



Location/Facilities

USARIEM is co-located with Soldier Systems Center in Natick, Massachusetts. Located a short distance from Boston, the institute offers researchers its own unique facilities and is in close proximity to many of the finest universities.

Unique Facilities

Hypobaric Chambers
(9,000m, -15°C to 40°C)

Biophysical Chambers
(-10°C to 50°C)

Environmental Chambers
(-10°C to 50°C)

Water Immersion Laboratory
(5°C to 45°C)

Biomechanical Laboratory

Human Exercise Physiology
Laboratories

Laser and Flow Cytometers

Pikes Peak Research Facility
(4,300m)

USARIEM / Womack Medical
Research Facility



USARIEM Research Areas



Environmental Physiology Research

- Hot, Cold and High Terrestrial Altitude Environments
- Acclimatization, Performance and Environmental Injury
- Heat Exchange & Clothing Biophysics
- Predictive Modeling & Physiological Monitoring

Occupational Medicine & Performance Research

- Warfighter Performance – Physical / Cognitive
- Nutrition and Metabolism
- Injury Epidemiology
- Biomechanics
- Bone Health

Career Opportunities

Research Scientists
Research Support Staff
National Research Council Post-Doctoral Fellowships
Military Positions
Research Student Internships



United States Army Research Institute of Environmental Medicine

*The Department of Defense's Premier
Institution for Environmental and
Exercise Physiology Research.*



Visit Our Web Site: www.usariem.army.mil

Natick, Massachusetts



United States Army Research Institute of Environmental Medicine

USARIEM is an internationally recognized center of excellence for Warfighter performance science and its useful applications. The institute functions as a world-class laboratory for environmental medicine, physiology, performance and nutrition research. It features integrated cellular, tissue, & human research programs.

Key Products

Performance Optimization Doctrine: USARIEM produces training policy and guidelines that provide recommendations to enhance Warfighter capabilities and reduce health risks.

Preventive Medicine & Planning Doctrine: USARIEM produces preventive medicine guidelines to minimize Warfighter injuries and reduce lost duty time and medical costs.

Materiel Development Support: USARIEM recommends product improvements for clothing, equipment, nutrition and pharmaceuticals by providing design specifications to improve individual Warfighter equipment and rations.

Monitoring Strategies & Predictive Algorithms: USARIEM develops strategies for personal physiological status monitoring and a variety of algorithms to prevent and detect Warfighter performance decrements.

Health Hazard Assessment: USARIEM coordinates with the Center for Health Promotion and Preventive Medicine (CHPPM) for thermal and hypoxic conditions.



USARIEM Research Divisions



Biophysics & Biomedical Modeling

Develop and validate biomedical models to simulate the effects of heat, cold, high altitude, hydration, nutritional status (metabolic enhancers), and clothing systems and equipment on Soldier performance.

Recent Accomplishments: Provided guidance on work-rest and water modifications for altitude & thermal stress for troops in Afghanistan, Operation Enduring Freedom. • Executed prolonged work-rest cycle model for operations in water for Operation Enduring Freedom. • Warfighter Physiological Status Monitoring Program



Military Performance

Conduct research to enhance the performance (physical, cognitive, behavioral and psychomotor) of military occupational tasks, or to prevent performance decrements due to physical overload, nutritional deprivation, environmental and operational stresses, and musculoskeletal injuries.

Recent Accomplishments: Vigilance Sentry Studies showed caffeine improves target detection response time and reduces friendly fire errors over 3 hours. • Demonstrated use of MOLLE Backpack Hip Belt transfers 30% of weight to hips, reducing back pain. • Biomechanical studies planned for Scorpion Load Carriage System.



Military Nutrition

Conduct research and provide policy on nutritional issues affecting service members, and support the Surgeon General's responsibilities as the Department of Defense executive agent for nutrition. Evaluate new rations and examine interactions between nutrition, performance and the environment.

Recent Accomplishments: Demonstrated cognitive enhancement with caffeine supplements during periods of operational stress.



Thermal & Mountain Medicine

Conduct human research to extend physical work capabilities and minimize medical problems associated with military operations at environmental extremes of heat, cold and high terrestrial altitude. Identify and elucidate the etiology and pathophysiological mechanisms of heat, cold, and altitude induced injuries and illnesses.

Recent Accomplishments: Demonstrated efficacy of intermittent hypoxic exposures to improve physical performance and reduce sickness at high altitude. • Research in progress on genetic markers for susceptibility to heat injury.