

Human Performance Week

5 - 8 December, 2023



Defence Human Sciences Symposium 2023 Program

Tuesday, 5 December

09:00 – 10:15	Opening Ceremony
09:00 – 09:05	Call to Order
09:05 – 09:15	Acknowledgement of Country, A/Prof Tony Parker, Academic Lead Indigenous Health
09:15 – 09:30	DVCR - QUT
09:30 – 09:40	Address from the Chief Defence Scientist, Prof. Tanya Monro
09:40 – 10:15	Defence Keynote: Dr Raymond Matthews, Fatigue Management Lead, Human Performance Optimisation, Headquarters Air Command
10.15 – 10.45	Morning Tea Break
10:45 – 12:15	Session 1: Warfighter Readiness <i>Chair: Larissa Cahill, DSTG</i>
10:45 – 11:00	Guidelines for reporting Human Performance Outcome research outcomes to Army stakeholders Jacqueline Costello
11:00 – 11:15	Concurrent cognitive and physical training for enhanced human performance: Considerations for Defence implementation Kristy Martin
11:15 - 11:30	Evaluating Low Org-Fit in ADF Recruits Ellen Bloxsome
11:30 - 11:45	The Human Performance Management System - Design Study Luana Main
11:45 - 12:00	The Validity of the MantisX Shooting Training System Kane Middleton
12:00 - 12:15	A Computational Cognitive Neuroscience Framework for Understanding, Measuring and Optimising Attentional Control: AUSMURI Project Overview Andrew Heathcote
12.15 – 12:45	Lunch Break
12.45 – 13:15	Poster Session 1
13:15 – 14:45	Session 2: Cognitive Performance <i>Chair: To be confirmed</i>
13.15 – 13.30	Dynamic Effects of Social Media Information on Command-and-Control Team Cognitive Demand, Information Load, and Cognitive Resilience Penny Kyburz
13.30 – 13.45	Estimating and Communicating Operator Cognitive Load to Improve UAS Operator and Team Performance Mari Velonaki
13.45 – 14.00	Examining colour usage in next generation displays when using Laser Eye Protection - maximising visual attention capacity and reducing cognitive burden Madeline Baker

14.00 - 14:15	Dynamic assessment of cognitive fitness Lucy Albertella
14.15 – 14.30	Higher order cognitive function during four simulated shiftwork schedules Jacob Guzzetti
14.30 – 14:45	How many screens are seen? Cognitive load in CCTV surveillance tasks on multi-screen displays Matt Stainer
14.45- 15.00	Afternoon Tea Break
15.00 – 15.30	Poster Session 2
15:30 – 17:00	Human-Autonomy Teaming <i>Chair: TBC</i>
15.30 – 15.45	Human-Machine Teaming in Virtual Reality: Exploring the Design of Virtually Embodied Autonomous Teammates for Time Critical Scenarios Penny Kyburz
15.45 – 16.00	Critical Decision Method Prompts to Measure Moral Responsibility for Autonomous Systems Kate Devitt
16.00 – 16.15	Use of Augmented Reality devices while walking: Implications for Defence use of near-to-eye information display technologies Jessica O'Rielly
16.15 – 16.30	Goal-based control for multiple autonomous systems Tom Fahy
16.30 – 16.45	Transparent Automation in Simulated Uninhabited Vehicle Management Shayne Loft
16.45 – 17.00	Swarm Metaverse for Human-Machine Education and Teaming Aya Hussein
17.00	End of Day
18:00 – 20:00	DHSS Cocktail Evening Room Three Sixty, QUT Gardens Point Campus

Wednesday, 6 December	
08:30 – 09:45	Team and Decision Sciences Chair: TBC
08.30 – 08.45	Communication and performance metrics for detecting changes in team dynamics Simon Hosking
08.45 – 09:00	The Entropy of Communication Turn Taking during a Collaborative Problem-Solving Task Hamish Stening
09.00 – 09:15	Sleep Restriction Alters Integration of Information Sources in Probabilistic Decision-Making Jeryl Lim
09.15 – 09:30	The Creativity Paradox in Defence Luke Houghton
09.30 – 09:45	Enhancing Intelligence Analysts' Decision Making Alicia Gilchrist
09:45 – 10:15	Morning Tea Break
10.15 – 10.45	Poster Session 3
10:45 – 12:30	Food & Wellbeing Chair: Katie Tooley, DSTG
10.45 – 11.00	Somatosensory Exercises Reduce Incidence of Injuries in Defence Personnel Gordon Waddington
11.00 – 11.15	Exploring the Complexity of Demands, Resources and Self-regulation in the Navy Context Monique Crane
11.15 – 11.30	Staying 'Left of Bang': a systems approach to injury prevention and physical optimisation in military training Emma Williams
11.30 – 11.45	Assessing the energy intake and expenditure of Australian Navy recruits during intensive periods of entry-level training Shannon Fizer
11.45 – 12.00	Exploring the relationship between the oral microbiota and wellbeing in Australian Army recruits: findings from the HPRnet Microbiome study Katherine Barlow
12.00 – 12.15	Microbial markers of cognitive performance – the role and predictive capabilities of the human gut microbiome Peter Sternes
12.15 – 12.30	Optimising the War fighter cognobiome: novel microbiome interventions to improve the cognitive performance of War fighters Emily Hoedt
12:30 – 13:00	Lunch Break
13:00 – 13:30	Poster Session 4
13:30 – 15:00	Wearable Tech/ BioMarkers Chair: Martin Stebbing, DSTG
13.30 – 13.45	Determination of Physiological and Molecular Biomarkers for the Development of Novel Performance Patch Sensors – a Project Update Tony Parker

13.45 – 14.00	A Deep Machine Learning Framework for Accurate Forecasting of Core-Body Temperature During Strenuous Physical Activities Tharindu Warnakulasuriya
14.00 – 14.15	Direct optical biosensing of performance biomarkers using a chemiluminescence dye Shahnewaz Ali
14.15 – 14.30	Saving power in the field: Investigating the effects of peripheral image degradation on search performance and user metrics in head-mounted displays Thomas McDougall
14.30 – 14.45	Does testosterone predict decisions involving risk choice Benjamin Serpell
14.45 – 15.00	Magnetoencephalography: an overview of use cases for Defence Science Will Woods
15:00 – 15:30	Afternoon Tea Break
15:30 – 17:00	Artificial Intelligence Chair: Simon Hosking, DSTG
15:30 – 15:45	Harnessing AI: Creating Digital Humans for Human-Machine Training and Teaming Michael Richardson
15.45 – 16:00	SADL: An effective prompting framework for multimodal generative AI Truyen Tran
16:00 – 16:15	Dynamic narrative visualizations via graphical network and AI models for augmenting decision-making Fernando Marmolejo Ramos
16:15 – 16:30	Decoding evoked brain responses to Real Faces versus GAN Generated Faces Pat Johnston
16.30 – 17.00	Closing Ceremony
17.00	End of Day

Poster Display

Poster Session 1 - Tuesday 5 December 13.15 – 13:45

	Wolf in SOCs clothing: How do security analysts want to use deception for active cyber defence? Andrew Reeves
	Impact of Augmented Reality displays on dynamically moving soldiers' geospatial awareness Larissa Cahill
	A Practical Approach to Translating the Cognitive Fitness Framework into Tactical Training Ken Franks
	Preparing Defence for Augmented Intelligence Jennifer Loy
	Monitoring and modelling human operator performance for a geospatial intelligence task Heidi Long
	Safeguarding Australia through Biotechnology Response and Engagement (SABRE) Alliance: Convergence in action Patrick Thomas
	UNITED: A unified neural framework for multichannel temporal data Truyen Tran
	Salivary microRNA as a Biomarker to Predict Performance Under Stress in Military Personnel. Madusha Perera
	Acute effects of exercise-induced cognitive enhancement: Comparison of concurrent physical-cognitive training with physical training in physically fit young adults Jonathan Connor
	Go Beyond, navigating life beyond service®: Preliminary evaluation of a self-directed online program for a successful transition from Defence Camila Guindalini
	A quantum model for calibrating trust in human-AI interactions Luisa Roeder
	Performance Evaluation of Aircrews Exposed to G-acceleration using a Human Centrifuge System Navid Mohajer
	Working together for health and performance – Creating Collective Solutions Anna Kitunen
	Augmenting complex and dynamic performance through mindfulness-based cognitive training: an evaluation of training adherence, trait mindfulness, personality and resting-state EEG. Chloe Dziego
	Representing the 360-degree horizon on a single display: the impact of panel arrangement on operator situation awareness Zachary Howard
	Distributed Decision Modelling in Integrated Air and Missile Defence Jackson Duncan-Reid
	Performance, health, and wellbeing: Uncovering the needs and challenges of uniformed women in the New Zealand Defence Force Lauren Keaney
	Integrating Offboard Sensor Information into the Submarine Control Room Shayne Loft
	Steroid Biomarkers as Predictors of Performance Readiness Under Competitive Stress Blair Crewther

Poster Session 2 - Tuesday 5 December 15.30 – 16.00

	Mutual Support: Assisting Advanced Manufacturing for Defence Capability Robert Trott
	In vitro and in vivo Validation of a Blood-Brain Barrier Microfluidic Chip Model for Chemical/Biological agent hazard assessment and medical countermeasure (MedCM) screening Patrick Thomas

	Improving battlefield-feasible diagnostic capabilities: next-generation diagnostic devices for individuals suffering from limb loss Laurent Frossard
	From Accessories to Electronic Tattoos: Personalised Wearable Devices for Demanding and In-Field Applications Anusha Withana
	Assessment of Biochemical, Biophysiological and Cognitive Responses to an Acute Laboratory Stressor Gemma Whelan
	Exercise heat stress-induced changes to plasma metabolite profiles in a controlled temporal pilot trial Daniel Broszczak
	Development of low burden devices based on LAMP assays for the presumptive detection of Defence biological agents of interest Michael Beer
	An explorative narrative review: Multitasking with the Multi Attribute Task-Battery II Melissa Ngo
	Quantifying Situation Awareness during a Competitive Team Multiplayer Video Game Cassandra Crone
	The Acute Effects of Martial Arts-Based Breath-Control and Feedback Training on Force Production and Stability Sherrilyn Walters
	The Behavioural Cues of Cognitive Overload (BCOCO) checklist Chris Brady
	Enhancing Military Personnel Safety: Investigating Manual Handling Tasks Impacting Spinal Forces. Logan Hard
	Development and Implementation of a Team Readiness Monitoring Tool in a Military Headquarters: The Team Performance Conditions Check Michael Chapman or Phillip Temby
	A Data Management Strategy for a Complex Human Performance Project. Virginie Perlo
	Design and in vitro Evaluation of a Recombinant Butyrylcholinesterase Medical Countermeasure for Nerve Agent Poisoning Joanne Allard
	Behavioural, psychological, and physiological changes in response to innate immune system activation from the influenza vaccine Brendan Gillespie
	Combined cognitive and physical training for improved cognitive and physical performance in young healthy adults Amanda Scott
Poster Session 3 - Wednesday 6 December 10.15 – 10.45	
	Development and preliminary efficacy testing of a digital sleep and circadian management tool for optimising cognitive performance in a cohort of the Australian Defence Force Prerna Varma
	Exploring Dispositional Characteristics, Resting-State EEG Neural Markers, and Performance in Submariner Teams Imogen Weigall
	Navigation under Uncertainty Naohide Yamamoto
	Biofeedback for sustained attention: a narrative review Onno van der Groen
	Command, Control, Cognitive Load: Quantifying stress and workload during real flight training Christine Boag-Hodgson

	Coding Competitive Behaviours in a Multi-Person Competitive Team Task Ayman bin Kamruddin
	EEG Neural Synchrony Insights into Collaborative Team Performance Mohammed Algumaei
	Design for Resilience in Naval Platform Habitability Peter Schumacher
	Is a sleep extension during Royal New Zealand Navy Basic Common Training feasible and effective? Lauren Keaney
	Robust Decision Support System Concept for Military Search Operations Canicious Abeynayake
	Towards a Formal Model of Situated Security Breaches Beth Cardier
	Emotion regulation and coping in active-military personnel: a systematic review Rebecca Kirkham
	A Cognitive Load Management Skills Training Platform for Controllers operating in C2 environments. Rohan Walker
	Augmented Reality Annotations for Facilitating Rapid Decision-Making and Combating Time Pressure Jamie Gower
	Investigating Cognitive Adaptations Following Social Evaluative Stressors: Implications for Decision-Making in Military Personnel Jonathan Flintoff
	Strategic Forces: Optimising Human Performance in Defence through Balancing Perceptual and Cognitive load. Karen Murphy
	Can Human Teams be Led by a Collaborative Conversational Agent? James Simpson
	The Ursula Project: Strategic planning through story and character Joanne Anderton
	Wearable Performance Patch: A Usability Study of Physical Performance Indicators in Active Scenarios Henry Bowman
Poster Session 4 - Wednesday 6 December 13:00 – 13:30	
	Distributed Command and Control Mick Reilly
	An assessment of the utility of various Heart Rate Variability metrics for real-time monitoring of cognitive load Kirby Wraith
	Implementation and effectiveness of an 8-week concurrent cognitive and physical training program in physically fit, healthy adults Kenji Doma
	Reliability of a revised Defense Automated Neurobehavioural Assessment (DANA) battery in healthy adults Anthony Leicht
	Novel Dietary Analysis for Cognitive Performance in Military and non-Military Cohorts Nicole Simm
	Exploring the Relationship Between the Gut Microbiome and Cognitive Performance in Military and Non-Military Cohorts Alexander Thorpe
	Advance Integrated Respiratory (AIR) Model Damien Chong
	Realistic Dialogue and Task-Effective Action for Synthetic Teammates

	Patrick Nalepka
	Interstitial fluid sampling combined with molecular imprinted polymer for on-body biochemical sensing Blair Crewther
	Learning to coordinate with humans from models of human perceptual-motor behaviour Gaurav Patil
	Confidence and intelligence indicate how much better two heads are than one Matthew Blanchard
	Work design for next-generation Remotely Piloted Aircraft Systems Andrew Neal
	Performance Indicators Under Sleep Stress Cassandra Pattinson
	Defence Total Wellness Measurement Framework Anne Macnamara
	Validation of Training Impact Using Synthetic Coaching and Biometrics in a Field-Tested Simulation-Based Training Environment Gary Eves
	Altered Peripheral Circadian Clock Gene Expression may Contribute to both Organic and Functional Gastrointestinal Disease Sophie Fowler
	Can thermal sensing offer a cheap, robust alternative to biochemical sensing of cortisol and other steroidal hormones? Benjamin Serpell
	Levels of Meaningful Human Control Jurriaan van Diggelen
	A Quantitative Analysis of the Herowear Apex1 Exoskeleton: Advancing Spine Health and Operational Efficiency in Military Manual Tasks Alessandro Garofolini
	Modelling Human Navigation and Decision Making in First-Person Herding Tasks Ayman bin Kamruddin