, we will define what aspects of the data you examine.

If you are interested in musculoskeletal rehabilitation in your career, this project will give you additional skills and enable you to distinguish yourself from others in the workforce

Methodological approach
This study is part of a randomised controlled trial which started in 2015 comparing an exercise physiologist led rehabilitation program to traditional physiotherapy treatment. Key outcome measures collected include magnetic resonance imaging (MRI) and functional measures of physical performance.

Necessary skills/knowledge
Interest in research

41 PROJECT TITLE: MINUTE BY MINUTE: COACHING BEHAVIOURS AT THE PROFESSIONAL LEVEL THAT COUNT.

Principal supervisor: **Dr. Julia Walsh**
Contact details: **julia.walsh@deakin.edu.au**
(03) 9246 8729

Supervisor's profile
Julia is a senior lecturer in sport coaching on the Burwood campus. Her expertise is in coach development, communication, and mentoring. She has been instrumental in shaping coach education macro structures in the UK. Current research includes an investigation of knowledge transfer from one generation of coaches to the next with Basketball Victoria.

Co-supervisor
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

Project is based at: Burwood

Project description
This research aims to identify coaching behaviours that enhance or reduce the quality of training outputs. The training environment is the basic building block for performance and it is a complex task to ensure players are ready to compete at their best for an event or for the start of the competitive season. Effective coaches prepare training down to the minute and integrate many factors into their training plan and session, for example, player development needs, game tactics and strategy, psychological preparation, culture and team building, and recovery. There are examples of coaches who plan their communication and teaching strategies. Every minute is valued in the high performance training environment. There is a cost for losing minutes in training or trying to catch up on training minutes, for example, reduction in recovery time, it is the law of diminishing returns.

The aim of this research is to identify crucial coaching behaviours that lead to lost minutes in training and develop strategies to assist the coach plan for these events and recognise cues in action to help with decision making in the training environment.

This research is nuanced by using two forms of behavioural observation and moving the research beyond exploration to explanation, understanding and strategy development to enhance training outcomes. The two forms of coach behaviour

observation are (1) systematic observation, and (2) the coach's perception and reflections of coaching behaviours that impact training outputs.

Primary questions
1. What coaching behaviours are critical for enhancing quality training outputs?

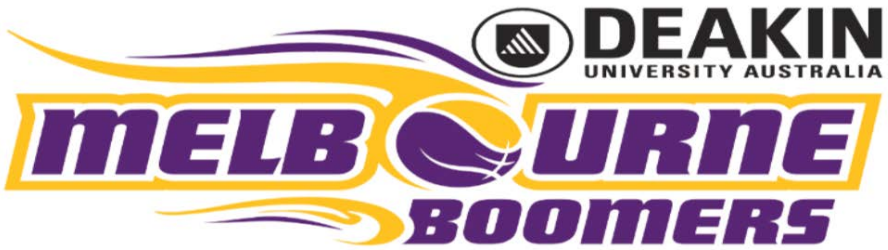
2. How do those coaching behaviours impact training outputs?

3. What are the antecedents to coaching behaviours that enhance and reduce quality training outputs?

4. What strategies and cues can the coach use to enhance training outputs?

Methodological approach
This research uses a case study approach, the main unit of analysis is the coach and the context is the training environment in a women's national league basketball program in Australia. The data collection includes collecting behavioural data using a validated systematic observational tool designed to measure frequency and nature of coaching behaviours, and analysis of coaching transcripts from each training session. To assist in triangulation other evidence including training documents and interviews with the coach will form part of the analysis.

Necessary skills/knowledge
An interest in coaching and knowledge of basketball or team sports.



42 PROJECT TITLE: UNDERSTANDING THE CIRCUMSTANCES PRECEDING ACL INJURIES IN WOMEN'S BASKETBALL

Principal supervisor: **Dr. Eric Drinkwater**
Contact details: **eric.drinkwater@deakin.edu.au**
(03) 9244 6136

Supervisor's profile
Eric Drinkwater is a senior lecturer in the School of Exercise and Nutrition Sciences, teaching in the area of exercise prescription. Eric's research expertise is in athletic preparation and performance as well as making meaningful inferences from quantitative data.

Co-supervisors
Dr Natalie Saunders and Dr Jason Bonacci will be co-supervisors for this project and have extensive experience researching ACL injury in women's' sport.

Project is based at: Burwood

Project description
Injuries to the anterior cruciate ligament (ACL) are perceived as a major risk to player welfare in the Women's National Basketball League (WNBL). An athlete may perform a number of "at-risk" movements over a season, but for an unknown reason one of those cutting movements causes an ACL injury. With substantial inconsistencies in identifying a single cause of ACL injuries, there needs to be greater understanding about the circumstances that precede an injury. This project will involve viewing previously recorded video footage of ACL injuries and describing the circumstances around the injury.

Methodological Approach
This project will involve collaborating with the Deakin Melbourne Boomers to access the WNBL's injury data and the broadcast footage of the injury. Data collection will involve using injury data to isolate in which games ACL injuries occurred and then watching the footage of the injury. Data to be recorded will be the circumstances preceding the injury. Data analysis will be descriptive information of the circumstances of the injury. The findings will allow for greater understanding of why an event that an athlete has performed many times without incident seems to suddenly causes an ACL injury.

43 PROJECT TITLE: HEALTH-RELATED RISK FACTORS FOR COGNITIVE IMPAIRMENT IN THE ELDERLY

Principal supervisor: **Dr. Helen Macpherson**
Contact details: **helen.macpherson@deakin.edu.au**
(03) 9244 5317

Supervisor's profile
Dr Helen Macpherson conducts research on healthy brain ageing, with a focus on dementia prevention. Dr Macpherson is a recipient of a 2016 NHMRC-ARC Dementia Research Training Fellowship to examine the effects of dietary supplementation combined with physical activity on brain health and cognitive function in older people at risk of dementia. Dr Macpherson has conducted numerous randomised controlled trials to investigate the cognitive effects of nutritional interventions including multivitamins, glucose and whole diet change. Her research investigates mechanisms of action including cardiovascular changes and direct effects on brain function using a range of neuroimaging modalities including EEG and MRI.

Co-supervisors
Prof Rob Daly

Project is based at: Burwood

Project Description
Low physical activity is recognised as a risk factor for cognitive decline and dementia. Recent work has indicated that in individuals over the age of 60, those with the lowest participation in physical activity had increased 10 year risk of dementia compared to those with higher physical activity. There is also growing evidence that low physical activity is associated with poorer cognition, even in those without dementia. However, the underlying mechanisms responsible for these associations are uncertain. The aim of this study is to investigate the relationship between cognition and health parameters relevant to a sedentary lifestyle, such as cardiovascular health and body composition. Participants in this study will be older people with subjective memory complaints, which can serve as an early marker of cognitive impairment. The findings from this study will be used to inform the development of targeted interventions designed to benefit brain health in older people.

Methodological Approach
This will be a cross-sectional analysis of baseline data from a larger study examining the effects of exercise training and nutrition on cognitive function in older adults. 75 older adults aged 60-85 year with subjective memory complaints, who regularly participate in less than 150 minutes of exercise per week will be recruited. Each participant will attend a testing session at Deakin where they will complete a battery of computerised cognitive tests, undergo tests of muscle strength and physical function, along with measures of body composition. Cardiovascular health will also be assessed using a device designed to measure arterial stiffness.
The successful student will assist the team in participant recruitment and data collection and must be available to help with these tasks in early in 2017.

Necessary skills/knowledge

Excellent communication skills, an interest in promoting healthy ageing, excellent attention to detail and the ability to work as part of a team.

44 PROJECT TITLE: FITBIT: ACTIVITY PROMOTING GADGET OR GIMMICK?

Principal supervisor: **Nicky Ridgers**
Contact details: **nicky.ridgers@deakin.edu.au**
(03) 9244 6718

Supervisor's profile
I am a Senior Research Fellow within the Institute for Physical Activity and Nutrition. My research focuses on measuring physical activity and sedentary behaviour patterns in different populations using a range of cutting-edge monitoring technologies. I am interested in whether commercially available wearable technologies (such as Fitbits) can be used to raise awareness of physical activity levels and change behaviour.

Co-supervisors
Dr Helen Brown

Project is based at: Burwood

Project description
Wearable technologies such as Fitbit are popular, widely available, and have mass market appeal. Such technologies are marketed as fitness products to health improve health through the tracking of daily activity. However, little is known about whether such devices are activity promoting gadgets or a technological fad. This research project aims to examine whether Fitbits increase adolescent physical activity levels. This research important implications for understanding how people use these technologies and how they may be embedded into broader health promotion and monitoring programs.

Methodological approach
This project is nested within the Raising Awareness of Physical Activity (RAW-PA) Study. This study involves adolescents wearing a Fitbit Flex for 12 weeks and participating in weekly 'missions' that aim to increase activity levels. Data are collected at baseline, post-intervention and 6-month follow-up. Information collected will include physical activity, steps, leisure behaviours, and the feasibility of using Fitbits to self-monitor activity levels. This project will provide an opportunity to develop an understanding of current wearable monitoring technologies, develop skills in analysing monitor data collected over an extended period of time, and interpreting survey data. Such skills and knowledge can be applied to a range of settings, including health promotion, and sport and exercise sciences.

Necessary skills/knowledge
Some knowledge of using Microsoft Excel and basic analytical skills is desirable (but not essential).

45 PROJECT TITLE: IS CHILDHOOD OBESITY ASSOCIATED WITH A DECREASE IN MUSCLE STRENGTH AND FUNCTION LEADING TO A DECREASED ABILITY TO PERFORM EVERYDAY FUNCTIONAL TASKS.

Principal supervisor: **Nicky Ridgers**
Contact details: **nicky.ridgers@deakin.edu.au**
(03) 9244 6718

Supervisor's profile
Principal Supervisor: Nicky Ridgers: I am a Senior Research Fellow within the Institute for Physical Activity and Nutrition. My research focuses on measuring physical activity and sedentary behaviour patterns in different populations using a range of cutting-edge monitoring technologies.

Co-supervisors
Rachel Duckham.
I am a postdoctoral researcher within the Institute for Physical Activity and Nutrition. My research focuses on the influence of physical activity and nutrition on musculoskeletal health over the lifespan.

Project is based at: Burwood

Project description
This project will determine if childhood obesity is associated with a decrease in motor performance including muscle strength and function and the decrease ability to perform every day functional tasks. Whilst it is well established that paediatric obesity increases the risk of early onset cardiometabolic diseases such as type 2 diabetes and cardiovascular disease, there is less consensus about its consequences on the developing musculoskeletal system. Of the limited research performed to date, the majority has focused on the impact of childhood obesity on bone health, with little known about the influence on motor performance such as balance, muscular strength and function. A decrease in muscle function early in life may increase the risk of early onset sarcopenia (muscle loss), a condition associated with poor physical function, quality of life and an increased risk for falls and fracture.

Methodological approach
This cross-sectional design will involve the recruitment of school aged children age 5 to 17 years. Participants will be recruited through schools across Melbourne. Total and site-specific body composition; physical activity, balance, reaction time and muscle strength and function will be assessed using state of the art equipment such as bio-electrical impedance, SenseWear, and accelerometers. This project will give the student a unique opportunity to recruit, collect and analysis data. Furthermore the student will gain skills and knowledge in a vast range of physiological measurement techniques.

Necessary skills/knowledge

Although no prior skills are required the prospective student should have a strong desire to work with school aged children in the area of physical activity and musculoskeletal health. The student should be self-motivated, with the ability to work independently and have good attention to detail.

46 PROJECT TITLE: TRACKING AUTOPHAGY IN SKELETAL MUSCLE

Principal supervisor: **Dr Chris Shaw**
Contact details: **chris.shaw@deakin.edu.au**
(03) 5227 3394

Supervisor's profile
Chris Shaw is a member of the Institute for Physical Activity and Nutrition (IPAN) and a senior lecturer at Deakin University in Exercise and Sport Science. Chris' research focuses on how lipid droplet metabolism influences insulin action in skeletal muscle and how exercise interventions can improve metabolic health. In particular, he has expertise in developing immunofluorescence microscopy techniques to study glucose and lipid metabolism in skeletal muscle.

Co-supervisors
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.

Paul Della Gatta is a post-doctoral researcher in IPAN. His research is focused on understanding the molecular factors regulating skeletal muscle growth, regeneration and function. Paul has extensive biochemical and molecular biology experience and has worked on various projects within the school since finishing his PhD in 2011, including a number of human clinical trials and projects utilising human primary skeletal muscle culture.

Project is based at: Waurn Ponds

Project description
Autophagy is a cellular process responsible for the removal or recycling of old or damaged components of the cell and is an important part of cellular regeneration. Its activity is manipulated by both feeding and exercise and it is proposed to play a role in the adaptations following exercise training and calorie restriction. However the role and regulation of autophagy in skeletal muscle is largely unknown. In this project we will investigate autophagy in muscle cells and use a combination of biochemical and microscopy techniques to assess the dynamics and timing of the autophagy process.

Methodological approach
Laboratory techniques include cell culture, single fibre dissections, from muscle tissue and microscopy imaging. Other basic laboratory techniques may be utilised. All these techniques will be taught as part of the honours training.

Necessary skills/knowledge

Coursework in physiology or similar. Course work in exercise physiology and/or biochemistry is an advantage but not necessary. All laboratory techniques will be taught to the student as part of the honours training.

47 PROJECT TITLE: RECOVERY FOLLOWING MUSCLE DAMAGE

Principal supervisor: **Dr. Craig Wright**
Contact details: **craig.wright@deakin.edu.au**
(03) 5247 9266

Supervisor's 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.

Co-supervisor
Dr Nicole Stupka School of Medicine

Project is based at: Waurn Ponds

Project description
The repair of skeletal muscle is largely coordinated by the immune system. Following damage neutrophils and macrophages infiltrate into the skeletal muscle and prepare the muscle for repair. The second stage in repair includes the activation of satellite cells which are muscle resident stem cells that fuse with the damage muscle to aid in the repair process. Recent research shows that the contra-lateral limb, which is not damaged, becomes "primed" for repair and if damage occurs the primed limb repairs at a much quicker rate. However little is known about this process and the contributing factors. This project aims to characterize the response to muscle damage in the contra-lateral limb.

Methodological approach
Laboratory techniques include tissue extraction, H&E staining, real-time PCR analysis, western blotting, and enzymatic assays. Other basic laboratory techniques may be utilised. All these techniques will be taught as part of the honours training.

Necessary skills/knowledge
Coursework in physiology or similar. Course work in exercise physiology and/or biochemistry is an advantage but not necessary. All laboratory techniques will be taught to the student as part of the honours training.

48 PROJECT TITLE: FEMALE AND MALE HORMONAL RESPONSES TO HYPOXIA EXERCISE

Principal supervisor: **Dr. Craig Wright**
Contact details: **craig.wright@deakin.edu.au**
(03) 5247 9266

Supervisor's 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.

Co-supervisor
Sam Hoffmann is a member of the Centre for Sport Research (CSR) and a lecturer in Applied Exercise and Sport Science at Deakin University's School of Exercise and Nutrition Sciences. Sam's broad research areas are exercise physiology, exercise prescription and sports performance. Her interests include investigating the differences in physiological responses to exercise, adaptations to training and exercise performance predictors between males and females. Her research takes an applied approach to understanding physiological responses to exercise and their impact on exercise performance outcomes.

Project is based at: Waurn Ponds

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 hormone responses in males and females.

Methodological approach
Exercise screening and VO2max testing of healthy volunteers. Blood sampling and laboratory techniques which may include enzymatic assays for hormone detection, protein extraction, real-time PCR analysis and western blotting. All techniques will be taught as part of the honours training.

Necessary skills/knowledge

Course work in exercise physiology or a related field is required. Coursework in biochemistry and/or molecular biology is an advantage but not necessary. All laboratory techniques will be taught to the student as part of the honours training.

49 PROJECT TITLE: IMMUNOLOGICAL RESPONSE TO RESISTANCE EXERCISE IN HYPOXIA

Principal supervisor: **Dr. Craig Wright**
Contact details: **craig.wright@deakin.edu.au**
(03) 5247 9266

Supervisor's 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.

Co-supervisor
Dr. Garth Stephenson School of Medicine

Project is based at: Waurn Ponds

Project description
The immune system is often overlooked when designing exercise interventions. Exercise interventions in elderly population target improvement in strength and muscle mass. However, there is growing evidence that exercise induced immunosuppression occurs immediately following exercise, especially if the exercise is physically demanding and/or long in duration. Therefore following exercise individuals more susceptible to upper respiratory tract infection (URTI). Although regular participation in moderate exercise is known to increase innate (fast acting) and adaptive (memory) immunity, elderly individuals show a reduced mobilisation of neutrophils and monocytes following exercise. Similarly, young adults show increases in T-cell mediated immunity following acute exercise, however this T-cell mediated immunity response does not occur in elderly individuals. Therefore a prolonged exercise induced immunosuppression may materialise in elderly individuals and leave them more susceptible to infections and illnesses. Secondly, there is growing literature that resistance exercise in hypoxia increases muscle strength and muscle growth improved insulin sensitivity in type-2 diabetes observed with hypoxia treatment and further improved by exercise in hypoxia. Similarly, low intense physical activity in hypoxia improves weight loss in obese individuals while exposure to hypoxia for 60 minutes for 7-14 days improves innate immunity. Therefore the immunosuppression seen following exercise may be alleviated with hypoxia, while improving the beneficial gains associated with traditional resistance exercise. This project aims to characterise the

immune and hormonal response in elderly males following a single bout of resistance exercise in a hypoxic environment.

Methodological approach
Exercise screening and VO2max testing of healthy volunteers. Blood sampling and laboratory techniques include protein extraction, real-time PCR analysis, western blotting, flow cytometry and enzymatic assays. All these techniques will be taught as part of the honours training.

Necessary skills/knowledge
Course work in exercise physiology or similar is required. Coursework in biochemistry and/or molecular biology is an advantage but not necessary. All laboratory techniques will be taught to the student as part of the honours training.

50 PROJECT TITLE: INVESTIGATING THE EFFECTS OF LOWER LIMB IMMOBILISATION AND CROSS-EDUCATION OF STRENGTH ON NEUROPLASTICITY OF THE CORTICOMOTOR PATHWAY.

Principal supervisor: **Dr Ashlee Hendy**
Contact details: **a.hendy@deakin.edu.au**
(03) 9244 6221

Supervisor's profile
Dr Ashlee Hendy is a Lecturer in Motor Learning and Development, with a particular interest in the role of the brain and nervous system in resistance training. She conducts research in the field of exercise science and neuroscience, investigating changes in the brain (neuroplasticity) that occur following exercise programs, as well as the use of a variety of non-invasive brain stimulation techniques to enhance strength and motor performance. Ashlee specialises in a training-rehabilitation technique known as 'cross-education', whereby resistance training of a single limb produces strength gains in the opposite (untrained) muscle group.

Co-supervisors

Dr Severine Lamon is a Senior Lecturer with expertise in skeletal muscle physiology and biochemistry. Her main research interest is to understand the physiological and cellular mechanisms underlying the processes of muscle atrophy and hypertrophy in health and disease conditions, including exercise training, muscular dystrophy and ageing. Severine has extensive experience with human clinical trials involving exercise protocols and the collection of human muscle biopsies and specialises in the analysis of these muscle biopsies using molecular biology based techniques.

Dr Wei-Peng Teo is currently an Alfred Deakin Postdoctoral Research Fellow with a research focus on developing novel neurorehabilitation strategies for people with neurological disorders. Wei-Peng's expertise includes the use of non-invasive brain stimulation techniques and various neuroimaging methods (i.e. Electroencephalography and near infrared spectroscopy) to understand pathology of brain disorders such as Parkinson's disease and stroke. Wei-Peng has extensive experience working with clinical populations and currently leads two clinical trials in people with Parkinson's disease.

Project is based at: Burwood

Project description
Cross-education is a phenomenon whereby unilateral resistance training results in strength gains of the opposite (untrained) muscle group. Importantly, the application of cross-education to maintain muscular strength and function during a period of immobilisation has significant implications for injury recovery, and requires further investigation. While several studies have demonstrated maintenance of strength in upper-limb models, cross-education during lower limb immobilisation has not been replicated. While, the transfer of strength is believed to be driven primarily by changes

in the nervous system, a comprehensive analysis of inhibitory and excitatory cortical and sub-cortical neural pathways innervating the untrained muscle group following unilateral training has not been conducted. This novel study will investigate cross-education in a lower-limb immobilisation model, while also providing a detailed investigation of the accompanying adaptations within the corticomotor pathway of the immobilised limb.

Methodological approach

24 healthy participants aged 18-35 will undergo immobilisation of the non-dominant ankle via CAM walker (moon boot) for a 3 week period. Participants will be randomly allocated to receive either 1) strength and balance training of the free limb, or 2) no training. Strength and balance training will be conducted three times per week for the duration of the 3 week immobilisation period. Exercises will involve 4 x 10 repetitions of high-intensity (70% 1RM) plantar and dorsiflexion performed to an externally paced metronome, as well as unilateral balance tasks on unstable surfaces with external perturbations. These training methods have previously been shown to maximise cross-education by increasing afferent feedback from peripheral receptors in the nervous system. Assessment of unilateral strength, functional balance, and cross-sectional area of the immobilised gastrocnemius muscle will be conducted prior to and following the intervention. Motor evoked responses recorded using electromyography (EMG) following single and paired pulse transcranial magnetic stimulation (TMS) will be analysed to assess inhibitory and excitatory pathways innervating the immobilised limb.

Necessary skills/knowledge

This project is suited to a student with skills and knowledge in strength and conditioning and motor control. Strong organisational skills and attention to detail in writing, data analysis and delivery of exercise programs. This project may be of particular interest to a student who wishes to contribute to the development of novel rehabilitation techniques.

51 PROJECT TITLE: INVESTIGATING THE EFFECTS OF LOWER LIMB IMMOBILISATION AND CROSS-EDUCATION OF STRENGTH ON MUSCLE GENE EXPRESSION.

Principal supervisor: **Dr Severine Lamon**
Contact details: **severine.lamon@deakin.edu.au**
(03) 9244 5571

Supervisor's profile
Dr Severine Lamon is a Senior Lecturer with expertise in skeletal muscle physiology and biochemistry. Her main research interest is to understand the physiological and cellular mechanisms underlying the processes of muscle atrophy and hypertrophy in health and disease conditions, including exercise training, muscular dystrophy and ageing models. Severine has extensive experience with human clinical trials involving exercise protocols and collection of human muscle biopsies and specialises in the analysis of muscle tissue using molecular biology based techniques.

Co-supervisors
Dr Ashlee Hendy is a Lecturer in Motor Learning and Development, with a particular interest in the role of the brain and nervous system in resistance training. She conducts research in the field of exercise science and neuroscience, investigating changes in the brain (neuroplasticity) that occur following exercise programs. Ashlee specialises in a training-rehabilitation technique known as 'cross-education', whereby resistance training of a single limb produces strength gains in the opposite (untrained) muscle group.

Dr Wei-Peng Teo is currently an Alfred Deakin Postdoctoral Research Fellow with a research focus on developing novel neurorehabilitation strategies for people with neurological disorders. Wei-Peng's expertise includes the use of non-invasive brain stimulation techniques and various neuroimaging methods (i.e. Electroencephalography and near infrared spectroscopy) to understand pathology of brain disorders such as Parkinson's disease and stroke. Wei-Peng has extensive experience working with clinical populations and currently leads two clinical trials in people with Parkinson's disease.

Project is based at: Burwood

Project description
Cross-education is a phenomenon whereby unilateral resistance training results in strength gains of the opposite (untrained) muscle group. Importantly, the application of cross-education to maintain muscular strength and function during a period of immobilisation has significant implications for injury recovery, and requires further investigation. While several studies have demonstrated that unilateral resistance

training maintains strength and protects against muscle atrophy in the non-immobilized limb, this phenomenon has never been investigated at the muscle level.

Methodological approach
24 healthy participants aged 18-35 will undergo immobilisation of the non-dominant ankle via CAM walker (moon boot) for a 3-week period. Participants will be randomly allocated to receive either 1) strength and balance training of the free limb, or 2) no training. Strength and balance training will be conducted three times per week for the duration of the 3 week immobilisation period. Exercises will involve 4 x 10 repetitions of high-intensity (70% 1RM) plantar and dorsiflexion performed to an externally paced metronome, as well as unilateral balance tasks on unstable surfaces with external perturbations. These training methods have previously been shown to maximise cross-education by increasing afferent feedback from peripheral receptors in the nervous system. Muscle biopsies will be collected before and following the intervention, along with the assessment of unilateral strength, functional balance, and cross-sectional area of the immobilised gastrocnemius muscle. RNA will be extracted from the muscle biopsy samples and gene expression specific to the regulation of muscle atrophy and hypertrophy will be measured using real-time PCR.

Necessary skills/knowledge
This project is suited to a student with skills and interest in muscle physiology and/or biochemistry. Strong organisational skills and attention to detail in writing, data analysis and delivery of exercise programs. This project may be of particular interest to a student who wishes to contribute to the development of novel rehabilitation techniques.

52 DO MICRORNAS DERIVED FROM AN ISCHEMIC HEART INDUCE SKELETAL MUSCLE CATABOLISM?

Principal supervisor: **Dr Severine Lamon**
Contact details: **severine.lamon@deakin.edu.au**
(03) 9244 5571

Supervisor's profile
Dr Severine Lamon is a Senior Lecturer with expertise in skeletal muscle physiology and biochemistry. Her main research interest is to understand the physiological and cellular mechanisms underlying the processes of muscle atrophy and hypertrophy in health and disease conditions, including exercise training, muscular dystrophy and ageing models. Severine has extensive experience with human clinical trials involving exercise protocols and collection of human muscle biopsies and specialises in the analysis of muscle tissue using molecular biology based techniques.

Co-supervisors
Dr Evelyn Zacharewicz is a Research Fellow who specialises in the underlying molecular mechanisms that regulate skeletal muscle atrophy and hypertrophy. In particular, Evelyn has a keen interest in microRNAs, powerful regulators of gene expression, and their impact on various cellular processes. Evelyn has extensive experience with human clinical trials and collection and analysis of human muscle biopsies and blood as well as in vitro techniques with multiple human and non-human cell lines.

Prof Aaron Russell is Associate Head of School (Research) with a research focus on the molecular factors that control skeletal muscle wasting, growth and regeneration. Aaron leads a successful, multifaceted research team comprising of students, junior and senior staff. In particular, Aaron has extensive expertise with rodent and human models of muscle wasting diseases such as muscular dystrophy, motor neuron disease and sarcopenia.

Project is based at: Burwood

Project description
Maintaining skeletal muscle mass is essential for independence, health and general wellbeing. Muscle atrophy can occur as a consequence of chronic diseases, such as heart failure (HF), and is associated with poor prognosis, poor quality of life and mortality. The incidence of HF is increasing in the developed world and results in the death of up to 30% of patients with mild-moderate HF and 50% of patients with severe HF.
MicroRNAs (miRNAs) are small, post-transcriptional regulators that play an important role in the maintenance of cellular health and function. Aberrant miRNA expression has been described in HF patients. During an ischemic episode of the heart, a sub-set of HF related miRNAs are released into the circulation. It is hypothesised that miRNAs are involved in cell-to-cell communication but whether crosstalk between cardiac and skeletal muscle via miRNAs exists has not been investigated. Understanding whether circulating miRNAs have an impact on skeletal muscle mass may assist in the

identification of novel therapeutic targets for muscle wasting secondary to chronic diseases such as HF.

Methodological approach
Blood serum will be collected from 6 month old male BALB/c mice under normal conditions (control) and following an induced episode of myocardial ischemia/reperfusion (HF). MiRNAs linked to HF will be measured in the serum. Mouse primary muscle cells will be grown in vitro. The cells will be serum starved for 24 hours then the media will be replaced with fresh media supplemented with either control or HF serum. The cells will then be incubated for 48 h. Output measures will include protein synthesis and protein degradation assays. This will provide a proof-of-concept that HF derived miRNAs can induce muscle cell atrophy.

Necessary skills/knowledge
This project is suited to a student with skills and interest in muscle health and/or biochemistry. By completing this project, the student will become proficient in standard molecular cell biology techniques. Strong organisational skills and attention to detail in writing, data analysis are required. This project may be of particular interest to a student who wishes to contribute to the discovery of novel therapeutic targets in muscle wasting diseases.

53 PROJECT TITLE: SEDENTARY BEHAVIOUR AND WELLBEING AND MENTAL HEALTH AMONG ADOLESCENTS

Principle supervisor: **Dr. Trina Hinkley**
Contact details: **trina.hinkley@deakin.edu.au**
(03) 9244 5480

Supervisor's profile
Trina is a full-time researcher in childhood physical activity and sedentary behaviours. I have worked and researched in the areas of child public health and epidemiology over the last 10 years and am passionate about supporting healthy outcomes in children and young people. My research focuses on physical activity and sedentary behaviours – particularly screen use – during childhood. This includes influences on those behaviours, health outcomes, and identifying and implementing strategies to support healthy levels of those behaviours. I am particularly interested in the influence of physical activity and screen use on children's and young people's well-being.

Co-supervisors
Dr Megan Teychenne
Dr Bronwyn Sudholz

Project is based at: Burwood

Project description
Sedentary behaviour is an independent chronic health risk factor, and emerging research indicates it may also be associated with adverse mental health outcomes. Limited research has examined the associations between sedentary behaviour and mental health outcomes in young people. Nonetheless, sedentary behaviour is ubiquitous among young people and mental health disorders begin to emerge during adolescence. Furthermore, research has not examined the impact of sedentary behaviours on wellbeing and mental health. These are distinct concepts that need to be considered individually as the absence of mental health disorders may not equate to healthy levels of wellbeing. The current study will aim to explore the cross-sectional association between sedentary behaviour and mental health and wellbeing outcomes.

Methodological approach
The study will employ a cross-sectional design and collect data via an online questionnaire. Approximately 200 young people will be recruited through schools to complete the survey asking about to levels of behaviour (e.g., sitting time, breaks in sitting, physical activity) and wellbeing and mental health outcomes. Quantitative data analyses will be used to examine and compare the association between sedentary behaviour and mental health and wellbeing outcomes. The results of the study are expected to further explore the relationship between sedentary behaviour and mental health and wellbeing among this age group.

Necessary skills/knowledge
You should have excellent communication and interpersonal skills and be willing to learn a few new techniques in data analysis.

54 PROJECT TITLE: SKELETAL MUSCLE ADAPTATIONS IN RESPONSE TO EXERCISE TRAINING

Principle supervisor: **Dr. Kirsten Howlett**
Contact details: **kirsten.howlett@deakin.edu.au**
(03) 5227 2563

Supervisor's profile
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. Dr Howlett and Dr Shaw have complementary research interests and skills and have successfully collaborated previously on honours research projects.

Co-supervisor
Dr Chris Shaw is a Senior Lecturer in the School of Exercise and Nutrition Sciences. His research focuses on the physiological and metabolic adaptations to exercise which underpin improvements in sports performance and the health benefits of exercise. He is particularly interested in how acute and chronic exercise influence fat and glucose metabolism in skeletal muscle.

Project is based at: Waurn Ponds

Project description
Exercise training results in skeletal muscle adaptations that can improve physiological and metabolic processes. In skeletal muscle, the extracellular matrix (ECM) is known to provide structural support, although recent research highlights that remodelling of the ECM in skeletal muscle may be an important adaptation following exercise training that influences metabolic and physiological functions. Both endurance and resistance exercise training can influence collagen turnover, but less is known about the training effects on other components of the ECM. The aim of this study will be to determine whether components of the ECM and associated enzymes are altered in skeletal muscle from trained and untrained humans.

Methodological approach
- Recruitment and testing of endurance trained and untrained individuals
- Maximum aerobic capacity determined by incremental workload test
- Skeletal muscle biopsy sampling
- Analysis of ECM gene and protein expression

Necessary skills/knowledge

An interest in the area of exercise physiology, muscle metabolism and/or biochemistry is required. Some experience with human exercise testing and analytical laboratory skills are desirable but not essential. All techniques and skills will be taught as part of honours training.

55 PROJECT TITLE: I WANT TO GET BACK INTO PHYSICAL ACTIVITY AFTER HAVING A BABY, BUT MY BODY IS JUST NQR.

Principle supervisor: **Dr Natalie Saunders**
Contact details: **natalie.saunders@deakin.edu.au**
(03) 9246 8284

Supervisor's profile
Natalie Saunders is a lecturer in Clinical Exercise Physiology and is currently also working as an Accredited Exercise Physiologist. In 2006 she completed her PhD titled 'Characteristics of the female landing pattern' which aimed to understand neuromuscular control during landings in netball. Her research interests include neuromuscular control and biomechanics in a functional context, in particular understanding the various loads on the human body that results in injury, prevents injury or is related to the rehabilitation of various structures.

Co-supervisor:
Dr Jason Bonacci will also act as co-supervisor for this project. Dr Bonacci is a physiotherapist with extensive experience in researching musculoskeletal injury.

Project is based at: Burwood

Project description
Returning to physical activity after childbirth is an important for both the health of the mother and baby. This projects aims to understand what physical factors exist that influence a women returning to exercise after childbirth.

Methodological approach
The data for this study stems from a larger project that is examining the biopsychosocial determinants of women returning to physical activity and exercise after childbirth. This project relies on qualitative data stemming from interviews conducted with post-natal women to identify common themes in the physical capacity for women to return to exercise. The student will be expected to analyse the relevant interview data, conduct analyses and interpret findings of results.

56 PROJECT TITLE: WHAT'S STOPPING MUMS FROM BEING ACTIVE? EXPLORING THE PATTERNS AND INFLUENCES ON PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AMONGST MOTHERS WITH YOUNG CHILDREN

Principal supervisor: **Dr Megan Teychenne**
Contact details: **mteych@deakin.edu.au**
(03) 9244 6910

Supervisor's profile
Dr Megan Teychenne is a behavioural epidemiologist and lecturer in Physical Activity and Health in the School of Exercise and Nutrition Sciences at Deakin University. She has a growing profile nationally and internationally for her research in the area of physical activity, sedentary behaviour and mental illness (particularly anxiety and depression), with a key focus on targeting 'at-risk' population groups such as women (including postpartum and prenatal women) and socio-economically disadvantaged adults.

Co-supervisor
This project will be co-supervised by Dr Trina Hinkley, a full-time researcher in childhood physical activity and sedentary behaviours.

Project is based at: Burwood

Project description
Mothers with young children are a population group at risk of engaging in lower levels of physical activity. Contrary to popular belief, there is evidence to suggest that mothers engage in high levels of sedentary behaviour. Both physical inactivity and sedentary behaviour are linked to chronic adverse health outcomes including overweight/obesity, depression and anxiety. Yet the barriers that mothers face in being physically active and reducing sedentary behaviour are currently not well understood. Therefore, the aim of this project is to investigate the patterns of and influences on physical activity and sedentary behaviour amongst mothers with young children.

Methodological approach
The 'Mums, Dads and Kids (MDK) study' was a cross-sectional study that recruited 575 mothers (with children aged 2-5 years) in 2013/2014. Women self-reported physical activity, sedentary behaviour and other demographic information using an online survey. In 2017, we plan to follow up participants and include qualitative questions within the survey regarding the perceived influences on physical activity and sedentary behaviour amongst these mothers. This Honours project will involve qualitative analysis as well as basic descriptive analysis of relevant survey items. The Honours student selected for this project will also be involved in key aspects of recruitment and data collection.

Necessary skills/knowledge
The student should have excellent communication and organisational skills

57 PROJECT TITLE: "IS HAPPINESS AS SIMPLE AS A WALK IN THE PARK?" THE ASSOCIATION BETWEEN VISITING PARKS AND MENTAL HEALTH IN ADULTS

Principal supervisor: **Dr Megan Teychenne**
Contact details: **mteych@deakin.edu.au**
(03) 9244 6910

Supervisor's profile
Dr Megan Teychenne is a behavioural epidemiologist and lecturer in Physical Activity and Health in the School of Exercise and Nutrition Sciences at Deakin University. She has a growing profile nationally and internationally for her research in the area of physical activity, sedentary behaviour and mental illness (particularly anxiety and depression), with a key focus on targeting 'at-risk' population groups including women (including postpartum and prenatal women) and socio-economically disadvantaged adults. Currently she supervises two honours students, one Masters Student and two PhD students.

Co-supervisor
Dr Jenny Veitch is a senior research fellow from the Institute for Physical Activity and Nutrition (Deakin University) and will co-supervise this project.

Project is based at: Burwood

Project description
Parks are located in most neighbourhoods, they are generally free to access, offer a variety of opportunities for physical activity and can serve diverse populations. Some evidence suggests that physical activity undertaken in parks may have greater psychological and physiological benefits than activity in other settings. However, little is known about how visitation to parks and specific features of parks may be associated with mental health. It is important to investigate the association between parks (visitation and features) and mental health as this information will add to the small body of existing knowledge which may inform future intervention and planning development to promote better mental health in the population.

This aim of this project is to investigate associations between park usage, park features, and mental health (i.e. depressive symptoms and well-being) among adults living in Melbourne.

Methodological approach
This project will be nested within the REVAMP study, which is a 3-year ARC Linkage funded study led by Dr Jenny Veitch, and will involve secondary analysis of existing data collected in 2013 and 2015. Self-reported survey data from approximately 1500 adults from two areas of Melbourne (low and high SES) will be analysed. This Honours project will involve conducting cross-sectional data analyses to investigate the link between park features (i.e. park visitation, perceptions of neighbourhood parks, activity in parks) and mental health (i.e. depressive symptoms and well-being).

Necessary skills/knowledge

The student should have excellent communication and interpersonal skills as well as good organisational skills

58 PROJECT TITLE: RECOVERY PRACTICES WITHIN ELITE AUSTRALIAN RULES FOOTBALL (AFL)

Principle supervisor: **Dr. Stuart Warmington**
Contact details: **stuart.warmington@deakin.edu.au**
(03) 9251 7013

Supervisor's profile
My research interests focus on 3 areas:
1. physiological mechanisms by which recovery methods may impact performance
2. physiological mechanisms by which clinical groups may better tolerate exercise and adapt to training to gain improvements to health
3. novel training methods that improve exercise outcomes in clinical groups

Co-supervisor
TBA

Project is based at: Burwood

Project description
The use of various recovery practices are common following training and competition. Reasons put forward for such practices include minimizing/management of injuries and post-exercise soreness, and to maintain exercise performance for future training and competitive events.
However, to date there is very little clear evidence or quantification that characterises the current recovery practices in use at the elite level.
As such this project aims to investigate the type, timing and characteristic prescription of recovery practices at the elite level with a view to establishing a basis for further research of recovery practices, and to assess current recovery practices relative to research knowledge of the advantages and disadvantages of different recovery practices.

Methodological approach
In 2009 we contacted all high performance managers (HPM) within the elite AFL to undertake an examination of recovery practices. This current project with be an 8 year follow-up that will involve the administration of a specifically designed survey to investigate recovery practices within the elite AFL. The aim is to examine quantify the use of current practices, how these have the changed over the last 8 years, and the rationale for any changes in practice. In addition, after compilation and analysis of the trends within the survey data, contact and interviews with each AFL HPM will be required to validate and further explore the technical, physiological and practical foundations for the survey responses.

Necessary skills/knowledge
This project would suit a variety of student interests including athlete care and performance, and training methodologies and management. An interest or familiarity with the physiology of recovery from exercise would be additionally useful. While this project is largely focused on qualitative work within the elite AFL, students should be

expected to be professional, confident and have a capacity to communicate well with elite sport science staff. As such this project would also be suited to students interested in the elite sort environment as a future career.

59 PROJECT TITLE: EXAMINING THE DETERMINANTS OF LIMB OCCLUSION PRESSURE PRIOR TO BLOOD FLOW RESTRICTION EXERCISE.

Principal supervisor: **Dr. Stuart Warmington**
Contact details: **stuart.warmington@deakin.edu.au**
(03) 9251 7013

Supervisor's profiles
My 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 exercise (BFRE) as a model to promote muscle growth and increased strength, and to develop this exercise method to improve muscle health and functional outcomes in populations where loss of muscle is highly prevalent. To this effect my research group has been working on a variety of projects from acute assessments of haemodynamic stress in both young and older adults as well as training studies to identify the effects of BFRE on muscle growth, strength and fatigue.

Co-supervisors
TBA

Project is based at: Burwood

Project description
It's been shown that when low-load resistance exercise is performed under blood flow restriction (BFR), that the gains in muscle size and strength are similar to the gains achieved with high-resistance strength straining. This novel outcome is in contrast to the fact that the greatest gains in such indicators of muscle health are most commonly thought to be achieved only with high-load resistance strength training. Given BFR exercise utilises only low-load resistance exercise, it may provide a substantial benefit to clinical groups where strength training proves beneficial, but where high-load resistance strength training is not recommended due to the implied clinical risk.
However, given the variety of methods by which BFR is applied during exercise the factors that predict the level of restriction to flow are poorly understood. Therefore, this project will build on current work in our lab and aim to provide an understanding of contribution of a variety of factors in predicting limb occlusion pressure which is necessary to be able to prescribe BFR in practice in the field. This will be significant for more widespread prescription of BFR exercise but in particular for more specific populations including athletes, clinical groups and the community.

Methodological approach
This project will involve recruitment and testing of healthy volunteers, and possibly athletes and clinical participants, to examine the determinants of limb occlusion pressure as an individualized method to set blood flow restriction pressures when this technique is used for resistance or aerobic exercise training. This will be done by collecting a variety of anthropometric variables including limb circumference, skin folds, blood pressure and others, and assessing the limb occlusion pressure using

digital plethysmography. Afterwards, in examining the relationship between predictive factors and limb occlusion pressure this project will provide be the first to provide a recommendation of necessary factors to measure prior to undertaking BFR exercise, while being an important tool for the purposes of screening and prescription of BFR exercise.

Necessary skills/knowledge

This project would suit students interested in exercise physiology, clinical exercise, exercise performance assessment and strength and conditioning. The student should be enthusiastic towards exercise prescription and monitoring, as well as exercise as a clinical treatment. Testing procedures and data collection will utilise non-invasive techniques such as typical anthropometric measures, use of an advanced metabolic cart to assess oxygen consumption, as well as measurement of blood pressure and typical risk factors associated with exercise.

60 PROJECT TITLE: MUSCLE FIBRE TYPE-SPECIFIC ADAPTATIONS IN LIPID METABOLISM WITH EXERCISE TRAINING

Principal supervisor: **Dr. Chris Shaw**
Contact details: **chris.shaw@deakin.edu.au**
(03) 5227 3394

Supervisor's 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 is particularly interested in how acute and chronic exercise influence fat and glucose metabolism in skeletal muscle.

Co-supervisor/s
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. Dr Howlett and Dr Shaw have complementary research interests and skills and have successfully collaborated previously on honours research projects.

Project is based at: Waurn Ponds

Project description
Lipid stored in skeletal muscle provides an important fuel source during prolonged endurance exercise. Endurance training enhances the use of muscle lipid stores during exercise, which contributes to improved endurance performance. In addition, this improvement in muscle lipid handling also contributes to the protection against the development of metabolic diseases seen with regular exercise. These adaptations in lipid metabolism with exercise are highly muscle fibre type specific and only occur in slow twitch muscle fibres. This project will apply several biochemical techniques to investigate the effect of endurance training on intramuscular lipid metabolism in fast and slow twitch muscle fibres.

Methodological approach
- Recruitment and testing of endurance trained and untrained individuals
- Maximum aerobic capacity determined by incremental workload test
- Skeletal muscle biopsy sampling
- Analysis of protein expression and protein location

Necessary skills/knowledge
An interest in the area of exercise physiology, muscle metabolism and/or biochemistry is required. Some experience with human exercise testing and analytical laboratory

skills are desirable but not essential. All techniques and skills will be taught as part of honours training.

61 PROJECT TITLE: THE CHAUFFEUR DRIVEN GENERATION: EXPLORING WAYS TO ENCOURAGE ADOLESCENTS TO WALK AND CYCLE IN THEIR NEIGHBORHOOD

Principal supervisor: **Dr. Shannon Sahlqvist**
Contact details: **shannon.sahlqvist@deakin.edu.au**
(03) 9251 7782

Supervisor's profile
Dr Shannon Sahlqvist is a Lecturer in Physical Activity and Health (Geelong). Shannon's research focuses on developing and evaluating active travel interventions.

Co-supervisor
Prof Anna Timperio

Project is based at: This project is being offered at either Waurn Ponds or Burwood

Project description
Many young people do not participate in sufficient physical activity. Subsequently, interest has turned to the promotion of active travel (walking and cycling to get from place to place) as a way of incorporating physical activity into the daily lives of young people. To date, research in the area has tended to focus specifically on active travel to school, however active travel to destinations other than school (i.e., friend's house, park) has been highlighted as an important research area. Taking an ecological approach, this project will explore the influences on active travel to non-school destinations among adolescents.

Methodological approach
Previously collected data from the Neighbourhood Activity in Youth (NEArbY) study will be utilised. Participants were recruited from secondary schools selected to maximise the diversity of neighbourhood environments included in the study in terms of walkability and income at the area-level. Participants completed a survey at school which included questions to ascertain how they usually traveled to a variety of common destinations. Objective measures of the built environment within 500m and 1km of each participant's home were also collected. These cross-sectional data will be analysed using appropriate techniques to determine the correlates of active travel to non-school destinations.

Necessary skills/knowledge
Essential: HSE203 Exercise Behaviour
Desirable: HSE212 Physical Activity Promotion and Evaluation and/or HSE316 Physical Activity and Health

62 PROJECT TITLE: EXPLORING MODELS OF SWIMMING TRAINING FOR NOVICE LEARNERS - THE PARC STUDY

Principal supervisor: **Dr Helen Brown**
Contact details: **hbrown@deakin.edu.au**
(03) 9244 6327

Supervisor's profile
Dr Helen Brown is a Lecturer in the School of Exercise and Nutrition Sciences. She lectures in the areas of sport coaching and children's physical activity and her main interest is investigating influences on children and youth's physical activity.

Co-supervisor
Dr Eric Drinkwater is a senior lecturer in the School of Exercise and Nutrition Sciences. He teaches in the area of exercise prescription and the health benefits of physical activity. Eric also has expertise in making meaningful inferences from quantitative data and mentoring research students to publish their research.

Project is based at: Burwood

Project description
While there is significant evidence confirming the health and safety benefits of regular and sustained participation in swimming, less is known about the optimal way to develop and implement a swimming program that aims to attract children and youth, teach effective swimming technique and sustain participation. This project, run in conjunction with Peninsula Aquatic Recreation Centre, will aim to explore from both a participation and performance perspective the most effective model for swimming lessons: intensive blocks of lessons, lessons distributed over a prolonged duration, or a combination of both.

Methodological approach
This project will employ a mixed methods approach. Quantitatively, learn-to-swim students will be scored by their instructor against criteria previously established for their enrolled level by AusSwim. Swimming skill retention will be assessed within an individual student over time based on their score; rate of changes in score (i.e. learning and retention) will be assessed between different types of lesson modes (intensive, distributes, combination). Qualitatively, surveys will be used to assess barriers and enablers to participation both from the parent's and child's perspective. Survey will comprise both scale and written response questions. Scale data will be analysed quantitatively while written responses will be assessed by thematic analysis. The student will gain skills in participant recruitment, data collection and analysing data.

Necessary skills/knowledge
An understanding of basic quantitative and qualitative research methods would be beneficial, but not essential. Training and support will be provided throughout the honours year.

63 PROJECT TITLE: THE EFFECT OF SURFING ON EXERCISE-INDUCED AFFECTIVE STATES

Principal supervisor: **Dr. Peter Kremer**
Contact details: **peter.kremer@deakin.edu.au**
(03) 5227 3396

Supervisor's profile
I am a senior lecturer in sport and exercise behaviour with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. I have 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.

Co-supervisor
Dr Fraser Carson
I am a Lecturer in Sport Coaching, with over fifteen years delivering psychological skills training to high performance athletes and coaches. I have previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. I have a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

Project is based at: Waurn Ponds

Project description
The physiological health benefits of physical activity and exercise are well documented. More recent evidence also indicates that physical activity and exercise also provide a range of psychological benefits as well. Surfing is a popular leisure time activity. Anecdotally, surfers report a number of positive psychological effects (eg. enhanced positive mood) following surfing and internationally a number of programs now use surfing as an activity to facilitate promote positive mental health. This study will empirically examine exercise-induced mood alteration following a single bout of surfing. It will also examine the time course of such effects over a 24 hour period post-exercise.

Methodological approach
Quantitative survey interviews (pen and paper & phone/Smart phone methods) will be use to capture self-report measures of mood before, immediately following and 24 hours following participants have completed a single bout of surfing.

Necessary skills/knowledge
Some knowledge of surfing, surf locations, and surf language would be helpful.

64 PROJECT TITLE: LOSS, RESILIENCE AND PERSONAL GROWTH: EXPERIENCES FOLLOWING MULTIPLE ACL INJURIES

Principal supervisor: **Dr. Peter Kremer**
Contact details: **peter.kremer@deakin.edu.au**
(03) 5227 3396

Supervisor's profile
I am a senior lecturer in sport and exercise behavior with the School of Exercise and Nutrition Sciences based at the Waurn Ponds Campus. I have 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.

Co-supervisors
Dr Fraser Carson
I am a Lecturer in Sport Coaching, with over fifteen years delivering psychological skills training to high performance athletes and coaches. I have previously been employed as performance psychologist, providing mental skills training, with a number of professional teams, coaches and athletes. I have a strong research background with a number of publications in performance psychology, mental toughness, wellbeing, stress and coping, and coach education.

Project is based at: Waurn Ponds

Project description
Anterior cruciate ligament (ACL) rupture is an incapacitating knee injury that occurs frequently in sports performers. From initial injury to return to competition takes, on average, nine to twelve months rehabilitation. Despite the extensive discussions related to the medical or physical aspects following ACL reconstruction, only limited attention has been paid to the psychological components associated with the rehabilitation process and this is particularly true for athletes who have experienced multiple ACL ruptures. How an athlete deals with the initial injury and subsequent re-injury can have dramatic consequences for their return to competition, continuation in sport, and general health and wellbeing. Several studies have identified key factors to facilitate coping and positive stress responses for single ACL injuries however very few studies have investigated the experiences of athletes who have had multiple ACL reconstructions. Further research is required to establish the full impact of prior injury, with specific reference to acceptance of the injury, preparation and recovery from surgery, adherence to the rehabilitation protocol as well both positive and negative impacts on athlete wellbeing and personal development. The purpose of this project is to investigate the psychological aspects of multiple ACL injuries by conducting qualitative interviews with a number of affected athletes as well as clinicians and significant others who have shared the journey of the athlete.

Methodological approach
Qualitative interviews will be used to gather information from a sample of ~15 injured athletes and ~15 clinicians / significant others familiar with the rehabilitation and

personal experiences of the athletes. Interview data will be analysed using thematic analysis.

Necessary skills/knowledge

No necessary skills/knowledge is required for this project. An interest in collision and other sports where ACL injuries are more frequent as well as the behavioural and psychological aspects of sports injuries and rehabilitation would be beneficial. An understanding of (or willingness to learn) qualitative research methods would also be beneficial.

65 PROJECT TITLE: ACTIVITY RECOGNITION BASED ON WEARABLE SENSOR RECORDING.

Principal supervisor: **Dr. Timo Rantalainen,**
Contact details: **t.rantalainen@deakin.edu.au**
(03) 9251 7256

Supervisor's profile
Dr Timo Rantalainen joined Deakin in August 2013 as a lecturer in biomechanics from the Department of Health Sciences, University of Jyväskylä, Finland. He completed his PhD (2010) at The University of Jyväskylä, Finland. His work has been mainly on estimating lower body skeletal loading with methods varying from examining cross-sectional associations to flexible multibody dynamics full-body modelling. During his PhD, and post-doctoral research he has acquired skills in implementing numerical analyses, which will be utilised in the proposed Honour's project.

Co-supervisor
A/Prof Daniel Belavy: After posts at The Unviersity of Queensland, Charité University Medical School in Berlin, Germany, A/Prof Daniel Belavy joined Deakin in 2014. His work in the last 10 years has focused on the impact of exercise and disuse on muscle, bone, neuromuscular function and the intervertebral disc. At Deakin, his work focusses on exercise, the spine and back pain.

Project is based at: Burwood

Project description
Activity recognition has many practical applications including athlete load monitoring, and physical activity and inactivity quantification. Machine learning approaches will be applied on wearable sensor recordings to classify segments of the recording into specific activities. Both laboratory data, and data from habitual activities will be utilised in the project. The aim of the project is to develop activity recognition algorithms to advance the state of art, and to explore whether more than one wearable sensor is necessary for activity recognition.

Methodological approach
Volunteers will be recruited to undertake a series of activities in a laboratory setting, and monitored over subsequent 7-days with wearable sensors. The recorded data will be used to train a classifier using machine learning techniques and applied on the 7-day recordings to explore activity recognition performance.

Necessary skills/knowledge
No specific requirements. Interest in wearable technology highly desirable.

66 PROJECT TITLE: EXPLORING ACCELEROMETRY-BASED ESTIMATES OF SKELETAL LOADING IN ADOLESCENTS

Principal supervisor: **Dr. Timo Rantalainen**
Contact details: **t.rantalainen@deakin.edu.au**
(03) 9251 7256

Supervisor's profile
Dr Timo Rantalainen joined Deakin in August 2013 as a lecturer in biomechanics from the Department of Health Sciences, University of Jyväskylä, Finland. He completed his PhD (2010) at The University of Jyväskylä, Finland. His work has been mainly on estimating lower body skeletal loading with methods varying from examining cross-sectional associations to flexible multibody dynamics full-body modelling. During his PhD, and post-doctoral research he has acquired skills in implementing numerical analyses, which will be utilized in the proposed honour's project.

Co-supervisor
Dr. Rachel Duckham joined Deakin University in June 2013 as a postdoctoral research fellow from the University of Massachusetts Medical School, USA. She has a PhD from Loughborough University, UK, in Human Biology with a research focus in the influence of physical activity and nutrition on musculoskeletal health over the lifespan. Although her primary role in the school is to run clinical research trials she is also required to deliver some select lectures focusing on body composition and the physiology of human growth.

Project is based at: Burwood

Project description
Growth is an opportune time for modifying skeletal health, in fact, it is rather likely that maximizing skeletal mass during growth would be the prudent way to minimize osteoporotic fractures later in life. The purpose of the project is to explore the associations between objectively measured habitual activity and inactivity and skeletal health in adolescents to provide important information for the design of future intervention studies focused at maximizing bone health.

Methodological approach
We will recruit a sample of healthy adolescents and measure their functional performance, physical activity and bone characteristics. They will be asked to wear a wearable sensor for a week. The recording will be analysed to produce an objective measure of skeletal loads, amount of physical activity and inactivity. Associations between skeletal loads, activity and inactivity, and bone characteristics will be evaluated with statistical methods.

Necessary skills/knowledge
Although no prior skills are required the prospective student should have a strong desire to work with adolescent children in the area of physical activity monitoring and musculoskeletal health. The student should be self-motivated, with the ability to work

independently and have good attention to detail. Keen interest in research highly desirable!

67 PROJECT TITLE: INTERVENTION DISSEMINATION IN THE DIGITAL AGE: IS ONLINE TRAINING EFFECTIVE?

Principal supervisor: **Prof Jo Salmon**
Contact details: jo.salmon@deakin.edu.au
(03) 9251 7254

Supervisor's profile
Prof Jo Salmon (Principal Supervisor): Prof Jo Salmon is an Alfred Deakin Professor and holds a NHMRC Principal Research Fellowship. She is Co-Director of the Institute for Physical Activity and Nutrition with more than 50 academic members of staff, and is President of the International Society for Behavioral Nutrition and Physical Activity which has more than 600 members. She completed her PhD on the behavioural epidemiology of sedentary behaviour. Her expertise is in the development of interventions to promote children's physical activity and reduce sedentary behaviour.

Co-supervisors
Dr Harriet Koorts (Co-supervisor): Dr Harriet Koorts is a Postdoctoral Research Fellow within the Institute for Physical Activity and Nutrition (IPAN). Her research focuses on the implementation and evaluation of physical activity and sedentary behaviour interventions at a population level. She is interested in effective ways of translating research into practice to improve the uptake and sustainability of interventions in real-world contexts. Harriet has both research and practice based experience implementing and evaluating health promotion initiatives in Australia and the UK.

Dr Jenny Veitch (Co-supervisor): Dr Jenny Veitch is a Senior Research Fellow within the Institute for Physical Activity and Nutrition (IPAN). Her research has examined neighbourhood influences on physical activity and sedentary behaviour across the lifespan and she has extensive experience conducting research in schools.

Project is based at: Burwood

Project description
Online methods are an increasingly popular and effective way of reaching large numbers of individuals in a low cost and timely manner. More recently, health researchers and health promotion organisations are using online methods as a way to disseminate health interventions and promote health messages across large populations. The aim of this project is to assess whether teacher training to deliver a school-based physical activity and sedentary behaviour intervention (Transform-Us!) is effective when delivered online. The Transform-Us! program is a school-based intervention targeting increases in children's physical activity and reductions in their sedentary behaviour. The program will be disseminated across Victoria and teachers will complete training to implement the intervention online. The training is designed to increase teacher's knowledge of the importance of increasing children's physical activity and reducing their sitting time, increase the teacher's self-efficacy to implement the intervention and capacity to adhere to the program requirements.

This project will assess the effectiveness of the online training via changes in teachers' knowledge, self-efficacy and capacity to deliver the intervention post completion of the online training.

Methodological approach
This cross sectional study will use online survey data to be collected during 2016-17 as part of a 5-year implementation trial of a physical activity and sedentary behaviour intervention across primary schools in Victoria.

Necessary skills/knowledge
Experience using Stata is desirable (but not essential).

68 PROJECT TITLE: TO ADOPT OR NOT TO ADOPT? DECISION MAKING PROCESSES TO IMPLEMENT A STATE-WIDE PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR INTERVENTION.

Principal supervisor: **Prof Jo Salmon**
Contact details: **jo.salmon@deakin.edu.au**
(03) 9251 7254

Supervisor's profile
Prof Jo Salmon (Principal Supervisor): Prof Jo Salmon is an Alfred Deakin Professor and holds a NHMRC Principal Research Fellowship. She is Co-Director of the Institute for Physical Activity and Nutrition with more than 50 academic members of staff, and is President of the International Society for Behavioral Nutrition and Physical Activity which has more than 600 members. She completed her PhD on the behavioural epidemiology of sedentary behaviour. Her expertise is in the development of interventions to promote children's physical activity and reduce sedentary behaviour.

Co-supervisors
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Dr Jenny Veitch is a Senior Research Fellow within the Institute for Physical Activity and Nutrition (IPAN). She has experience with qualitative research methodologies including conducting one-on-one interviews and focus groups and using NVivo to analyse data.

Project is based at: Burwood

Project description
Schools are an ideal setting in which to target healthy levels of physical activity and sedentary behaviour, as children spend a considerable amount of time in this environment and schools provide access to large populations of children. Whilst the school setting is opportunistic, school-based health improvement is one of a many competing demands schools face in addition to curriculum pressures and academic outcomes. School Principals and members of the School Council are important gatekeepers to the implementation of interventions in schools, and the decision to adopt or reject delivery of a program. Dissemination and implementation research has shown that the perceived relevance, appropriateness and feasibility of an intervention are all linked to individual's adoption of program. Understanding what makes interventions appealing to the decision makers within schools, such as Principals and

School Council members, will help researchers tailor the perceived appeal of interventions and strategy for dissemination to maximise likely uptake.
The aim of the project is to explore in-depth the perspectives and experiences of Principals and/or school council members when deciding whether or not to adopt and implement a school-based physical activity and sedentary behaviour intervention. This project will answer the question 'What factors influence school's decision to adopt and implement interventions to promote physical activity and reduce sedentary behaviour?'

Methodological approach
This project will involve qualitative methodology which may include semi-structured interviews and/or focus group discussions among 10-15 Primary School Principals / School Council committee members in Victoria. An in-depth exploration of participant perspectives will be conducted. Data will be analysed thematically using NVivo10. Ethics approval will be sought from Deakin Human Ethics.

Necessary skills/knowledge
Students with an interest in the implementation of interventions, population health promotion, and/or physical activity and sedentary behaviour interventions would be suited for this project. Applicants should have basic skills in qualitative methodology, and an ability to work as part of a research team and communicate with a variety of audiences.

69 PROJECT TITLE: HOW DOES MUSCLE ADAPT TO ENDURANCE TRAINING?

Principal supervisor: **Dr Glenn Wadley**
Contact details: **glenn.wadley@deakin.edu.au**
(03) 9244 6018

Supervisor's profile
Dr Wadley is a senior lecturer in the School of Exercise and Nutrition Sciences. A key focus of his 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 current research projects utilize a range of approaches from human exercise trials down to animal and cell culture experiments to investigate these areas. Some of Dr Wadley's projects are currently funded by Diabetes Australia and he has received substantial funding from the Heart Foundation and the National Health and Medical Research Council. Most of his previous honours students have been successful in obtaining entry to competitive postgraduate programs including PhD, Medicine and Master of Dietetics.

Co-supervisors
Professor Aaron Russell

Project is based at: Burwood

Project description
This project will provide important insights into the mechanisms that stimulate muscle to adapt to endurance exercise training. The skills students would develop from this Honours project are ideally suited to students wishing to pursue postgraduate study in biomedical or exercise physiology research (such as a PhD) or even medicine.

Some of the major health benefits of endurance training are increased mitochondrial content (synthesis), antioxidant defences and insulin sensitivity and reduced oxidative stress in skeletal muscle. microRNA are small non-coding ribosomal nucleic acid (RNA) molecules that are expressed in skeletal muscle and are involved in regulating these adaptive responses of muscle to endurance training. Furthermore, we have shown that the expression levels of many microRNA's are increased following exercise in skeletal muscle of humans. There is now evidence in cell culture that microRNA move (translocate) from the cytosol of the cell to the mitochondria to help stimulate mitochondrial synthesis. Therefore, studies are now required to examine if microRNA's translocate to the mitochondria in human skeletal muscle following endurance exercise. 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 muscle biopsies taken before and after exercise. The nuclear, cytosolic and mitochondria fractions of the muscle will be isolated and the microRNA levels measured.

Methodological approach
Exercise screening and VO2max testing of healthy volunteers. Laboratory techniques include protein extraction, real-time PCR analysis, western blotting and enzymatic assays. All these techniques will be taught as part of the honours training.

Necessary skills/knowledge
Course work in exercise physiology/metabolism is required. Coursework in biochemistry and/or molecular biology is an advantage but not necessary. All laboratory techniques will be taught to the student as part of the honours training.

70 PROJECT TITLE: HOW DOES PHYSICAL ACTIVITY IN CHILDHOOD IMPROVE THE ADULT HEART?

Principal supervisor: **Dr Glenn Wadley**
Contact details: **glenn.wadley@deakin.edu.au**
(03) 9244 6018

Supervisor's profile
Dr Wadley is a senior lecturer in the School of Exercise and Nutrition Sciences. A key focus of his 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 current research projects utilize a range of approaches from human exercise trials down to animal and cell culture experiments to investigate these areas. Some of Dr Wadley's projects are currently funded by Diabetes Australia and he has received substantial funding from the Heart Foundation and the National Health and Medical Research Council. Most of his previous Honours students have been successful in obtaining entry to competitive postgraduate programs including PhD, Medicine and Master of Dietetics.

Co-supervisor
Dr Severine Lamon

Project is based at: Burwood

Project description
We have found in rats that a few weeks of regular exercise during juvenile development (i.e. before adolescence), results in bigger hearts in adulthood. This is despite them being sedentary for their entire adult lives and long after the training effects should have worn off. It is possible one of the molecular mechanisms to explain these surprising findings could be due to exercise altering microRNA (miRNAs) levels during cardiac development. MiRNA's are small noncoding ribonucleic acids (RNAs) that are known to function by inhibiting protein translation or enhance messenger RNA degradation. Therefore, the aim of this project is to examine if mimicking the effect of endurance exercise by altering the miRNA expression of hearts will lead to bigger (and possibly healthier) hearts in these rats. The skills students would develop from this Honours project are ideally suited to students wishing to pursue postgraduate study in nutrition, biomedical or exercise physiology research (such as a PhD) or even medicine.

Methodological approach
Laboratory techniques including animal handling, protein extraction, RNA extraction, real-time PCR analysis, western blotting and enzymatic assays. It is not expected students have these skills prior to Honours and all these techniques will be taught as part of the honours training.

Necessary skills/knowledge
Laboratory techniques including animal handling, protein extraction, RNA extraction, real-time PCR analysis, western blotting and enzymatic assays. It is not expected students have these skills prior to Honours and all these techniques will be taught as part of the honours training.

71 PROJECT TITLE: WOMENS PARTICIPATION IN SPORT AND EXERCISE

Principal supervisor: **Dr Helen Brown**
Contact details: **hbrown@deakin.edu.au**
(03) 9244 6327

Supervisor's Profile
Dr Helen Brown is a Lecturer in the School of Exercise and Nutrition Sciences lecturing in the areas of sport coaching and children's physical activity. Her primary research interest is investigating influences on children and youth's physical activity. Helen has also been involved in several studies relating to increasing females participation in sport and physical activity, including a recent study exploring sport participation amongst females in the City of Casey.

Co-supervisor
Dr Natalie Saunders is co -supervisor for the project. She is a lecturer in Clinical Exercise Physiology and her research interests include neuromuscular control and biomechanics in a functional context, in particular understanding the various loads on the human body that results in injury, prevents injury or is related to the rehabilitation of various structures. She has an interest in translating evidence based research into practice in the wider community.

Project is based at: Burwood

Project description
Women's participation in sport is currently of great interest to both government and sporting communities due to the evidence of positive health and wellbeing outcomes associated with participation. To date research has typically focused on individual factors affecting women's sport participation, however little is known about the interaction of personal and environmental factors to enhance female participation. The aim of this project is to conduct a research case-study of a successful female sport participation environment to examine the key factors behind female participation in sport.

Methodological approach
This project will use a sporting organisation with a high female participation base as a case study to evaluate a model of women's sporting participation. Semi-structured interviews will be undertaken with athletes, coaches and sport administrators to explore the broad environmental factors and the interaction of these factors to support or enable women's participation in sport. Direct observations will be undertaken to enable researchers to gain a deeper understanding of the social and environmental factors at play. Finally, analysis of existing documents such as web pages and existing club information will be undertaken to provide further information on the sporting environment for women.

Necessary skills/knowledge
An understanding of qualitative research methods would be preferred, but is not essential. Training and support will be provided throughout the honours year.

Confidence in conversing with a range of individuals and a desire to increase female's confidence in their capacity to participate and engage in sport and exercise at all levels would be advantageous.

72 PROJECT TITLE: REGULATING MICRORNAS TO IMPROVE RUNNING PERFORMANCE

Principle supervisor: **Professor Aaron Russell**
Contact details: **aaron.russell@deakin.edu.au**
03 9251 7397

Supervisor's profile:
Professor Russell has published over 100 scientific papers in the area of skeletal muscle development and function. His primary research interest focuses on skeletal muscle health and its impact on exercise performance and the severity of chronic disease. He uses human, rodent and muscle cell models to identify molecular factors that influence skeletal muscle health.

Co-supervisor
Dr Paul Della Gatta is an expert in skeletal muscle function with expertise in muscle regeneration, fibre type and inflammation. His is an expert in the development of human muscle cell cultures, muscle morphological analyses, as well as conducting human and rodent exercise interventions.

Project is based at: Burwood

Project description
MicroRNA's a small molecules that regulate cell function. Our team has identified that a microRNA-23a (miR-23a) can inhibit skeletal muscle mitochondrial biogenesis and function. We have developed a technique to reduce the amount of miR-23a in mouse skeletal muscle. As the mitochondria is vital for exercise performance, numerous chronic diseases with compromised mitochondrial function are characterised by impaired exercise tolerance; the latter often contributing to disease severity. Therefore we aim to inhibit miR-23a and measure impact exercise capacity in mice. We hypothesise that inhibiting miR-23a will improve mitochondrial function and exercise capacity in mice. The outcome of this study is the identification of a potential therapeutic approach to improve skeletal muscle mitochondrial function and physical performance. As miRNA therapies are presently used in clinical trials, the outcomes from this project may eventually be used to improve exercise tolerance in chronic disease conditions.

Methodological approach
Sixteen mice (8 control/8 miR-23a inhibition) will perform a treadmill test to determine maximal running speed and time to exhaustion. Leg muscles will be removed for the determination of mitochondrial morphology and function, muscle fibre type and substrate oxidation.

Necessary skills/knowledge
Understanding of skeletal muscle adaptation to exercise and mitochondrial function.

73 PROJECT TITLE: INTEGRATING ENVIRONMENTAL AND PHYSIOLOGICAL DATA TO IMPROVE THE DELIVERY OF REMOTELY MONITORED EXERCISE

Principal supervisor: **Professor Ralph Maddison**
Contact details: **ralph.maddison@deakin.edu.au**
03 9244 6218

Supervisor's profile:
Ralph Maddison is a behavioural scientist and Professor of Physical Activity and Disease Prevention at the Institute for Physical Activity and Nutrition (IPAN), Deakin University. Since 2004, has been awarded consecutive nationally competitive fellowships from the New Zealand Heart Foundation and Health Research Council to investigate physical activity and lifestyle interventions for the prevention and management of chronic disease. 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. Both working at IPAN, we will have regular mentoring contact.

Co-supervisor
Jonathan Rawstorn

Project is based at: Burwood

Project description
Exercise training improves mortality, exercise capacity, and modifiable cardiovascular risk factors among individuals with cardiovascular disease, but fewer than 50% of eligible individuals initiate traditional supervised exercise programmes in hospitals and rehabilitation clinics. We have developed a novel technology-assisted programme that enables clinical exercise specialists to remotely monitor participants' physiological responses and provide individualised coaching support in real-time during exercise training. This overcomes key barriers that limit access to traditional programmes; however, variable terrain and environmental conditions in free-living environments introduce unique challenges for managing participants' exercise performance compared with stationary ergometer training. Our technology platform enables collection of geopositional data that could enable use of detailed topographical data to improve methods for prescribing and monitoring remotely delivered exercise. This could improve health and functional outcomes; however, to date we have not explored the feasibility and validity of integrating topographical data with existing geopositional and physiological data. This projects aims to assess the feasibility of combining geopositional, topographical, and physiological data to improve the management of remotely delivered exercise in free-living environments.

Methodological approach
Topographic data will be extracted for an existing set of geopositional data, and used to model terrain during free-living exercise. This will be overlaid with physiological data to explore whether topographic data can be integrated into remotely delivered exercise prescription and monitoring.
The feasibility of extracting topographic data in real-time during remotely monitored exercise will be explored.
Field data may be collected during free-living exercise on varied terrain to determine whether integration of topographic, geopositional, and physiological data, collected via the technology platform, can be used to estimate mechanical power output and energy expenditure.

Necessary skills/knowledge
Applied exercise physiology, exercise prescription, exercise psychology, basic statistics, exercise testing (lab and/or field)

74 PROJECT TITLE: PHYSICAL DEMANDS DURING TRAINING AND COMPETITION OF AFL FIELD AND BOUNDARY UMPIRES

Principal supervisor: **A/Prof Paul Gastin**
Contact details: **paul.gastin@deakin.edu.au**
03 9244 6334

Supervisor's profile:
A/Prof Paul Gastin is Co-Director of the Centre for Sport Research. Paul's teaching and research focuses on innovation in sport science and coaching practice to enhance the performance of people and organisations across the sport participation spectrum. His work is multidisciplinary and includes athlete monitoring, performance management and sport system development. Focus areas include assessment methods to quantify load and the monitoring of athlete responses to training and competition. In addition to his work in academia, Paul worked in Olympic/Paralympic and professional sport in Australia and overseas over many years holding senior positions in the Victorian Institute of Sport, the UK Sports Institute and UK Sport. He is an ESSA accredited sport scientist.
To find out about Paul's research view his Google scholar publications: http://goo.gl/RKCXWl

Co-supervisor
Ms Brianna Harvey (Umpire Coach Analyst, AFL)

Project is based at: Burwood

Project description
Umpires play an integral role in sport as they uphold the laws of the game. In Australian football, the physical demands of players during both training and competition have been well documented with a number of time-motion analysis variables linked to performance, injury and recovery. Much less is known about the match demands and training characteristics of umpires as they prepare for their role.
This project, conducted in collaboration with the AFL Umpires Department, will analyse GPS and accelerometer time-motion data collected during training (2 sessions per week) and all matches at the MCG during the home-and-away season and finals. Research questions include comparisons between training and competition, home-and-away and finals, and field umpires and boundary umpires.

Methodological approach
Data collected using integrated wearable technologies (GPSports SPI-HPU) from field and boundary umpires during the 2015 home-and-away and finals series will be analysed and used to answer the identified research questions. Other data (eg. video footage, decision-making outcomes) collected during the season will also be made available should it be required.
In addition, the Honours student will also have the opportunity to work with the AFL Umpires Department during the 2017 season should they wish. This may include the collection of data for future research projects or support for the week-to-week operations of the Department (eg. live coding of matches and umpire performance).

Necessary skills/knowledge
Foundation knowledge in exercise and sports physiology and performance analysis.
Good organisational and time management skills; self-driven and capable of working autonomously.
An interest in applied sport science, with a focus on performance assessment in field team

75 PROJECT TITLE: EARLY-CAREER GAME EXPOSURES AND CAREER LONGEVITY IN ELITE AUSTRALIAN FOOTBALL

Principal supervisor: **Dr Jacquie Tran**
Contact details: **j.tran @deakin.edu.au**
0447 222 203

Supervisor's profile
Jacquie is a Research Fellow working jointly in Deakin's Centre for Sport Research and the Geelong Cats FC. Jacquie has multidisciplinary research interests, including elite athlete preparation and performance, load monitoring, sports analytics, and sports technology.

Co-supervisor
Assoc Prof Paul Gastin, Mr Kris Hinck

Project is based at: Burwood

Project description
Athletes experience a number of transitions during their involvement in sport. These transitions can be broadly classified as normative (predictable, anticipated exits from one stage of development and entry into another) and non-normative (unpredicted, unanticipated, involuntary transitions) (Wylleman & Lavellee 2004). Within-career transitions that occur when athletes progress from junior to senior level competition can be classified as largely normative, although athletes will experience major shifts during this period across athletic, cognitive, physical, psychological, psychosocial, and academic / vocational domains (Finn & McKenna 2010).

Over recent years, many professional teams competing in the Australian Football League (AFL) have adopted an 'academy' model to nurture young athletes in the early phases of their careers (e.g., first 4 years), and guide their development in order to achieve and sustain elite performance in the long-term. The early-career phase is clearly complex, dynamic, and multifaceted, but one major consideration for coaches is the degree to which academy players should be exposed to senior-level competition. Previous qualitative research has revealed that elite athletes (e.g., Olympians, World Champions) perceive early exposure to and early success in senior-level competition as critical for making a successful transition from junior to elite senior ranks. However, there is currently limited research exploring how much exposure to senior-level games should be provided to young footballers to support career longevity and foster successful performance. A considerable amount of objective data is routinely collected on AFL players during competitive matches (e.g., games played, percentage of game time played, individual player performance ratings); this rich source of information warrants further exploration to improve our understanding of athlete development in AFL. This study will examine the trajectories of games played by AFL players over their careers to investigate the volume of game exposure for AFL players in the early phase of their career, and explore whether game exposure trajectories vary between athletes in different 'experience' brackets (e.g., 100 vs. 150 vs. 200 vs. 250 vs. 300+ games played).

Methodological approach
This will be a longitudinal, observational study. The data to be used will include a combination of data retrieved from Champion Data, and from freely accessible databases in the public domain. Specifically, this data will include AFL game statistics for all players on all teams that have competed in the league since the inception of the national league in 1990.

Necessary skills/knowledge
An interest in sports analytics, some foundational skills in basic statistics and statistical programming and / or an eagerness to learn are essential. Some familiarity with Australian football is preferred, but is not essential if the individual is willing to learn more about the sport.

76 PROJECT TITLE: INVESTIGATING PHYSICAL ACTIVITY AND ITS RELATIONSHIP TO HEALTH, FITNESS AND WELLBEING IN MEDICAL STUDENTS

Principal supervisor: **Dr Shannon Sahlqvist**
Contact details: **shannon.sahlqvist@deakin.edu.au**
(03) 522 17782

Supervisor's profile
Dr Shannon Sahlqvist is a Lecturer in Physical Activity and Health (Geelong). Shannon's research focuses on developing and evaluating active travel interventions.

Co-supervisor
Sam Hoffmann is a member of the Centre for Sport Research (CSR) and a lecturer in Applied Exercise and Sport Science at Deakin University's School of Exercise and Nutrition Sciences. Sam's broad research areas are exercise physiology and exercise prescription in relation to health, well-being and sports performance. Her interests include investigating the physiological responses to exercise, adaptations to training and the relationship with health, well-being and performance outcomes.

David Lipman has been the lead researcher on the MEDx project since its inception and has subsequently presented the research at multiple state, national and international conferences across both sports medicine and medical education. His research interests include the effects of physical activity and obesity. He is passionate about exercise as medicine.

Scott McCoombe is a senior academic in the School of Medicine and is head of the year 1 Public Health Medicine stream. He has an exceptional resume of research supervision and vast experience in the area. He has a diverse set of research interests including: cancer, medical education, rural health, indigenous health and his PhD work in infectious diseases (HIV).

Project is based at: Waurn Ponds

Project description
The growing burden of non-communicable disease means a changing of the role and requirements of tomorrow's doctors. The MEDx study has for 3 years been investigating the attitudes towards and knowledge of 'exercise is medicine', and physical activity habits in medical students at Deakin University's School of Medicine. Results thus far have yielded a clear deficiency of knowledge and physical activity habits.

Utilising information gained from the MEDx project regarding the physical activity habits of medical students, this project will progress the insight into this area significantly through investigation of links to physical fitness and associated academic performance and coping. This has important implications for the medical curriculum and role modelling of tomorrow's doctors.

Methodological approach
This project will investigate the fitness and wellness of medical students. This will then be correlated with cognitive performance, and sleep, depression, anxiety and stress scores. Additionally this will be compared with self-reported physical activity data. There is significant scope for the motivated student to show initiative and drive in directing this project in areas of interest.

Necessary skills/knowledge
Knowledge on the relationship between physical activity and health. Skills on data collection and analysis will be taught.

77 PROJECT TITLE: COMPARING PHYSICAL ACTIVITY HABITS, AND ATTITUDES AND KNOWLEDGE OF 'EXERCISE AS MEDICINE' IN EXERCISE SCIENCE AND MEDICAL STUDENTS.

Principal supervisor: **Dr Shannon Sahlqvist**
Contact details: **shannon.sahlqvist@deakin.edu.au**
(03) 522 17782

Supervisor's profile
Dr Shannon Sahlqvist is a Lecturer in Physical Activity and Health (Geelong). Shannon's research focuses on developing and evaluating active travel interventions.

Co-supervisor
Sam Hoffmann is a member of the Centre for Sport Research (CSR) and a lecturer in Applied Exercise and Sport Science at Deakin University's School of Exercise and Nutrition Sciences. Sam's broad research areas are exercise physiology and exercise prescription in relation to health, well-being and sports performance. Her interests include investigating the physiological responses to exercise, adaptations to training and the relationship with health, well-being and performance outcomes.

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Project is based at: Waurn Ponds

Project description
The growing burden of non-communicable disease means a changing of the role and requirements of tomorrow's doctors. The MEDx study has for 3 years been investigating the attitudes towards and knowledge of 'exercise is medicine', and physical activity habits in medical students at Deakin University's School of Medicine. Results thus far have yielded a clear deficiency of knowledge and poor physical activity habits.

Utilising information gained from the MEDx project regarding the physical activity habits of medical students, this project will progress the insight into this area significantly through contrasting the results obtained from medical students with students currently undertaking an Exercise Science degree. This will provide important context for the results obtained from the medical students.

Methodological approach
This project will investigate the physical activity habits, and attitudes towards and knowledge of ‘exercise as medicine’ in Exercise Science students at Deakin University. The data will then be compared with the previously collected data from the MEDx project. There is significant scope for the motivated student to show initiative and drive in directing this project in areas of interest.

Necessary skills/knowledge
Knowledge on the relationship between physical activity and health. Skills on data collection and analysis will be taught.

ADDITIONAL PROJECTS

FOOD SCIENCE AND NUTRITION PROJECT (H418)

31A PROJECT TITLE: SENSORY MARKETING

Principal supervisor: **Dr Gie Liem**
Contact details: **gie.liem@deakin.edu.au**
(03) 924 46039
Co-supervisor: **Prof Russell Keast**

Supervisor's profile
Gie Liem is a senior lecturer and course director of the Bachelor of food and nutrition sciences. His research focuses on taste development and sensory marketing

Project is based at: Burwood

Project description

We offer a range of projects in the field of sensory marketing and consumer/sensory science. Please contact Gie for more information about these projects

Methodological approach
We use a range of methods including sensory tasting, eye tracking and online sensory consumer research

Necessary skills/knowledge
Knowledge in the area of food, nutrition and sensory science is useful

EXERCISE AND SPORT SCIENCE PROJECTS (H442)

78 PROJECT TITLE: VALIDITY AND REPRODUCIBILITY OF A FOOT-MOUNTED POWER METRE DURING RUNNING

Principal supervisor: **Dr Jason Bonacci**
Contact details: **jason.bonacci@deakin.edu.au**
(03) 522 72634

Supervisor's profile
Dr Bonacci is a physiotherapist with extensive experience in researching musculoskeletal injury.

Co-supervisors
Dr Kris Hink, Samantha Hoffmann and Dr Natalie Saunders

Project is based at: Waurn Ponds

Project description

Stryd is a foot-mounted device that measures power output during running by combining assessments of running form, pace and surface inclination. Power output is a scientific variable not previously available during running and it has the potential to provide real-time feedback on running efficiency and form outside the laboratory. Since running efficiency and form have the capacity to impact injury and performance outcomes, this feedback may be more informative than traditionally-used measures of pace and heart rate. However, it is unknown whether the power output produced by Stryd is valid in relation to laboratory-derived biomechanical and physiological measures, nor whether the power output it derives is reproducible. These findings will determine the usefulness of the Stryd device for training and competition. The aim of this project is to determine the validity and reproducibility of Stryd compared with laboratory-derived biomechanical and physiological measures including leg stiffness and oxygen consumption (VO_2).

Methodological approach:
This project will involve a test, re-test design in a laboratory setting where participants will run on a treadmill at a range of pre-determined intensities. The Stryd power metre will be worn, and its results compared to laboratory-derived assessments of leg stiffness and VO_2.

EXERCISE AND SPORT SCIENCE PROJECTS (H442)

79 PROJECT TITLE A COMPARISON OF THE VALIDITY AND RELIABILITY OF TWO COMMERCIALLY AVAILABLE INERTIA SENSORS SYSTEMS TO MEASURE MOVEMENT VELOCITY IN STRENGTH AND POWER EXERCISES FOR ATHLETES IN TRAINING.

Principal Supervisor: **Dr Eric Drinkwater**
Contact details: **eric.drinkwater@deakin.edu.au**
92446136

Supervisor's profile
Eric Drinkwater is a senior lecturer in the School of Exercise and Nutrition Sciences, teaching in the area of exercise prescription. Eric's research expertise is in athletic preparation and performance as well as making meaningful inferences from quantitative data.

Co-supervisors
Dr Kris Hinck, Sam Hoffman, Harry Brennan (VIS)

Project is based at: Waurn Ponds

Project description
The advancement of technology has allowed Strength and Conditioning coaches to quantify force, velocity and power during exercises in the weight room and take a more scientific approach to training (Newton and Dugan 2002). This technology has included force plates and linear encoders (Drinkwater, et al., 2007) and more recently inertia sensor technology. Inertial sensors offer a low cost, wireless solution to tracking bar movements of training athletes. These technologies offer instantaneous feedback on movement velocity which can improve intent of lifting (Randell et al 2011), identification of the velocity based training zones (Janovic and Flannagan 2014), and feedback on auto regulation of load when fatigued (Mann et al 2015). Preliminary studies have shown that the *Push* system is valid compared to the Vicon for upper body DB exercises (Sato et al 2015), and the back squat compared to a linear encoder (Balsalobre-Fernandez et al 2016). Unfortunately, the different commercial systems (e.g. *Beast* versus *Push*) calculate their variables based on different proprietary algorithms so how well coaches can compare outputs across different systems is not known. Furthermore, due to weaknesses in their data analysis methods, previous research has presented the tool as valid and/or reliable, but has not quantified the *degree* of validity or reliability.

Methodological approach

Using an athlete sample cohort, the objective of this study is to compare and quantify the validity and reliability of two inertia sensors – the *Push* system (www.trainwithpush.com) and the *Beast* system (www.thisisbeast.com) – to a linear encoder system (Gymaware) and a combined Force plate and linear encoder system (BMS 400S). These results will allow a direct comparison to established methods to help determine how these new technologies can assist in a more scientific approach to strength training and load monitoring.