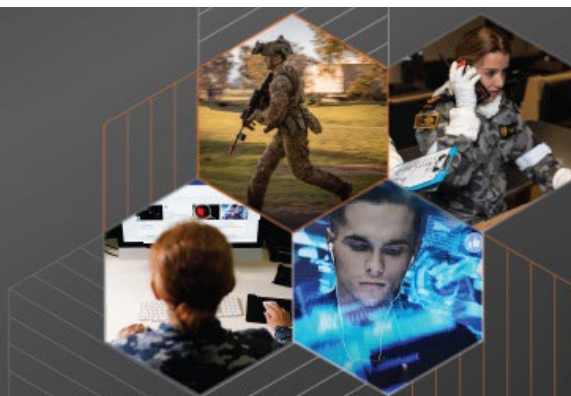


Human Performance Week

28 NOV – 2 DEC 2022



Defence Human Sciences Symposium 2022 Program

Monday, 28 November

09:10 – 10:30	Opening Session
09.10 – 09.20	Call to Order and Housekeeping
09.20 – 09.30	Welcome to Country
09.30 – 09.45	Opening Remarks Western Sydney University
09.45 – 10.00	Opening Remarks Prof Tanya Monro, Chief Defence Scientist, Department of Defence
10.00 – 10.30	Defence Keynote TBC
10.30 – 10.50	Morning Tea Break
10:50 – 12.40	Session 1: Human sciences in the Grey Zone
10:50 - 11:10	Defining hues in the Grey Zone Andrew Maher
11:10 – 11:30	Data-driven ideology detection: a case study of far-right extremist Marian-Andrei Rizoiu, Rohit Ram
11:30 - 11:40	Understanding persuasive technology: a systematic review of the literature in the context of Defence and National Security Mirela Stjelja, Dragana Calic
11:40 - 11:50	Remote, Granular, and Passive Measurement of Internet Activity, Quality and Anomalies at Scale: applications in the Indo-Pacific and Ukraine Simon Angus, Klaus Ackermann and Paul Raschky
11:50 - 12:00	Geostrategic Trends and Atrocity Risk: Understanding the risk of mass atrocities in a changing global and regional context. Sascha Nanlohy, Gorana Grgic
12:00 - 12:10	Weaponised Trade Markus Wagner, Lisa Toohey, Elizabeth Thurbon, Elisabeth Sheargold, Liam Mackay
12:10 - 12:20	An Interactional Model of Information Warfare Lucy Post
12.20 – 12.30	Developing an AI-enabled Reasoning Aid for the Information Environment Rachel Stephens
12.30 – 13.30	Lunch Break
13.30 – 14.00	Poster Session
14.00 – 15.40	Session 2: Defence Human Sciences
14.00 – 14.10	Realising potential: a case for collaboration between human performance and health research in Defence Paula Dabovich, Katie Tooley, Alexander McFarlane, Therese Keane, Martine Cosgrove

14.10 – 14.20	Human Performance research in the Australian Army: Guidance and Opportunities for the Human Sciences Community Jacqueline Costello, Emma Williams, Karina Cann, Justen Taylor, Phillip Temby
14.20 – 14.30	From the lab to the battlefield: A framework for translation and implementation of human sciences research into Defence capability Emma Williams, Michael Drew, Philip Temby, Lisa Headly, Jodie Wills
14.30 - 14:40	Human Research Ethics in Defence: New Challenges and Solutions Susannah Whitney, Eugene Aidman
14.40 – 15.40	Round table discussion
15.40- 16.00	Afternoon Tea Break
16.00 – 17.30	Session 3: The Physical Warfighter
16.00 – 16.20	Musculoskeletal injury patterns impacting Australian infantry soldiers' physical performance Joanne Stannard, Lauren Fortington, Caroline Finch, Paula Dabovich
16.20 – 16.40	Monitoring the allostatic load response in soldiers using heart rate variability Sean Corrigan, Spencer Roberts, Stuart Warmington, Jace Drain, Jamie Tait, Sean Bulmer, Luana Main
16.40 – 16.50	Moving from the lab to the field: accuracy and reliability of wearable sensors in the estimation of lower limb joint kinematics Stuart Millar, Jessica O'Reilly, Grace McConnochie, Marlon Blencowe, Lucy Turner, Steven Wiederman, Edward Palmer, Steve Cook, Ryan Dummin, Larissa Cahill, Anna Ma-Wyatt, Dominic Thewlis
16.50 – 17.00	Reliability of the MetaMax3B during load carriage Danielle Vickery-Howe, Ben Dascombe, Jace Drain, Anthea Clarke, Kane Middleton
17.00 – 17.10	Evaluating benefit of using a passive off-the-shelf spine exosuit during military manual handling tasks (work in progress) Alessandro Garofolini, Simon Taylor, Logan Hard, Kurt Mudie, Rezaul Begg
17.10 – 17.20	The Effect of Load Carriage on Segment Coordination Variability of Military Personnel During Walking Brooke Hoolihan, Jon Wheat, Ben Dascombe, Danielle Vickery-Howe, Kane Middleton
17.20 – 17.30	The Effect of Speed on Linear and Non-Linear Measures of Stride-Time Variability Patrick Slattery, Eduardo Lizama, Jon Wheat, Paul Gustin, Ben Dascombe, Kane Middleton
17.30	End of Day

Tuesday 29 th November	
08.40 – 10.40	Session 4: Mind and Body
08.40 – 09.00	Enhancing threat detection in military personnel via tDCS Nick Willmot, Li-Ann Leow, Hannah Filmer, Paul Dux
09:00 – 09:20	Psychological self-care when viewing distressing imagery Christine Baker, Dana Michalski
09:20 – 09:40	Combined cognitive and physical training for improved cognitive function and physical performance: Part B – Training intervention Keely McDicken, Amanda Scott, Kristy Martin, Joe Northey, Amit Lampit, Andrew Flood, Richard Keegan, Alison Fogarty, Phillip Temby, Ben Rattray
09:40 – 10:00	Attention focused exercise-based cognitive training to enhance decision-making under challenging conditions Maarten Immink, Alex Chatburn, Philip Temby, David Crone, Marissa Bond, Matthias Schlesewsky, Ina Bornkessel-Schlesewsky
10:00 – 10:10	Development and Implementation of a Concurrent Cognitive and Physical Training Protocol in an Applied Setting Jonathan Connor, Anne Swinbourne, Kenji Doma, Philip Temby, Alison Fogarty, Anthony Leicht
10:10 – 10:20	Combined cognitive and physical training for improved cognitive function and physical performance: Part A – Performance outcomes Amanda Scott, Keely McDicken, Kristy Martin, Joe Northey, Amit Lampit, Andrew Flood, Richard Keegan, Alison Fogarty, Philip Temby, Ben Rattray
10:20 – 10:30	Genomic markers of cognitive fitness: unpacking biological foundations of performance under pressure Scott R Clark, Lazar Stankov, Muktar Ahmed, Andrew Heathcote, Scott Clark, Eugene Aidman
10:30 – 10:40	The Use of Multi-Modal Physiological Responses with Machine Learning for Real-Time Classification of Cognitive Load Sophia Agnew, Melissa Stolar, Simon Hosking
10:40 – 11:00	Morning Tea Break
11:00 – 12:40	Session 5: Gut Instincts
11:00 – 11:20	Optimising the Warfighter cognobiome: novel microbiome interventions to improve the cognitive performance of Warfighters Emily Hoedt, Katie Tooley, Kirsten Swan, Alex Thorpe, Kerith Duncanson, Mark Morrison, Gerald Holtmann, Yi-Chin Toh, Tony Kenna, Páraic Ó Cuív, Lutz Krause, Ottmar Lipp, Scott Brown, Ami Eidels, Simon Keely, Gene Tyson, Nicholas Talley
11:20 – 11:40	Exploring the relationship between human microbiota, cognition and diet in Australian Army recruits undergoing basic military training: Preliminary findings from the HPRnet Microbiome study Matthew Cooke, Katie Tooley, Sarah Catchlove, Bradley Baker, Regina Belski, Emily Hoedt, Nicholas Talley, Peter Sternes, Katherine Barlow, Gene Tyson, Simon Keely
11:40 – 12:00	Quantifying the value of nutrition to achieving military performance outcomes Julia Carins, Ben Fisher, Bianka Probert, Joanne Fallowfield
12:00 – 12:10	Examining the Influence of the Human Gut Microbiota on Cognition and Stress: A Systematic Review of the Literature Matthew Cooke, Sarah Catchlove, Katie Tooley
12:10 – 12:20	Cortisol daily rhythms are disturbed by nightwork and eating at night on shift Siobhan Banks, Linda Grosser, Crystal Yates, Jillian Dorrian, Stephanie Centofanti, Leonie Heilbronn, Gary Wittert, David Kennaway, Alison Coates, Charlotte Gupta, Jacqueline Stepien, Raymond Matthews, Peter Catcheside
12:20 – 12:30	Ready to Go: A Pilot Study to increase breakfast frequency within the military Jessica Harris, Julia Carins, Sebastian Isbanner, Sharyn Rundle-Thiele

12:30 – 12:40	Military ration pack item choices: Preferences among segments Anna Kitunen, Julia Carins, Jeanine De Diana
12:40 – 13:30	Lunch Break
13:30 – 14:00	Poster Session
14:00 – 16:40	Session 6: Work and Workspaces
14:00 – 14:20	Investigation of a novel LED lighting strategy designed to accelerate circadian entrainment to night shift-work in an encapsulated environment Alisha Guyett, Hannah Scott, Bastien Lechat, Jack Manners, Nicole Stuart, Leon Lack, Eva Kemps, Andrew Vakulin, Danny Eckert, Gorica Micic, Siobhan Banks Jillian Dorrian, Robert Adams, Peter Catcheside, Nicole Lovato
14:20 – 14:40	Sharing Imagery and Task Analysis Tools in a Simulated Submarine Control Room Shayne Loft, Zach Howard, Stephen Pond, Madison Fitzgerald, Tory Visser, Jason Bell, Gavin Pinniger, Jessica Irons, Megan Schmitt, Matthew Stoker, Sam Huf, Shayne Loft
14:40 – 15:00	Impact of Augmented Reality displays on dynamically moving soldiers' geospatial awareness Larissa Cahill, Ryan Dummin, Chris Brady
15:00 – 15:30	Afternoon Tea Break
15:30 – 15:40	Here be Multi-Domain Dragons? - Distributed Decision Making, Command and Control, Roles and Information Flow in Maritime Task Groups Jessica Szulc, Sam James
15:40 – 15:50	The effect of a shared tactical picture on distributed decision making in a Maritime identification and classification task Thomas Pearce, Sam James, Jessica Szulc, Kingsley Fletcher, Daniel Sturman
15:50 – 16:00	Looking beyond deployments: The importance of submariner work design at-sea, alongside and on-shore Alexandra Boeing, Karina Jorritsma
16:00 – 16:10	The impact of submarine watchkeeping schedules on sustained attention Isabella Marando, Mikaela Owen, Kurt Lushington, Raymond Matthews, Crystal Yates, Siobhan Banks
16:10 – 16:20	Ergonomic Evaluation Options for Console and Shared Display Screens to Support the Post-TransCAP ANZAC Operations Room Design Cassandra Heffernan, Kingsley Fletcher, Tom Fahy
16:20 – 16:30	Laser eye protection effects on colour perception Amanda Douglass, Kate Coffey, Renee Karas, Larry Abel
16:30 – 16:40	A virtual reality tool to experience environments as Digital Human Mannikins for the design of complex human environments Peter Schumacher, Francois Fraysse, Ross Smith, Brandon Matthews, Dominic Thewlis, Geoff Langridge, Jack Bevan
16:40	End of Day
18.00 – 20.00	Conference Dinner Sahra by the River, Paramatta

Wednesday 30th November	
08:50 – 11:00	Session 7: Characterising Individual and small team performance
08:50 – 09:10	Assessing the Command and Control Battle Rhythm for Military Teams Rachel Mate, Takuma Adams, Sebastian Tsui, Timothy McLennan-Smith
09:10 – 09:30	Resting-state and task-related neural activity predicts team performance in a complex naturalistic environment Imogen Weigall, Zachariah Cross, Matthias Schlesewsky, Ina Bornkessel-Schlesewsky, Ruchi Sinha
09:30 – 09:50	Distributed Team Performance and Cohesion during Sustained Operations Ellyse Greer, Raymond Matthews, Mikaela Owen, Linda Grosser, Peter Roma, Steven Hursh, Siobhan Banks
09:50 – 10:10	Using Pupillometry to Index Cognitive Load & Stress in Extended Reality Environments Daniel Frazer, Tamara Watson, John Cass
10:10 – 10:20	Evaluating and comparing the precision and sensitivity of alternative measures of cognitive workload Zach Howard, Stephen Pond, Gavin Pinniger, Steph Michailovs, Troy Visser, Jason Bell, Jessica Irons, Megan Schmitt, Shayne Loft
10:20 – 10:30	Implementation and Ecological Validation of the Acute Readiness Monitoring Scale (ARMS) Joshua Adie, Richard Keegan, Ben Rattray
10:30 – 10:40	Psycho-physiological measures to assess force readiness in active-duty military populations: a systematic review Caspian Astill, Jamie Tait
10:40 – 11:00	Morning Tea Break
11:00 – 12:30	Session 8: Enhancing individual and small team performance
11:00 – 11:20	Meditation as a cognitive training tool: evidence from individual performance enhancement and resting-state EEG activity Chloe Dziego, Ian Bornkessel-Schlesewsky, Zachariah Cross, Maarten Immink, Matthias Schlesewsky
11.20 – 11:40	Feedback – Improving Military Team Performances in Advanced Combat Training Mick Reilly, Adam Reimers
11:40 – 11:50	Assessing Inhibition Cueing and Sensitivity of Sensory Modalities within a Perceptually Noisy Virtual Reality Shoot/Don't Shoot Task Luke Cramer, Ryan Dummin, Simon Parker, Antonio Giardina, Quentin Cooke, Larissa Cahill
11:50 – 12:00	When are two heads better than one? Matthew Blanchard, Sabina Kleitman
12:00 – 12:10	Developing measurement standards to assess high-performance cognition Lucy Albertella, Rebecca Kirkham, Kristian Rotaru, Eugene Aidman, Murat Yucel
12:10 – 12:20	Development of Cognitive Load Mitigation Strategies in Combat Force Headquarters Personnel Mick Reilly, Rohan Walker
12:20 – 12:30	Validating a 4-Week Multimodal Cognitive Fitness Intervention in Australian Workplace Settings Paul Taylor
12:30 – 13:20	Lunch Break
13:20 – 13:50	Poster Session
13:50 – 15:50	Session 9: Autonomous and Semi-autonomous systems
13:50 – 14:10	Wargaming responsibility in future military operations Kate Devitt, Helen Marshall, Beth Cardier

14:10 – 14:30	Justified Autonomous UAS Effects: An agile collaboration between DSTG and industry Robert Morris, Christopher Shanahan, Maxim Srour
14:30 – 14:50	Deep Metric Learning for Scalable Gait Based Person Re-identification Using Force Platform Data Kayne Duncanson, Simon Thwaites, David Booth, Gary Hanly, William Robertson, Ehsan Abbasnejad, Dominic Thewlis
14:50 – 15:10	Predicting and Understanding Human Action Decisions during Team Performance using Supervised Machine Learning and Explainable-AI Michael Richardson, Fabrizia Auletta, Rachel Kallen, Simon Hosking, Mario Di Bernardo
15:10 – 15:20	DroneCam: persuasive arguments using speech in a dual image classification task John Taylor, Jessica Chin
15:20 – 15:30	Gestural Control of Machines: An Auslan Case Study Jessica Korte, Adele Vogel, Maria Zelenskaya, Guy Gallasch
15:30 – 15:40	Augmenting decision-making under uncertainty using a new cognitive AI model Julian Gutierrez, Fernando Marmolejo-Ramos, Julian García, Mario Muñoz, Julian Tejada
15:40 – 15:50	Modelling the processes underlying human adaptation to varying automation reliability Luke Strickland, Jack Hutchinson, Simon Farrell, Michael Wilson, Shayne Loft
15:50 – 16:10	Afternoon Tea Break
16:10 – 16:30	Closing Ceremony
16.10 – 16.25	Presentation of awards
16.25 – 16.30	Closing remarks and thanks
16:30	Conference Ends

Poster Display	
Monday, 28 November – Wednesday 30 November	
Theme: Autonomous & semi-autonomous	
Understanding ethical implications of AI enabled decision support systems on the battlefield	Christine Boshuijzen-van Burken, Dean Baker, Jo Plested, Ned Dobos, Twan Huybers, Erandi Hene Kankageme, Oleksandra Molloy and Milad Ghasrikhouzani
The Impact of Transparency on Human-Automation Teaming Outcomes as a Function of Automation Reliability	Isabella Gegoff, Shayne Loft, Vanessa Bowden and Monica Tataschiere
An ethical framework for autonomous systems in Defence	Christine Boshuijzen-van Burken,
Designing an Autonomous Teammate: Experiments in Human-Autonomy Teaming (HAT)	Chris Stanton
Improving the Accessibility of Levels of Automation/Autonomy for Defence Researchers and Practitioners	Luke Richardson, Indra Gunawan and Justin Fidock
Theme: Characterising individual and small team performance	
Changes of mind under uncertainty: The role of evidence accumulation	Caleb Stone, Jason Mattingley and Dragan Rangelov
The effect of cue validity and cognitive load on the detection of frequent and infrequent targets in virtual reality	Salvatore Russo, David Nicoll, Tobias Loetscher, John Salamon, Mike Nicholls and Oren Griffiths
Effects of Cognitive Load and Visual Processing Capacity on First Person Shooter Performance in Virtual Reality	Hong Wing Fu, Tijn Grootswagers, John Cass, Larissa Cahill and Gabrielle Weidemann
Multitasking with the Multi Attribute Test- Battery II: An Ongoing Explorative Study	Melissa Ngo, Siobhan Banks and Philippe Rauffet
A Systematic Review of High-Stakes Moral Decision-Making Measures and Their Psychometric Properties	Kai Benjamin Ni, Suncica Lah, Micah Goldwater, Bruce Burns, Sabina Kleitman, Diego Silva and Karina Mak
Taking Science to the Sky: Applying Cognitive Science Techniques to Aviation	Alexander Thorpe, Brett Molesworth, Dominique Estival and Ami Eidels
Reducing the reliability paradox by refining the measurement of individual differences in decision-conflict tasks	Andrew Heathcote, Kristy De Salas, Ian Lewis, Lindsay Wells, Talira Cucina, Matt Palmer, Dora Matzke, Eugene Aidman and Jim Sauer
Theme: Mind & Body	
Physical training under low-to-moderate levels of cognitive load: A pilot study in Soldiers using Brain-Physical Optimization Conditioning (B-POC)	Brad Fawver, Michael Dretsch, Jeffrey Osgood, Michaela Monson, Gaylene Stephens, Tobin Thomas, Nathan Kearns, Benjamin Trachik and Dana Henry
Psychological and mind-body interventions improve sleep in US Veterans undergoing treatment for posttraumatic stress disorder	Danielle Mathersul, Peter Bayley, R. Schulz-Heik, Jamie Zeitzer, Timothy Avery and Kamini Dixit
Theme: Enhancing individual and small team performance	
Visual-Perceptual Training Techniques to Accelerate Decision-Making Skill in Defence Personnel	Sean Muller, Khaya Morris-Binelli, David Hambrick and Brooke Macnamara
Mobile App-enhanced Cognitive Fitness Training: A Proof-of-concept Pilot Trial	John Crampton, Leonard Zaichkowsky, Jeff Bond and Gerry Fogarty
Enhancement of Vestibular/Balance Function in Healthy Individuals using Subperceptual Random Stimulation: A possible novel mechanism to enhance warfighter performance	Jorge Serrador and Paul Breen
Theme: Work & workspaces	
Visual perceptual performance during locomotion: implications for information display technologies	Jessica O’Rielly, Marlon Blencowe, Anna Ma-Wyatt, Steve Cook, Larissa Cahill, Edward Palmer, Dominic Thewlis, Stuart Millar, Ryan Dummin, Steven Wiederman and Lucy Turner

<p>Predicting vigilance in a shift-work context with under-mattress sensor data from the preceding sleep Jack Manners, Danny Eckert, Peter Catcheside, Bastien Lechat, Alisha Guyett, Nicole Stuart, Eva Kemps, Phuc Nguyen and Hannah Scott</p>
<p>Overcoming HSI Modelling & Simulation Challenges Emerging through Modern Systems Engineering Methods. Helen Lawrence and John Towers</p>
<p>Cognitive Fit – Towards Cognitively Efficient Data Visualisations in Command and Control Matt Cabanag and Chris Stanton</p>
<p>Distribution of attention in screen-based versus head-mounted virtual reality displays in a military-relevant search task David Nicoll, Megan Bartlett, John Salamon, Tobias Loetscher, Mike Nicholls, Salvatore Russo and Oren Griffiths</p>
<p>Augmented displays with the human in mind: Investigating the effects of image degradation on target detection and discrimination Troy Visser, Vanessa Bowden, David Badcock, Jason Bell, Thomas McDougall and Ryan Dummin</p>
<p>Theme: The physical soldier</p>
<p>Rappelling as a Novel Method to Induce a Stress Response in Elite Athletes Gemma Whelan, Rosie Stanimirovic and Christian Cook</p>
<p>Human Sleep During an Expedition to the North Pole in Constant Natural Light Jacob Guzzetti, Audrey Bergouignan and Siobhan Banks</p>
<p>Predictors of Lower Limb Musculoskeletal Injury in an Infantry Field Training Program Gordon Waddington</p>
<p>Quantification of Weapon Characteristics to Aid Human Research Jemma Coleman and Kane Middleton</p>
<p>Effect of Perception of Gravity on Cerebral Blood Flow: Possible mechanism underlying spatial disorientation Valentin Siderskiy and Jorge Serrador</p>
<p>The Effect of Weapon Stability on Accuracy Jemma Coleman, Jodie McClelland and Kane Middleton</p>
<p>Theme: Grey Zone</p>
<p>Using Mental Simulations to Increase Cyber Secure Behavioural Intentions and Self-Efficacy Jennifer Williams and Jeffrey Foster</p>
<p>Ethical Human-Machine Teaming in the Grey Zone Zena Assaad and Christine Boshuijzen-van Burken</p>
<p>Melbourne Freedom Rallies: Applying a Mixed-Methods Approach for Investigating Grass Roots Activism on Twitter Matteo Farina, Carolyn Semmler and Lewis Mitchell</p>
<p>To What Extent Can Fact-Checking Reduce the Sharing of Fake News? Piers Howe, Bradley Walker, Andrew Perfors, Nicolas Fay and Yoshihisa Kashima</p>
<p>Countering misinformation goes beyond detecting what's true and what's false: lessons from the COVID-19 pandemic Micah Goldwater</p>
<p>MAGPIE: Monitoring And Guarding the Public Information Environment Keith Ransom and Rachel Stephens</p>
<p>Theme: Gut Instincts</p>
<p>Enhancing health and performance of Defence personnel: the multiplicative power of behavioural spillover in healthy eating Sebastian Isbanner</p>
<p>Advancing dietary assessment in human gut microbiome research: review and gap analysis Kerith Duncanson, Emily Hoedt, Georgina Williams, Nicholas Talley, Simon Keely, Gene Tyson and Kirsten Swan</p>