

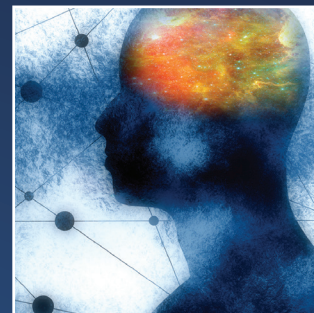
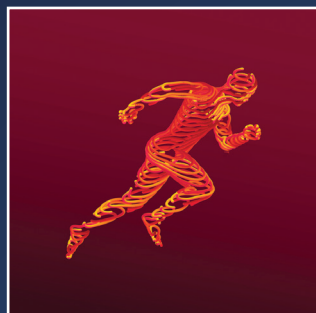
UNIFORMED SERVICES UNIVERSITY
Center for the Study of Traumatic Stress

PROGRAM

Precision Medicine in Human Performance

May 8-9, 2019

Embassy of Canada to the United States
Washington, D.C.



Sponsored by: The Center for the Study of Traumatic Stress
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PROGRAM

NORTH ATLANTIC TREATY ORGANIZATION HUMAN FACTORS AND MEDICINE (HFM)

Personalized Medicine in Mental Health & Performance

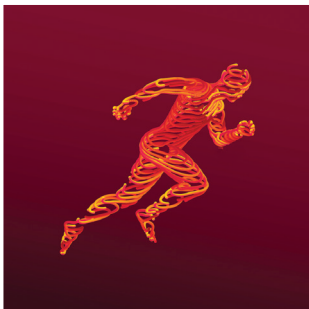
Precision Medicine in Human Performance

Meeting #2

May 8-9, 2019

Embassy of Canada to the United States

Washington, D.C.



NATO Research Task Group (RTG) Mission: Identify technological advances that can have a direct impact on assessment, treatment, education, training, and identification of risk to enhance force readiness through optimized performance, risk mitigation, return to duty, and more efficient health care utilization.

CSTS



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Agenda

May 8, 2019

0900–0920	Welcome and Introduction — LTC(P) Gary H. Wynn (USA)
0920–0950	Overview of HFM RTG — COL Dennis McGurk (USA)
0950–1040	Assessing and Developing Elite Athletic Talent: Lessons Learned from the NFL and NBA National Scouting Combines — Dr. Kenneth Yusko, Ph.D. (USA)
1040–1105	Break
1105–1200	Human Performance Optimization and Precision Performance: The Role of Nutrition — Jonathan Scott, Ph.D. (USA)
1200–1300	Lunch
1300–1350	Center for the Study of Traumatic Stress: An Overview — CAPT Joshua C. Morganstein (USA)
1350–1400	Break
1400–1450	Leveraging Commercial Technology to Transform Defense Capabilities — Matt Goldman, M.D. (USA)
1450–1520	Military Human Performance Optimization — Overview from the CAF Perspective — Col Rakesh Jetly & Shawn Rhind, Ph.D. (CAN)
1520–1600	Wrap up and Discussion — Panel Members

Agenda

May 9, 2019

0900–0915	Welcome / Check In / Issues / New Attendees Welcome — LTC(P) Gary H. Wynn (USA)
0915–1000	Effects of Fatigue on Psychological and Physiological Performance — Including Countermeasures in Military Personnel — Oshin Vartanian, Ph.D. (CAN)
1000–1045	Sports Psychiatry: Strategies for Life Balance and Peak Performance — David McDuff, M.D. (USA)
1045–1100	Break
1100–1145	Enhancing and Maintaining Mental Performance in the Netherlands Armed Forces — Elbert Geuze, Ph.D. (NLD)
1145–1200	Wrap-up and Discussion; Speakers and Guests Released
1200–1300	Lunch
1300–1600	Panel Wrap-up, Next Steps, Next Meeting

Center for the Study of Traumatic Stress (CSTS)

The Center for the Study of Traumatic Stress (CSTS) is one of the nation's oldest and most highly regarded, academic-based organizations dedicated to advancing trauma-informed knowledge, leadership and methodologies. The Center's work addresses a wide scope of trauma exposure from the consequences of combat, operations other than war, terrorism, natural and human made disasters, and public health threats. CSTS is a part of our nation's federal medical school, Uniformed Services University (USU), and its Department of Psychiatry. These affiliations represent the Center's history, mission and future directions as a major contributor to our country's understanding of the impact of trauma and the advancement of trauma-informed care.

A unique aspect and contribution of the Center is the bridging of military and disaster psychiatry and the integration of disaster mental health and public health. In applying the principles and practices for dealing with individuals and groups exposed to extreme environments (in the military), the Center has generated and disseminated its subject matter expertise to inform disaster preparedness, response and recovery principles and practices across a wide range of traumatic events and populations.

Today and into the future, the Center is uniquely positioned to respond to DoD mission relevant activities and issues, as well as to educate regional and national stakeholders in government, industry, healthcare, public health, and academia on mitigat-

ing the effects of disaster and trauma in the civilian community to foster human continuity and community and national resilience.

The Center:

- Develops and carries out research programs to extend our knowledge of the medical and psychiatric consequences of war, deployment, trauma, disaster and terrorism, including weapons of mass destruction.
- Educates and trains health care providers, leaders, individuals and public and private agencies on how to prevent, mitigate and respond to the negative consequences of war, deployment, traumatic events, disasters, and terrorism.
- Consults with private and government agencies on medical care of trauma victims, their families and communities, and their recovery following traumatic events, disasters and terrorism.
- Maintains an archive on medical literature related to the health consequences of traumatic events, disasters and terrorism of individuals, families, organizations, and communities.
- Provides opportunities for post-doctoral training of medical scientists to respond to and research the health consequences of trauma, disaster, and terrorism.

CSTS



Serving our nation for 30 years

Embassy of Canada to the United States of America

The embassy building is at 501 Pennsylvania Avenue, Northwest, Washington, D.C. between the Capitol and the White House, just north of the National Gallery of Art. In addition to its diplomatic role, the Embassy handles consular services and assists with international business development for the surrounding states of Virginia, West Virginia, and Maryland.

The Embassy was officially opened by Prime Minister Brian Mulroney on May 3, 1989. The building houses approximately 265 Canadian diplomatic and locally engaged staff. The Embassy houses representatives from two provinces (Ontario and Alberta) and 13 Canadian federal government agencies including Foreign Affairs, International Trade and Development Canada, Industry Canada, Transport Canada, Public Works and Government



Services Canada, the Department of National Defence, the Permanent Mission of Canada to the Organization of American States, and the Royal Canadian Mounted Police, amongst others.

Canada has the embassy closest to the Capitol and is the only country to

have its embassy along the Presidential inaugural route between the Capitol and the White House. The Washington, D.C. bureau of the Fox News Channel is a short distance away — its studio is positioned such that the Canadian flag of the embassy is usually visible out the window during broadcasts.

The Embassy of Canada hosts numerous events throughout the year for visiting ministers as well as for a wide range of diplomatic, military, and public functions.

NATO Science and Technology Organization (STO)

The North Atlantic Treaty Organization, also called the North Atlantic Alliance, is an intergovernmental military alliance between 29 North American and European countries. The organization implements the North Atlantic Treaty that was signed on 4 April 1949.

NATO was launched as part of a broader effort to serve three purposes: deterring Soviet expansionism, forbidding the revival of nationalist militarism in Europe through a strong North American presence on the continent, and encouraging European political integration.

NATO's essential purpose is to safeguard the freedom and security of its members through political and military means.

About STO (Science and Technology) in NATO

In NATO, S&T is defined as the selective and rigorous generation and application of state-of-the-art, validated knowledge for defence and security purposes. S&T activities embrace scientific research, technology development, transition, application and field-testing, experimentation and a range of related scientific activities that include systems engineering, operational research and analysis, synthesis, integration and validation of knowledge derived through the scientific method.

The STO is a NATO subsidiary body having the same legal status as NATO itself, and created within the framework of the North Atlantic Treaty signed in Washington, D.C. in 1949. It has been established with a view to meeting to the best advantage the collective needs of NATO, NATO Nations and partner Nations in the fields of Science and Technology. The STO is operated under the authority of the North Atlantic Council which has delegated the operations of the STO to a Board of Directors (the Science &

Technology Board — STB) comprising the NATO Nations S&T managers. The STB is chaired by the NATO Chief Scientist who is a high level recognized S&T leader of a NATO Nation, being permanently assigned to the NATO Headquarters in Brussels and also serving as the Senior Scientific Advisor to the NATO leadership.

The STO is composed of the STB, the Chief Scientist, and the three executive bodies: The Office of the Chief Scientist (NATO HQ, Brussels), The Collaboration Support Office (Paris, France), and The Centre for Maritime Research and Experimentation (La Spezia, Italy). The CSO supports a range of activities primarily divided among a number of technical panels. These technical panels (and one group) include Applied Vehicle Technology (AVT), Human Factors in Medicine (HFM), Information Systems Technology (IST), Systems Analysis and Studies (SAS), Systems Concepts and Integration (SCI), Sensors and Electronics Technology (SET), and the NATO Modelling and Simulation Group (NMSG).

The mission of the HFM Technical Panel, under which RTG 281 falls, is to provide the science and technology base for optimizing health, human protection, well-being and performance of the human in operational environments with consideration of affordability. This involved understanding and ensuring the physical, physiological, psychological and cognitive compatibility among military personnel, technological systems, missions, and environments. This is accomplished by exchange of information, collaborative experiments and shared field trials. HFM RTG 281 is a 3 year effort with the objective of harnessing and encouraging new advances in personalized approaches to optimize mental health and mental health aspects related to military-relevant mission performance.

Personalized Medicine in Mental Health and Performance

Background and Justification for this RTG

The medical field is committed to delivering evidence-based care, but the evidence used is often from population wide studies that do not always allow for tailored approaches reflective of an individual patient's biological makeup, history, and responses to environmental factors. This may contribute to less than optimal prevention strategies, diagnostics, and responses to treatments. However, there have been great advances in some areas of medicine such as oncology that use Precision Medicine to customize treatment approaches based on an individual patient's profile in the context of evidence-based care. The use of Precision Medicine will ultimately have a positive impact on military readiness and performance. For the purposes of this Research Task Group (RTG), the focus is on Precision Health and Performance as an approach that takes into account and when possible exploits/leverages people's individual variations in biological makeup, history, environment and lifestyle for disease prevention, diagnosis and treatment as well as optimization of military performance. Precision Health and Performance is the result of a convergence of transformative technological advancements that are all reaching a sufficient level of technical maturation such as biomarkers, wearable technologies, and big data analytics. The Exploratory Team (ET) concluded that the breadth, required expertise, and amount of material to be covered in Precision Health and Performance would be too large in scope for one RTG. As a result, based on the expertise among the ET members, the pervasiveness of Mental Health issues across military members, and the potential impact of Precision Medicine on Mental Health issues, it is proposed that the initial RTG is focused on the impact of Precision Health and Performance on Mental Health

and the relationship of Mental Health to Military performance. The ET further recognizes that additional RTG(s) focused on other aspects of Precision Health and Performance may be of particular importance to the HFM Panel. This RTG will address the 2016 NATO S&T Priority "Advanced Human Performance and Health" in the following areas: Human Resiliency, Medical Solutions for Health Optimization, and Enhanced Cognitive Performance. In addition, this RTG will address other NATO S&T Areas to include Big Data & Long Data Processing and Analysis, and Sensor Integration & Networks. This RTG will also coordinate with relevant on-going activities: ET-137 Leveraging Technologies in Psychiatry, ET-150 Reducing Musculo-skeletal Injuries, and HFM-RTG-260 Wearable Sensors. The outcome of this RTG will be identification of cutting-edge precision medicine techniques that will lead to improvements in how NATO member nations provide Mental Health problem prevention, diagnoses, and treatment as well as improvements in Mental Health aspects (e.g., focused concentration, mental endurance) related to Military-relevant mission performance. The end result will be improved military readiness and performance during the full spectrum of military operations.

Objective:

The main objective is to harness and encourage new advances in personalized approaches to optimize: 1) mental health, including ensuring medical readiness, prevention/diagnosis/treatment of disorders, and return to duty; and 2) mental health aspects related to military-relevant mission performance.

1. Early exploitation of: a) Individual genetic reactions to pharmacological interventions

- (pharmacogenomics) — review and evaluate existing evidence for potential immediate application (ex: genetic markers that predict the efficacy and tolerance of psychotropic and analgesic medications), b) Databases (e.g., follow oncology example) — deeper analysis of existing databases would allow for predictive models to be created on issues such as response to treatments, withdrawal from treatment, etc.
2. Use a Systems Biology approach for prevention, diagnosis, and treatment of psychological injury/illness. For example, use biomarkers (e.g., omics, data analysis, imaging, sample banking, phenotypical data, contextual/environmental data) as tools for 1) targeted prevention/intervention strategies based on personalized stratified risk, 2) objective diagnosis, 3) targeted treatment choices. Explore whether Systems Biology approaches may be able to identify mental and cognitive fitness characteristics within individuals.
 3. Develop and exploit the predictive ability of emerging technologies, science, data, and models (e.g., machine learning) in order to identify the risk for adverse mental health outcomes and the opportunities to optimize mental health aspects of performance.
 4. Maximize the convergence of sciences to capitalize on multiple disciplines in the life sciences, physical sciences and engineering to prevent psychological injury/illness and optimize performance by leveraging perspectives from clinicians, researchers, and engineers.
 5. Assess the feasibility of utilizing real-time and continuous physiological and psychological status monitoring and feedback in military settings (coordinated with HFM-260 Wearable Biosensors).
 6. Recommend approaches to develop databases/registries that would guide precise interventions. Encourage nations to share data to allow for analyses that are important for each nation.

Summary of Prior Meeting

Research Task Group Planning (Meeting #1)

NATO Science and Technology Office
Neuilly-sur-seine, Paris, FR
25–27 Sept. 2018



The initial meeting of the HFM 281 RTG panel members took place at the NATO STO Collaboration Support Office in Paris, FR and focused on organization and scheduling. Panel members reviewed the

foundational documents supporting NATO's decision to stand up the RTG. Panel members sketched out an initial schedule of meetings for the topics to be covered. Tasks were assigned and interim updates and planning meetings were scheduled. A discussion around the possibility of producing a journal special issue from this RTG was undertaken and panel members volunteered to explore this further.

Panel Members

COL Dennis McGurk (USA) **Panel Co-Chair**



COL Dennis McGurk, Ph.D.; Director, Office of Medical Systems US Army Medical Research & Materiel Command (MRMC); Deputy Assistant Secretary of the Army Science & Technology (DASA(R&T))

COL Dennis McGurk is the Director of the Office of Medical Systems, representing MRMC at DASA(R&T). The Medical Systems office is responsible for “all things Medical” in science & technology as well as product development and systems management at the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) level. COL McGurk’s previous assignment was as the Army Medical Department (AMEDD) representative to the Army Futures Command (AFC) in Austin, TX. AFC’s mission is to integrate the future force modernization enterprise in order to provide the Army the concepts, force designs, requirements,

and materiel solutions required to deter and, when necessary, decisively defeat a future peer adversary. Previously, COL McGurk was the Director of the Military Operational Medicine Research Program (MOMRP), Ft Detrick, MD. The MOMRP is responsible for managing research to develop effective medical countermeasures against combat and operational stressors to maximize Service member health, readiness and performance. COL McGurk entered the military in 1990 as an Infantryman in the Army Reserve. He was commissioned as a Medical Service Corps Officer in 1994. COL McGurk earned his Ph.D. in Experimental Psychology from Texas Tech University in 2002. He has served as a Platoon Leader, Operations Officer, Company Commander, Research Branch Chief, and Detachment Commander. During his 24+ years of military service, COL McGurk has deployed to Haiti, Kosovo, Iraq and Afghanistan. He has published in peer-reviewed journals, was the lead author on two book chapters, has presented to numerous scientific and military conferences and has briefed many senior military leaders to include the Under Secretary of Defense for Personnel and Readiness, the Secretary of the Army and the Secretary of the Navy.

Panel Members, Continued

Col Rakesh Jetly (CAN) Panel Co-Chair



Colonel Rakesh Jetly enrolled under the Medical Officer Training Plan in 1989 and graduated in 1991 from the University of Toronto with a Doctorate in Medicine (MD). Upon graduation, he was posted to Canadian Forces (CF) Base Borden as a General Duty

Medical Officer and Flight Surgeon.

In 1993, Col Jetly deployed as the senior medical officer to the United Nations mission in the Golan Heights (UNDOF) and in 1994, he deployed to Rwanda as part of the CF humanitarian mission.

In 1996, he was accepted into the University of Toronto Postgraduate Training Program in Psychiatry and was promoted to the rank of major in 1997. Upon graduation in 2000, he was certified as a Fellow in the Royal College of Physicians and Surgeons of Canada (psychiatry) and posted to CF Health Services Centre (Atlantic). During his tenure in Halifax from 2000-2008, he filled various roles including clinical director of mental health services

and regional director of the Operational Trauma and Stress Support Centre (OTSSC).

In 2006 and 2007, Col Jetly was deployed on two separate missions to Afghanistan as the head of the mental health detachment of the Canadian-led Role Three Multinational Medical Unit. He was promoted to Lieutenant-Colonel in 2007 and posted to Ottawa in 2008 as the mental health advisor to the Deputy Surgeon General.

Col Jetly was promoted to his current rank in 2011 and appointed senior psychiatrist and mental health clinical advisor to the CF Surgeon General. He was additionally appointed in 2015 “The Canadian Forces Brigadier Jonathan C. Meakins, CBE, RCAMC Chair in Military Mental Health”.

Col Jetly was appointed to the Order of Military Merit as an Officer in 2009. He is also an associate professor of psychiatry at Dalhousie University (Halifax) and the University of Ottawa. He has published numerous articles in professional journals and presents nationally and internationally on such topics as post-traumatic stress disorder and operational psychiatry.

Col Jetly and his wife Julie reside in Ottawa with their three children: Sarah, Serena and Deven.

Panel Members, Continued

LTC(P) Gary H. Wynn (USA) Local Panel Host



Dr. Wynn is Professor of Psychiatry and Neuroscience, Assistant Chair of the Department of Psychiatry, and Senior Scientist at the Center for the Study of Traumatic Stress. He is also a Distinguished Fellow of the American Psychiatric

Association and on the editorial board of the Journal of Neuroscience Research. Dr. Wynn received his education at the United States Military Academy at West Point and Uniformed Services University of the Health Sciences. He completed a dual residency in psychiatry and internal medicine at the Walter Reed Army Medical Center in Washington, D.C. During his military career Dr. Wynn has served as a Division Psychiatrist (2nd Infantry Division, Korea), Assistant Chief of Inpatient Psychiatry Services (Walter Reed), and as a Research Psychiatrist (Walter Reed Army Institute of Research) prior to transitioning to the Uniformed Services University of the Health Sciences.

Dr. Wynn has served as a frequent member of DoD level committees and working groups on the topics of PTSD and suicide. Dr. Wynn has served as a member of VA Merit Review Boards, National Institute of Mental Health (NIMH) Data Safety and Monitoring Board, and as US Representative to NATO Human Factors in Medicine panels on Leveraging Technology in Military Mental Health and Precision Medicine in Human Performance and Mental Health. He is a member of the Order of Military Medical Merit and recipient of the AMEDD “A” Proficiency Designator, the Rundell Award, the Artiss Award, and three Meritorious Service Medals. Dr. Wynn is a Past President of the Society of Uniformed Services Psychiatrists. In addition, Dr. Wynn has over 80 publications, including being co-author and editor on three books.

Shawn G. Rhind, Ph.D. (CAN) Panel Member



Dr. Shawn Rhind earned his doctorate in Immunobiology from the University of Toronto. He completed an NSERC Postdoctoral Fellowship with the Defence & Civil Institute of Environmental Medicine (DCIEM) and US Army

Research Institute of Environmental Medicine (USARIEM), examining biomolecular interactions between neuro-endocrine-immune systems under severe physiological stress and environmental extremes and their impact on health and performance. Today, Dr. Rhind is a senior Defense Scientist in the Military Operational Health Group at Defence Research and Development Canada (DRDC) Toronto and an Associate Professor at the University of Toronto, where he leads an integrative — molecular to systemic — translational research team. His research spans basic laboratory science to human clinical trials, and is currently focused on elucidating the biological basis and therapeutic countermeasures for combat-related psychological and physical trauma, including posttraumatic stress disorder (PTSD) and battlefield care after traumatic shock and brain injury.

Panel Members, Continued

Mathew McCauley, Ph.D. (GBR) **Panel Member**



Dr McCauley is a Consultant Clinical Psychologist, based within Joint Medical Group, Joint Forces Command, Ministry of Defence (MoD), UK. He is also a Medical Corps Officer in the Army Reserve and an Assistant Professor of Clinical Psychology at Trinity

College, University of Dublin.

He completed his doctoral residency at the UK's Royal Centre for Defence Medicine and Royal Air Force Station, Brize Norton. Since 2005, he has served in MoD clinical posts across the Royal Navy, British Army, and Royal Air Force. Dr McCauley also served for six years with the US Department of Defense, assigned OCONUS to the United States Air Forces' 48th Medical Group, 48th Fighter Wing and 423rd Air Base Group, 501st Combat Support Wing. He was Lead Consultant Clinical Psychologist for the UK MoD, based in Scotland and Northern Ireland; before taking up his current post as senior clinician for the British military's mental health team in Northern Ireland.

Dr McCauley is an active researcher in the field of military clinical psychology. He also undertakes doctoral-level clinical psychology teaching and research supervision. His most recent scholarly work includes service as Guest Editor and contributing author for the April 2019 Special Issue of the Journal of the Royal Army Medical Corps, which focuses on military psychology. Dr McCauley is also a founding member and committee officer of the British Psychological Society's Section on Defence and Security Psychology.

Elbert Geuze, Ph.D. (NLD) **Panel Member**



Elbert Geuze is Director of the Brain Research and Innovation Centre of the Dutch Ministry of Defence, Utrecht, the Netherlands. In addition, he is also an associate professor at Utrecht University Medical Centre. He received his PhD cum laude in 2006 and has

been conducting research on the neurobiology of PTSD since 2002. He has used various neuroimaging techniques such as structural MRI, functional MRI and PET imaging. He is PI of a number of studies investigating the neurobiological correlates of PTSD, anxiety and aggression in veterans. He is also PI of a study involving the use of transcranial direct current stimulation for the treatment of anxiety and aggression. He has published more than 90 papers in peer-reviewed journals. He is frequently asked to speak on research relating to military veterans, is an active reviewer for journals and grant agencies. Elbert is also a member of the Internal Review Board of Utrecht University Medical Centre since 2011.

Panel Members, Continued

Dominic Murphy, Ph.D. (GBR) **Panel Member**



Dominic gained his first degree, a masters in psychology from Glasgow University in 2003. He joined King's College London University late 2003 as part of the team that established the King's Centre for

Military Health Research (KCMHR) and setup an ongoing UK military epidemiological survey following the 2003 Iraq War. Dominic earned his doctorate at King's College London exploring vaccinations and medically unexplained symptoms in UK military personnel. Dominic then trained as a Clinical Psychologist and completed his clinical doctorate at Royal Holloway University. In 2013, Dominic joined Combat Stress (a national veterans mental health charity in the UK) where he established and now leads a research department specializing in veterans mental health. The Combat Stress research department is co-located within the KCMHR where Dominic continues to be a member of the KCL department. Dominic is an active member of the Forces in Mind Trust (FiMT) mental health steering group, an executive board member of the UK Psychological Trauma Society (UKPTS), editor for a number of journals and member of several international military mental health research consortiums. In 2019 he was elected the president of the UKPTS and onto the executive board of the European Society for Traumatic Stress Studies (ESTSS). Dominic has specialized clinically and academically within the field of PTSD and military mental health and is widely published with over 80 journal articles to date.

Maj Gerwyn Michael RMN, RGN (GBR) **Panel Member**



Gerwyn joined the UK Army in 1986 as a soldier in 1st Cheshire regiment. He then trained as a general nurse (RGN) and mental health nurse (RMN) graduating in 1992 and 1995 respectively. He commissioned in 1998,

graduated from Staff College in 2008 and has led in-patient and community mental health teams as well as Staff appointments in UK and overseas for the last 21 yrs. including Germany and Brunei.

He was appointed Specialist Nurse Advisor (Mental Health) to the Army in 2014 and Defence Specialist Advisor (Mental Health) since 2016. He is also a Visiting Researcher at KCMHR, recently conducting research in South Sudan.

Over the last 33 years, he has deployed to Belize (Infantry), Northern Ireland, Bosnia, Kosovo, Macedonia, Iraq, Afghanistan, leading FMHTs during his six years deployed.

He introduced EMDR to Defence Mental Health in 1999 and advocated its utility in a presentation to the ESTSS at Edinburgh in 2001. He studied Health Service and Change Management as part of his MBA programme in 1994, graduated BSc (Hons) in Defence nursing in 2008. A PGDip (CBT) followed in 2015 and his MA (CBT) in 2017. He has recently contributed to the Human Performance programme for the UKSF and has an interest in insomnia, trauma and innovative approaches to therapy.

Panel Members, Continued

David Forbes, Ph.D. (AUS) Panel Member



David Forbes is the Director of Phoenix Australia — Centre for Posttraumatic Mental Health and Professor in the Department of Psychiatry, University of Melbourne. He has over twenty-five years experience in the assessment and treatment of mental

health problems in trauma survivors, with a speciality in military and veteran mental health. He led the development of the inaugural 2007 Australian Guidelines for the Treatment of Posttraumatic Stress Disorder (PTSD) and the revision published in 2013 approved by the National Health and Medical Research Council and endorsed by colleges of psychiatrists, psychologists and general practitioners. Professor Forbes is also Vice Chair of International Society for Traumatic Stress Studies Committee for the new PTSD Guidelines and the lead editor for the forthcoming third edition of the ISTSS Effective Treatments for PTSD book. He has published 150 scientific papers in the international literature and sits on many Commonwealth government policy and scientific advisory panels and academic journal editorial boards He has a strong track record in the conduct of research in the assessment and treatment of PTSD and the provision of policy and service development advice to government and agencies responsible for the care of veteran and military personnel and trauma survivors across the community. Professor Forbes has also a strong track record in the provision of training in evidence-based treatments for PTSD and related disorders. This has also included the development of mobile app and online resources for practitioners and trauma survivors.

Heather Pangburn, Ph.D. (USA) Panel Member



Heather Pangburn, Ph.D., is the Systems Biology Branch Technical Advisor and Core Research Area Lead of Systems Biology for Performance, overseeing and conducting research related to the mechanisms contributing to human performance optimization including their physical and cognitive state over time and in varying operational environments.

Dr. Pangburn brings 10+ years' experience in toxicology, molecular and cellular biology and biochemistry. Before moving to her current position she was the Lead Research Toxicologist in the USAF School of Aerospace Medicine, providing scientific leadership, direction and management to a large diverse cross functional team conducting Systems Biology research related to Force Health Protection (FHP) to include hazard detection and air quality monitoring, applying precision medicine/total exposure health efforts that employ high throughput in vitro methods and in vivo (human subject) studies, systems biology approaches and computer-based modeling to evaluate substances for possible effects on human health. Dr. Pangburn's first position with the

Air Force was as the Radioprotection Team Lead where she led a team of scientists in identifying and exploiting molecular mechanisms to provide enhanced human performance and injury protection to the warfighter in high radiation environments. She received her PhD in Molecular Toxicology from the University of Colorado Health Sciences Center wherein she examined the biologic and biochemical mechanisms of the chemopreventive effects of non-steroidal anti-inflammatory drugs. She subse-

Panel Members, Continued

quently executed her postdoctoral fellowship in the Regenerative Medicine and Stem Cell Biology Program at the University of Colorado Denver studying genetic pathways and identifying genetic alterations that occur in acquired skin diseases such as cancer. Dr. Pangburn has also worked in industry, providing primary strategic technical product development support for molecular diagnostic assay activities required to prepare for launch and to support product aftermarket launch in the Molecular Diagnostics Division of Abbott Laboratories.

Other Panel Members:
Maj Nathalie Pattyn (BEL)

Speakers

Kenneth Yusko, Ph.D. (USA)



Dr. Ken Yusko is currently the Deputy Director of the University of Maryland Industrial/Organizational Psychology MPS program and co-principal of Siena Consulting, a human capital consulting firm. He earned his master's and doctoral

degrees in Industrial/Organizational Psychology at the University of Maryland.

Ken is an expert in the design of personnel selection, development, and performance management systems. As a consultant in both the private and public sectors, Ken has worked with sports teams and leagues, Fortune 500 companies, small businesses, partnerships, consulting firms, and government agencies. His recent clients include the National Football League, the Sacramento Kings, S.C. Johnson, Merck, Morgan Stanley, the Motion Picture Association of America, and the Jefferson County, Alabama local government.

Dr. Yusko frequently serves as an expert in employment litigation cases involving the design of court-approved/consent decree human resource interventions. He has authored two books on human resource and human capital management practices and is a frequent contributor to both trade and research journals on the topic of employee selection and development. Ken's research primarily focuses on improving employee hiring decisions. His doctoral research on decision making was funded through a grant from the National Science Foundation. Ken and his team were recently awarded the

M. Scott Myers Award for Applied Research from the Society of Industrial/Organizational Psychology and the International Personnel Assessment Council's Innovations Award for their work in developing and implementing the Siena Reasoning Test (SRT), a cognitive ability test that substantially improves employee hiring outcomes.

Jonathan Scott, Ph.D. (USA)



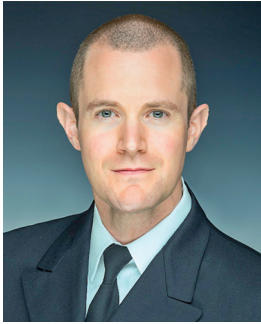
Jonathan Matthew Scott, Ph.D., CSSD., R.D., is an assistant professor in the Department of Military and Emergency Medicine at the Uniformed Services University. Prior to academic life, Dr. Scott was a sports dietitian at The Ohio State University, where he provided

individualized and group counseling to athletes across 10 varsity sports teams. He conducts research and produces educational materials on a variety of topics related to performance nutrition and dietary supplements for the Department of Defense. He has worked in various capacities supporting the military for nearly 7 years. Dr. Scott is a member of the American College of Sports Medicine, Collegiate and Professional Sports Dietitians Association, and the Academy of Nutrition and Dietetics.

Dr. Scott received his Ph.D. in health and rehabilitation sciences from The Ohio State University. Dr. Scott is a registered dietitian who completed a dietetic internship and M.S. in clinical nutrition at the Ohio State University. He has advanced training in sports nutrition and holds the distinction of being a board Certified Specialist in Sports Dietetics.

Speakers, Continued

CAPT Joshua Morganstein (USA)



Dr. Joshua C. Morganstein currently serves as an Associate Professor and Assistant Chair in the Department of Psychiatry and Assistant Director at the Center for the Study of Traumatic Stress. He is a Fellow and Member of the Committee

on the Psychiatric Dimensions of Disaster within the American Psychiatric Association. Dr. Morganstein completed undergraduate training at the University of Maryland at College Park, medical school at the Uniformed Services University, and combined Psychiatry and Family Medicine residency training in the National Capital Consortium. Dr. Morganstein's operational experiences include remote overseas community mental health care for the Pacific Air Force in Japan and deployment to Afghanistan as the lead Psychiatrist in support of the Global War on Terrorism. He served as Chief of Addictions Services for the Air Force's only dual-diagnosis treatment program and was selected to serve as the Behavioral Health Advisor to the Commander, Joint Task Force National Capital Region-Medical. Following a sixteen year career as an Air Force officer, Dr. Morganstein transferred to Commissioned Corps of the United States Public Health Service in 2013 to pursue his professional interests in public health and disaster mental health.

Dr. Morganstein provides disaster mental health education, consultation and training as a speaker and consultant to federal agencies and national organizations. He has authored and co-authored a range of scholarly works on the mental health effects of various disaster events including natural disasters, mass violence, terrorism, pandemics, climate

change, and nuclear exposure. Dr. Morganstein served in the development of disaster mental health training curriculum and global disaster management doctrine. He is Assistant Editor for the second edition of the Textbook of Disaster Psychiatry. Dr. Morganstein is currently collaborating with the National Institutes of Justice and UCLA on a study of community resilience in the aftermath of mass shootings and working with the U.S. Air Force to identify and manage the effects of recurrent and persistent traumatic stress exposure on personnel involved in drone aircraft operations.

Dr. Matt Goldman, MD (USA)



Dr. Goldman is the director of the human systems line of effort at the Defense Innovation Unit. The portfolio's mission is to accelerate the transition of commercial innovation and technology to our men and women in government

covering a wide area of problem sets from safety and survivability, training and simulation, to prevention and treatment of combat injuries. Prior to this position Dr. Goldman served several roles within the military medical community. Most recently as a program director for graduate medical education fellowship at Walter Reed National Military Medical Center. Dr. Goldman is an active medical researcher, his latest endeavor was collaborating on projects using state of the art biotechnology to help develop a multivalent adhesin vaccine for Enterotoxigenic E. coli. He remains active in graduate medical education and currently is on staff with the Stanford University Medical Center.

Speakers, Continued

Oshin Vartanian, Ph.D. (CAN)



Oshin Vartanian received his Ph.D. in experimental psychology from the University of Maine. He then completed postdoctoral fellowships in cognitive neuroscience at York University and Defence Research and Development Canada (Toronto Research Centre),

where he works as a Defence Scientist in the Human Effectiveness Section. He is the co-editor of *Neuroscience of decision making* (Psychology Press), *Neuroscience of creativity* (The MIT Press), and *Cambridge handbook of the neuroscience of creativity* (Cambridge University Press). He has studied the effects of various stressors—including fatigue, sleep and caloric deprivation, and negative emotion—on human health and performance in military and civilian settings. An important component of his research programme involves the development of resilience and various countermeasures to mitigate the effects of stress on health and performance.

professional and college teams he uses an integrated, on-site-model providing players, coaches, and other staff with specialized services including player selection, team building, life balance, stress control, performance enhancement, mental preparation, energy recovery, injury rehabilitation, pain management, sleep medicine, substance prevention, and mental disorders treatment.

He is a Clinical Professor of Psychiatry at the University of Maryland at Baltimore School of Medicine and is board certified in General & Addiction Psychiatry. He is the founding Director, of the Department's Division of Alcohol & Drug Abuse and its Addiction Psychiatry and Medicine Fellowship Programs as well as its Sports Psychiatry Program. Visit www.mdsports.net for more information.

David McDuff, M.D. (USA)



David R. McDuff, M.D. is the long-time sports psychiatrist and mental preparation trainer for the Baltimore Orioles (1996-present) and Baltimore Ravens (1996-2013) and more recently the Performance Medicine Physician for the Indianapolis Colts (2015-2018). He

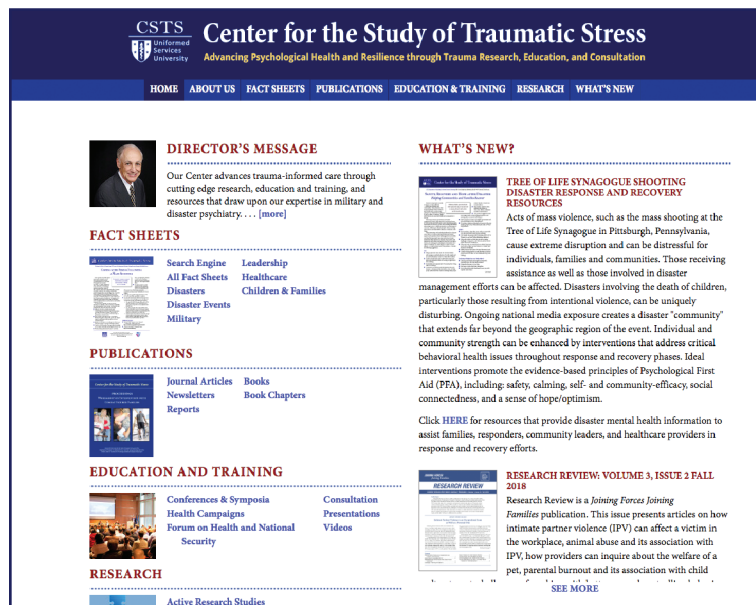
is also the author of the 2012 book *Sports Psychiatry: Strategies for Life Balance & Peak Performance*. He was recently appointed (2018) to the International Olympic Committee (IOC) Consensus Panel on Mental Health in Elite Athletes. For his work with

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The screenshot shows the homepage of the Center for the Study of Traumatic Stress (CSTS). The header includes the CSTS logo and the tagline "Advancing Psychological Health and Resilience through Trauma Research, Education, and Consultation". A navigation menu lists: HOME, ABOUT US, FACT SHEETS, PUBLICATIONS, EDUCATION & TRAINING, RESEARCH, and WHAT'S NEW. The main content area is divided into several sections: "DIRECTOR'S MESSAGE" with a photo of a man and a short paragraph; "FACT SHEETS" with a search engine and categories like Leadership, Healthcare, Children & Families, Disasters, Military, and Disaster Events; "PUBLICATIONS" with sub-sections for Journal Articles, Books, Newsletters, and Book Chapters; "EDUCATION AND TRAINING" with sub-sections for Conferences & Symposia, Health Campaigns, Forum on Health and National Security, Consultation Presentations, and Videos; and "RESEARCH" with a sub-section for Active Research Studies. A "WHAT'S NEW?" section features a featured article titled "TREE OF LIFE SYNAGOGUE SHOOTING DISASTER RESPONSE AND RECOVERY RESOURCES" with a brief summary and a "SEE MORE" link. Another "WHAT'S NEW?" section features a featured article titled "RESEARCH REVIEW: VOLUME 3, ISSUE 2 FALL 2018" with a brief summary and a "SEE MORE" link.

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