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

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
(4,300m)

Physiology / Biochemistry & Molecular Laboratories

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Select Recent Scientific Publications

Cheuvront, S.N., et.al. *Hypohydration Impairs Endurance Exercise in Temperate But Not Cold Air.* **Journal of Applied Physiology.** 99:1972-1976, 2005.

Fulco, C.S., et.al. *Carbohydrate Supplementation Improves Time-Trial Cycle Performance During Energy Deficit at 4300 M Altitude.* **Journal of Applied Physiology.** 99:867-876, 2005.

Leon, L.R., et.al. *Time Course of Cytokine, Corticosterone and Tissue Injury Responses During Heat Strain Recovery.* **Journal of Applied Physiology.** 100:1400-1409, 2006.

O'Brien, C. et.al. *Glycerol Hyperhydration: Physiological Responses During Cold Air Exposure.* **Journal of Applied Physiology**. 99:515-521, 2005.

Sonna, L.A., et.al. *Exertional Heat Injury and Gene Expression Changes: A DNA Microarray Analysis Study.* **Journal of Applied Physiology.** 96:1943-1953, 2004.

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Thermal & Mountain Medicine Division

United States Army Research Institute of Environmental Medicine

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USARIEM is the Department of Defense lead laboratory for Operational Medicine and is organized into four research divisions: Biophysics and Biomedical Modeling, Military Performance, Military Nutrition, and Thermal & Mountain Medicine.

Thermal & Mountain Medicine Division conducts research to sustain and enhance performance (physical and cognitive) and minimize medical problems associated with military operations at environmental extremes (heat, cold & high terrestrial altitude). In addition, research supports military materiel developers of clothing, equipment, food and pharmaceuticals.

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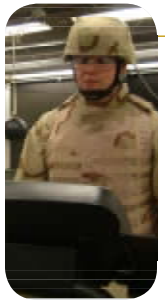
Research Areas



Heat Stress

- Acquired Thermal Tolerance
- Heat Acclimatization
- Fluid & Electrolyte Requirements
- Human Performance
- Exposure Guidelines
- Heat Strain of Clothing & Equipment
- Microclimate Cooling
- Predict & Prevent Heat Casualties

Cold Stress

- Cold Acclimatization.
- Thermoregulatory Fatigue
- Exposure Guidelines
- Nutritional Supplements
- Dexterity
- Clothing Insulation
- Microclimate Heating
- Predict & Prevent Cold Injuries

High Altitude

- Altitude Acclimatization
- Hypoxic Preconditioning
- Human Performance
- Exposure Guidelines
- Nutritional Supplements for High-Altitude Operations
- Predict & Prevent Mountain Sickness.

Pathophysiology

- Heat Injury / Stroke
- Hypothermia
- Cellular Protection
- Molecular Biomarkers
- Signaling Pathways
- Gene Expression

Military Guidance Publications

A Guide to Acclimatization, Illness & Physical Work Performance at High Altitude. 2002.

Cold Stress Control & Cold Injury Management. Department of Army Technical Bulletin, TBMED508, 2005.

Heat Stress Control & Heat Casualty Management. Department of Army and Air Force Technical Bulletin, TBMED507/ AFPAM 48-152(1), 2003.

Ranger & Airborne School Student Heat Acclimatization Guide. 2003.

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