



CHAMP



Uniformed  
Services  
University

**LOOKING BACK ON**  
A YEAR OF CHALLENGES  
**LOOKING AHEAD**  
WITH HOPE

**2020 ANNUAL REPORT**  
APRIL 2021

# Table of Contents

Director's Letter.....	4
CHAMP Leadership.....	5
CHAMP Team.....	6
Mission & Vision .....	8
A Year of Challenges .....	9
Strategy.....	9
Operations.....	9
2019 Goals Accomplished in 2020.....	10
CHAMP 2020 Accomplishments.....	15
Research & Scholarship .....	15
Education & Training .....	18
Leadership & Service.....	23
Selected 2020 Publications, Posters & Presentations .....	28
Peer-Reviewed Publications.....	28
Research Poster & Research Abstract Presentations.....	30
Presentations at Scientific Conferences .....	32
Other Presentations .....	33
Partners & Collaborators .....	34
CHAMP Goals for 2021 .....	38
Overall Internal .....	38
Research & Scholarship .....	38
Education & Training .....	39
Leadership & Service.....	39

# Director's Letter

18 January 2021

Dear Stakeholders, Colleagues, and CHAMP team:

Our 2020 Annual Report for the Consortium for Health and Military Performance (CHAMP) shows that despite the COVID-19 pandemic, we have been extremely proactive and perhaps even more successful and productive than last year, thanks to our devoted CHAMP staff. As the primary Human Performance Optimization (HPO) and Total Force Fitness (TFF) resource for the Department of Defense (DoD), we continue to be sought after by many organizations for stress-optimization efforts, dietary-supplement education, and our clinical musculoskeletal and exertion-related event activities. We strive to be strategic in our efforts and community-based in our applications. Great ideas come from our Military Service Members themselves, and we are here to serve them. Being able to listen and engage both vertically and horizontally provides key perspectives and allows us to observe firsthand the needs of many units.

As we prepare CHAMP's 2020 Annual Report early in 2021—with the COVID-19 pandemic raging—we continue to provide virtual training and evidence-based resources for stress optimization to many groups, from healthcare providers to intelligence personnel, with **HOPE**, or **H**onesty, **O**ptimism, **P**rofessionalism, and **E**mpathy. Likewise, we have transitioned to providing virtual clinical consultations and for our work with key partners. **HOPE** has been our motto since March 2020 when the pandemic first struck, and it continues to serve our CHAMP team.

Our leadership in multiple TFF areas results in better care, better information and resources, and better opportunities for our Military Service Members. The

education we provide to USU students, fellows, and across DoD has been transformed this year as virtual has become the norm—and the reviews are all positive. Despite COVID-19, our research efforts have managed to move along, and we continue translating new and applicable information for our Military Service Members to optimize their performance and expedite their return to duty. Through our sustained efforts, we are emerging as the premier lead across DoD and beyond in the areas of HPO and TFF and continuing to build many bridges to achieve that goal. Again, I am proud of CHAMP's contributions to mission readiness.

I would like to take this opportunity to thank everyone for believing in us and, on behalf of everyone at CHAMP, to express our gratitude for the many colleagues, stakeholders, and friends who have been part of our HPO and TFF activities. Despite a very unusual year, we continue to support our Military Service Members and their families, the Military Health System, DoD, and our nation. Each and every CHAMPion is special and committed to the CHAMP mission.

*Patricia A. Deuster*

Patricia A. Deuster, PhD, MPH  
Executive Director, Consortium for Health and Military Performance



# CHAMP Leadership

- |                                       |  |
|---------------------------------------|--|
| Francis O'Connor, MD, MPH, COL (ret.) | Medical Director                                 |
| Stacey Zeno, MBA, MS                  | Chief of Operations                              |
| Carolyn Chou, CPA                     | Chief Financial Officer                          |
| Preetha Abraham, DoL                  | Director of Research and Scholarship             |
| Lauren Messina, PhD, LCMFT            | Director of HPO Education and Training           |
| Sarah de la Motte, PhD, MPH, ATC      | Director of Fitness and Injury Prevention        |
| Andrea Lindsey, MS                    | Director of Operation Supplement Safety          |
| Elizabeth Moylan, MPH, RD, CSSD       | Director of Performance Nutrition                |
| Gloria Park, PhD                      | Director of Social, Spiritual, and Psychological |
| Travis Lunasco, PsyD                  | Director of HPO Strategic Operations             |
| Francis Floresca, MPH                 | Strategy and Engagement Manager                  |



# CHAMP Team

Libby Alders,  
Research Associate

Camila Almeida, Scientist

Karla Arose, Assistant Information Technical Specialist

Cindy Astorino,  
Senior Research Associate

Amelia Barrett,  
Project Coordinator

Joshua Bonner, Biostatistician

Courtney Boyd,  
Senior Research Associate

Heather Calvert,  
Administrative Assistant

Francesca Cariello,  
Research Nurse

Rachel Chamberlin,  
Senior Anthropologist

Tinghua Chen,  
Research Assistant

Kevin Chuang,  
Research Assistant

Daniel Clifton,  
Research Scientist

Gabrielle Couture, Nutrition/  
Dietary Supplement Education  
Specialist

Howie Crosby, Spiritual  
Performance Coordinator

Carolyn Dartt,  
Research Coordinator

Daniel Edgeworth, Clinical  
Research Coordinator

Doug Forcino,  
Strategic Planner

Brooks Ford,  
Performance Dietitian

Jacqueline Forster,  
Nutrition/Dietary Supplement  
Education Specialist

Shantha Gowda,  
Sleep Psychologist

Alex Gregory,  
Research Assistant

Timothy Gribbin,  
Senior Exercise Physiologist

Jake Harp, Program Manager

Cooper Hazel,  
Research Assistant

Sarah Hinman,  
Research Assistant

Adela Hruby, Biostatistician

Tammy Irelan,  
Digital Manager

Zachary Johnson,  
Administrative Assistant

Joshua Kazman,  
Senior Biostatistician

Jessica Kegel, Biostatistician

Katie Kirkpatrick,  
Senior Environment  
Nutrition Manager

Carolyn Kleinberger,  
Research Associate

Salvatore Libretto,  
Program Manager

Rory McCarthy,  
Qualitative Researcher

Maria McConville, Senior  
Nutrition Health Educator

Beth McNally, Research  
Technical Editor

Michael McNamara,  
EEG Technician

Christiane Minnick,  
Senior Graphic Designer

Rebecca Mintz,  
Health Communication &  
Social Media Specialist

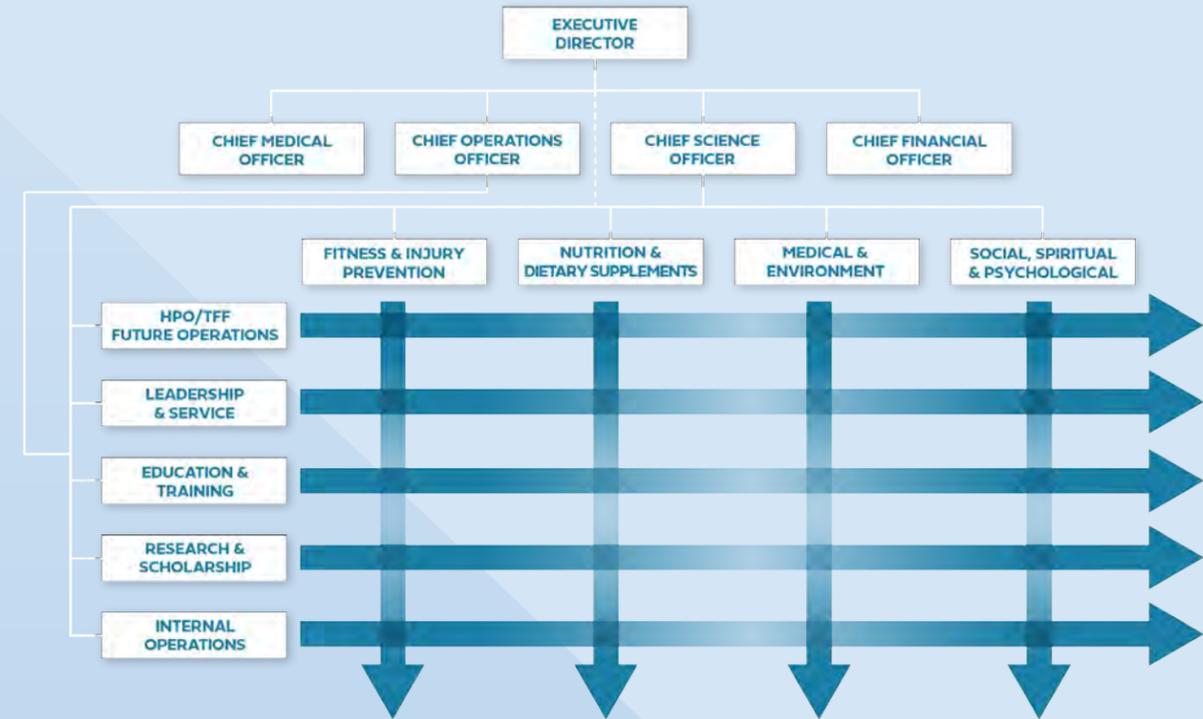
Alan Nelson, Data Scientist

Chris Niewinski,  
Multimedia Specialist

Gabe Paoletti,  
Mental Fitness Scientist

Yu Min Park,  
Research Assistant

Maya Patton,  
Research Assistant



Johannes Rech II,  
Senior Information  
Technical Manager

Mingqiang Ren,  
Research Scientist

Melissa Reichley,  
Senior Technical Writer/Editor

Emily Ricker, Scientist

Melissa Rittenhouse,  
Nutritionist/Exercise Scientist

Deborah Robinson,  
Senior Research Associate

Jared Ross,  
Operations Senior Manager

Dale Russell, Psychological  
Health Researcher

Nyamkhishig Sambuughin,  
Senior Scientist

Sierra Shepherd,  
Administrative Assistant

Ayanna Shivers, Outreach &  
Communications Manager

Keely Siebenthal,  
Program Coordinator

Carol Stockton,  
Senior Editor/Manager

Sarah Steward,  
Social Health Scientist

Andrew Stranieri,  
Research Associate

Tiffany Taylor,  
Research Coordinator

Gia Torpey,  
Senior Technical Editor

John Tra, Biostatistician

Danielle Urey,  
Clinical Research Manager

Stephanie Van Arsdale,  
Program Manager

Lindsay Vander Molen,  
Nutrition/Dietary  
Supplement Education  
Specialist

Ana Vasquez,  
Program Coordinator

Abraham Walter, Nutrition  
Education Specialist

Nathan Walton, Scientist

Caitlin Wong,  
Program Manager

Tianzheng Yu,  
Research Scientist

Andrew Young, Senior  
Nutrition Physiologist

## Mission & Vision

The mission of the Consortium for Health and Military Performance (CHAMP) is to optimize the health, wellness, and performance of members of the military community through leadership, community engagement, education, and conducting and translating human performance research. Located within the Department of Military and Emergency Medicine, CHAMP is a Defense Center of Excellence at the Uniformed Services University of the Health Sciences (USU). In addition to reflecting the values of the University, CHAMP embodies integrity, service and well-being, excellence and learning, and collaboration, community, and diversity. Our strategic plan is also aligned to the pillars of the University. Accordingly, the 2020 CHAMP Annual Report is organized by those three key pillars: Research & Scholarship, Education & Training, and Leadership & Service.

Military Service Members focus on performance, injury prevention and recovery, and holistic wellness to meet their fitness goals. CHAMP carries out and translates research into evidence-based resources to help Warfighters and their families improve resilience, achieve total fitness, and optimize performance—whether at home, in the office, or in theater.

## A Year of Challenges

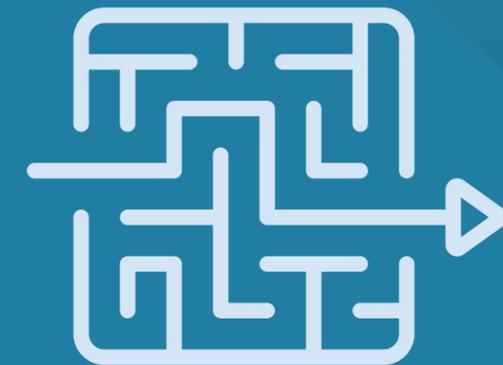
### Strategy

The year 2020 was to be the marketing year for CHAMP: re-confirming our strong partnerships and collaboration bonds, and strategically attending and participating in conferences for each TFF domain. Other actions occurred instead: CHAMP marketing efforts involved working with partners and collaborators to include or update backlinks to our websites. Due to travel restrictions for in-person meetings and conferences, CHAMP staff quickly pivoted to work with USU partners and other Department of Defense (DoD) and government entities to provide webinars, Facebook livestreams, and other types of remote trainings.

### Operations

From an operational standpoint, all CHAMP laboratory and field studies were put on hold for a few months, but all laboratory studies resumed with COVID-19 safety protocols. Most field studies were able to pivot to virtual platforms. The Education directorate created COVID-19-specific Total Force Fitness (TFF) content and thrived with being able to reach a wider audience with webinars and other virtual trainings.

Overall, our team had a number of strategy goals and operations disrupted, but CHAMP was agile and able to prosper.



## 2019 Goals Accomplished in 2020

**GOAL:** *Engage in teaching opportunities to extend the reach of HPO (Human Performance Optimization) and TFF.*

**ACCOMPLISHMENT:** CHAMP team members attended professional and military conferences in several locations and online. In addition, we gave virtual presentations on many performance-optimization topics, including nutrition, dietary supplements, exercise, sleep, and more.

Our **Physical Fitness & Injury Prevention** teaching activities included 11 lectures and 7 webinars. CHAMP's **Nutrition & Dietary Supplement** activities included 4 presentations and 35 webinars. Our **Medical & Environment** activities included 41 clinical consultations. CHAMP's **Social, Spiritual & Psychological** activities included 39 presentations (virtual and in-person presentations, webinars, workshops, and seminars).

**GOAL:** *Engage in HPO and TFF teaching opportunities and curriculum development.*

**ACCOMPLISHMENT:** CHAMP's Operation Supplement Safety (OPSS) team continued developing an online health-professional educational module for dietary supplements. The Warfighter Nutrition Basics course for U.S. Army and U.S. Air Force Diet Techs is projected to launch in 2021.

**GOAL:** *Implement "Year of the CHAMPion" strategic communication theme, where the organization's staff will push to re-engage our current partners and collaborators and create new relationships throughout the military, research, and academic communities related to HPO and TFF.*

**ACCOMPLISHMENT:** Although the original plan was delayed to 2021, CHAMP was able to re-engage its partners and collaborators by asking them to link back to our educational websites. It was a huge effort to track down contacts and have them update our links or branding on their sites. It was by far one of our largest outreach efforts, and we appreciated having so many CHAMPions on board to do outreach.

**GOAL:** *Continue to act in accordance with CHAMP values and strategic objectives.*

**ACCOMPLISHMENT:** We demonstrated the following CHAMP values:

**Integrity**

**Service & Well-being**

**Excellence & Learning**

**Collaboration, Community & Diversity**

Specifically, we cared for our teleworking staff by having biweekly virtual "watercooler" chats. Many staff also attended training webinars offered by internal staff members. And our Diversity, Equality, and Inclusion workgroup hosted a virtual panel discussion on social justice in America.

**GOAL:** *Advance integration of HPO and TFF at all levels.*

**ACCOMPLISHMENT:** CHAMP continued to provide HPO and TFF expertise to assist with the shaping of policy and structures at the DoD Chairman of the Joint Chiefs of Staff (CJCSI 3405.01 Chairman's Total Force Fitness Framework and JROCM 073-18 Total Force Fitness DOTmLPF-P Change Recommendations) and Service levels (USMC G-10 Force Optimization reorganization, shaping 25 USAF Embedded Teams CONOPS, building of U.S. Army Holistic Health and Fitness [H2F] service delivery model, and USMC Force Fitness Instructor [FFI] education/training). Within operational communities, CHAMP integrated HPO and TFF in its Community-Based Participatory Research methodology and conducted 3 career-field and unit-level Capability-Based Blueprinting and Targeting System workshops (1U Sensor Operators/USAF 432 Wing; USAF 1N3 Cryptologic Language Analysts/692d Intelligence, Surveillance, and Reconnaissance Group; and USAF 2W1X1 Aircraft Armament Systems/355th Maintenance Group).

**GOAL:** *Maintain a strong and active military presence and expand our global network at multiple venues.*

**ACCOMPLISHMENT:** CHAMP was consulted on the implementation of the H2F system with the U.S. Army at the leadership level.

**GOAL:** *Forge new relationships with diverse operational military communities.*

**ACCOMPLISHMENT:** CHAMP delivered educational presentations to multiple operational military communities, including the Office of Naval Intelligence, North Carolina National Guard, Oklahoma National Guard, Defense Threat Reduction Agency, 2nd Logistics Civil Augmentation Program (LOG-CAP) Support BN, Fort Belvoir, Guard Directors of Psychological Health, National Defense University (NDU), Naval Health Clinic (NHC) Patuxent River, USMC Semper Fit, U.S. Coast Guard Wednesday Wellness series, and the U.S. Army Brigade Surgeons Course.

CHAMP also provided ongoing HPO/TFF consultation, research, and educational support to a variety of line communities: U.S. Air Force Special Operations Command (AFSOC), USAF 432nd Wing, 692d Intelligence, Surveillance, and Reconnaissance Group, 82 Combat Aviation Brigade, Naval Aviation Warfighting Development Center, U.S. Space Force (Delta), USAF 355 Maintenance Group, and U.S. Army Intelligence and Security Command.

**GOAL:** *Advance implementation of TFF in 2020 through disseminating educational materials and serving as subject-matter experts (SME).*

**ACCOMPLISHMENT:** CHAMP received 690 Ask the Expert total inquiries, with roughly 90% about dietary supplements. Both CHAMP's Education and Research directorates provided a total of 42 webinars, 11 lectures, and 14 presentations throughout the year.

**GOAL:** *Disseminate research findings through peer-reviewed scientific journals, the Human Performance Resources by CHAMP (HPRC) and OPSS platforms, and service-specific channels to reach our military, medical, and scientific audiences.*

**ACCOMPLISHMENT:** CHAMP published 42 peer-reviewed scientific journals. Our team also created 97 articles, 37 graphics, 34 blog posts, 11 videos, one HPO/TFF guide on weight loss, and one social media campaign for HPRC. In addition, we created 36 articles, 43 graphics, and one video for OPSS.

**GOAL:** *Refine and expand the Capability Based Blueprinting (CBB) and Targeting methodology.*

**ACCOMPLISHMENT:** CHAMP conducted the USAF 1N3 Cryptologic Language Analyst (692 Intelligence, Surveillance, and Reconnaissance Group [ISR], Joint Base Pearl Harbor Hickam) HPO/TFF-CBB workshop.

**GOAL:** *Promote and socialize our efforts on psychosocial and spiritual fitness.*

**ACCOMPLISHMENT:** CHAMP hosted the Second Performance Psychology Summit in partnership with the Walter Reed Army Institute of Research (WRAIR-CMPN). We also initiated the Called to Serve (CTS) project, a qualitative research study designed with 24 SOW Air Force Special Operations Command (AFSOC) chaplains to assess how Special Tactics Airmen understand the concept of spiritual readiness. We also conducted a foundational assessment to develop **more effective Spiritual Fitness programming among AFSOC chaplains.**

**GOAL:** *Develop two apps: OPSS One Stop Shop and Military Nutrition Environment Assessment Tool (mNEAT).*

**ACCOMPLISHMENT:** The mNEAT application was completed and OPSS One Stop Shop will be completed in early 2021.

**GOAL:** *Develop the OPSS professional dietary supplement education module for DoD.*

**ACCOMPLISHMENT:** CHAMP created content for much of the module in 2020, but the sophisticated program for the module slowed down the progress of completing this project. Our team is on target to finish by summer 2021.

**GOAL:** *Provide up-to-date guidance and resources to improve the military nutrition environment through the Go for Green® (G4G) program and mNEAT.*

**ACCOMPLISHMENT:** Using the results from the 2019 G4G 2.0 study at two U.S. Army dining facilities, CHAMP developed additional resources, toolkits, and templates for DoD facilities implementing G4G 2.0. The G4G section on the HPRC website currently includes 189 items and approximately 1,000 pre-coded recipes—along with a more robust G4G social media account to share and communicate updates. Currently, two pilot sites are in progress under the G4G 2.0 umbrella protocol. In addition, the mNEAT web-based application was developed. Upon release, it will be used for the mNEAT app pilot study.

**GOAL:** *Determine efficacy of ketone-ester supplementation on preventing and treating traumatic brain injury-related neuropsychiatric impairment.*

**ACCOMPLISHMENT:** CHAMP researchers concluded an animal study showing that ketone supplementation effectively protects the brain from TBI-induced damage. Data from this study were presented at the 2020 National Capital Area TBI Research Symposium and published as a peer-reviewed manuscript in *Nutritional Neuroscience*.

**GOAL:** *Continue becoming a return-on-investment-driven organization by collecting feedback and data to show the impact of our programs and products across communities.*

**ACCOMPLISHMENT:** CHAMP was committed to creating feedback mechanisms to gather data on products to include presentations, workshops, guides, etc.

**GOAL:** *Expand reach and engagement of the Warrior Heat- and Exertion-Related Events Collaborative.*

**ACCOMPLISHMENT:** The HPRC team mobilized to launch the Warrior Heat- and Exertion-Related Events Collaborative (WHEC) subsection on the HPRC website in 2020. The subsection includes clinical care and provider resources, educational tools, and research related to exertional heat illness, exertional rhabdomyolysis, exercise-associated hyponatremia, exercise collapse associated with sickle cell trait (SCT), and exertional sudden cardiac arrest. The WHEC subsection is a portal for healthcare providers to ask questions of the Multidisciplinary Case Review Committee (MDCRC) and includes a range of new video resources on sickle cell trait awareness. Since its launch, the WHEC home page has been viewed 3,099 times and the Sickle Cell Trait Awareness video page 2,432 times.

**GOAL:** *Advance science and clinical recognition of Exercise Collapse Associated with Sickle Cell Trait (ECAST).*

**ACCOMPLISHMENT:** The U.S. Army received approval for SCT screening. This policy change is a turning point in clinical recognition and care of Warfighters with ECAST. The Genomics of Exertion Related Events in Sickle Cell Trait (GEREST) study successfully expanded to include a multi-omics approach: epigenetic, transcriptomic, and proteomic—in addition to whole genome sequencing (WGS) of SCT cases and controls. Currently, the project completed WGS in 78 participants and transcriptomics in 40. Epigenetic and proteomic sequencing of more than 40 participants is underway. CHAMP also published a peer-reviewed paper and submitted numerous abstracts to various research and scientific meetings.

**GOAL:** *Remain excellent stewards of funding.*

**ACCOMPLISHMENT:** CHAMP is up-to-date on all federal guidelines for our continued efforts to enhance good stewardship of federal funds. We continually review and optimize our internal administrative practices to provide outstanding quality and efficiency in research, education, and service while striving for cost-effectiveness. We regularly review all financial transactions, monitor budgets, and evaluate financial reports.

# CHAMP 2020 Accomplishments

## Research & Scholarship

### INJURY PREVENTION RESEARCH LAB (IPRL)

CHAMP's Injury Prevention Research Lab (IPRL) conducts research on the prediction and prevention of musculoskeletal injuries in Military Service Members. In February, members from CHAMP's IPRL presented at the 5th International Congress on Soldier's Physical Performance in Quebec City, Quebec, Canada. The presentation included findings from recent studies for Reducing Injury with Training Enhancement, Targeted Rehabilitation, and Core Conditioning (RITE-TRACC) and the Initiation of Marine Psychological Assessment of Female Combat Training (IMPACT). Dr. Sarah de la Motte presented

alongside other musculoskeletal injury-prevention researchers from the U.S., the United Kingdom, and Canada in a thematic session titled "An International Problem and Collaboration to Predicting and Preventing Injuries in the Military: Accurate Prediction Depends on Accurate Assessment: Self-Limiting Beliefs and Cultural Barriers Influence Musculoskeletal Injury Reporting." Several other IPRL oral and poster presentations from the IMPACT and RITE-TRACC studies were delivered by Dr. Emily Ricker on behalf of other IPRL members who were unable to attend in person.

### MUSCULOSKELETAL OUTCOMES AND READINESS PROJECT (MORE)

Accomplishments in the second year of the Musculoskeletal Outcomes and Readiness Project (MORE) involved leveraging the combined dataset of administrative, medical, and readiness data at Womack Army Medical Center (WAMC) on the total active-duty U.S. Army for 2014-2017 that we created in project year one, as well as the existing similar dataset at the University of Maryland covering 2011-2014. These resources were used to conduct multiple analyses for submission as deliverables to the Office of the Assistant Secretary of Defense –

Health Affairs (OASD-HA) in order to support decision-making on best practices in the Military Health System. Topics in these analyses included associations of embedded injury-prevention experts in initial-entry training (IET) and physical therapists in deployable units with readiness, retention, and cost outcomes. We also examined the impact of surgical management of multiple common conditions (e.g., clavicle injuries, bunions, and inguinal hernia) among Military Service Members on medical readiness and retention.

As developing deliverables for OASD(HA) is our main mission, we are in the process of transferring the findings from our analyses to manuscripts for submission to major journals. We have partially completed administrative and technical efforts in support of expanding the WAMC data to the total active U.S. military, and establishing multi-Service collaborative relationships to support additional analyses in this larger population.

### MILITARY NUTRITION ENVIRONMENT

CHAMP supports a number of military nutrition environment projects, including serving as the program office for Go for Green® (G4G). G4G is the joint service performance-nutrition initiative that labels the nutritional quality of foods and drinks with a stoplight system—Green, Yellow, and Red—to help Military Service Members identify the best choices for peak performance, readiness, and health. The program office provides training, resources, and support for DoD facilities planning and executing G4G through the G4G section on the HPRC website, Facebook page, and consultations. The G4G team collaborated with the U.S. Army Research Institute of Environmental Medicine (USARIEM) to prepare two poster abstracts and four publications to share the results of a program evaluation from two military dining facilities (Ft. Carson and Ft. Hood). Results showed the G4G program was successful in improving meal quality without compromising meal satisfaction. Currently, there are two active pilot sites (Ft. Sill and West Point) to assess G4G program components.



In addition, the mNEAT app is in progress to evaluate community policies and environmental factors that support healthy eating. The web-based application enhances data entry, produces reports for each food venue at an installation, and facilitates the development of an action plan to improve the food environment.

### SOCIAL, SPIRITUAL & PSYCHOLOGICAL

The pandemic brought heightened awareness of the need to support psychological, social, and spiritual health across DoD and within our own organization, and magnified the importance of each of these dimensions as robust contributors to well-being and performance. In a year of challenges, our psychological, social, and spiritual team members spearheaded innovative projects to support spiritual readiness, and brought together professionals from all branches of DoD to pave the way for advancing performance psychology research, practice, and policy.

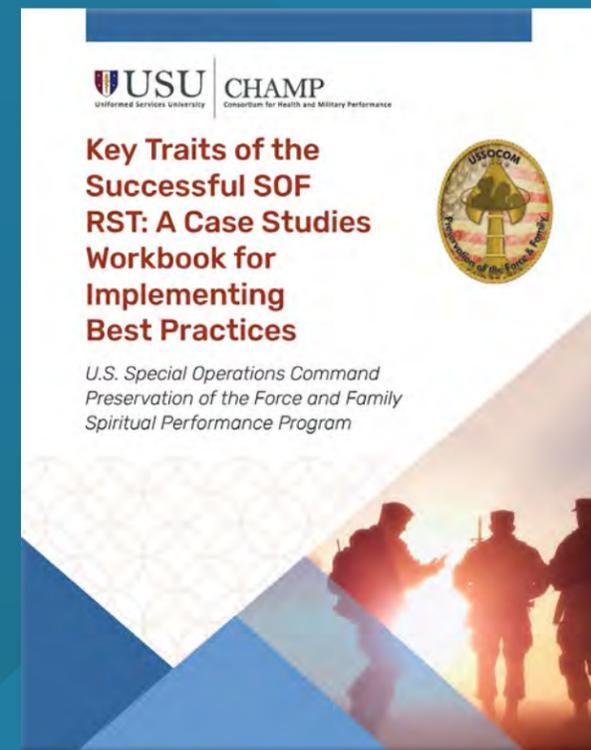
In 2020, the Spirituality and Performance Research Team (SPRT) expanded on work previously done by the CHAMP Spiritual Fitness Research Team, developed new projects intended to help military communities better understand and apply the concept of spiritual readiness, and consulted with a broad range of audiences across DoD.

### Key Traits of the Successful Special Operations Forces Religious Support Team

SPRT revised a case-studies workbook for implementing best practices from a qualitative research study designed in concert with USSOCOM Preservation of the Force and Family (POTFF). The goal was to develop a practical, research-informed workbook for use with the USSOCOM Religious Support Team Orientation course. This product will be used to train incoming Special Operations Forces Religious Support Teams (SOFIRST) on the 19 key traits of the successful SOFIRST. The revised version was completed and submitted to USSOCOM in September 2020.

### Warfighters Called to Serve

Called to Serve (CTS) is a qualitative research study designed in concert with 24 SOW AFSOC Chaplains to assess Special Tactics Airmen's understanding of spiritual readiness, and to conduct foundational assessment of the path to developing more effective Spiritual Fitness programming among AFSOC chaplains. Phase one of the project—which consisted of designing and conducting qualitative data collection through virtual focus groups of Special Operators and support Military Service Members from across the 24 SOW—was completed in September 2020. Phase two began in October 2020, and consists of codebook development, qualitative coding, and analysis. It will conclude with a final written report. The final phase will begin in 2021 and consist of assessing and implementing recommendations from the report.

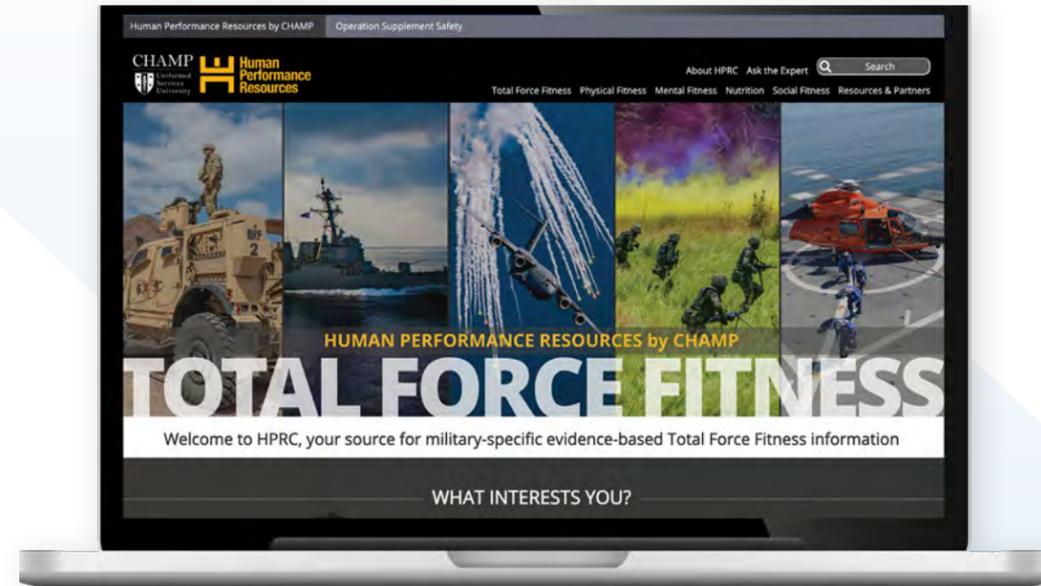


## Education & Training

### HUMAN PERFORMANCE RESOURCES BY CHAMP (HPRC)

The HPRC team navigated the challenges of 2020 with determination and skill. Committed to using their expertise and resources to provide performance optimization and wellness information to Military Service Members and other stakeholders during the pandemic, the team published over 130 pieces of content on the HPRC-online.org website and 34 blog posts on the HPRC Blog. In addition, HPRC social media published hundreds of Twitter, Facebook, and Instagram posts. The HPRC team also published 11 new videos to its YouTube page and implemented search engine optimization (SEO) best practices to increase visibility of its content.

The HPRC team also developed partnerships with other military organizations to showcase its content. In 2020, HPRC materials were featured on the Health.mil website, in the Navy and Marine Corps Public Health Center newsletter, the Oklahoma National Guard newsletter, the USUHS Office of Student Affairs Student Newsletter, the Assistant Secretary for Preparedness & Response/Health and Human Services Newsletter, and the Washington State National Guard newsletter. HPRC print materials were disseminated to the U.S. Coast Guard Academy, U.S. Naval Academy, North Carolina Air National Guard, Illinois National Guard, USUHS student orientation, and Medical Education and Training Command Barracks. HPRC articles were linked to from ArmyFit.com, Health.mil, Tricare.mil, the Military Family Learning Network blog, and Walter Reed National Military Medical Center’s library website.



#### HPRC-online.org’s most popular content in 2020:

##### PHYSICAL FITNESS:

**PFT/PRT TRAINING SERIES—PART 2: MUSCULAR STRENGTH AND ENDURANCE**

##### MENTAL FITNESS:

**OPTIMIZE PERFORMANCE THROUGH POSITIVE SELF-TALK**

##### NUTRITION:

**NUTRIENT TIMING FOR NIGHT SHIFT**

##### SOCIAL FITNESS:

**ARE CELL PHONES RUINING FAMILY TIME?**

##### TOTAL FORCE FITNESS (TFF):

**GET INTO FIGHTING WEIGHT: A TOTAL FORCE FITNESS GUIDE**

#### Presentations & Live Virtual Events

The HPRC team seized the virtual landscape as an opportunity to reach broader audiences. Starting with a request to present on stress optimization to the North Carolina National Guard in May, the HPRC team—with support from the broader CHAMP family—delivered 50+ live webinar presentations to audiences such as the Office of Naval Intelligence, Oklahoma National Guard, Defense Threat Reduction Agency, 2nd LOGCAP Support BN at Fort Belvoir, University of Maryland Air Force ROTC cadets, Coast Guard Wellness Wednesday, and Semper Fit Health Coaches. These presentations reached over 2,200 members of the military community.

In addition to presentations, the OPSS and HPRC teams launched ongoing collaborations with Military OneSource to bring health and performance information to their audiences via Facebook livestreams. CHAMP participated in 12 Facebook Live streaming events, reaching 12,351 members of the military community.

### Get into Fighting Weight Guide

The HPRC team published “Get into Fighting Weight: A Total Force Fitness Guide.” The comprehensive Guide offers a habit-tracking worksheet, a sample grocery list, a cardio- and strength-planner worksheet, a sleep diary, and relaxation resources. The Guide was created in response to an expressed need from military nutritionists and dietitians who saw a gap in resources that holistically supported weight loss. The Guide was distributed to nutrition working groups and health-promotion educators across all Services and through the Coast Guard Health Promotions program, among others. The HPRC team surveyed recipients of the Guide to gather feedback, and most respondents planned to use the Guide in their professional work with Military Service Members. They specifically liked that the Guide was written for the military, that it was available in PDF form to download and print, and that the Guide included challenges. Since being published, the landing page for the Guide has received 4,634 views, and the PDF of the Guide was downloaded 260 times.



**MILITARY FE BALANCE**

**OPTIMIZE FAMILY TIME**  
**OVER HALF** of Military Service Members and their spouses report time away from family as their biggest concern.  
Quality over quantity! Balance "core family fun" (card games or dinners) with new experiences that help build skills such as volunteer projects or vacations.

**MAKE WELLNESS A HABIT**  
Not having enough time is one of the biggest obstacles to getting adequate exercise.  
Block 30-60 minutes a day in your schedule for workouts. You can also use family or social time to be active together.

**TEAMWORK MAKES THE DREAM WORK**  
**98%** of workers experience rude behavior while on the clock. Unhealthy work relationships affect motivation, commitment, productivity, and performance.  
Be assertive, not aggressive. Build trust with team members by letting your guard down, having fun, and focusing on the mission to service that bonds you.

**STAY FIT TO FIGHT**  
About **80%** of adults and children don't meet recommended guidelines for physical activity (PA) and aerobic/muscular strengthening.  
PA helps protect against burnout, especially in jobs that aren't physically demanding. Perform at least 160 minutes of moderate-intensity PA each week to fight physical, mental, and emotional fatigue.

**FIND MEANING AT WORK**  
**9 OUT OF 10** people wish they could find more meaning in their work.  
Take time daily to reflect on your value systems to help yourself grow and find new ways to apply your spirituality or values at work and home.

**AVOID BURNOUT**  
Burnout: noun  
(ˈbɜːr.naʊt)  
1. Fatigue from overwork and stress.  
2. One of the top reasons for turnover in the military.  
Learn the signs of burnout and combat it by spending time with loved ones at home and building healthy workplace relationships while on duty.

**ARE YOU LIVING A LIFE OR A TO-DO LIST?**  
Over **30%** of active-duty Military Service Members and their spouses say they want to improve their quality of life.  
Prioritize what's important! To get the most out of tasks you already have, reflect on what you can learn, who it helps and brings you closer to, and what you enjoy.

**SHARE MEALS**  
**FEWER FAMILIES EAT DINNER TOGETHER.**  
Family and shared meals are linked to healthier diets. Meal prep or cook in batches on weekends, so you can enjoy mealtimes with family and friends during the busy workweek.

**SUCCESS STARTS AT THE TOP**  
Most people rank **FEELING RESPECTED** and **TRUSTING THEIR LEADERS** (or commanding officers) as crucial to job satisfaction and engagement.  
Start with you! Set boundaries, communicate, and practice self-care. And meet with team members one-on-one to talk about social support, hobbies, and what motivates them.

USU CHAMP HUMAN PERFORMANCE RESOURCES by CHAMP | HPRC-online.org



### Military Work-Life Balance Campaign

The quality of life, health, and family dynamics are often cited as sources of stress and areas needing improvement in military communities. In response, HPRC developed a new integrative product to address how Total Force Fitness principles could be applied to optimizing military performance. The Military Work-Life Balance campaign focused on nine different aspects of military and home/personal life balance, with some coming from research showing how family dynamics and quality of life were major concerns for military families.

As a social media-based campaign, the goal of the online posts included increasing followers and engagement with followers. On Facebook, we reached 68,000 users and had 70,000 impressions. We were also successful in maintaining audience engagement in the campaign by spreading out the frequency of the posts.

### OPERATION SUPPLEMENT SAFETY (OPSS)

The OPSS team started 2020 with an aggressive, in-person schedule of dietary supplement presentations and trainings; they crisscrossed the country to get in front of healthcare providers and Military Service Members to educate them on dietary supplements. Although many of these in-person presentations were cancelled

with the onset of COVID-19 in March, OPSS shifted gears and met the new challenge for the remainder of the year. The team focused on three broad areas: Education & Outreach, the Health Professional Training Module, and the One Stop Shop App.

#### Education & Outreach

The demand signal for presentations and trainings transitioned to a virtual environment, and OPSS met the challenge. The following is a list of presentations and trainings delivered in 2020:

- Air Station San Francisco
- Army Medicine Campaign Research to Practice Education
- B3 Dietary Supplement Intersession—Medical Students
- Camp Pendleton
- Defense Threat Reduction Agency
- Division Surgeons Course
- FFI at USMC Base Quantico

- Massachusetts National Guard
- National Defense University
- National Nutrient Databank Conference
- Office Of Naval Intelligence
- Office Of People Analytics
- Pentagon Heart Health Fair
- TRACEN Petaluma
- USA Specialty Corps Webinar
- USAF Health Promotion Workshop
- USAF Operational Nutrition Working Group
- USCG Base Alameda
- USCG Wellness Wednesday
- USU Bench To Bedside Dietary Supplements
- USU Lunch And Learn
- Walter Reed National Military Medical Center



The OPSS team also participated in a series of Military OneSource Facebook Live events and engaged partners and others in the community, including the Washington State National Guard and U.S. Anti-Doping Agency (USADA).

The OPSS team also continued training and eliciting important pulse signals from health-care professionals in deployed settings. Even more, due to the demand for new information related to immune response with COVID-19, OPSS continued to engage with its federal partners involved with dietary supplement issues to ensure messaging and communication were aligned and represented on the OPSS website as appropriate. This included the U.S. Food and Drug Administration (FDA), U.S. Drug Enforcement Administration (DEA), National Institutes of Health Office of Dietary Supplements (NIH/ODS), Federal Trade Commission (FTC), and our partner USADA.

### ASK THE EXPERT

CHAMP's HPRC subject-matter experts fielded about 90 Ask the Expert questions in 2020, and our OPSS SMEs answered more than 600 Ask the Expert questions related to dietary supplements from Military Service Members (enlisted and leaders) and military healthcare providers throughout 2020. We got some great feedback, and a few of these responses appear below.

***“Excellent resource!! I’ve already advertised your service to multiple others.”***

***“If I could give you 11 on a 1–10 scale I would. I wish I could have found the information on my own but you provide such a wonderful resource. Thank you!”***

***“Definitely helps to know this information is available. Also helps that there professionals here that do amazing work to find it for us.”***

***“I am very impressed with the thorough response I received! It was much faster than expected and I genuinely feel as though someone put effort and care into giving me the best information available. I think if I had actual amounts of the ingredients I submitted I’d have a more specific response. I feel much better about making my decision to use or not use the products I’ve bought. I will definitely will be using this service again and will share my experience with all of my junior Sailors! Thank you for taking time to respond and research my inquiry.”***



## Leadership & Service

### CHAMP CLINICAL CONSULTATIONS

#### Heat- and Exertion-Related Illness

CHAMP established the Warrior Heat- and Exertion-Related Events Collaborative (WHEC) with a forward Heat Center of Excellence at Fort Benning. This initiative is dedicated to clinical care, education, research, and policy development to mitigate exertional illness and optimize readiness. WHEC also supports the Multidisciplinary Review Committee (MDCRC) that provides DoD clinical consultation services on exertional illness.

CHAMP's summit on sickle cell trait in November 2019, dedicated to finding the “way ahead” with the ECAST video and clinical guidelines, subsequently led to the U.S. Army revising its policy in 2020 to adopt screening of all Soldiers. CHAMP—in collaboration with WHEC—has been instrumental in providing educational resources to support the implementation of this policy change in the U.S. Army, as well as supporting policy efforts in the U.S. Navy and U.S. Air Force.

CHAMP transitioned a Program Project Grant on Exertion-Related Illness to a Cooperative Award. The intent of the award is to develop clinical algorithms for providers to risk-stratify those who have undergone exertion-related events (heat stroke, exertional rhabdomyolysis, or ECAST) and optimize return-to-duty decision-making after an event.

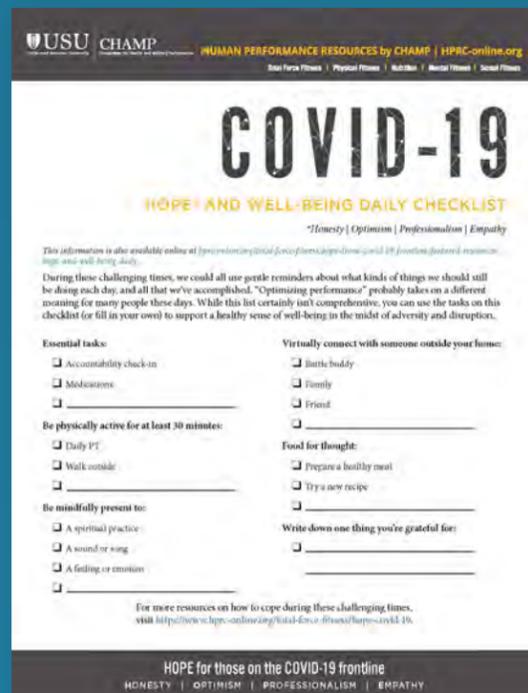
### WHEC ON HPRC

HPRC also launched the WHEC website subsection in 2020. This subsection includes clinical care and provider resources, educational tools, and articles related to research on exertional heat illness, exertional rhabdomyolysis, exercise-associated hyponatremia, ECAST, and exertional sudden cardiac arrest. The WHEC subsection is a portal for healthcare providers to ask questions of the Multidisciplinary Case Review Committee (MDCRC) and includes a range of new video resources on sickle cell trait awareness. Since the subsection's launch, the homepage of WHEC has been viewed more than 3,000 times, and the Sickle Cell Trait Awareness video page has been viewed more than 2,400 times.

**HOPE\* FOR THOSE ON THE  
COVID-19 FRONTLINE**

In response to the COVID-19 pandemic, the HPRC team launched the HOPE\* for Those on the COVID-19 Frontline subsection on the HPRC website. \*HOPE stands for Honesty, Optimism, Professionalism, and Empathy. HPRC's TFF section includes articles and resources compiled to help anyone looking for support during this challenging time. In addition, the HPRC team created new resources for healthcare workers, Military Service Members, and the general public to provide support and evidence-based information during the pandemic.

Since its launch, the HOPE for COVID-19 landing page has been viewed almost 3,400 times. Some individual articles and resources have received over 1,000 page views.

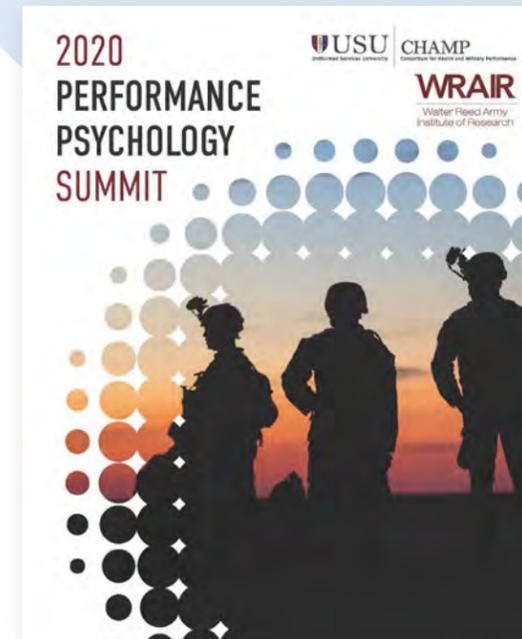


**EXPANDED REACH OF  
PSYCHOSOCIAL EXPERTISE**

CHAMP's psychosocial domain saw immense growth in the types and numbers of audiences seeking out our expertise. Our expertise was sought out to assist medical professionals, first responders, and those working in the public health sector whose resources were severely strained while responding to COVID-19. These professionals continue to endure environments characterized by sustained operational stressors and high expectations for performance execution. CHAMP provided a keynote address at the National Association of County and City Health Officials (NACCHO) Preparedness Summit, and posted recorded resources to the U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response Technical Resources, Assistance Center, and Information Exchange Stress and Resilience Speaker series. FDA also requested a CHAMP presentation on supporting the development of human-centered workplaces. As workplaces adapted to quickly shifting work-at-home environments brought on by the pandemic, this domain served as an important source of resources for both external CHAMP partners as well as internally for CHAMP's own staff on ways to live a balanced and productive life despite the many adversities presented by COVID-19.

**CHAMP/WRAIR PERFORMANCE PSYCHOLOGY SUMMIT**

On 12-13 November 2020, CHAMP and WRAIR hosted a virtual Performance Psychology Summit. The goals of the summit were to: 1) Clarify the role of performance psychology across the broader spectrum of psychological practice in operational populations; 2) Provide opportunities for sharing best practices; 3) Deliver skill-building workshops to enhance practitioner competence; and 4) Enable forging of best connections and collaborations. The summit featured 50 presenters and moderators from key DoD agencies and the Services. Over 200 people registered for the virtual event hosted on an MS Teams Commercial Virtual Remote (CVR) platform.



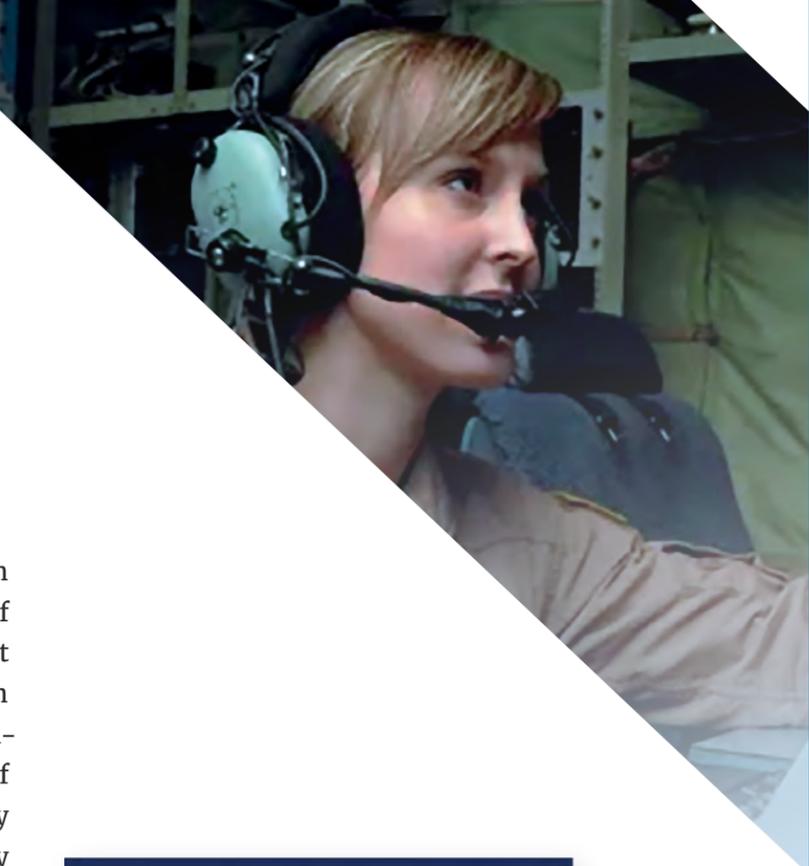
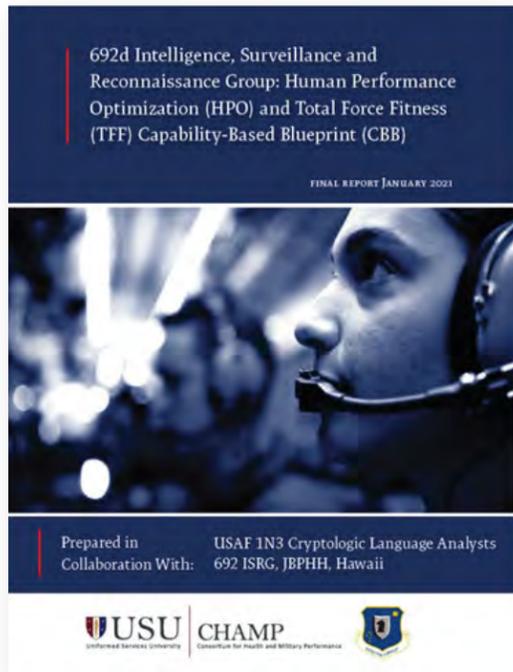
Session overviews included an introduction from keynote speaker SEAC Ramón "CZ" Colón-López, applied status reports from 8 Warfighter communities, and a precision-performance workshop on Capability Based Blueprinting (CBB) and Stress Inoculation Training (SIT-NORCAL). Other sessions included a research report panel with 6 presentations focused on advancing research methodology, tools, and approaches, and a practitioner-competence panel with 5 practitioners from across DoD. In addition, the summit included a skill-building session on embedded competencies with CHAMP anthropologists, a technology panel (with 5 presenters) on the use of wearables and other tools, and a teaming panel with 5 presenters from across DoD, National Aeronautics and Space Administration (NASA), and professional sports.

The summit raised awareness of the need to advocate for the inclusion of a performance-oriented focus in addition to more traditional clinical approaches to supporting psychological health and readiness of our Force. With an approved charter for a performance-psychology subcommittee, CHAMP is poised to provide leadership and advocacy in this area and serve as an important hub for advancing the science and practice of performance psychology across DoD.

**TFF/HPO FUTURE OPERATIONS**

***Improving the Targeting and Operational Validation of Service Delivery***

A Community-Based Participatory Research (CBPR) initiative was conducted in support of the following DoD Joint Requirements Oversight Council Memorandum 073-18 (11 July 2018) Item 2.A. [...for each operational community, in collaboration with SMEs, to conduct an analysis of their Mission Essential Task List and identify key areas of strengths and weaknesses. Identify opportunities to develop a course of action for optimizing HPO and minimizing identified risks. Incorporate elements of the TFF framework for achieving Military Service Members' fitness and mission readiness]. CHAMP's multidisciplinary mobile training team constructed an HPO and TFF Capability-Based Blueprint (CBB) and Targeting System in collaboration with members of the USAF 1N3 Cryptologic Language Analyst career field assigned to the 692 ISRG at Joint Base Pearl Harbor Hickam, Hawaii. The resulting CBB report highlighted the health and performance priorities and metrics that directly support career-field mission-essential tasks identified as critical to their mission at the 692 ISRG. The resulting blueprint will serve as the first step to assist in improving the precision of embedded Airman Resiliency Team health-and-performance service delivery, resource acquisition, upstream services, and professional competencies. In 2021, CHAMP will assist in the second and third steps of service realignment and operational validation.

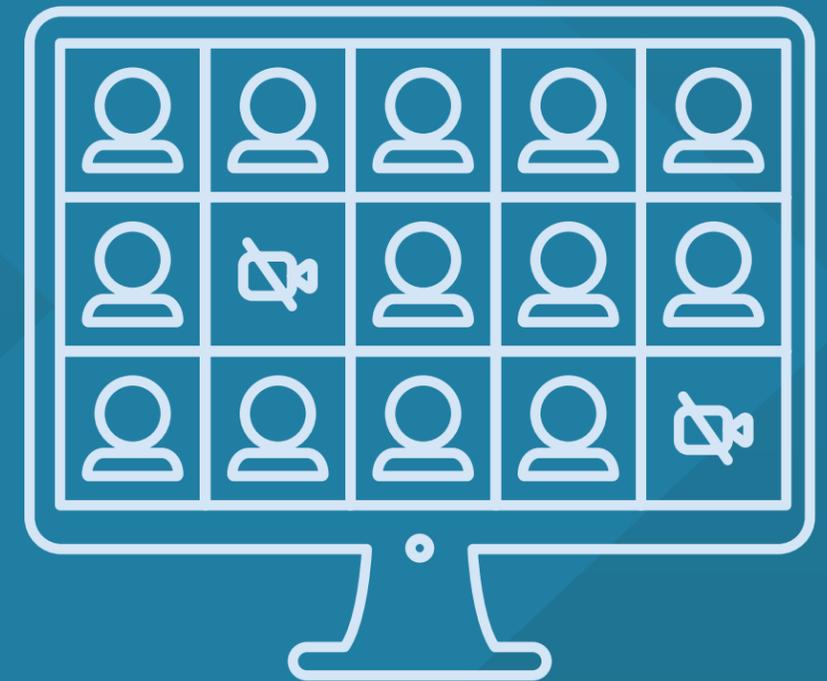


**INTERNAL CHAMP ACTIVITIES**

In addition to providing presentations and webinars for our external stakeholders, CHAMP team members also offered training for internal staff. Leaders implemented a “Learning Lab” series where staff share their expertise on a variety of topics—such as leadership, active constructive responding, communication, and nutrition—to help everyone perform at their best.

Monthly staff meetings went online and virtual “watercooler” chats enabled staff members to discuss gardening tips, introduce their pets, and showcase new home offices. Social support, an important aspect of human performance optimization, helped our CHAMPions stay connected in the new, online workplace.

As the COVID-19 pandemic raged, social tensions also brought fear and uncertainty to our nation. Dr. Deuster reminded us to “stay united and do what we can to foster a caring, respectful, nurturing, and loving environment and remain true to our CHAMP values of Integrity, Service and Well-Being, Excellence and Learning—and above all: Collaboration, Community, and Diversity.” CHAMP’s Diversity, Equality, and Inclusion workgroup subsequently hosted a virtual panel discussion to help raise awareness about the experiences of Black communities in America and talk about what CHAMPions can do to embrace diversity respectfully in our workplace and beyond.



# Selected 2020 Publications, Posters & Presentations

## Peer-Reviewed Publications

**Alexander, D. W.** (2020). Applications of the SOCOM Spiritual Fitness Scale: Program Development and Tailored Coaching for Optimized Performance. *J Spec Oper Med*, 20(3), 109–112. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/32969013>

**Alexander, D. W., Abulhawa, Z., & Kazman, J.** (2020). The SOCOM Spiritual Fitness Scale: Measuring “Vertical” and “Horizontal” Spirituality in the Human Performance Domain. *J Pastoral Care Counsel*, 74(4), 269–279. doi:10.1177/1542305020967317

**Almeida-Suhett, C., Namboodiri, A. M., Clarke, K., & Deuster, P. A.** (2020). The ketone ester, 3-hydroxybutyl-3-hydroxybutyrate, attenuates neurobehavioral deficits and improves neuropathology following controlled cortical impact in male rats. *Nutr Neurosci*, 1–13. doi:10.1080/1028415x.2020.1853414

**Chamberlin, R. A., Lunasco, T., & Deuster, P. A.** (2020). Optimizing Special Operations Forces Operator Talents and Mission Capabilities: Human Performance Optimization and Total Force Fitness Capability-Based Blueprint and Targeting System. *J Spec Oper Med*, 20(1), 113–119. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/32203615>

**Chen, Y., & Yu, T.** (2020). Involvement of p53 in the Responses of Cardiac Muscle Cells to Heat Shock Exposure and Heat Acclimation. *J Cardiovasc Transl Res*. doi:10.1007/s12265-020-10003-w

**Chen, Y., & Yu, T.** (2021). Mouse liver is more resistant than skeletal muscle to heat-induced apoptosis. *Cell Stress Chaperones*, 26(1), 275–281. Epub 2020. doi:10.1007/s12192-020-01163-4

**Clifton, D. R., Gribbin, T. C., Beutler, A. I., & de la Motte, S. J.** (2020). See the Forest for the Trees: Making Injury Risk Mitigation Programs Work for You. *Curr Sports Med Rep*, 19(5), 175–177. doi:10.1249/JSR.0000000000000714

**Crawford, C., Boyd, C., Avula, B., Wang, Y. H., Khan, I. A., & Deuster, P. A.** (2020). A Public Health Issue: Dietary Supplements Promoted for Brain Health and Cognitive Performance. *J Altern Complement Med*, 26(4), 265–272. doi:10.1089/acm.2019.0447

**Crawford, C., & Deuster, P. A.** (2020). Be in the Know: Dietary Supplements for Cognitive Performance. *J Spec Oper Med*, 20(2), 132–135. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/32573750>

**Crawford, C., Wang, Y. H., Avula, B., Bae, J. Y., Khan, I. A., & Deuster, P. A.** (2020). The scoop on brain health dietary supplement products containing huperzine A. *Clin Toxicol*, 58(10), 991–996. doi:10.1080/15563650.2020.1713337

**DeGroot, D. W., & O'Connor, F. G.** (2020). Commentary: The Warrior Heat- and Exertion-Related Event Collaborative and the Fort Benning Heat Center. *MSMR* 27(4), 2–3. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/32330062>

**Dohl, J., Passos, M. E. P., Foldi, J., Chen, Y., Pithon-Curi, T., Curi, R., . . . Yu, T.** (2020). Glutamine depletion disrupts mitochondrial integrity and impairs C2C12 myoblast proliferation, differentiation, and the heat-shock response. *Nutr Res*. doi:10.1016/j.nutres.2020.09.006

**Gasier, H. G., Dohl, J., Suliman, H. B., Pi-antadosi, C. A., & Yu, T.** (2020). Skeletal muscle mitochondrial fragmentation and impaired bioenergetics from nutrient overload are prevented by carbon monoxide. *Am J Physiol Cell Physiol*, 319(4), C746–C756. doi:10.1152/ajpcell.00016.2020

**Gasier, H. G., Yu, T., Swift, J. M., Metzger, C. E., McNerny, E. M., Swallow, E. A., . . . Allen, M. R.** (2020). Carbon Monoxide and Exercise Prevents Diet-Induced Obesity and Metabolic Dysregulation Without Affecting Bone. *Obesity (Silver Spring)*, 28(5), 924–931. doi:10.1002/oby.22768

**Kao, T. C., Kazman, J. B., Cheng, Y. H., Jeffery, D. D., & Deuster, P. A.** (2020). Healthy Lifestyles Among Military Active Duty Service Members,

and Associations With Body Building And Weight Loss Supplement Use. *Ann Epidemiol*. doi:10.1016/j.annepidem.2020.08.011

**Kazman, J. B., Attipoe, S., Kupchak, B. R., & Deuster, P. A.** (2020). Caffeine and heat have additive but not interactive effects on physiologic strain: A factorial experiment. *J Therm Biol*, 89, 102563. doi:10.1016/j.jtherbio.2020.102563

**Kazman, J. B., Gutierrez, I. A., Schuler, E. R., Alders, E. A., Myatt, C. A., Jeffery, D. D., . . . Deuster, P. A.** (2020). Who sees the chaplain? Characteristics and correlates of behavioral health care-seeking in the military. *J Health Care Chaplain*, 1–12. doi:10.1080/08854726.2020.1723193

**Kegel, J. L., Kazman, J. B., Scott, J. M., & Deuster, P. A.** (2020). Health Behaviors and Psychosocial Attributes of US Soldiers. *J Acad Nutr Diet*, 120(9), 1469–1483. doi:10.1016/j.jand.2020.01.018

**O'Connor, F. G., Grunberg, N. E., Harp, J. B., & Deuster, P. A.** (2020). Exertion-Related Illness: The Critical Roles of Leadership and Followership. *Curr Sports Med Rep*, 19(1), 35–39. doi:10.1249/JSR.0000000000000673

**Park, G. H., Lunasco, T., Chamberlin, R. A., & Deuster, P. A.** (2020). Optimizing Teamwork for Human Performance Teams: Strategies for Enhancing Team Effectiveness. *J Spec Oper Med*, 20(4), 115–120.

**Rittenhouse, M., Scott, J., & Deuster, P.** (2020). Dietary Supplements: Knowledge and Adverse

Event Reporting Practices of Department of Defense Health Care Providers. *Mil Med*, 185(11-12), 2076-2081. doi:10.1093/milmed/usaa157

Rittenhouse, M., Scott, J., & Deuster, P. (2020). Healthy Eating Index and Nutrition Biomarkers among Army Soldiers and Civilian Control Group Indicate an Intervention Is Necessary to Raise Omega-3 Index and Vitamin D and Improve Diet Quality. *Nutrients*, 13(1). doi:10.3390/nu13010122

Troncoso, M. R., Jayne, J. M., Robinson, D. J., & Deuster, P. A. (2020). Targeting Nutritional Fitness by Creating a Culture of Health in the Military. *Mil Med*. doi:10.1093/milmed/usaa325

Yu, T., Dohl, J., Wang, L., Chen, Y., Gasier, H. G., & Deuster, P. A. (2020). Curcumin Ameliorates Heat-Induced Injury through NADPH Oxidase-Dependent Redox Signaling and Mitochondrial Preservation in C2C12 Myoblasts and Mouse Skeletal Muscle. *J Nutr*, 150(9), 2257-2267. doi:10.1093/jn/nxaa201

Zhang, L., Hu, X. Z., Yu, T., Chen, Z., Dohl, J., Li, X., . . . Ursano, R. J. (2020). Genetic association of FKBP5 with PTSD in US Service Members deployed to Iraq and Afghanistan. *J Psychiatr Res*, 122, 48-53. doi:10.1016/j.jpsychires.2019.12.014

cal and Behavioral Characteristics of a Study Population. USU Research Days (Virtual).

Hazel C, Kazman JB, Abraham PA, & Deuster PA. *Physical Activity Levels and Thermoregulatory Abilities: Associations during Heat Tolerance Testing*. USU Research Days (Virtual).

Kegel, J., Kazman, J., Nelson, D.A., & Deuster, P. *Army Health Behaviors, Risks, and Outcomes: Longitudinal Trends from a Population Surveillance System – 2014–2018*. USU Research Days (Virtual).

Patton M, Almeida-Suhett C, M. Namboodiri M, K. Clarke K, & Deuster P. *Performance on the Neurological Severity Scale-Revised is associated with morphological outcomes following controlled cortical impact in male Sprague Dawley rats*. USU Research Days (Virtual).

Scott JM, Mejia-Guevara Y, Swallow EA, Metzger CE, Stacy AJ, Allen MR, & Gasier HG. *Iron deficiency does not impact femoral bone properties in young female rats following 12-weeks of high-intensity running*. American Society for Bone Mineral Research Annual Meeting (Virtual).

Simon AL, Kazman JB, & Deuster PA. *Barriers to exercise among active-duty Service Members*. USU Research Days (Virtual).

Weiner C, Kazman JB, Abraham PA, & Deuster PA. *The Discrepancy between Perceptual and Physiological Strain Indexes in a Heated Environment*. USU Research Days (Virtual).

Dohl J, Chen Y, Deuster P, Yu T. *Curcumin preserves mitochondrial integrity, alleviates oxidative stress and minimizes heat-induced skeletal muscle injury in mice*. USU Research Days (Virtual).

Almeida-Suhett C, Namboodiri A, Clarke K, & Deuster P. *A Ketone Body Mono-Ester, 3-Hydroxybutyl-3-Hydroxybutyrate, Attenuates Sensory and Motor Deficits in a CCI Model of TBI in Male Sprague-Dawley Rats*. USU Research Days (Virtual).

Nelson DA, Clifton D, Edgeworth D, Nelson K, Choi YS, & Deuster PA. *Associations of Armed Forces Vocational Aptitude Battery Scores and Actionable Risk Factors with Medical Non-Readiness and Return to Duty Times Among US Army Soldiers*. USU Research Days (Virtual).

Nelson DA, Edgeworth D, Clifton D, Choi YS, Bjarnadottir M, Shell D, & Deuster PA. *The Musculoskeletal Outcomes and Readiness Evaluation (MORE) Project: Introduction to a Large, Multiservice Analysis of Health Care Trajectories and Endpoints*. USU Research Days (Virtual).

Nelson DA, Clifton D, Edgeworth D, Beltran T, Choi YS, & Deuster P. *Factors Associated with Medical Non-Readiness among New US Army Enlisted Soldiers*. WAMC XIV Annual Research Symposium

Alders E, & Alexander D. *Time Constraints and Recording Restrictions: Ethical Reflections on a Program Evaluation Project for Military Chaplains*. AER20 (Virtual)

## Research Poster & Research Abstract Presentations

CHAMP had a total of 29 research abstracts. In addition, the Military Health System Research Symposium (MHSRS) accepted six CHAMP abstracts, but the conference was cancelled.

Abulhawa Z, Alexander D, Alders E, & Deuster P. *Development of the 17-item Spiritual Fitness Metrics Survey: A validated and holistic measure for the Spiritual Fitness domain*. USU Research Days (Virtual).

Almeida-Suhett C, Namboodiri A, Clarke K, Deuster P. *A Ketone Body Mono-Ester, 3-Hydroxybutyl-3-Hydroxybutyrate, Attenuates Sensory and Motor Deficits in a CCI Model of TBI in Male Sprague-Dawley Rats*. Office of Dietary Supplement Symposium.

Almeida-Suhett C, Namboodiri A, Clarke K, & Deuster P. *A Ketone Body Mono-Ester, 3-Hydroxybutyl-3-Hydroxybutyrate, Attenuates Sensory and Motor Deficits in a CCI Model of TBI in Male Sprague-Dawley Rats*. 2020 National Capital Area Traumatic Brain Injury Symposium.

Bonner J, Abraham PA, Kazman JB, Foote F, Bhodel W, & Deuster PA. *Green Road: Effects of Natural Environments on Physiological and Psychological Measures*. USU Research Days (Virtual).

Chuang K, Kazman JB, Harp J, Ren MQ, Abraham PA, Sambuughin N, O'Connor FG, & Deuster PA. *Genomics of Exertion-Related Events associated with Sick Cell Trait (GERESCT) Study: Demographic, Physi-*

## Presentations at Scientific Conferences

Because of COVID-19, many invited presentations and scientific conferences were cancelled, starting in March. However, some were able to be delivered virtually. Below is a listing of some presentations.

Charters, K.G., Abulhawa, Z., Kazman, J., & Deuster, P.A. *Relationships Among Stress, Sleep and Spiritual Fitness: A Secondary Analysis of Data on Military Service*. The Society for Personality and Social Psychology (SPSP) Annual Convention.

Dartt, C., de la Motte, S., Clifton, D., & Barrett, A. *History of Ankle Sprain and Functional Instability in U.S. Officer and Enlisted Service Members at Entry to Secondary Training*. NATA Virtual 71st Clinical Symposia & AT Expo (Virtual).

de la Motte, S.J. *Accurate Prediction Depends on Accurate Assessment: Self-Limiting Beliefs and*

*Cultural Barriers Influence Musculoskeletal Injury Reporting*. International Congress on Soldiers' Physical Performance.

Kegel, J.L. *Assessment of Performance Triad and Health Outcomes among Warfighters*. 5th International Congress on Soldiers Physical Performance (ICSPP).

Park, G.H., Knust, S.K., Jackson, S., Baity, M., Nassif, T., Lunasco, T.K., & Chamberlin, R. *Redefining Readiness: Bridging Human Performance and Psychological Health Approaches for Warfighters*. 2020 Annual American Psychological Association Conference (Virtual).

Southmayd E., de la Motte, S., Dan Clifton, D. *The Role of Mental Resilience in the Biopsychosocial Experience of Pain in Male and Female Military Officers*. International Congress on Soldiers' Physical Performance.

## Other Presentations

Deuster, P.A. *Dietary Supplements & Operation Supplement Safety*. USMC Camp Pendleton, Oceanside, CA. February 2020.

Deuster, P.A. *Dietary Supplements & Operation Supplement Safety*. USCG Air Station San Francisco, CA. February 2020.

Deuster, P.A. *Dietary Supplements & Operation Supplement Safety*. USCG Base Alameda, Alameda, CA. February 2020.

Deuster, P.A. *Human Performance Optimization and Total Force Fitness: What a Sport Medicine Doc Should Know*. USU Sports Medicine Fellowship, Bethesda, MD. March 2020.

Deuster, P.A. *Dietary Supplements: What a Provider Should Know*. Transitional Year Didactics at WRNMMC, Bethesda, MD. April 2020.

Deuster, P.A. *Appearance and Performance Enhancing Substances*. Lunch and Learn, USU, Bethesda, MD. April 2020.

O'Connor, FG. *Leadership in a Crisis Situation*. AMSSM COVID 19 Seminar. April 2020.

O'Connor, FG. *Exertional Illness in Athletes: The Challenge of Prevention*. NATA. May 2020.

O'Connor, FG. *Exertional Illness in Athletes: The Challenge of Prevention*. Grand Rounds, University of Oklahoma. May 2020.

O'Connor, FG. *Sickle Cell Trait in Warfighters: What the Leader Needs to Know*. TRADOC Commander's Forum. May 2020.

O'Connor, FG. *Exertional Illness in Athletes: The Challenge of Prevention*. Wits University Sports and Health, South Africa. June 2020.

Deuster, P.A. *HPO 101: 21<sup>st</sup> Century Solutions*. Defense Strategies Institute's 2<sup>nd</sup> Annual Human Performance and Biosystems Summit. September 2020.

# Partners & Collaborators

## USU CENTERS COLLABORATIONS

The virtual work environment offered new opportunities for collaborations with other Centers at USU. The HPRC team was pleased to represent CHAMP and further our relationships with the following USU Centers.

*Center for the Study of Traumatic Stress (CSTS):* HPRC worked with CSTS to develop a handout for parents and adults to guide them on how to help teenagers manage through COVID-19. The fact sheet described the impact prolonged social distancing could have on teen health and offered TFF strategies to help teens cope. The handout contents were leveraged to participate in a podcast episode with the Military Family Learning Network Family Development Division's Anchored podcast.

*Center for Deployment Psychology (CDP):* In July 2020, CHAMP delivered a presentation as part of the "CDP Presents" series to military, Veteran, and civilian mental health professionals titled "How Positive Psychology Can Enhance the Performance and Well-being of Service Providers." With over 250 attendees, feedback from the presentation included comments that it was "engaging," "informative," "well organized," and an "excellent presentation with fascinating information."

*National Center for Disaster Medicine and Public Health (NCDMPH):* In response to the COVID-19 pandemic and in an effort to help frontline workers, CHAMP partnered with NCDMPH and other centers at USU to compile resources on performance optimization for the Mount Sinai Hospital System. The HPRC team developed the Resources for Frontline Healthcare Workers compilation document, and Dr. Gloria Park participated in NCDMPH's panel discussion on the well-being of healthcare workers during the COVID-19 crisis.

## INTERNAL DOD USU STAKEHOLDERS

Center for Deployment Psychology  
Center for Neuroscience and Regenerative Medicine  
Center for Rehabilitation Sciences Research  
Collaborative Health Initiatives Research Program  
College of Allied Health Sciences  
Defense and Veteran Center for Integrative Pain Management  
Defense and Veterans Brain Injury Center  
Graduate School of Nursing  
Henry M. Jackson Foundation  
School of Medicine

## EXTERNAL DOD STAKEHOLDERS

Armed Forces Health Surveillance Center  
Building Healthy Military Communities  
Defense Advanced Research Projects  
Defense Commissary Agency Headquarters  
Defense Health Agency  
Defense Suicide Prevention Office  
Medical Education and Training Campus  
Morale, Welfare and Recreation  
National Defense University  
National Guard Bureau  
Office of Naval Intelligence  
Services: U.S. Army, U.S. Navy, U.S. Marine Corps, U.S. Air Force, U.S. Coast Guard  
U.S. Special Operations Command  
Walter Reed National Military Medical Center  
Walter Reed Army Institute of Research

**EXTERNAL FEDERAL PARTNERS**

Centers for Disease Control and Prevention  
Department of Homeland Security  
Federal Trade Commission  
National Institutes of Health  
NIH Office of Dietary Supplements  
U.S. Department of Agriculture  
U.S. Department of Justice  
U.S. Department of Veterans Affairs  
U.S. Drug Enforcement Administration  
U.S. Food and Drug Administration

**ACADEMIC INSTITUTIONS**

Clemson University  
Duke University  
George Mason University  
Heller Institute of Medical Research  
National Defense University  
Stanford University  
The Kinsey Institute  
Tufts University  
University of Arkansas for Medical Sciences  
University of Connecticut  
University of Maryland  
University of Mississippi, Oxford  
University of North Texas  
University of South Alabama  
University of Tennessee, Chattanooga  
University of Toronto

**PROFESSIONAL ASSOCIATIONS**

American College of Sports Medicine  
American Medical Society for Sports Medicine  
National Athletic Trainers' Association  
National Collegiate Athletic Association  
National Strength and Conditioning Association

**OTHER PARTNERS & COLLABORATORS**

Biotechnology Performance Computing Software Applications Institute  
Military Children's Collaborative Group  
Military Family Learning Network  
National Military Families Association  
Natural Medicines Database  
PsychArmor Institute  
The Institute for Integrative Health

# CHAMP Goals for 2021

## Overall Internal

- ☉ Continue promoting diversity, equity, and inclusion in education, research, and across the workplace and organization

## Research & Scholarship

- ☉ Conduct natural history study of SCT in DoD
- ☉ Identify best practices for reducing musculoskeletal injuries
- ☉ Expand HPO/TFF-CBB within DoD communities to assist with health and performance realignment and validation efforts
- ☉ Expand brain-health portfolio



## Education & Training

- ☉ Apply Spiritual Fitness Metric to various chaplain trainings and programs
- ☉ Develop materials to populate an HPO/TFF online training hub for HPO team professionals
- ☉ Host campaigns to promote knowledge of HPO and TFF among military audiences
- ☉ Expand network of partnerships within DoD and the federal government to share HPO/TFF educational resources and presentations
- ☉ Develop an Operation Supplement Safety app to provide timely information and be able to risk-stratify dietary supplements
- ☉ Develop a health professional training module for the OPSS website at OPSS.org
- ☉ Work with the Services (such as the U.S. Army's H2F program) to fill gaps in HPO/TFF education delivery

## Leadership & Service

- ☉ Develop Exertion-Related Event Registry
- ☉ Complete and disseminate military-unique practice parameters on exertional illness to include exertional rhabdomyolysis and exercise-associated hyponatremia
- ☉ Secure long-term funding for WHEC
- ☉ Facilitate implementation of SCT screening and ECAST education and management
- ☉ Host Total Force Fitness-Whole Health Summit
- ☉ Lead activities related to the performance psychology working group/subcommittee

# CHAMP



Uniformed  
Services  
University

4301 Jones Bridge Road, Bethesda, Maryland 20814

[champ.usuhs.edu](http://champ.usuhs.edu)

[hprc-online.org](http://hprc-online.org)

[opss.org](http://opss.org)

[hprc-online.blogspot.com](http://hprc-online.blogspot.com)

## **SOCIAL MEDIA:**

### ***LinkedIn***

CHAMP: [linkedin.com/showcase/usuchamp](https://www.linkedin.com/showcase/usuchamp)

### ***Facebook***

HPRC: [facebook.com/HPRConline](https://www.facebook.com/HPRConline)

OPSS: [facebook.com/OperationSupplementSafety](https://www.facebook.com/OperationSupplementSafety)

Go for Green®: [facebook.com/GoForGreenG4G](https://www.facebook.com/GoForGreenG4G)

### ***Twitter***

HPRC: [twitter.com/HPRConline](https://twitter.com/HPRConline)

OPSS: [twitter.com/OPSSorg](https://twitter.com/OPSSorg)

### ***Instagram***

HPRC: [instagram.com/hprconline](https://www.instagram.com/hprconline)

OPSS: [instagram.com/opssorg](https://www.instagram.com/opssorg)

### ***YouTube***

HPRC: [youtube.com/hprconline](https://www.youtube.com/hprconline)

OPSS: [youtube.com/channel/UC1IxVc8FHjrniwcnKGMG3mA](https://www.youtube.com/channel/UC1IxVc8FHjrniwcnKGMG3mA)

### ***Vimeo***

CHAMP: [vimeo.com/usuchamp](https://vimeo.com/usuchamp)

### ***Pinterest***

HPRC: [pinterest.com/hprconline](https://www.pinterest.com/hprconline)