BOND UNIVERSITY
TACTICAL RESEARCH UNIT

Tactical Research Unit
Annual Report 2022

Annual Report 2021

tru.bond.edu.au

BOND UNIVERSITY
TACTICAL RESEARCH UNIT

MISSION

To enhance the protection and performance of tactical personnel through pragmatic research, education and advice.

VISION

Excellence in research that will lead to improvements in the health, wellbeing and occupational performance of tactical personnel.

BOND UNIVERSITY
TACTICAL RESEARCH UNIT

CONTENTS

1. Highlights and Meeting the Bond University strategic direction for Research

1.1 Highlights

A year of several highlights, 2022 saw the easing of travel restrictions which brought with it a flurry of travel to catch up on delayed research and course provision with trips to New South Wales, Victoria, the Northern Territory, New Zealand, and the USA, being squeezed in between teaching commitments. Highlights of the year included winning several national and international awards, including the National Strength and Conditioning Association's Tactical Professional of the Year, a Queensland Young Tall Poppy Science award, and a Sports Medicine Australia best scientific poster award. The year saw the first TRU HDR student, Dr Danny Maupin, graduate and the first visiting research fellow, Diogo Ferreira, from Brazil. TRU were back to support Australian Defence Apparel at LANDFORCES Conference and hosted the Rapid Fire Mini Congress during Research Week. Notable success in translation of research to real-world impact was seen across several law enforcement agencies (impacting recruit training) and industries (from thermal input into body armour design through to boot construction).

Overall, the TRU had a highly productive and impactful year due largely to the acknowledged support of key staff from the Doctor of Physiotherapy program, the Faculty of Health Sciences and Medicine, and Office of Research Services. Furthermore, invaluable industry support, especially from Australian Defence Apparel, and agency support, especially from the New South Wales Police Force and Department of Veterans' Affairs, saw the TRU able to achieve their goals and continue to progress work across the tactical field.

1.2 TRU contribution toward the Bond University strategic direction for research

Research conducted by the TRU has continued to support and advance Bond University's Strategic Plan 2019-2023. The following are contextualised against the four primary themes distilled from the strategic plans:

Distinctive and Connected: The TRU is indeed distinctive in Australia and internationally, being a research centre serving multiple tactical streams (military, law enforcement, fire and rescue, and paramedics), in a single university setting, with the sole research focus on these tactical occupations. The unit's success has seen other micro adaptations of the TRU develop in the USA and UK with these institutions now collaborating with the TRU and, as such, expanding our reach to make a greater impact globally. Beyond just building collaborations, the TRU promotes connections amongst academics, industry, and end users internationally; an approach made evident by our hosting of the 4th International Physical Employment Standards Conference in 2023.

The TRU's uniqueness is further highlighted by having a dedicated focus on education and training so as to foster an inspirational and aspiring learning community; a focus that has led to national and international awards for teaching and service. Doctor of Physiotherapy and Higher Degree Research students actively seek engagement with the TRU as part of their learning journey with many of these students remaining connected to the TRU and continuing to collaborate post-graduation. Tactical, academic, and broader government organisations have connected with the TRU requesting training and education support services. These services have ranged from bespoke 1 hour training sessions to multi-day workshops and courses.

Relevant and Excellent: To ensure relevant and translational research, the TRU are constantly engaged and collaborating with industry and tactical organisations. This triangulated approach of academia, industry, and end-users has seen the TRU sought to aid multiple industry partners in their product research and development and their responses to tenders from tactical organisations. Likewise, multiple national and international tactical organisations have specifically engaged with the TRU to test and evaluate industry products and assist in user trials and product down selection. These industries and organisations seek out the TRU specifically given our known research excellence. The relevance of outcomes has guided industries to win tenders for their products and tactical organisations to change approaches to tactical assessment and training.

The TRU pursuit of excellence is typified by the philosophy of 'do more', providing outcomes above and beyond that expected. Through this approach, excellence in research and teaching service and quality, have been fostered leading to increasing national and international Requests For Information (RFI) from industry, government and state organisations, and end-users serving their respective nations and communities. The TRU and Bond University's unique identity and brand are further advanced across the globe through the TRU's numerous local, state, national and international conference presentations and speaker invitations, by ongoing publications in peer-reviewed international journals, and by their work with international law enforcement, military, and firefighter organisations and universities.

TRU national and international engagements

Dr Ben Schram (far right) sprints with two specialist police members; the safety pacer (centre) and the officer undertaking his mission specific occupational fitness assessment (left).

2. Centre Staff

DR ROB ORR – DIRECTOR, TRU

Director, Dr Rob Orr, leads the team and brings over 30 years of military experience to the TRU, having served in the Australian Regular Army for over two decades as an infantry soldier, physical training instructor, physiotherapist and human performance officer and now serving in the Army Reserves. Joining Bond University in 2012, his fields of research, consultancy, and education provision spans physical conditioning, reconditioning, rehabilitation and injury prevention for military, law enforcement and protective services across their occupational lifespan (initial trainee to specialist).

DR BEN SCHRAM – RESEARCH COORDINATOR

Dr Schram has a Bachelor of Exercise Science, Doctor of Physiotherapy and a PhD and is currently employed as an Assistant Professor at Bond University. He is the research and data coordinator for the Tactical Research Unit, where he conducts research with the military, police, and firefighters with a focus on injury identification and reduction strategies, validation of fitness standards, determining the physical demands of tactical occupations and ways to maximise performance within this population. He has been successful in obtaining almost $2 million dollars in research funding in a variety of tactical projects and has worked clinically as a physiotherapist for eight years.

DR. ELISA CANETTI - PROJECT COORDINATOR

Dr. Canetti is a Brazil-trained physiotherapist with a master's degree in high-performance science and a PhD in exercise immunology and iron metabolism. Dr Canetti is the TRU's general research project manager ensuring coordination of activities, providing high-level project support, and research expertise. Dr Canetti has over five years' experience teaching across multiple degrees at Bond University and is an experienced researcher in musculoskeletal conditions, immunology, and injury in female athletes, military, law enforcement, and fire and rescue personnel. Dr Canetti leads the TRU's research stream on the impact of stress and cognitive load in task performance and decision making by tactical populations.

DR. VINICIUS SIMAS - POST DOCTORAL RESEARCH FELLOW

Dr. Simas is a Sport and Exercise Physician, with clinical experience in injury prevention and rehabilitation, sports performance, and cardiopulmonary rehabilitation. He is a former member of the Brazilian Army Medical Corps, where he served as a cavalry lieutenant. Since 2015, Dr. Simas has been working in research and teaching at Bond University, where he completed his Ph.D. in Sport and Exercise Science. Dr. Simas has a strong passion for clinical and functional anatomy, focusing on the prevention of injuries and chronic diseases. He joined the TRU in 2020 as a Post-Doctoral Research Fellow.

DR. PATRICK CAMPBELL - POST DOCTORAL RESEARCH FELLOW

Dr. Campbell completed his Ph.D. in Sports Science at the Queensland University of Technology, where he concurrently taught subjects pertaining to Exercise Physiology, Sport and Exercise Science, and Research & Data Analysis. Dr. Campbell comes from a background in managing the physical preparation in a variety of sports and populations in high-level athletes. He has now joined the TRU as a Postdoctoral Research Fellow and has a strong passion for investigating factors relating to human performance, injury risk factors, and injury prevention.

ADMINISTRATIVE SUPPORT

The TRU is supported by Sally Alexander and Michelle Hollands, who both have a long history of working for Bond University in an administrative capacity and bring a knowledge of all aspects of the University with them.

ADJUNCTS AND RESEARCH ASSISTANTS

Several ongoing and highly successful adjunct relationships have persisted notably with Professor Rodney Pope (CSU), Dr Jay Dawes (Oklahoma State University) and Dr Robert Lockie (California State University – Fullerton). This year the TRU welcomed back Dr Anthony Walker from ACT Fire & Rescue to the team.

As part of TRU support and skill extension, several HDR students work with the unit as Research Assistants (RAs). These RAs, which include Danny Maupin, Dustin Kidd and Colin Tomes, are actively involved in all things research, from drafting literature reviews and formatting publications to real-time field research.

HDR Student Dustin Kidd, supporting the TRU collecting data in the field.

3. Overview of Centre activities for 2022

3.1 General

Awards

In 2022, the TRU achieved several notable awards. TRU Director Rob Orr was awarded the National Strength and Conditioning Association Tactical Professional of the Year. The award, which had not previously be won by a tactical professional outside of the USA, was awarded for 'influential and outstanding contributions that advance the tactical field in a measurable way'. More locally, Dr Orr was awarded a Queensland Young Tall Poppy Award for optimising the health and wellbeing of tactical professionals who serve the community. In addition, Dr Vini Simas was awarded best research poster at the Sports Medicine Australia Conference, the leading multidisciplinary sports medicine conference in Australasia for his work on spondylosis for the Department of Veteran's Affairs.

(L) Dr Vini Simas was awarded best research poster at the Sports Medicine Australia Conference.

NSW Police Force Research

The TRU completed and commenced several projects in collaboration with the NSW Police in 2022. These included:

- A review of NSW Police Force Academy 2.4 km run and 20m Multistage Fitness Test performance and requirements. The outcomes of this work led to a technical report, several research papers, conference presentations, and real-world changes at the academy itself.
- Completion of Phase 1 of the Mounted Police workplace profile analysis. The outcomes of the work saw the provision of a technical report and the progression to Phase 2 of the research which was commenced in 2022. In addition, following the success of this work, the TRU were requested to assist the School of Traffic and Mobile Policing and the Traffic and Highway Patrol units in developing their workplace profiles with this work commencing in late 2022.

(L) Dr Ben Schram and Dr Elisa Canetti capturing workload of Mounted Police officers. (R) Dr Rob Orr observes police officers doing 'hot laps' as part of their driver training.

Elbit Systems Australia

As part of their bid to the Commonwealth for the LAND 125-4: Integrated Soldier Systems bid, Elbit Systems Australia (ELSA), sought out the TRU to assist in their demonstration of capability. Working with ELSA, the TRU developed a framework for evaluating and comparing products under consideration. The human-system integration plan, build on engineering, evidence based human factors and risk management approaches was pilot trialled before being successfully demonstrated to the Commonwealth during a Fitment Exercise and Limited Dynamic Assessment (FITEX/LDA). Both technical reports generated by the TRU formed part of ELSA's submission to the Commonwealth. Outcomes of the bid are anticipated to be known mid-2023.

Australian Army soldiers completing tasks as directed by Dr Rob Orr from the TRU during ELSA FITEX/LDA trials.

2nd TRU Rapid Fire Mini Congress

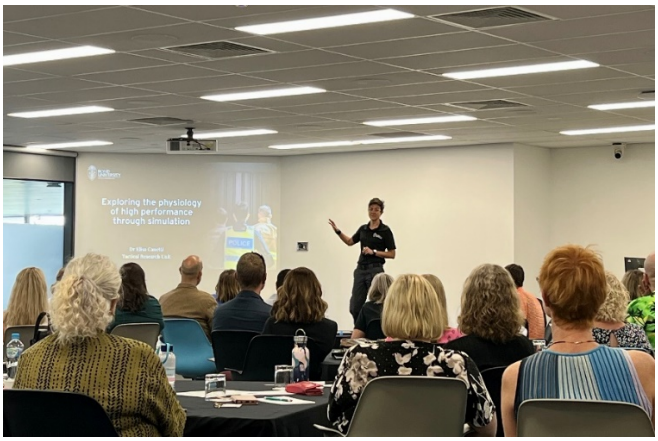
Supporting the University's Research Week, the TRU ran their 2nd Rapid Fire Mini Congress. With over 70 delegates in person and online, TRU staff, HDR students, and DPHTY students presented research to delegates from law enforcement, the military, fire and rescue, and paramedics. Dr Schram hosted the event which included a keynote presentation from Dr Jace Drain (Defence Science and Technology Group: DSTG) and a panel discussion with Jason Semple (LEGEAR General Manager).

Dr Ben Schram hosting the panel discussion on academic-industry with Dr Rob Orr and the General Manager LEGEAR, Jason Semple

Mission Critical Teams with the Translational Simulation Collaborative

Supporting a fellow Faculty of Health Sciences and Medicine Research Centre, the Translational Simulation Collaborative (TSC), the TRU have been providing research and consultancy support during mission critical team simulations. Working with Dr Victoria Brazil, the TRU provide objective measures of stress in Emergency Department staff undertaking complex high-stress simulation events as part of their mission-critical team training. This joint collaboration has seen numerous joint presentations, including participation in a panel on High Performing Teams at the TRAUMA 2022 Conference, a presentation at the Simulation: Reconnect symposium, and at the Society in Europe for Simulation Applied to Medicine (SESAM) conference.

Dr Ben Schram and Dr Elisa Canetti monitoring incoming data during an ED simulation being run by the TSC's Dr Victoria Brazil.



Dr Elisa Canetti presents at the Simulation: Reconnect symposium hosted by the TSC.

Dr Rob Orr working with the TSC presenting a panel session at the TRAUMA 2023 Conference

NT Police Territory Response Group (TRG)

The TRU team, together with HDR students Colin Tomes and Dustin Kidd, again supported the Northern Territory Police Territory Response Group (TRG). This support included monitoring injuries and capturing Heart Rate Variability (HRV) to inform TRG staff on the performance of candidates undergoing specialist selection, and helping to review their current occupational fitness test and changes in performance wearing two different body armour plate carriers.

Dr Ben Schram observes a TRG Officers completing the breaching obstacle as part of the unit's occupational fitness assessment.

3.2 External Funding Review

The TRU were awarded $183,000 in research funding in 2022 to continue their work with the Department of Veterans' Affairs. Concomitant to this funding, the TRU provided professional consultancy services to several organisations generating $49,000 in income for the TRU. A new novel means of industry-academic collaborative funding, proposed by Australian Defence Apparel (ADA), was successful. Imbedded in their tender to Queensland Police Service, ADA included a research budget to allow for ongoing review and development of their product. The outcome of ADA's successful bid will see TRU receive up to $100,000 to provide research over the next 5 years.

3.3 Research Output Summary

The TRU continued to ensure research outcomes were disseminated through a variety of mediums with express focus on ensuring that the research was accessible to target audiences; was published in a timely fashion; and supported students who completed work with the TRU.

Over the 2022 period, the TRU:

- Published 43 journal articles, with one of those published in conjunction with a PhD student, and 6 published in conjunction with Doctor of Physiotherapy (DPHTY) and Nutrition and Dietetics students.
- Produced 10 Technical Reports for, the Department of Veterans' Affairs (x 6), Elbit Systems Australia (x2), and NSW Police Force (x 2).
- Disseminated research by several other outputs including television, radio interviews, magazine articles, informative blogs, and industry podcasts.

Over the 2022 period, the TRU presented a total of 18 conference presentations (both face-to-face and virtually). The TRU maintained a strong presence again at the Sports Medicine Australia conference, delivering 9 podium and poster presentations across TRU staff. The TRU staff, HDR students, and DPHTY students had 19 podium and poster abstracts accepted for presentation at the 2022 Australian Physiotherapy Association Conference, the largest physiotherapy conference in the Southern Hemisphere. Unfortunately, the conference was again cancelled due to the pandemic.

For the full list of Publications in Peer Review Journals, conference presentations, and other activities, please see Appendix A.

Links:
https://tru.bond.edu.au/
https://www.linkedin.com/company/tactical-research-unit
https://www.facebook.com/TacticalResearchUnit

Documents: Appendix A - Publications and Presentations List 2022

3.4 Higher Degree Research

Constituting 19% of the Faculty of Health Sciences and Medicine's HDR students, the TRU continue to balance teaching and research responsibilities with creating our next generation of tactical researchers. As such, it was a proud moment for the team when Dr Danny Maupin became the first TRU HDR completion. Dr Maupin's thesis 'Optimising Training Load and its Relationship to Injury Risk and Fitness in a Tactical Population' was conducted with the Los Angeles Sheriff's Department and has been used to inform their recruit training and further the field in the transfer of training load from sport to tactical populations. Dr Maupin has since taken on a more senior role assisting the TRU to manage RA support.

Higher Degree Research Students

Commenced in 2022:

1. Holly Ranson: The influence of social norms on the occupational food choices of career firefighters.
2. Luke Meir: Effect of group based martial arts (Brazilian Jiu Jitsu) as an adjunct therapy for military veterans.

Ongoing:

3. Nathan Andrews: Can competence achievability in law enforcement firearms training be defined and predicted.
4. Kate Lyons: Musculoskeletal Injuries in Military Basic Training: Does Changing the Training Program Change the Injury Profile?
5. Graham Marvin: The relationship between sleep, training load, fatigue, and injury rate in emergency service workers.
6. Mark Stephenson: Tactical performance under stress
7. Sandra Adiarte: Eyes on the Target: Assessing and Training Tactical Personnel in Threat Assessment via Structured Behaviour Observation*
8. Joseph Dulla: Optimizing the Training Outcomes of Law Enforcement Recruits and Through Provision of an Evidence-based Physical Training Approach*
9. Dustin Kidd: A Comparison of Overt and Covert Body Armour*
10. Shane Irving: Occupational task and conditioning analysis in operational members of the Australian and New Zealand Police Tactical Groups*

11. Jeremy Robinson: Identifying and optimising neuromuscular strength and power measures for Law Enforcement candidates
12. Michael Stierli: Can workplace reconditioning improve the return to duty status and outcomes of the injured Police officer?*
13. Colin Tomes: Heart Rate Variability as a Human Performance Optimization Tool for the Tactical Professional*
14. Whitney Tramel: Subjective and objective measures of stress during activities related to tactical operator performance**
15. Robert Walsh: The benefits of extended reality (XR) simulation and training in the area of weapon draw time for the tactical response police services sector.
16. Darren Corea: The effects of a Virtual Reality based intervention on Chronic pain and anxiety in Veterans.

*** Completed their confirmation in 2022: * Confirmed*

International HDR Dissertation Committee

1. Jeff Paschall: Musculoskeletal Injuries in Pilots
2. Javair Gillett: The impact of a cognitive load delivered via smart glasses on handgun shooting performance in a variable environment.

HDR Achievements

Sandra Adiarte: Presentations at the European Police Trainer Conference, Enforcetac (Germany), the Force Science Conference (USA), and Clinical Forensics: A Global Perspective (online).

Joe Dulla: Presentations at the NSCA Tactical Annual Training conference (USA) and 30x30 National Summit on Women in Law Enforcement (USA).

Mark Stevenson: Presentation at the NSCA Tactical Annual Training conference (USA).

Nathan Andrews: Invited presentation at the Australian Law Enforcement Operational Safety Trainer (OST) conference at the Australian Institute of Police Management (AIPM)

Non-HDR Student Supervision for Doctor of Physiotherapy Program

Evidence Based Practice Research (PHTY72-419 S221)

- Nicholas Fleming
- Alexis DeBoer
- Victor Studdeny
- Daniel Rosenmiller
- Jonah Lapitan
- Kiefer Josephs
- Jayden Hutchinson
- Corey McKay
- Sam Hodkiewicz
- Olivia Pickard
- Hayato Yamada
- Peta Burton
- Claire Buttner
- Sharne Tiller
- Nash Vollenweider
- Jedd Sugden
- Philip DeMase
- Nicolas Thompson

Bond University DPHTY and Nutrition and Dietetics students who contributed to Research Publications in 2022:

- Amy Decker
- Kimberly Talaber
- Takato Sakura
- Ksaniel Hasanki
- Olivia Pickard
- Peta Burton
- Hayato Yamada
- Patrick Wood
- Ka Wing Lee
- Angela Tsoi
- Jordan Scott
- Grace Lennox

3.5 Engagement with academia, government organisations, and industry

There was a strong continuing engagement with academic colleagues from the United States, the United Arab Emirates, Germany, Serbia, Singapore, and Brazil with new fruitful collaborations with colleagues in South Africa, New Zealand, the Islamic Republic of Iran, and Saudi Arabia. These collaborations included the hosting of PhD candidate Diogo Ferreira, a professional firefighter completing his thesis on firefighter performance with the University of Brasília, Brazil; and presentations to students at Oklahoma State University and California State Fullerton in the United States.

Firefighter and PhD candidate Diogo Ferreira with Dr Canetti and Inspect Gorey (QFES).

The TRU continued to strengthen and foster industry collaborations. Notable work included supporting Australian Defence Apparel at the LANDFORCES Conference, the co-production of various media outputs and presentations at ADA's Law Enforcement Innovation Day; supporting Elbit Systems Australia and Babcock International in the LAND 125-4 bids.

Support Australian Defence Apparel at LANDFORCES 2022, (L) Dr Elisa Canetti trials the Mawashi UPRISE Exoskeletal while (R) Dr Ben Schram models for the new anthropometric modelling app for clothing sizing

Dr Orr presenting to police officers and law enforcement support personnel at ADA's LEID.

This year also saw a notable increase in Requests for Information (RFIs) from government organisations. This included national and international military, law enforcement, fire and rescue and ambulance service organisations. Major project works with the Department of Veterans' Affairs and the US Naval Health Research Centre continued producing technical reports, research publications and conference presentations.

Research dissemination to academia, government organisations, and industry has been maintained through a variety of forums, from hosting the TRU's own Mini Congress to attending national and international conferences and presenting *en masse.*

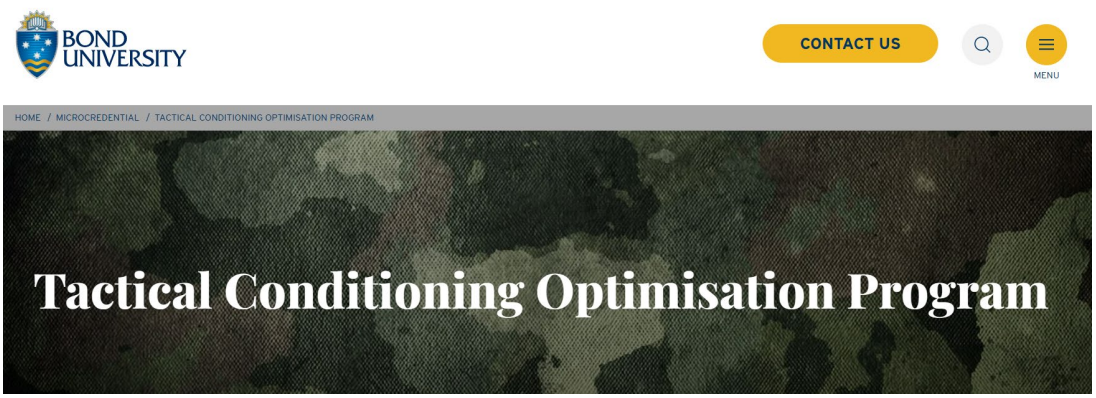
Doctor of Physiotherapy students presenting their research at the 2nd TRU Rapid Fire Mini Congress

The TRU team presenting their DVA research outcomes at the Sports Medicine Australia Conference

3.6 Specialist Courses Delivery

The TRU ran their 3-day Tactical Conditioning Optimisation Program (TACOPs) for the Australian Defence Force following several COVID-19 delays. The course was run at the Army base in Puckapunyal and attended by Army and Navy Physical Training Instructors from Victoria and Canberra.

The first module for the TACOP microcredential was delivered and is now available with the next two modules due for release in 2023. More on the Microcredential is available here: https://bond.edu.au/microcredential/tactical-conditioning-optimisation-program



4. Research Impacts

With a continued focus on translation of research to pragmatic outcomes, the TRU made many impacts upon industry and government departments throughout the year, with some notable contributions listed below:

- Australian Defence Apparel: Ongoing work focussing on thermal impacts of light armour vests has seen ADA awarded the highly contested contract to provide their new vests to the Queensland Police Service. Working with the TRU, ADA were able to provide proof-of-concept to innovative designs enabling their ability to provide a unique and bespoke solution.
- Steel Blue ™: The technical report provided to Steel Blue ™ has informed future footwear designs for the military and law enforcement. New boots, developed from the initial design phase and informed by the report, are currently being produced with trials of the prototypes to be conducted by the TRU in mid-2023.
- NSW Police Force: A technical report comparing the 2.4 km run to the 20m Multistage Fitness Test and generation of normative data for both, allowed NSW Police Force to apply an evidence-based approach to their utilisation of these two assessments during their police recruit training.
- Elbit Systems Australia: The TRU assisted ELSA, in their demonstration of capability for the Commonwealth's LAND 125-4 tender. The TRU had personnel in the field at the Enoggera Barracks with a forward element working out of the new Brisbane campus. This capability allowed rapid transfer of information via safehand delivery as the research was emerging. The result was the generation of a Technical Report following the ELSA Fitment Exercise and Limited Dynamic Assessment in 5 days.
- Babcock International: Working with Babcock International, the TRU assisted in the generation of a bespoke solution to product design, testing, and implementation. A framework of independent academic product evaluation along the acquisition pathway was used to support their LAND 125-4 tender bid as was demonstrated to Commonwealth during Babcock's Fitment Exercise and Limited Dynamic Assessment.

5. Centre advisory board members and meeting minutes

The members of this committee are:

- Chris Dixon – Chief Executive Officer, Australian Defence Apparel
- Dr Jace Drain – Defence Science and Technology Group, Department of Defence
- Shane Irving – Managing Director, Optimal Performance Solutions
- Inspector Richard Gorey –Manager Tactical Training Unit, Queensland Combined Emergency Services Academy
- Charlotte O'Connor – Director of Business Development and Strategy, Armor Australia
- Kate Lyons, Doctor of Physiotherapy – Physiotherapist, Kapooka Health Centre, Australian Defence Force
- Coach Jeremy Robinson – Human Performance Specialist, Innovation & Training, Australian Federal Police
- Jason Semple – General Manager, LEGEAR
- Dr Anthony Walker – ACT Emergency Services

The first External Advisory Committee meeting was held on 31 March 2022 with ten out of 14 members in attendance either in person or via Zoom. The minutes from this meeting are attached in Appendix B. The next meeting of the committee has been scheduled for July 2023.

Documents: Appendix B - External Advisory Committee Meeting minutes

6. Terms of Reference for the TRU

The Terms of Reference for the Tactical Research Unit were developed and confirmed by the members of the External Advisory Committee at the first meeting and are attached as Appendix C.

Documents: Appendix C – Terms of Reference

7. Upcoming in 2023

Several major events are expected in 2023. The TRU are hosting the 4th International Physical Employment Standards (IPES). Originally intended to run in 2021, the conference was delayed to February 2023. The Commonwealth LAND 125-4 bid is expected to be announced in 2023 the outcomes of which may lead to several large and sustained contracts to provide research services to industry. Finally, two major research projects for the Department of Veterans' Affairs and the New Zealand Police are anticipated to culminate in 2023.

8. Acknowledgements

The TRU would like to formally acknowledge several key personnel who have supported and enabled the unit during 2022

PHYSIOTHERAPY
Prof Wayne Hing
Assoc Prof Suzanne Gough

HSM
Prof Nick Zwar
Assoc Prof Kevin Ashton
Tanya Forbes
Rhonda Morton

ORS
Prof Keitha Dunstan
Andrew Calder
Haley Jacobi
Deb Johnston
Elizabeth Gordon
Sarah Savage
Caroline Lovell
Dr Lisa Marlow

Publications Running List

PEER REVIEWED JOURNAL ARTICLES

1. Lockie, R., Dawes, J. J., Sakura, T., Schram, B., & Orr, R. M. (2022). Relationships Between Physical Fitness Assessment Measures and a Workplace Task-Specific Physical Assessment Among Police Officers: A Retrospective Cohort Study. Journal of Strength and Conditioning Research. https://doi.org/10.1519/JSC.0000000000004301

2. Rodas, K., Dulla, J., Moreno, M., Bloodgood, A., McGuire, M., Orr, M., Dawes, J., Lockie, R. (2022). The effects of traditional versus ability-based physical training on the health and fitness of custody assistant recruits. International Journal of Exercise Science, 15(3). https://digitalcommons.wku.edu/ijes/vol15/iss3/23/

3. Lockie, R., Ruvalcaba, T., Thompson, M., Viramontes, E., Orr, R., Dawes, J., Dulla, J. (2022). A preliminary comparison of firefighter candidates' biddle physical ability test performance and success based training class participation. International Journal of Exercise Science, 15(4). https://digitalcommons.wku.edu/ijes/vol15/iss4/33/

4. Simas, V., Schram, B., Canetti, E., Maupin, D., Orr, R. (2022). Factors influencing marksmanship in police officers: A narrative review. International Journal of Environmental Research and Public Health, 19(21). https://doi.org/10.3390/ijerph192114236

5. Kukic, F., Orr, R., Markovic, M., Dawes, J., Cvorovic, A., Koropanovski, N. (2022). Factorial and construct validity of sit-up test of different durations to assess muscular endurance of police students. Sustainability, 14(20). https://doi.org/10.3390/su142013630

6. Lockie, R., Orr, R., Dawes, J. (2022). Justified concerns? An exploration of the leg tuck in a tactical population. International Journal of Environmental Research and Public Health, 19(21). DOI: 10.3390/ijerph192113918

7. Lockie, R., Dulla, J., Higuera, D., Ross, K., Orr, R., Dawes, J., Ruvalcaba, T. (2022). Body composition and fitness characteristics of firefighters participating in a health and wellness program: Relationships and descriptive data. International Journal of Environmental Research and Public Health, 19(23). doi.org/10.3390/ijerph192315758

8. Maupin, D., Schram, B., Canetti, E., Dulla, J., Dawes, J., Lockie, R., Orr, R. (2022). Profiling the typical training load of a law enforcement recruit class. International Journal of Environmental Research and Public Health, 19(20). https://doi.org/10.3390/ijerph192013457

9. Campbell, P., Pope, R., Simas, V., Canetti, E., Schram, B., Orr, R. (2022). The effects of early physiotherapy treatment on musculoskeletal injury outcomes in military personnel: A narrative review. International Journal of Environmental Research and Public Health, 19(20). https://doi.org/10.3390/ijerph192013416

10. Lockie, R., Dawes, J., Orr, R. (2022). Health and fitness data for police officers within a health and wellness program: Implications for occupational performance and career longevity. Work. DOI:10.3233/WOR-211089

11. Lockie, R., Orr, R., Montes, F., Ruvalcaba, T., Dawes, J. (2022). Exploring predictive ability of fitness test data relative to fire academy graduation in trainees: Practical applications for physical training. International Journal of Exercise Science, 15(4). https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=3345&context=ijes

12. Lockie, R. G., Beitzel, M. M., Dulla, J. M., Dawes, J. J., Orr, R. M., & Hernandez, J. A. (2022). Between-Sex Differences in the Work Sample Test Battery Performed by Law Enforcement Recruits: Implications for Training and Potential Job Performance. Journal of Strength and Conditioning Research, 36(5), 1310-1317. https://doi.org/10.1519/JSC.0000000000003671

13. Dawes, J., dos Santos, M., Kornhauser, C., Holmes, R., Alvar, B., Lockie, R., Orr, R. (2022). Longitudinal changes in health and fitness measures among state patrol officers by sex. Journal of Strength and Conditioning Research. DOI: 10.1519/JSC.0000000000004327

14. O'Shea, S., Pope, R., Freire, K., Orr, R. (2022). Prevalence of lower urinary tract symptoms in a cohort of Australian servicewomen and female veterans. International Urogynecology Journal. https://doi.org/10.1007/s00192-022-05254-x

15. Orr, R., Maupin, D., Palmer, R., Canetti, E., Simas, V., Schram, B. (2022). The impact of footwear on occupational task performance and musculoskeletal injury risk: A scoping review to inform tactical footwear. International Journal of Environmental Research and Public Health, 19(17). https://www.mdpi.com/1660-4601/19/17/10703

16. Talaber, K., Orr, R., Maupin, D., Schram, B., Hasanki, K., Roberts, A., Robinson, J. (2022). Profiling the absolute and relative strength of a special operations police unit. BMC Sports Science Medicine and Rehabilitation, 14(111). https://doi.org/10.1186/s13102-022-00502-5

17. Maupin, D., Canetti, E., Schram, B., Lockie, R., Dawes, J., Dulla, J., Orr, R. (2022). Profiling the injuries of law enforcement recruits during academy training: a retrospective cohort study. BMC Sports Science, Medicine and Rehabilitation, 14(136). https://doi.org/10.1186/s13102-022-00533-y

18. Pickard, O., Burton, P., Yamada, H., Schram, B., Canetti, E., Orr, R. (2022). Musculoskeletal disorders associated with occupational driving: A systematic review spanning 2006-2021. International Journal of Environmental Research and Public Health, 19(11). https://doi.org/10.3390/ijerph19116837

19. Lockie, R., Orr, R., Montes, F., Ruvalcaba, T., Dawes, J. (2022). Differences in fitness between Firefighter trainee academy classes and normative percentile rankings. Sustainability, 14(11). https://doi.org/10.3390/su14116548

20. Kukic, F., Orr, R., Veskovic, A., Petrovic, N., Subosic, D., Koropanovski, N. (2022). Association between perceived stress, coping profile and fear during the COVID-19 pandemic among male and female police students. Medycyna Pracy, 73(3). DOI: https://doi.org/10.13075/mp.5893.01145

21. Schram, B., Canetti, E., Orr, R., Pope, R. (2022). Injury rates in female and male military personnel: a systematic review and meta-analysis. BMC Women's Health, 22(1). DOI: 10.1186/s12905-022-01899-4

22. Schram, B., Orr, R., Pope, R. (2022). A profile of injuries suffered by female soldiers serving in the Australian Army. BMC public health, 22(1), 1-8. https://doi.org/10.1186/s12889-022-13225-6

23. Schram, B., Canetti, E., Orr, R., Pope, R. (2022). Risk factors for injuries in female soldiers: a systematic review. BMC Sports Science, Medicine and Rehabilitation, 14(1), 1-24. https://doi.org/10.1186/s13102-022-00443-z

24. MacKenzie-Shalders, K., Lee, K. W., Wright, C., Dulla, J., Tsoi, A., Orr, R. M. (2022). Dietary intake in law enforcement personnel: Occupation is an additional challenge for changing behavior. Nutrients, 14(7), 1336. https://doi.org/10.3390/nu14071336

25. Orr, R., Lockie, R., Milligan, G., Lim, C., Dawes, J. (2021). Use of physical fitness assessments in tactical populations. Strength and Conditioning Journal. doi: 10.1519/SSC.0000000000000656

26. Decker, A., Hilton, B., Dawes, J., Lockie, R., Orr, R. M. (2022). Physiological demands of common occupational tasks among Australian Police Officers: A descriptive analysis. Annals of Work Exposures and Health. https://doi.org/10.1093/annweh/wxac012

27. Wood, P., Lennox, G., Schram, B., Canetti, E., Simas, V., Pope, R., Orr, R. (2002). Non-modifiable risk factors for stress fractures in Military Personnel undergoing training: A systematic review. Journal of Australian Strength and Conditioning, Vol 30(1). https://www.mdpi.com/1660-4601/19/1/422/htm

28. Lockie, R. G., Dawes, J. J., Orr, R. M., Dulla, J. (2022). The bigger they are: Relationships between body height and mass with the body drag task in Law Enforcement recruits. International Journal of Exercise Science, 15(4), 570-584. https://digitalcommons.wku.edu/ijes/vol15/iss4/13/

29. Koropanovski, N., Orr, R., Dopsaj, M., Heinrich, K., Dawes, J., Kukic, F. (2022). Effects of maximal and submaximal anaerobic and aerobic running on subsequent change-of-direction speed performance among police students. Biology, 11(5). https://www.mdpi.com/2079-7737/11/5/767/htm

30. Lockie, R., Dawes, J., Dulla, J., Orr, R. (2022). Extending research on law enforcement academy graduation and fitness: A research note on receiver operating characteristic curves. The Journal of Strength and Conditioning Research. https://pubmed.ncbi.nlm.nih.gov/35544353/

31. Lockie, R., Orr, R., Dawes, J. (2022). Fit (and healthy) for duty: blood lipid profiles and physical fitness test relationships from police officers in a health and wellness program. International Journal of Environmental Research and Public Health, 19(9). https://www.mdpi.com/1660-4601/19/9/5408/htm

32. Lockie, R., Moreno, M., Dulla, J., Orr, R., Dawes, J., Rodas, K. (2022). The health and fitness characteristics of civilian jailer recruits prior to academy training. International Journal of Exercise Science, 15(4). https://digitalcommons.wku.edu/ijes/vol15/iss4/2/

33. Koropanovski, N., Kukic, F., Jankovic, R., Kolarevic, D., Subosic, D., Orr, R. (2022). Intellectual potential, personality traits, and physical fitness at recruitment: Relationship with academic success in police studies. SAGE Journals. https://journals.sagepub.com/doi/10.1177/21582440221079932

34. Dawes, J., Scott, J., Canetti, E., Lockie, R., Schram, B., Orr, R. (2022). Profiling the New Zealand police trainee physical competency test. Frontiers in Public Health, 10:B21451. doi: 10.3389/fpubh.2022.821451

35. O'Shea, S., Freire, K., Pope, R. R., & Orr, R. M. (2022). Obstetric History, Pelvic Health and Military Occupations: a Study of a Cohort of Australian Female Military Personnel and Veterans. Journal of Military and Veterans' Health, 30(2), 63-64. https://jmvh.org/wp-content/uploads/2022/05/AMMA-JMVH-April-2022.pdf

36. Stephenson, M., Schram, B., Canetti, E., Orr, R. (2022). Effects of acute stress on psychophysiology in armed tactical occupations: A narrative review. International Journal of Environmental Research and Public Health, 19(3). https://www.mdpi.com/1660-4601/19/3/1802/htm

37. Lockie, R., Moreno, M., Dawes, J., Orr, R., Rodas, K., Dulla J. (2022). An analysis of the body drag test in law enforcement recruits with consideration to current population demographics. International Journal of Exercise Science, 15(7). https://digitalcommons.wku.edu/ijes/vol15/iss7/3/

38. Collins, K., Christensen, B., Orr, R., Dulla, J., Dawes, J., Lockie, R. (2022). Analysis of total and segmental body composition relative to fitness performance measures in law enforcement recruits. International Journal of Exercise Science, 15(4). https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=3147&context=ijes

39. Lockie, R., Orr, R., Dawes, J. (2022). Slowing the path of time: age-related and normative fitness testing data for police officers from a health and wellness program. The Journal of Strength and Conditioning Research, 36(3). https://journals.lww.com/nsca-jscr/Citation/2022/03000/Slowing_the_Path_of_Time__Age_Related_and.21.aspx

40. Canetti, E., Gayton, S., Schram, B., Pope, R., Orr, R. (2022). Psychological, physical, and heat stress indicators prior to and after a 15-minute structural firefighting task. Biology, 11, 104. https://doi.org/10.3390/biology11010104

41. Grani, G., Rodacki, C. D. L. N., Lubas, H., Resende, E. F., Hoinatski, R., Sentone, R. G., Orr, R. M., & Paulo, A. C. (2022). Can Training trunk musculature influence musculoskeletal pain and physical performance in military police officers? Ergonomics, 65(2), 265-275. https://doi.org/10.1080/00140139.2021.1973576

42. Orr, R. M., Robinson, J., Hasanki, K., Talaber, K., Schram, B., & Roberts, A. (2022). The Relationship Between Strength Measures and Task Performance in Specialist Tactical Police. Journal of Strength and Conditioning Research, 36(3), 757-762. https://doi.org/10.1519/JSC.0000000000003511

Technical Reports

1. Orr, R., Canetti, E., Campbell, P., Simas, V. Tomes, C., Kidd, D. & Schram, B. (2022). Elbit Systems Australia FITEX / LDA Trial, Human Systems Integration Review. Tactical Research Unit, Bond University, Australia

2. Campbell, P., Simas, V., Canetti, E., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: The Effects of Early Physiotherapy Treatment on Musculoskeletal Injury Outcomes: A Narrative Review. Tactical Research Unit, Bond University, Australia

3. Orr, R., Canetti, E., Maupin, D., Moore, R., Gersbach-seib, A. & Schram, B. (2022). An Occupational Analysis of the New South Wales Mounted Police. Tactical Research Unit, Bond University, Australia.

4. Maupin, D., Canetti, E., Campbell, P., Simas, V., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Shin Splints: A Rapid Review. Tactical Research Unit, Bond University, Australia.

5. Orr, R., Canetti, E., Campbell, P., Simas, V. Tomes, C., Kidd, D. & Schram, B. (2022). Tactical Research Unit Report: Human Systems Integration Plan - FITEX/LDA Trial Rapid Review. Tactical Research Unit, Bond University, Australia.

6. Simas, V., Campbell, P., Canetti, E., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Occupational risk factors for physical injury due to munitions discharge: a rapid review. Tactical Research Unit, Bond University, Australia.

7. Campbell, P., Simas, V., Canetti, E., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Fractures in military populations: A rapid review. Tactical Research Unit, Bond University, Australia.

8. Simas, V., Campbell, P., Canetti, E., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Occupational risk factors for the development of sensorineural hearing loss: a rapid review. Tactical Research Unit, Bond University, Australia

9. Maupin, D., Canetti, E., Campbell, P., Simas, V., Schram, B., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Patellar Tendinopathy – A Rapid Review. Tactical Research Unit, Bond University, Australia

10. Parnell, T., Simas, V., Canetti, E., Pope. R. & Orr, R. (2022). Tactical Research Unit Report for the Department of Veterans' Affairs: Rotator Cuff Syndrome: A rapid review. Tactical Research Unit, Bond University, Australia.

Seminars, Conventions and Conference Presentations/Posters

1. Gonzales, S., Withrow, K., Dawes, J., Orr, R., Lynn, S., Rubin, D., FACSM, Lockie, R. (2022). The leg-tuck versus the plank-hold relative to the army combat fitness test: Interactions with body composition, strength and sex. Abstract from the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

2. Lockie, R., Montes, F., Orr, R., Dawes, J. (2022). Firefighter trainee fitness, reasons for academy release, and predictive capabilities of fitness tests. Abstract from the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

3. Sanchez, K., Dawes, J., Stephenson, M., Orr, R., Lockie, R. (2022). Resisting arrest: Analysis of different prone body positions on time to stand and engage. Abstract from the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

4. Gonzales, S., Withrow, K., Dawes, J., Orr, R., Lynn, S., Rubin, D., FACSM, Lockie, R. (2022). The leg-tuck versus the plank-hold relative to the army combat fitness test: Interactions with body composition, strength and sex. Poster presented at the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

5. Sanchez, K., Dawes, J., Stephenson, M., Orr, R., Lockie, R. (2022). Resisting arrest: Analysis of different prone body positions on time to stand and engage. Poster Presented at the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

6. Lockie, R., Montes, F., Orr, R., Dawes, J. (2022). Firefighter trainee fitness, reasons for academy release, and predictive capabilities of fitness tests. Poster presented at the 2022 South West American College of Sports Medicine Conference, Costa Mesa, CA, USA, 28th – 29th October 2022

7. Simas, V., Orr, R., Schram, B., Canetti, E., Campbell, P., Pope, R. (2022). Occupational factors associated with the development of spondylosis in physically demanding occupations: a rapid review. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

8. Schram, B., Canetti, E., Simas, V., Campbell, P., Pope, R., Orr, R. (2022). Occupational risk factors for the development of disc herniation in physically demanding occupations: a rapid review. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

9. Orr, R., Schram, B., Canetti, E., Pope, R. (2022). Exposure to risk factors for the development of lower limb osteoarthritis during Army infantry training. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

10. Maupin, D., Canetti, E., Rathbone, E., Schram, B., Dawes, J., Lockie, R., Orr, R. (2022). Relationship between training load and law enforcement recruit injuries during academy training. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

11. Lockie, R., Orr, R., Ruvalcaba, T., Dulla, J., Higuera, D., Ross, K., Dawes, J. (2022). Hold the line: Fitness differences in firefighters from a health and wellness program who self-report injuries. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

12. Canetti, E., Gayton, S., Schram, B., Pope, R., Orr, R. (2022). Psychological, physical, and heat stress indicators prior to and after a 15-minute structural firefighting task. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

13. Canetti, E., Schram, B., Simas, V., Campbell, P., Orr, R., Pope, R. (2022). Risk factors for the development of femoroacetabular impingement in physically demanding occupations: a systematic review. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

14. Campbell, P., Canetti, E., Simas, V., Schram, B., Pope, R., Orr, R. (2022). Risk factors for the development of Superior labrum anterior to posterior (SLAP) tears in physically demanding occupations: a systematic review and meta-analysis. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

15. Campbell, P., Canetti, E., Simas, V., Schram, B., Pope, R., Orr, R. (2022). Risk factors for the development of glenohumeral dislocations in tactical populations: a systematic review. Abstract from the 2022 SMA Conference, Gold Coast, Aus. 16th-19th November 2022

16. Orr, R. (2022). Movement orientated training for tactical personnel. Presented at NSCA Tactical Annual Training 2022, San Antonio, USA. 23rd – 26th August 2022

17. Brazil, V., Orr, R., Canetti, E., Stevenson, N., Isaacson, W., Purdy, E. (2022). Stress Exposure Simulations for Emergency Department Teams. Presented by Victoria Brazil at: the 2022 Annual Meeting of the Society for Simulation in Europe, Seville. 15th – 17th June 2022

Specialty Presentations

1. Orr, R., (2022). High performing teams - a series of talks & panel discussion. Invited Speaker at the Trauma 2022 Conference, Brisbane 3rd September 2022

2. Orr, R., (2022). Load carriage. Presented at: Australasian Police Dog Advisory Group (APDAG) Conference, 18th – 21st July 2022

3. Orr, R., (2022). The impacts of deconditioning on tactical personnel…Part 2. Presented at: End PJ Paralysis – 4th Global Summit, 13th – 14th July 2022

4. Orr, R. (2022). Treating tactical personnel. Presented at: Northern NSW Physiotherapy Symposium, 9th June 2022

5. Orr, R. (2022). Load carriage. Law Enforcement Innovation Day, 21st June 2022

6. Orr, R. (2022). Building resilience into the lower legs. Presented at: the 2nd Annual DFC Training Virtual Workshop, 12th January 2022

7. Orr, R. (2022). Building resilience into the lower back. Invited Speaker at the 2nd DFC Tactical Training Virtual Workshop, Royal Canadian Mounted Police, Canada. 12 January 2022

Specialist Courses

1. Tactical Conditioning Optimisation Course (TACOPS), Australian Army, 29 June – 01 July 2022
2. Tactical Research Unit Rapid Fire Mini Congress – Bond University Research week, 12 October 2022

Peer Reviewed Trade Journal publications

1. Tomes, C., Schram, B., Orr, R. (2022). Defining, measuring, and monitoring resilience for the tactical professional: Part 2 - Holistic measurement and monitoring: Theory, principles and application. NSCA TSAC Report Issue 64, pp 18-23

Editorial and Peer Review

1. Orr, R. Journal of Strength and Conditioning Research (Journal) - Reviewer, 08 Jan 2022
2. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 27 Jan 2022
3. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 01 Feb 2022
4. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 02 Feb 2022
5. Schram, B. PEERJ (Journal) - Reviewer, 10 Feb 2022
6. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 12 Feb 2022
7. Orr, R. Sustainability (Journal) – Editor, 22 Feb 2022
8. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 05 Mar 2022
9. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 20 Mar 2022
10. Schram, B. International Journal of Exercise Science (Journal) – Reviewer, 27 Mar 2022
11. Orr, R. Sustainability (Journal) – Editor, 30 Mar 2022
12. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 20 Apr 2022
13. Orr, R. Sustainability (Journal) – Editor, 22 Apr 2022
14. Orr, R. Biology (Journal) – Editor, 27 Apr 2022
15. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 29 Apr 2022
16. Orr, R. Biology (Journal) – Editor, 13 May 2022
17. Orr, R. Biology (Journal) – Editor, 25 May 2022
18. Orr, R. Sustainability (Journal) – Editor, 27 May 2022

19. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 02 Jun 2022
20. Orr, R. Biology (Journal) – Editor, 06 Jun 2022
21. Orr, R. Biology (Journal) – Editor, 06 Jun 2022
22. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 23 Jun 2022
23. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 27 Aug 2022
24. Orr, R. Biology (Journal) – Editor, 29 Aug 2022
25. Orr, R. Biology (Journal) – Editor, 17 Sept 2022
26. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 28 Sep 2022
27. Orr, R. Biology (Journal) – Editor, 30 Sept 2022
28. Orr, R. Biology (Journal) – Editor, 01 Oct 2022
29. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 03 Oct 2022
30. Orr, R. Biology (Journal) – Editor, 12 Oct 2022
31. Orr, R. Biology (Journal) – Editor, 13 Oct 2022
32. Orr, R. Applied Ergonomics (Journal) – Reviewer, 31 Oct 2022
33. Schram, B. Ergonomics (Journal) – Reviewer, 04 Nov 2022
34. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 29 Nov 2022
35. Orr, R. International Journal of Environmental Research and Public Health (Journal) – Editor, 30 Nov 2022

Tactical Research Unit, Bond University / External Advisory Committee Minutes Date: 31st March 2022

Meeting Attendance: Robin Orr (RO), Ben Schram (BS), Elisa Canetti (EC), Vini Simas (VS), Patrick Campbell (PC), Jason Semple (JS), Richard Gorey (RG), Anthony Walker (AW), Charlotte O'Connor (CO), Chris Dixon (CD)

Apologies: Kate Lyons (KL), Jeremy Robinson (JR), Shane Irving (SI), Jace Drain (JD)

Chair: Rob Orr (RO) **Minutes: Sally Alexander (SA)**

Item	Discussion	Action
Meeting commencement: 9.30am		
Actions carried forward from last meeting		
Welcome and introductions		
TRU Information	ADA packs, thermal testing, NSW Police and in particular law enforcement, support to LAND125 tender is out. Working with trades with the ADF. Marksmanship & Performance. Working with dog squad and federal police as well as mounted police. Teamed up with Nutrition and working with firefighters and military/hydration/energy drinks. Looking at a ration pack that police can keep in their cars, especially in USA. Translocative VR for veterans – Veterans Strong and Amazon have now looked at supporting this. CD - Can we talk about availability for the translocative VR system? Have 6 PhD students working with us. New building – gate track and force plate area. New series of microcredentials for Bond but also now assisting Federal Police with same. Would like to explore 2032 Olympics, put together a committee to optomise the recovery of personnel, recovery centre, crowd movements etc. 47,000 volunteers, possibly look at clothing for PTIs and how do we look after the volunteers. How our PhD students can help you. 1. Microcredentials 2. How can our PhD students help you 3. Olympics	
Chris Dixon update	Wrap up of tenders/submissions. NZ defence – in trial. Delivered 11 full kits for trial. Possible opportunity for TRU to be involved. New Markets – Defence/Military – 85,000 employees, $238M est. sector value, $95M ADA, Opportunities, NZDF Armour $4M, SCU female fit (too complex) Nov 22 $18M, ADF Future clothing system July 23 $100M, $23M ADF Land 125 Phase 4 July 23. RO – our students are completing a systematic review around female law enforcement and clothing. Will share when completed. CD – will share submission with TRU.	

	Finally forming future clothing system which will be one company/group rather than a number of them. We need to win that submission and will be discussing with TRU around this. Can look at what's coming up and how we can help each other. RO – paramedics – looking at what the public would want to see. Looking at changing the colours due to how the colours are perceived. Possibly change back to medical colours – white/light. Dustin Kidd is working on this. CD - Better protection/additional cost. They need to understand the value of it. No standardization in the uniforms for health. CD - SES – not much success. Moved into polycotton workwear. RO – started doing SES training and found that the mindset is that they do storm relief and leave QFES to do anything with more risks. CD – the fire service received more funding after the bushfires. Large body of volunteers. They all receive 2 ensembles, rather than 1.	
Industry Reports/feedback	AW – Ambulance service is stand-alone in NSW. Concern – deploying staff forward without medical service. Heading to medic service. Paramedics carry everything whether they need it or not, just in case they need it. Like suitcases and stowed in awkward positions. Looking for a new bag but needs to be kept to about 10 kgs. New contract – gear will be maintained and supported via Pacfire. For all cleaning and repairs. Staff have 3 sets of turn-out gear but really only needed the 2. Would be happy to have communal turn-out gear, as long as helmet, boots and gloves are my own. CD – laundry service is where it's heading for these smaller entities. AW – the fire service is going to need protection against things like chemicals/moisture but mostly will be fighting bush fires, rather than structural so will have to come to terms with the two types of equipment required. Possibly look at the union requirements and try to work within their guidelines too. Feedback on modern helmets – they can't hear with them on, they lose vision – so are they really more effective. CD – SES – where do you see it evolving to? AW – the army is the new SES. More of the natural disaster response will be calling on them more. Priority will need to be what protects them from heat stress, walking in water. JS – defence will hold current position but there will be a push-back on this as it's not what they're trained for. CD – seems that the public and media now expect the defence to be there, rather than SES. AW – SES basically plug holes. RO – defence are paid and can therefore be placed into circumstances, whereas SES are volunteers. Resilience – linked with SES but more in rebuild rather than response industry.	

HDR student projects	**Students must do research to complete their studies. (list of topics provided to attending members) If there's any way you can work with the students or seek help from them.** ACT have paid a bursary to one of the students Govt expects students to be involved in industry/trade rather than just being in academia JS – involving the end-user in the education/collaboration – increasing the education with ADA but then the trade area with the students. Having people embedded for meetings/presentations. CD – benefit to chat with the PhD students BS – we also have the students within the Physio program who can look at the start of projects. Groups (eg Fire service) have looked at some of the reports and are actioning same. RG – need to have union involvement. QFES are starting to be aware of the cost of injuries/results of not spending the money on good protection gear. The secret with equipment is adaptability, readjust rather than reinvent. RO – we have educational skills at our fingertips but how do we work in with industry. BS – a You Tube plan of showing the outcomes in layman's terms JS – programs of how to wear/use the gear properly – education side of their roles. CO – people always complaining about load and load control – does weight come in when discussing the ancillary items. JS – can point them to the right area to discuss this with professionals CO – breaking the thought process. Stop overloading the pack RG – any studies/training – you need to wear it this way but explain it will take time to become comfortable. EC – upkeep the fitness, must do so but make sure it's the correct fitness for carrying the items. BS – the video to go with the new equipment RO why a product looks like this, explain how it came about CD – this will only work if it is completely unbiased to products. RO had presented at a conference around 5 years ago and now – what defence force carry. Would be worthwhile doing this with all areas RG – equipment provision based on risk CD – do fire and pol have load over time to the kg RG – risks change, equipment changes, but nothing will ever be dropped off completely, will always be replaced with something else. CD – as a test – take one person and put on all the best of everything and then what they're currently using and let them actually feel the difference. Not bits and pieces but the whole package.	SA to forward electronically to staff not in attendance or online

	RO – look at all areas of defence and put a full kit together, current cost/future cost/savings and why. Look at optimised costs and predict for future RG – having to go through tunnels etc under Brisbane looking at fire regs, could end up with police working in the underground systems – more training involved and different equipment RO – look at optimizing costs, how will police etc protect themselves in future from other areas, eg drones, plus the education side of things. Do a proof of how people react after they have been taught the proper wear of them.	
Further business	CD & JS – planning a capability day on 23 June hoping TRU available A day of education on product/code/heat – invitation to contracts approx. 80 people RO not available but may rejig the date. 12 October – Bond Mini-Congress – invited all to be a part of this again. 4 – 6 October Landforce – slightly more than just sales. Having a stand for Bond showing the education around the products – theme – Future Clothing Systems CO – showed the difference in body armour weights	

Close 12.30 pm

Welcome to Country

I would like to acknowledge that this meeting is being held on the ancestral lands of the Kombumerri people of the Yugumbah language and pay my respect to Elders both past and present.

Tactical Research Unit

Advisory Group

Terms of Reference

Function

The Tactical Research Unit (TRU) is a Bond University Faculty of Health Sciences and Medicine research centre. The TRU is a multidisciplinary team researching ways to enhance the protection and performance of tactical personnel in military, law enforcement and fire fighter/first responder organisations. Research and uniformed experience inform education and consultancy services provided by the TRU to tactical groups and organisations. In essence, the TRU works towards the protection and performance of individuals on the front line who protect their community and country.

Mission

To enhance the protection and performance of tactical personnel through pragmatic research, education, and advice.

Vision

Excellence in research that will lead to improvements in the health, wellbeing, and occupational performance of tactical personnel.

Membership

Chair:

- Director - Tactical Research Unit

Members:

- TRU staff
- Research partners
- Organisational stakeholders
- Industry stakeholders

Secretariat:

- Tactical Research Unit, Administration Officer

Terms of Reference

1. Provide the TRU with strategic advice on research projects, particularly their alignment with current and future trends in tactical organisation, business, and industry.

2. Provide advice and recommendations to the TRU on local community, state and/or national priority areas impacting tactical organisation and industry operations.

3. Contribute to the development and review of the TRU's strategic planning.

4. Provide advice on enhancing the TRU's competitive advantage and point of difference in the marketplace as it relates to our stakeholder and end-user engagement.

5. The membership of the advisory group will commit to:

    a. attending all scheduled Advisory Group meetings or, if necessary, nominating a proxy;

    b. notifying the TRU director, as soon as practical, if any matter arises which may present as a conflict of interest;

    c. not disclose TRU strategic direction, projects, or collaborators outside of the Advisory Group; and

    d. providing information and contribute to discussions in an accurate and meaningful manner without resort to any misleading assertions.

Meeting Schedule

The TRU External Advisory Committee will meet twice a year.

Quorum

A quorum is not required for the meeting given its non-voting status.

Tenure

Each member's term will be two (2) years, with the option to serve for a further 2-year term.

Reporting

The TRU Advisory Committee reports to the Director of the Tactical Research Unit.

Minutes and Agenda

The previous minutes, an agenda and supporting documentation for the meeting will be distributed electronically one week before the meeting. Meeting minutes will be distributed electronically no later than two weeks after the meeting.

Confidentiality

Members and other meeting attendees may, from time to time, be in receipt of information that is regarded as 'in confidence', confidential and/or have privacy or security implications. Members and other meeting attendees acknowledge their responsibility to maintain confidentiality of all information that is not in the public domain or for general discourse.

Conflicts of Interest

Members will declare any conflicts of interest, whether actual, potential, or apparent, or appear likely to arise and manage those in consultation with the Chair. This may relate to a position a member holds or to the content of a specific item for deliberation. All conflicts of interest will be documented for transparency.

Date of Review

These Terms of Reference shall be reviewed at least annually to ensure that they reflect contemporary needs, the TRU's work plan, and its capacity**.**

BOND UNIVERSITY
TACTICAL RESEARCH UNIT

AAUT Associated Comments

“Actually working with the police, not just doing lots of research about them, but actually seeing them in person, in action and seeing them with industry was huge…as was recognising the work we were doing would have an immediate impact on their everyday lives.”
- DPHTY Student Tyler Morton Hamilton

“Being still in the learning phase they bring in a fresh outlook. Super enthusiastic. It was really insightful.”
- General Manager LEGearTM, Jason Semple

“This [Trident] approach to research, teaching and outreach has a much broader impact on influencing change within a community and the targeted professions."
- Associate Professor Jay Dawes, Oklahoma State University

“While we used to have students working on some research projects with different academies, the ‘Trident Approach’ has allowed us to structure this interaction to make it a true research learning experience.”
- Associate Professor Robert Lockie, California State Fullerton University