



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 academic and medical institutions.

Unique Facilities

Climatic Rooms
(-10 to 50 °C)

Immersion Lab
(5 to 41 °C)

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

Doriot Climatic Facility
(-57 to 74 °C)

Pikes Peak Laboratory
(4,300 m)

Physiology / Biochemistry
& Molecular Laboratories



Current Highlighted Research Studies

- Effects of Prolonged Deployment On Body Composition and Physiological Function
- Development of a “TOP” (Tissue, Overuse, Injury and Performance) Computer Prediction Model to Predict Injury Potential and Performance
- Quantification of Musculoskeletal Disabilities and Related Costs Within the Army
- Effects of Prolonged Deployment On Cognitive Function
- Effects of Blast Injury On Cognitive Function
- Effects of Exercise Training On Bone Health and Musculoskeletal Injury
- Physical Performance In the Amputee Population
- Biomechanical Factors Associated With Injury

*United States Army Research Institute
of Environmental Medicine*



Military Performance Division

Natick, Massachusetts



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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, and human research programs.



Military Performance Division

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.



Military Performance Research Areas

Physical Performance Optimization

- Advanced training programs
- Performance assessment
- Amputee function & performance
- Body composition analysis
- Soldier task performance
- Rapid train-up (Nat. Guard, Reserves)
- Computer modeling – performance prediction



Injury Reduction/Bone Health

- Stress fracture quantification
- Bone health optimization – exercise training & intervention programs
- Bone geometric & structural analysis



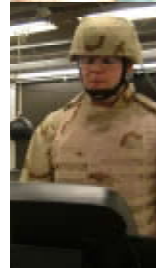
Military Biomechanics Research

- Load Carriage
- Mechanical stress/strain injury
- Computer modeling – injury prediction



Cognitive Performance, Decision Making and Judgment

- Vigilance studies – marksmanship
- Decision/judgment analysis – EST 2000
- Cognitive assessment
- Brain imaging



Injury Epidemiology

- Acute & chronic musculoskeletal injuries
- Heat injury susceptibility
- Anthropometric statistics
- Disability – musculoskeletal



Deployment Health Protection

- Pre-/Post-deployment studies – Cognitive function & physiological assessment
- Injury mechanisms & biomarker studies
- Anti-inflammatory strategies
- Computer modeling - Training, Overuse injury and Performance (TOP)



Select Recent Scientific Publications

Nindl, BC et al. *Utility of Circulating IGF-I as a Biomarker for Assessing Body Composition Changes in Men During Periods of Physical Activity, Energy and Sleep Restriction.* *Journal of Applied Physiology.* 2007 Apr 5 (In Press).

Nindl, BC et al. *Altered secretion of growth hormone and luteinizing hormone after 84 h of sustained physical exertion superimposed on caloric and sleep restriction.* *Journal of Applied Physiology.* 2006 Jan;100(1):120-8.

Sonna, LA et al. *Angiotensin-converting enzyme genotype and physical performance during US Army basic training.* *Journal of Applied Physiology.* 2001 Sep;91(3):1355-63.

Devaney, JM et al. *IGF-II gene region polymorphisms related to exertional muscle damage.* *Journal of Applied Physiology.* 2007 May;102(5):1815-23.

Friedl, KE et al. *Endocrine Markers of Semistarvation in Healthy Lean Men in a Multistressor Environment.* *Journal of Applied Physiology.* 2000 May;88(5):1820-30.

Military Performance Division Products

TB MED 592 – Prevention and Control of Musculoskeletal Injuries Associated with Physical Training

