

Queensland Academy of Sport – Potential Honours Projects 2019/2020

If you are interested in any of the following projects, please contact Dr Trish King (Trish.King@npsr.qld.gov.au), ensuring you provide an indication of the project you are in and provide relevant details as outlined on the HMNS website – <https://hmns.uq.edu.au/current-students/honours-research-project>.

Supervisor	Proposed Project/Topic Area
Dr Luke MacDonald	<p><i>Tracking kicking load in Taekwondo (TKD) using IMUs.</i></p> <p>Part of a larger project including AIS combat centre and VIS Taekwondo hub – the Honours project would involve some initial piloting.</p> <p>Currently in Australian TKD there is little understanding of how many kicks (and types of kicks) are performed in training sessions and how this may vary with different types of sessions (sparring, repetitive drills etc.). In addition, anecdotally, it is understood that Aussie athletes train less, and therefore perform less kicks, than those athletes from more successful nations (e.g., SE Asia, UK, Eastern Europe etc.). And whether or not this is true and Aussies actually need to train more, in attempts to progressively increase training down at the VIS TKD Hub, athletes are experiencing more hip issues/injuries. The QAS athletes have not had any issues, however, currently the QAS athletes would experience ~60% of the kicking load the VIS hub athletes have.</p> <p>The goal is to have the ability to monitor kicking load using IMUs in TKD athletes and use this data to inform decisions around training. We hope to track several variables (total count, different velocities, impact vs non-impact).</p>
Dr Trenton Warburton	<p><i>A comparison of Alter-G, Treadmill and Track running stride mechanics (contact time, flight time, step length etc.) using optical measurement systems.</i></p> <p>A project investigating if any mechanical differences exist in athletes running on 2 x treadmills and on the athletics track using Optojump and Optogate.</p>
Dr Kirstin Morris	<p><i>The muscle activation patterns of elite rowers using RP3 vs. Concept II ergometers.</i></p> <p>Project using EMG with a biomechanics or physiology focus</p>
Dr Kirstin Morris	<p><i>Longitudinal analysis of ergometer training and career progression in elite rowers.</i></p> <p>Project involving statistics/data analysis and physiology</p>
Dr Kirstin Morris	<p><i>Effects of environmental conditions on rowing training speeds and stroke rates.</i></p>

	Project involving statistics/data analysis and physiology
Dr Kirstin Morris	<i>Using rate of heart rate increase for tracking training performance in elite rowers</i> Project involving primarily physiology
Dr Kirstin Morris and Katie McGibbon	<i>Towards optimising training individualisation in a Paralympic swimming squad.</i> Project involving statistics/data analysis and physiology
Nick Smith	<i>Analysing the role of arm and leg timing for performance of relay changeovers in elite swimmers.</i> Analysing two years of data collected on Australian elite swimmers, this project utilises digitised video to determine the timing of arms and legs during the relay changeover. Project involving statistics/data analysis and biomechanics
Dr Trish King	<i>Goal scoring opportunities in Women's Hockey</i> Goal scoring has been identified as an area that requires attention in Australian Women's Hockey. The rate of a positive outcome (goal shot or penalty corner opportunity) once the attacking circle has been entered is low and significantly impacts the success of Australian teams domestically and internationally. This project would identify which areas (position of entry into the goal circle, passing/shooting decisions, athlete positioning, type of shot etc.) the coaches and athletes can focus on to increase their rate of effectiveness. Project involving performance analysis and decision making/skill acquisition.
Chantelle du Plessis	<i>The reliability of muscle activation patterns during successive high intensity cycling bouts at the same cadence and crank length.</i> Project using EMG with a biomechanics focus
Chantelle du Plessis	<i>Assessing bilateral asymmetry during successive high intensity cycling bouts using crank torque and cadence relationships.</i> Project using LODE Ergometer with a biomechanics focus
Chantelle du Plessis	<i>The validity of using EMG to assess the rate of fatigue during a 4-min maximal cycling effort.</i> Project using EMG with a biomechanics focus