

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES CONSORTIUM FOR HEALTH AND MILITARY PERFORMANCE

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MEMORANDUM FOR CHAMP MEMBERS, PARTNERS, AND FRIENDS

From: Directors, Consortium for Health and Military Performance (CHAMP)
Through: Chair, Department of Military and Emergency Medicine
Subject: CHAMP: Where We Have Been, Where We Are, and Where We Are Going!

Where We Have Been

The Impetus: June 2006

In June 2006, Uniformed Services University sponsored a conference entitled “Human Performance Optimization (HPO) in DoD: Charting a Course for the Future”. The attendees were tasked to initiate the development of a strategic plan for HPO in DoD. Eighty-nine persons from 56 DoD organizations, to include commanders, clinicians, researchers, investigators, and educators, attended the workshop. A summary report was presented to Dr. Winkenwerder, Assistant Secretary of Defense for Health Affairs. Conclusions included the following:

- Urgent need to define HPO;
- Valid and standardized metrics required for HPO;
- Need to translate research results into operational technologies;
- Establish effective communication between and among medical, research and operational communities, as well as across service.



The History

Subsequent to the USUHS initiative, a series of events have occurred to move the University forward in the area of Human Performance Optimization:

- After the USUHS Conference, the Dean requested the Army Medical Department to allow Dr. Francis O’Connor to return to USUHS and lead the development of HPO;
- COL O’Connor Permanent Change of Station (PCS) move to USUHS December 2006;
- COL O’Connor and Dr. Deuster began conceptual development of Consortium for Health and Military Performance (CHAMP), in partnership with Dr. Steve Kaminsky, Vice President, Office of Research;
- Ms. Embrey, Deputy Assistant Secretary of Defense for Health Affairs for Force Health Protection & Readiness, directed an Integrated Product Team (IPT) to review



the USUHS report, gather information from the Services, and make recommendations for establishing a comprehensive HPO program; COL O'Connor and Dr. Deuster are active members, with COL O'Connor leading the education subcommittee;

- COL O'Connor and Dr. Deuster developed a 398 Proposal outlining CHAMP research vision, goals and plans;
- CHAMP was formally presented to the Dean, School of Medicine, February 2007, and approved in principle;
- COL O'Connor received approval for faculty package to assist in the development of CHAMP (June 2007).

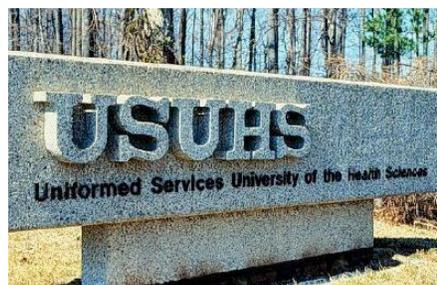


Where We Are!

Overview

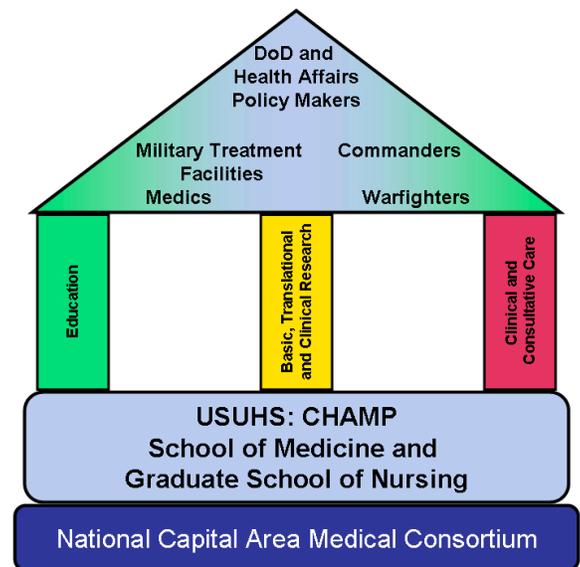
CHAMP has been establishing itself in the University community, as well as in the DoD Human Performance Optimization community. Our underlying goal has been to create an active and recognized University collaboration among clinicians, researchers and teachers dedicated to improving military performance. Key to this process has been the development of a vision, mission and strategy:

- **VISION:** “To be the premier medical resource for the Department of Defense for education, basic, clinical and translational research, and clinical expertise in the area of military unique human performance optimization.”
- **MISSION:** The mission of the USU Consortium of Health and Military Performance (CHAMP) is to promote basic, clinical and translational research, education, and clinical expertise in optimizing the functional capacity of the warfighter, with the objective of maximizing performance in the operational environment. The Program seeks to provide Department of Defense Commands, military treatment facilities clinicians, researchers, policy makers and war fighters with applied medical expertise in the area of military unique human performance optimization with specific functions including: data management; educational services and resources; electronic, clinical and laboratory consultative services; basic, clinical and translational investigation support and review.





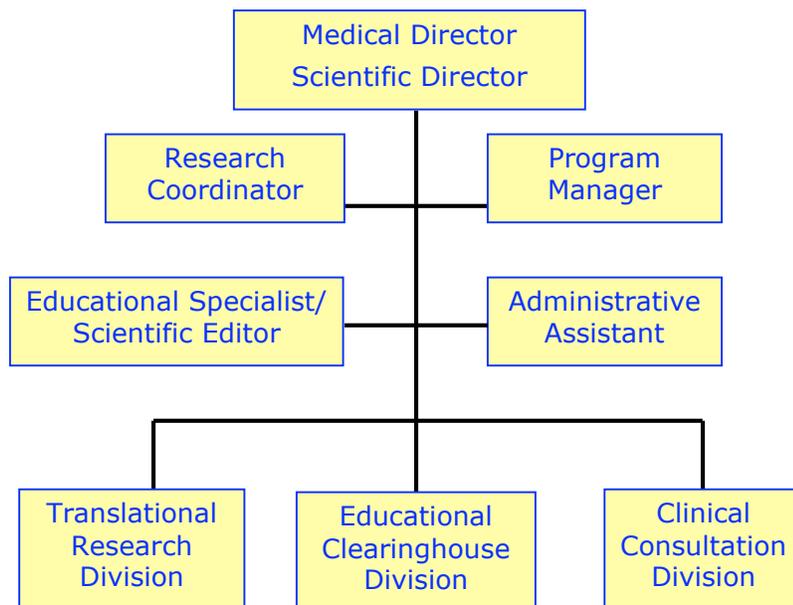
- STRATEGY:** The USU CHAMP represents a National Capital Area (NCA) Consortium of clinicians, educators and investigators dedicated to the identification and exploration of human factors and capabilities that impact performance optimization and contribute to the health and operational success of our warfighters. The consortium’s underlying strategy is a collaborative effort among the operational, medical and research communities in the following areas:
 - Educational and Evaluation Services
 - Basic, Translational and Clinical Research
 - Clinical and Consultative Care

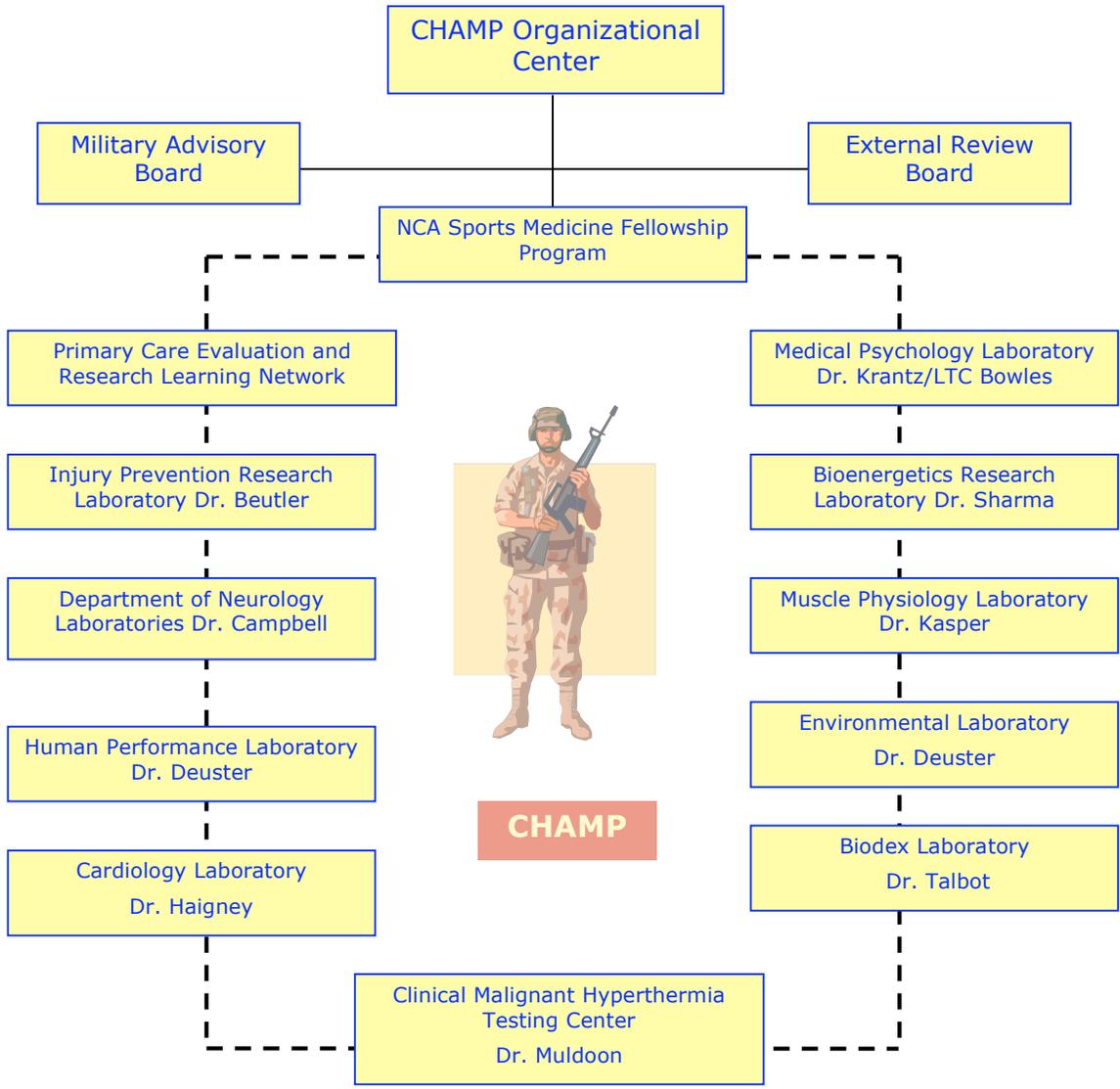


The CHAMP mission is a direct reflection of the USU mission. President Rice’s description of the mission is “to provide continuity and leadership while ensuring medical readiness and continuing education for the Military Health System (MHS).” CHAMP is operationally relevant and speaks directly to “learning to care for those in harm’s way”.

Planned Structure

The following two figures layout the organizational center and current membership of CHAMP.





Strategic Areas

Educational and Evaluation Services

1. Goals

CHAMP’s foundation is education, with the goal of becoming the premier resource for information in DoD on war fighter human performance optimization. CHAMP proposes to supervise and direct a DoD clearinghouse/data management center. The purpose of the Human Performance Optimization Clearinghouse (HPOC) is to provide timely, mission-specific,



evidence-based information, knowledge transfer and training for optimizing human function and performance in the military. The goals and specific functions of the HPOC:

- a. Identification. Identify the primary DOD mission performance activities potentially improved by human performance optimization (HPO).
- b. Evaluation. Collect, synthesize and prepare summary reports of all research and state of knowledge on current methods for optimizing function and performance for each mission activity identified in #1. This function would include:
 - Comprehensive, evidence-based summaries of current knowledge in HPO translated for pragmatic use by clinicians, commanders and warfighters.
 - Expert review and customization of these reviews for appropriateness and utility with target audiences (commanders, health practitioners and war-fighters).
- c. KTET Program. Creation of a knowledge transfer, education and training (KTET) program for the delivery of mission performance optimization knowledge, skills, attitudes and practices to health care practitioners, commanding officers and war-fighters for pre-deployment, deployment, post-deployment and specific mission scenarios.
- d. Communication System. Develop and maintain a multi-information communication system for HPO information and training including websites, phone interactions, video information, virtual reality and other venues.
- e. Mission Customization. Provide a mission-specific HPO customization service wherein commanders can get specific information and training programs when planning complex and non-standard missions. This service would be real-time, commander responsive, mission-specific, evidence-based, secure and customized.
- f. Expert Network. Maintain a network of military and civilian experts on HPO areas for consultation and advice “on call” to address the above goals and functions of the HPOC in real-time.



Current Efforts

Drs. O'Connor and Deuster have been actively working on many fronts to realize the development an educational clearinghouse to be housed inside of, or run in conjunction with CHAMP. These efforts have included discussions with Health Affairs, the Samuelli Institute and the National Center for Human Performance. To date these discussions are ongoing.

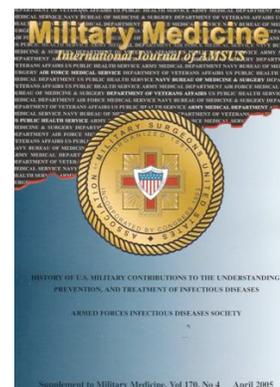




CHAMP has moved forward with monthly seminars at USUHS in the area of human performance. These seminars are offered in conjunction with the USU/NCA Primary Care Sports Medicine Fellowship Program.

CHAMP has been active in writing/publishing in the area of Human Performance Optimization. CHAMP publications are intended to be efforts written from members from multiple disciplines/departments. Recently accepted publications include the following:

- “Human Performance Optimization: An Evolving Charge to DoD” in press in *Military Medicine*.
- “Heat Illness: Return to Duty Guidelines” in press in the *Journal of the National Athletic Trainers Association*.
- Rhabdomyolysis. In *Cecil’s Textbook of Internal Medicine 2007*. In press.
- Exercise Physiology for Graded Exercise Testing: A Primer for the Primary Care Clinician. In press.



CHAMP has initiated the development of a website <http://www.usuhs.mil/mem/champ.html> to function as the foundation of the consortium. The site details CHAMP functions and will have links to all member and partner centers and labs.

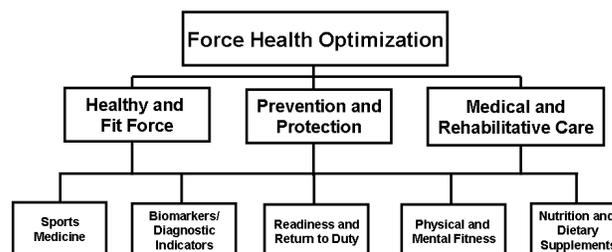
Basic, Translational and Clinical Research

1. Goals

CHAMP will be a unique contributor in the field of human performance optimization. It will provide an integrated array of research services, including basic, translational and clinical

research. CHAMP will be a premier program for investigating issues relating to optimal operational performance. Basic, translational and clinical research will address barriers to optimal performance. Laboratory and field approaches for safely enhancing performance of mission essential functions will be tested. Promising new technologies will be transitioned to the field and the war fighter. The program, which will involve both the School of Medicine and the Graduate School of Nursing, will focus on the three pillars of the Department of Defense’s Force Health Protection model: A Healthy and Fit Force; Prevention and Protection; Medical and Rehabilitative Care. Across the three pillars are various topic areas in which we at USU have specific expertise, to

Major Research Areas for CHAMP





include sports medicine, biomarkers and diagnostic indicators (genomics, proteomics, and metabolomics), readiness and return to duty, physical and mental fitness, and nutrition and dietary supplements. Work in all areas has been ongoing for a number of years, and establishing interdisciplinary projects will bring these areas together. The *long-term research goal* of the center is to conduct research on human performance optimization for the military. Our *contention* is that human performance is cyclic and time-phased – warfighters need to be prepared, trained and optimized pre-deployment to execute their mission successfully, followed by targeted post-deployment programs for recovery and repair. At this point in time we intend to focus on three topics that are of importance with respect to Force Health Protection and war fighter mission performance:

- Musculoskeletal Health: susceptibility, diagnosis, management, prevention, and return to duty after injury;
- Heat Stress: Susceptibility to, prevention of, and return to duty after heat illness;
- Dietary supplement effects on physical and cognitive performance.

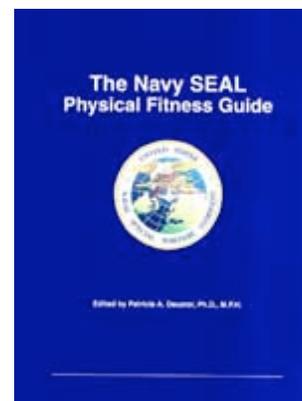


Current Efforts

CHAMP has been active in creating a network of researchers throughout the University to pursue the previously stated goals. The intent of this effort is to foster interdisciplinary collaborations. CHAMP's purpose is to engage as many departments as possible with the intent of evolving into a center. We envision the purpose of the Center as:

- Aiding in faculty recruitment and retention;
- Facilitating, incubating, and nurturing scientific collaboration;
- Securing resources and providing research support;
- Offering a sense of community and promoting continuous learning;
- Affording organizational flexibility, and;
- Focusing on societal problems.

The Human Performance Laboratory has been active in writing protocols for continued research in the area of Human Performance Optimization. These protocols reflect efforts of the HPL working with other members of the CHAMP.





2. Current ACTIVE Research Protocols

- a. Understanding and Characterizing Insulin Resistance and Obesity in East Asians in the U.S.: \$35k – 2 yrs
- b. Physiologic and Endocrine Correlates of Overweight in African Americans and Caucasians: \$1M – 4 yrs
- c. Metabolomic Evaluation of Combat Personnel: \$230k – 2 yrs
- d. Exertional Rhabdomyolysis: A Genetic Perspective: \$150K – 3 yrs
- e. Joint Special Operation Forces Nutrition Guide and Training: \$125k – 1 yr
- f. Differential Responses to Exertional Stress: A Genetic Perspective: \$100k - 2 yrs
- g. Neuromuscular Electrical Nerve Stimulation (NMES) in Trans-Tibial Amputation: A Pilot Study: \$20k – 2 yrs

3. Submitted Proposals

- a. Buccal Strips for Delivery of Electrolytes and Nutrients: \$250k – 2 yrs
- b. USU Center for Health Disparities Research - \$5M – 5 yrs
- c. Electromyostimulation and graduated strength walking for Knee OA: \$330k-3 yrs

4. In Preparation

- a. DARPA: Preserving Military Performance under Extreme Environments
- b. RADIX BIORESEARCH: Interventions for Improving Endurance Performance
- c. Prospective Evaluation of the Functional Movement Screen (FMS)TM for predicting musculoskeletal injury in Marine Corps Officer Candidates
- d. Heat Casualties in Marine Corps Officer Candidate School Training: An Analysis of Risk Factors and Biosignatures



CHAMP is currently engaged in active discussion with the Dean's office with regard to space for the Human Performance Laboratory and the Environmental Laboratory. Additionally, CHAMP is pursuing partnerships with multiple laboratories and research centers to encourage collaboration on current and future work. These groups include: The US Army Research Institute of Environmental Medicine (USARIEM); the Institute for Exercise and Environmental Medicine; the National Center for Human Performance Optimization; the Samueli Institute; US Special Operations Command; the American College of Sports Medicine; the Heller Institute in Israel.





Clinical and Consultative Care

1. Goals

CHAMP's unique capability in the arena of human performance optimization will be its ability to facilitate clinical care. CHAMP has access not only to the Human Performance Laboratory, and an anticipated Environmental Laboratory, but the greater resources of the National Capital Area. The Consortium will specifically identify clinical subject matter experts (SME), and through an interactive website assist clinicians throughout the DoD with expertise in human performance optimization. It is anticipated that where necessary, such as in difficult return to duty issues e.g. recurrent heat stroke or exertional rhabdomyolysis, patients will be evaluated on site in one of the exercise laboratories or clinical care centers inside of the NCA by an identified SME.

CHAMP will additionally assist in staffing an interactive human performance optimization virtual clearinghouse. This interactive site will facilitate communication between subject matter experts, clinicians, MTFs, warfighters, policy makers and commanders. The CHAMP's function will be to assist the clearinghouse mission in providing rapid virtual e-consultation, as well as the best evidence-based practice material, and facilitate clinical consultation when required.

2. Current Efforts

CHAMP to date has begun to see patients (4) at USUHS in conjunction with a number of members including Neurology, Cardiology, Sports Medicine and Anesthesiology. These patients have been encounters in the area of rhabdomyolysis and exercise intolerance. Working as a team of collaborators, challenging patients have been able to get streamlined evaluations and the advantage of multiple expert perspectives.



CHAMP is actively engaged in a joint project with the Army Office of the Surgeon General and the American College of Sports Medicine to hold a conference in November 2008 on return-to-duty/return-to-play issues concerning Heat Illness and Rhabdomyolysis.

Where We Are Going!

Educational and Evaluation Services

CHAMP has no core funding and no resources other than the efforts of Drs. Deuster and Dr. O'Connor. We are actively engaged, and will stay engaged at any and all levels to seek support for core funding, administrative resources, space and faculty to continue the development of CHAMP.





Anticipated meetings include discussions with the Office of the Army Surgeon General, and the Army Chief of Staff.

CHAMP will continue to promote the development of a clearinghouse in the area of Human Performance Optimization, with CHAMP being an active leader. We are currently partnering with the National Center for Human Performance on a joint initiative in this area.

Basic, Translational and Clinical Research

CHAMP is actively involved in a number of research activities, to include a DARPA proposal, again involving a proposal utilizing multiple labs throughout the University. CHAMP is working with the PEARL in the translational research initiative at USU. The ultimate goal of CHAMP is recognition by US Army Medical Research & Materiel Command (MRMC) as a facilitator of Human Performance Optimization related research at the Uniformed Services University.

Clinical and Consultative Care

A variety of initiatives are planned for this effort. They include the following:

- Develop a website in the area of clinical consultation to facilitate consultations in person and electronically.
- Identify CHAMP liaison to facilitate appointments and electronic network of consultation. We are currently working to develop an NCOIC role and it is anticipated that this position will manage CHAMP consultations.
- Develop electronic website of expert consultants in the areas of sports medicine, neurology, cardiology, anesthesiology and physiology throughout DoD.
- Develop algorithms and clinical practice guidelines in the areas of exercise intolerance evaluations, and rhabdomyolysis and heat illness.
- Develop thermal tolerance testing protocol with the acquisition of the new heat chamber in the National Capital Area.



Summary

Since CHAMP's formal recognition in February 2007, we have made considerable progress. However, we still have a long way to go with respect to funding, resources and space. We are optimistic and encouraged as we strive to contribute our efforts toward improving the performance of soldiers, airmen, sailors and marines. Our core belief is that a University consortium facilitates partnerships and academic collaborations that allows the group to



accomplish more than can be achieved as individuals. As we continue moving forward, we seek your help with the following:

- A virtual connection is the cornerstone of the consortium. We will continue to build the CHAMP website and ask your assistance for links to your labs. Marla Wright is our POC at 295-1712; we would like to assist you in developing a link on the CHAMP webpage.
- The clinical consultative component of CHAMP is actively working to identify uniformed and civilian experts in the area of Human Performance Optimization that can be identified as resources for clinicians.
- CHAMP will be hosting quarterly meetings appreciate an email indicating the preferred time that would ensure your attendance.



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