## ACADEMIC PROJECT SUBMISSION DETAILS:

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<thead>
<tr>
<th>Supervisor/s:</th>
<th>Matt Driller, Dr Lynne Chepulis and Dr Ryan Paul,</th>
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<tbody>
<tr>
<td>Project Title:</td>
<td>Evaluating glycemic control in patients with Type 1 diabetes during and following exercise</td>
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<tr>
<td>Field:</td>
<td>Biomedical / Health</td>
</tr>
<tr>
<td>Division/School:</td>
<td>HECS - Division of Health, Science, Computing &amp; Engineering</td>
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## EXPECTED OUTCOMES:

1. to better understand how glucose levels respond in patients with type 1 diabetes
2. a publication in a peer reviewed journal
3. a conference presentation (in 2020) at a national diabetes meeting

## STUDENT TASKS:

1. support study recruitment
2. work alongside the research team on data collection days to collect blood glucose data from patients with Type 1 diabetes before, during and after exercise
3. assist with data analysis
4. draft a paper for publication

## REQUIRED SKILLS:

1. knowledge of health, including Type 1 diabetes
2. effective time management
3. available after hours for some test sessions (these may need to occur on weekend and/or evenings)
4. experience with analysis of health data
5. some familiarity with report writing and/or drafting research work for publication

## PROJECT ABSTRACT:

Exercise is the cornerstone of management for all forms of diabetes. However, exercise in patients with type 1 diabetes (T1D) is often difficult due to exercise-induced hypoglycaemia (low blood glucose levels) and hyperlactatemia (high blood lactate levels). To prevent hypoglycaemia, two different guidelines have been produced that either recommend reducing doses of insulin around exercise (Riddell et al 2017), or eating extra carbohydrates around exercise (www.excarbs.com). Importantly, these guidelines are primarily based on expert opinion rather than being evidence-based, and it is not currently known which approach is more effective in reducing hypoglycaemia.
PROJECT ABSTRACT:

Furthermore, it is not known which approach is more effective in either reducing hyperglycaemia (high blood glucose levels) and/or hyperlactatemia, or how they affect performance parameters such as speed, stamina, or power. We aim to answer these questions by performing a randomized crossover trial of both approaches with exercise in a cohort of 20 adult participants with T1D recruited via the Waikato Regional Diabetes Service. Glucose levels before, during and for the 24 hours after a standardized exercise and performance testing protocol will be measured by both intermittent capillary glucose levels and continuous glucose monitoring (funding secured). Capillary lactate levels will be measured at the same time as capillary glucose levels. Differences in episodes of hypoglycaemia, hyperglycaemia, and hyperlactatemia, performance parameters and patient preference between the approaches will then be compared. We plan to disseminate the findings of this study at national and international diabetes conferences, and in a peer reviewed journal.

Note: This project is part of a larger study to evaluate how exercise impacts on glycemic control in patients with diabetes. As such, the ethics will be in place before the summer studentship starts.
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<tr>
<th>Supervisor/s:</th>
<th>Apo Aporosa, Nic Vanderschantz and Annika Hinze</th>
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<tbody>
<tr>
<td>Project Title:</td>
<td>Na i cavuti: Traditional knowledge through a mobile application</td>
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<tr>
<td>Field:</td>
<td>Design/Computer science/mobile application interface design/traditional knowledge/Pacific Studies</td>
</tr>
<tr>
<td>Division/School:</td>
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### EXPECTED OUTCOMES:

1. Conference and journal publications from this research will result. These publications will detail the reporting of results from the requirements analysis and paper prototyping studies as well as the learning from the design of an application.
2. This project will result in an interactive prototype mobile application allowing for the building of a final working application after the summer scholarship. This working application would be a free downloadable mobile application aiding the retention of na i cavuti.
3. Future user studies with this working application are expected after development ensuring continued potential for collaborative investigation into cultural and traditional knowledge preservation using digital information and mobile apps by the research team of Aporosa, Vanderschantz, and Hinze.

### STUDENT TASKS:

1. Undertake a requirements analysis study of the technology and visual communication considerations for a mobile app using the data collected by the research team before the commencement of the summer scholarship.
2. A paper prototyping user study
3. Data design and input for a mobile application
4. Interface design for a mobile application

### REQUIRED SKILLS:

1. Familiarity with Excel.
2. Experience in the use of Adobe XD or InVision Studio or Proto.io or similar (App development programmes).
3. Is comfortable working (at times) on their own and is self-motivated.
4. Has an interest in app. design and development linked to traditional knowledge.
PROJECT ABSTRACT:

This project builds on a research collaboration between the School of Health, Sport and Human Performance and the Computer Science Department. This collaboration investigates cultural and traditional knowledge preservation using digital information and mobile apps. The summer scholarship will provide the opportunity to advance this cross faculty investigation into presenting traditional Fijian cultural knowledge through mobile applications. Interaction design, visual design and usability research for a mobile app will be undertaken as the central focus of this summer scholarship.

When visiting a Fijian village or house (including the home of an expatriate), the presentation of a verbal hierarchical acknowledgement 'na i cavuti' is necessary and critical to appropriate cultural practice. This protocol has similarities to Māori powhiri or whakatau, a formality used to eliminate tapu, or 'separateness', between host and guest. In Fiji, each chiefly entity has their own cavuti, meaning there are several thousand na i cavuti. Additionally, these are based on ancestral titles and pre-colonial place names. Therefore, in some cases, cavuti can be quite lengthy.

Over the past ten years, Fiji's Institute of Language and Culture has been collecting and recording oral traditional knowledge including na i cavuti. While this is extremely valuable, it has also highlighted the role that textualized (written) recording plays in weakening remembered knowledge. Na i cavuti is a good example of this, with Fijians increasingly abdicating memorised cavuti for textualized sources. However, that abdication tends to be based on idealised assumptions as opposed to reality, as textualized cavuti records are scarce and difficult to access. This is increasingly leading to cavuti being mis-presented and in some cases negated, resulting in culturally inappropriate practice and the loss of critical traditional knowledge. Our proposed mobile application will begin to address this weakening of remembered knowledge.

We are seeking a motivated summer student with a passion for mobile application design and development. While the data is presented in vosa vakabau (Fijian language) and the mobile application will be for a Fijian audience (native and ex-patriate) the summer scholarship applicant need not be a Fijian designer. Aporosa will work closely with the summer scholar to understand the content that is being worked with and the implications of visual material that should be considered during the visual design and development phase of the project. This project would also be suited to a student with an interest in traditional knowledge continuity. The student would receive guidance within a supportive and friendly environment working with the researchers named on this application who work across the anthropology, design, and computer science research domains.

The student will benefit by the development of key research skills for use in human computer interaction, information systems, and graphic design research and practice as well as the development of mobile application design experience. This project will provide a stepping-stone to further postgraduate research opportunities, as the student will be introduced to research human-computer-interaction experiment design considerations and results analysis.
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<th><strong>Supervisor/s:</strong></th>
<th>Kim Herbert-Losier</th>
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<td><strong>Project Title:</strong></td>
<td>Injury screening - Consensus rating of the Landing Error Scoring System and effect of warm-up on risk scores</td>
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<td><strong>Field:</strong></td>
<td>Sport Science / Clinical Science</td>
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### EXPECTED OUTCOMES:

1. Validation of LESS score database
2. Pilot data on the effect of warm-up on injury risk
3. Brief report (extended abstract) on validation findings
4. Brief report (extended abstract) on warm-up findings
5. Pathway to master or PhD project for student

### STUDENT TASKS:

1. Extract LESS scores from a pre-existing database
2. Collect injury-risk data (under supervision) pre and post warm-up
3. Write a brief report on the collected data

### REQUIRED SKILLS:

1. Experience / interest in injury risk screening and movement analysis
2. Basic human anatomy and human movement knowledge
3. Strong written and oral communication skills
4. Coaching experience (preferred, but not required)

### PROJECT ABSTRACT:

The subjective assessment of movement is common practice in health and sport. Several movement screens have been developed in recent years and are used daily to help clinicians identify individuals at high-risk of non-contact injuries. The Landing Error Scoring System (LESS) is used to screen for risk of non-contact lower-body and Anterior Cruciate Ligament injuries. Research suggests that a consensus rating from two raters strengthens the validity of LESS scores. In the last 2 years, our research team has accumulated a database of LESS scores that needs validation from a second rater. In addition, we have shown that various factors have the potential to influence LESS scores.
In New Zealand, coaches and athletes use ACC SportSmart warm-up programs in preparation for sporting activities. This summer project will also provide an opportunity for a student to lead a pilot study investigating the effect of recommended warm-up programs on injury-risk screening scores.

This summer scholarship provides a student an opportunity to participate in the longer-term research plans of the School of Health, Sport and Human Performance. The scholarship will allow the School to strengthen a database that is currently in use for research and grant-application purposes. This scholarship will also enhance our potential to partner and support ACC SportSmart and community sport initiatives (i.e., netball, football, rugby codes), and offers the student a pathway to postgraduate study.