



Military Operational Medicine Research Program Overview



MILITARY MEDICINE PARTNERSHIP DAYS
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MOMRP

US Army Medical Research and Materiel Command
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Overview of MOMRP



MOMRP is an extremely diverse program

- Supports operational health, readiness and performance of the Joint Warfighter across the Range of Military Operations and Service member life-cycle
- Manages R&D to understand novel mechanisms and develop focused solutions at the group and individual level for Precision Operational Medicine
- ~90% of MOMRP projects are linked to knowledge products that are central to the DoD Total Force Fitness (TFF) and Army Human Dimension concepts



The views expressed in this presentation are those of the author(s) and may not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

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MOMRP Mission & Focus Areas



Develop effective medical countermeasures against operational stressors and to prevent physical and psychological injuries during training and operations in order to maximize the health, readiness and performance of Service members and their Families, and support the Army F2025B and DoD Total Force Fitness (TFF) concepts.

Science

ENVIRO

Environmental Health and Protection

THREATS

Heat/Humidity Stress
Cold Stress
Altitude/Hypoxia
Toxicants
Dust and Air Pollution
Inadequate Protective Equipment/ Clothing

INJURY

Injury Prevention and Reduction

THREATS

Musculoskeletal Injury
Blast Overpressure
Blunt Head/Body Trauma
Mild Traumatic Brain Injury
Face/Eye/Spinal Injury
Acoustic Trauma
Laser Eye Injury
Degraded Visual Environment

PHYSIO

Physiological Health and Performance

THREATS

Disaggregated/Continuous Operations
Sleep Deficit and Circadian Desynchrony
Sustained Fatiguing Work (Physical/Mental)
Malnutrition
Dehydration
Dietary Supplements Misuse

PSYCH

Psychological Health and Resilience

THREATS

PTSD/Other Anxiety Disorders
Suicide Behavior
Alcohol/Other Drug Use
Co-occurring Mental Disorders
Access/Retention in Behavioral Health Care
Family Transitions and Well-being

Service Member

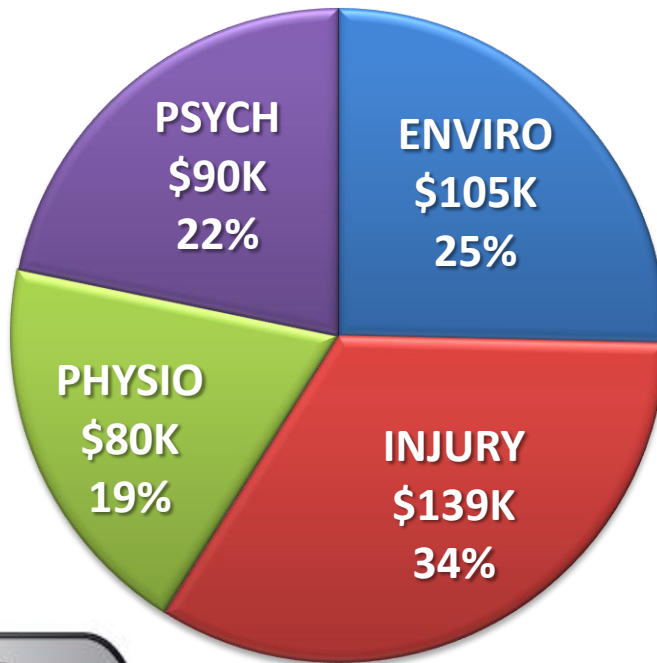


MOMRP Funding Distribution

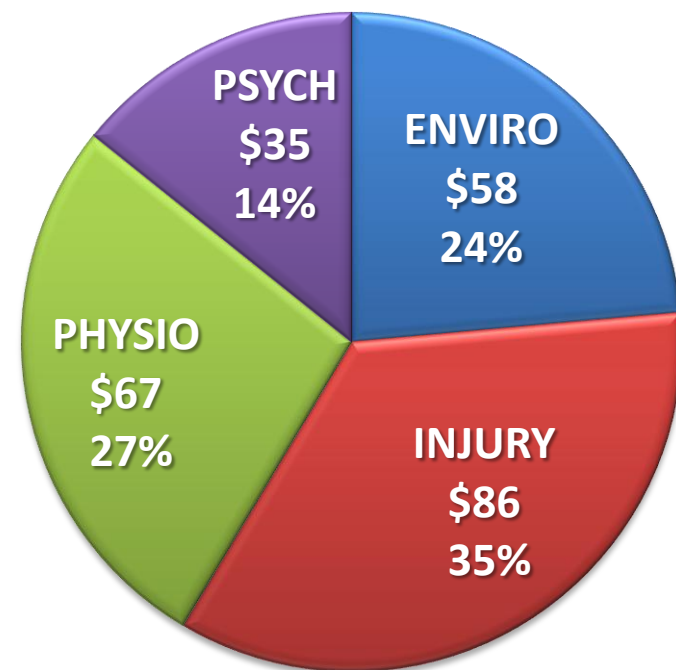


MOMRP ARMY/DHP Total Program Distribution (FY17-23)

Army Program Tasks (\$414M)



DHP (JPC-5) Program Tasks (\$246M)



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MOMRP Biomedical Research Laboratories



NHRC

San Diego, CA



Naval Health Research
Center - Naval Base Point
Loma

NAMRU-SA

San Antonio, TX



Naval Medical Research
Unit - Joint Base San
Antonio

USAISR

Ft. Sam Houston, TX



US Army Institute of
Surgical Research

59 MW

San Antonio, TX



59th Medical Wing - Joint
Base San Antonio-Lackland

USAARL

Ft. Rucker, AL



US Army Aeromedical
Research Laboratory

NAMRU-D

Dayton, OH



Naval Medical Research
Unit - Wright-Patterson AFB

711 HPW

Dayton, OH



711th Human Performance
Wing - Wright-Patterson AFB

USACEHR

Ft. Detrick, MD



US Army Center for
Environmental Health Research

BHSAI

Ft. Detrick, MD



TATRC / Biotechnology High
Performance Computing
Software Applications Institute

USARIEM

Natick, MA



US Army Research Institute
of Environmental Medicine

NSMRL

Groton, CT



Naval Submarine Medical
Research Laboratory - Sub
Base New London

WRAIR

Forest Glen, MD



Walter Reed Army
Institute of Research

NMRC

Silver Spring, MD



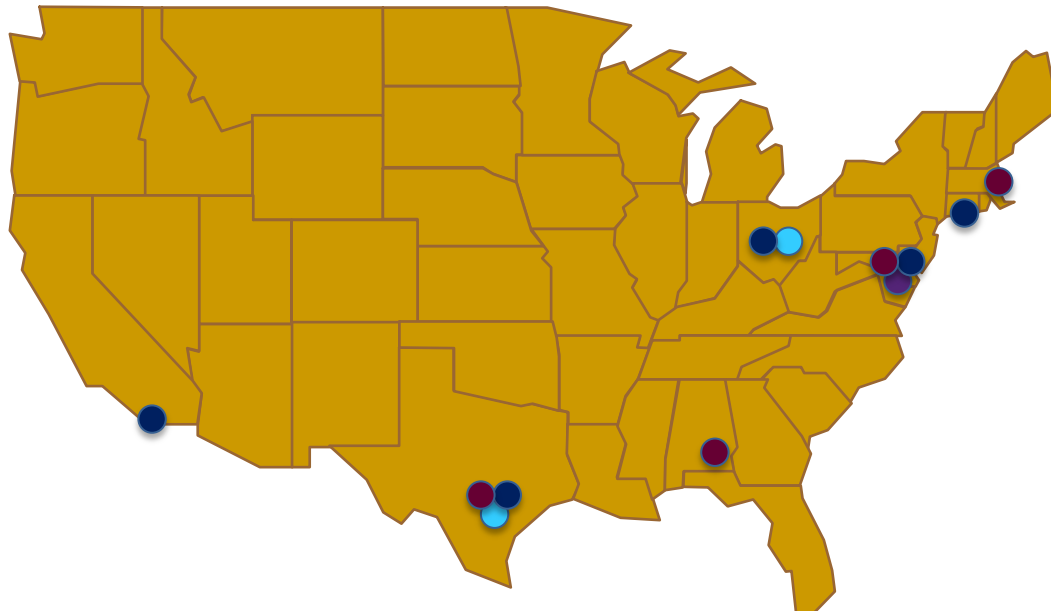
Naval Medical Research
Center

USUHS

Bethesda, MD



Uniformed Services
University of the Health
Sciences



NOTE: MOMRP provides funding and oversight to multiple Extramural (e.g. Academia, Industry) performers, as well as other non-medical DoD laboratories.

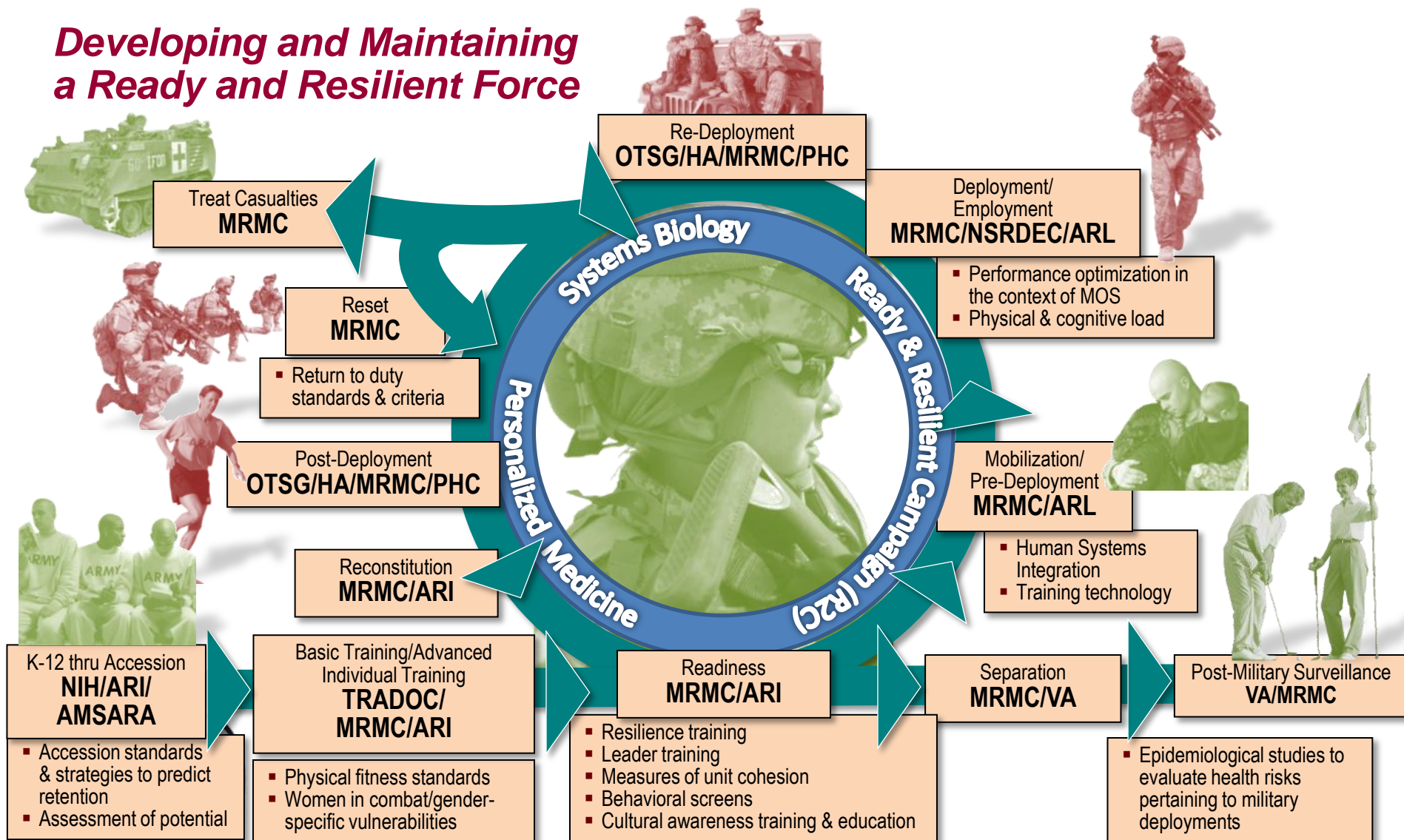
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Human Dimension/Human Performance Optimization



Developing and Maintaining a Ready and Resilient Force





Environmental Health & Protection (1 of 2)

Heat Exposure

- Performance and injury predictions
- Return to duty criteria following heat injury
- Microclimate cooling
- Technologies for optimal hydration status management



Altitude/Hypoxia Environments

- Performance and injury predictions
- Technologies to support sustained operations



Multi-environmental Stressors

Arctic Operations





Environmental Health & Protection (2 of 2)

Toxicant Exposure

- Accurate dose information for exposure to industrial chemical mixtures and material hazards
- Technologies and wearable devices to track chemical/toxic hazard exposures



Biomarker Panels to Assess SM Impact

- Toxicant environmental health hazards
- Industrial chemical mixtures found in dense urban environments



Acute and Chronic Health Effects Linked to Response-Biomarkers





Injury Prevention & Reduction (1 of 2)

Training and Operational Environments

- Improved understanding of the physiological mechanisms underlying musculoskeletal injuries
 - Advanced technologies for real-time assessments outside of the clinic
- Physical fitness training strategies to reduce the risk of injury from load, jolt, vibration, etc.
- Countermeasures to mitigate injury risk potential for exploitation in training environments





Injury Prevention & Reduction (2 of 2)

Training and Operational Environments

- Development of injury criteria for Personal Protection Equipment against blunt, blast and ballistic trauma threats
- Injury criteria and medical performance standards to protect against hearing loss, vestibular injury, and ocular facial injury
- Standards and criteria to identify when Warfighters are capable to Return-to-Duty (RTD), fully able to perform demanding tasks





Physiological Health & Performance (1 of 3)

Fatigue Mechanisms and Countermeasures

- Novel mechanisms in understanding/manipulating sleep for performance and health
- Sleep quality assessment that is objective but not necessarily tied to actigraphy/polysomnography – *What are we currently measuring and what are we currently missing?*
- Non-pharmacological manipulation of alertness and sleep
- Use of VALIDATED wearables for Sleep as an indicator/predictor of performance, safety and health
- Management of Circadian rhythms





Physiological Health & Performance (2 of 3)

Nutrition Solutions, Countermeasures and Strategies

- Nutrition solutions to optimize recovery and sustain the Joint Warfighter under extreme conditions
- Nutritional interventions for mission reset and injury recovery -- countermeasures for physical and cognitive degradation following military operations
- Protection strategies to mitigate operational stress
- Tailored, modular ration components to improve readiness





Physiological Health & Performance (3 of 3)

Physiological Basis of Resilience and Cognitive Readiness

- *Sustain robust cognitive function* in Service members under acute operational psychological/physiological stressors
- *Promote adaptability to novel, militarily-relevant demands* and improve cognitive function in Service members over the course of a training cycle or career





Psychological Health & Resilience (1 of 2)

Service Member Resilience

- Evidence-based individual and group interventions and technologies to promote Resilience
- Resilience training that incorporates key behavioral health outcomes
- Biomarkers of resilience



Behavioral Health

- Tools and technologies to better prevent, diagnose, and treat mental health issues such as suicide and substance abuse

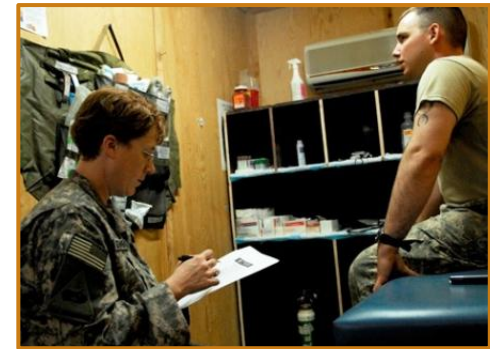




Psychological Health & Resilience (2 of 2)

Psychological and Behavioral Health

- Non-self report assessment technologies of psychological well-being and status
- Telemedicine and mental/behavioral health approaches that overcome barriers/challenges
- Identification/validation of biomarkers for Post Traumatic Stress Disorder (PTSD)
- Translational efforts on the diagnosis and treatment of PTSD





Interagency Psych Health Collaborations



- National Research Action Plan (NRAP) to coordinate psychological health research across DoD, VA and NIH (NIMH/NIDA/NIAAA)
- Army Study to Assess Risk and Resilience in Service Members (Army STARRS and STARRS-Longitudinal Study (STARRS-LS))
- Consortium to Alleviate PTSD (CAP)
- Joint review and analyses of integrated psychological health research programs across DoD, VA and NIH (NIMH/NIDA/NIAAA)
- FY13 Joint Program Announcement, “Substance Abuse Prevention and Health Promotion”, with NIDA/NIAAA/NCCAM





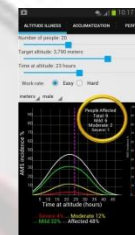
Advanced Development



RESEARCH → ADVANCED DEVELOPMENT → FIELDED PRODUCT



- ❖ Prototyping (Durability/Packaging)
- ❖ Manufacturing Evaluation
- ❖ Validation and Verification
- ❖ Logistics Analysis/Planning
- ❖ Integration with User Representatives
- ❖ User Evaluation
- ❖ Transition/integration to other PEOs/Services



DoD 5000

**Materiel Solution
Analysis**

**Technology
Maturation and
Risk Reduction**

**Engineering and
Manufacturing
Development**

Deployment

**Operations and
Sustainment**

Bridging the Valley of Death



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MOMRP



Every Service Member, Every Day



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MOMRP Contact Information



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Questions?



For additional questions after the conclusion of the conference, send an email message to usarmy.detrick.medcom-usamrmc.mbx.mmpd@mail.mil

