



WARFIGHTER

PERFORMANCE OPTIMIZATION

FORGING PEAK READINESS

Advancing Cognitive Assessment and Performance through the Warfighter Performance Optimization Framework



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Data to Decision: Optimizing Cognitive Performance for the Operational Environment
MHSRS-26-4400

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2026 Military Health System Research Symposium

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Dr. Theresa Santo and Dr. Z. Reagan Pearce have no financial relationships or conflicts of interest to disclose in relation to this presentation.



Learning Objectives

Data to Decision: Optimizing Cognitive Performance for the Operational Environment

By the end of this session, participants will be able to...

01

Explain how the modernized Total Force Fitness (TFF) framework establishes **cognition as a distinct performance domain**.

02

Identify key gaps in **cognitive assessment and performance efforts** within the Services, as highlighted by **WPO strategic documents**.

03

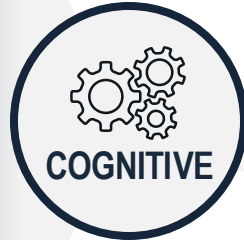
Describe how **integrated cognitive assessment and performance efforts** supports readiness, safety, and performance-related decisions.



Current Operational Reality

Every Mission is a Cognitive Mission

Cognitive capacity is the **primary mediating variable** for operational readiness.
Cognitive decisions come before any physical action.¹



EXISTING INFRASTRUCTURE

Enterprise-wide investment in human performance efforts²

Expansion of comprehensive force optimization and readiness initiatives

Rapid interest in technology and wearables for real-time physiological monitoring³

Cognitive tracking remains historically anchored to post-injury clinical protocols (e.g., TBI)⁴

Readiness Gaps & Decision Constraints

Why the Current Landscape Fails Commanders



Current cognitive assessment informative, but not yet sufficient for **operational decision-making**.



1

FRAGMENTED MEASURES

Many cognitive tools assess isolated functions rather than **integrated demands of mission performance**.^{1, 5, 6}



2

LIMITED ECOLOGICAL VALIDITY

Findings often do not translate cleanly from controlled settings to **real-world operational environments**.^{6, 8}



3

WEAK DECISION LINKAGE

Assessment results are **not standardized**, longitudinal, or tied to readiness, training, or policy decisions.^{7, 9, 10}

Current operational realities create the need for a **formal readiness framework** that prioritizes cognition as a **core warfighting capability**.



Cognition is a Readiness Competency

Institutional Mandate for Cognitive Performance



SECRETARY OF WAR
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MAY - 6 2026

MEMORANDUM FOR SENIOR PENTAGON LEADERSHIP
COMMANDERS OF THE COMBATANT COMMANDS
DEFENSE AGENCY AND DOW FIELD ACTIVITY DIRECTORS

SUBJECT: Warfighter Performance Optimization - Total Force Fitness

Achieving peace through strength demands a decisively dominant force. Our military advantage and our readiness depend directly on the performance of the Department's most critical asset: our Warfighters. We maintain our weapon systems and equipment with precision, discipline, and accountability, yet we do not currently manage Warfighter performance with that same level of rigor. That gap directly impacts readiness, increases operational risk, and limits our lethality and effectiveness.

Warfighter Performance Optimization (WPO) is the Department's approach to closing this gap. By building on and modernizing the principles of Total Force Fitness (TFF), WPO will deliver a unified operational approach to accelerate readiness, dominance, and peak performance across the Force. We will treat the Warfighter as a readiness capability, held to the same disciplined evaluation, maintenance, and optimization we demand of every asset that preserves combat power.

To maintain warfighting mastery and advance a unified WPO approach that keeps our teams cognitively sharp, physically capable, and dominant over time, the Department will:

- **Uphold Commanders' Unwavering Responsibility.** We have entrusted our Commanders with the Nation's most vital asset — the American Warfighter. The Commissioned and Non-Commissioned Officers leading our Soldiers, Sailors, Airmen, Marines, and Guardians hold direct responsibility for the physical fitness, mental acuity, and combat focus of their teams. WPO will provide leaders with the data, tools, capabilities, and resources required to understand Warfighter performance, anticipate degradation, and take necessary actions.
- **Accelerate WPO Technology and Innovation.** The Department will create a rapid pipeline to identify, validate, and scale innovations and capabilities that give our warfighting teams a decisive edge. This means aggressively fielding data analytics, wearables, and cutting-edge technologies across modernized TFF domains that improve performance in demanding operational environments, not just in a lab.
- **Elevate Cognitive Performance as Key to Readiness.** On the modern battlefield, decision-making, attention, and cognitive endurance are as critical as physical fitness. The Department will establish cognitive performance as a core occupational readiness competency, measuring and managing it with the same attention and discipline we apply to our physical standards. We will mitigate brain health risks that erode



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“

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”

THE REQUIREMENTS

UPHOLD

Commanders' Unwavering Responsibility

ACCELERATE

Technology and Innovation

ELEVATE

Cognitive Performance as a Central Readiness Enabler

INVEST

In Warfighter Lethality



Warfighter Performance Optimization (WPO)

Elevating Cognition as a Distinct Performance Domain

THE WARFIGHTER

A highly trained, predominantly young population with a 3:1 male-to-female ratio. Warfighters routinely operate under immense physical and psychological stress.

WARFIGHTER PERFORMANCE OPTIMIZATION

The continuous, integrated conditioning of the cognitive, physical, psychological, social, and spiritual dimensions of the Warfighter to sustain and maximize performance.



Warfighter Performance
Optimization Directorate

DOW-LEVEL ENABLING
READINESS PROGRAMS

SERVICE-LEVEL WPO PROGRAMS



Air Force



Army



Marine Corps



Navy



Space Force



Warfighter First
Operational Agility
Military Dominance



END
STATE

*Warfighters sustain cognitive, physical, psychological, social, and spiritual dominance across operational cycles, enabled by cohesive teams, performance support systems, and a sense of purpose. Command teams can **assess, predict, and optimize performance to maintain readiness and overmatch.***

Total Force Fitness (TFF) Framework

A Comprehensive Model for Warfighter Readiness



WARFIGHTER PERFORMANCE OPTIMIZATION

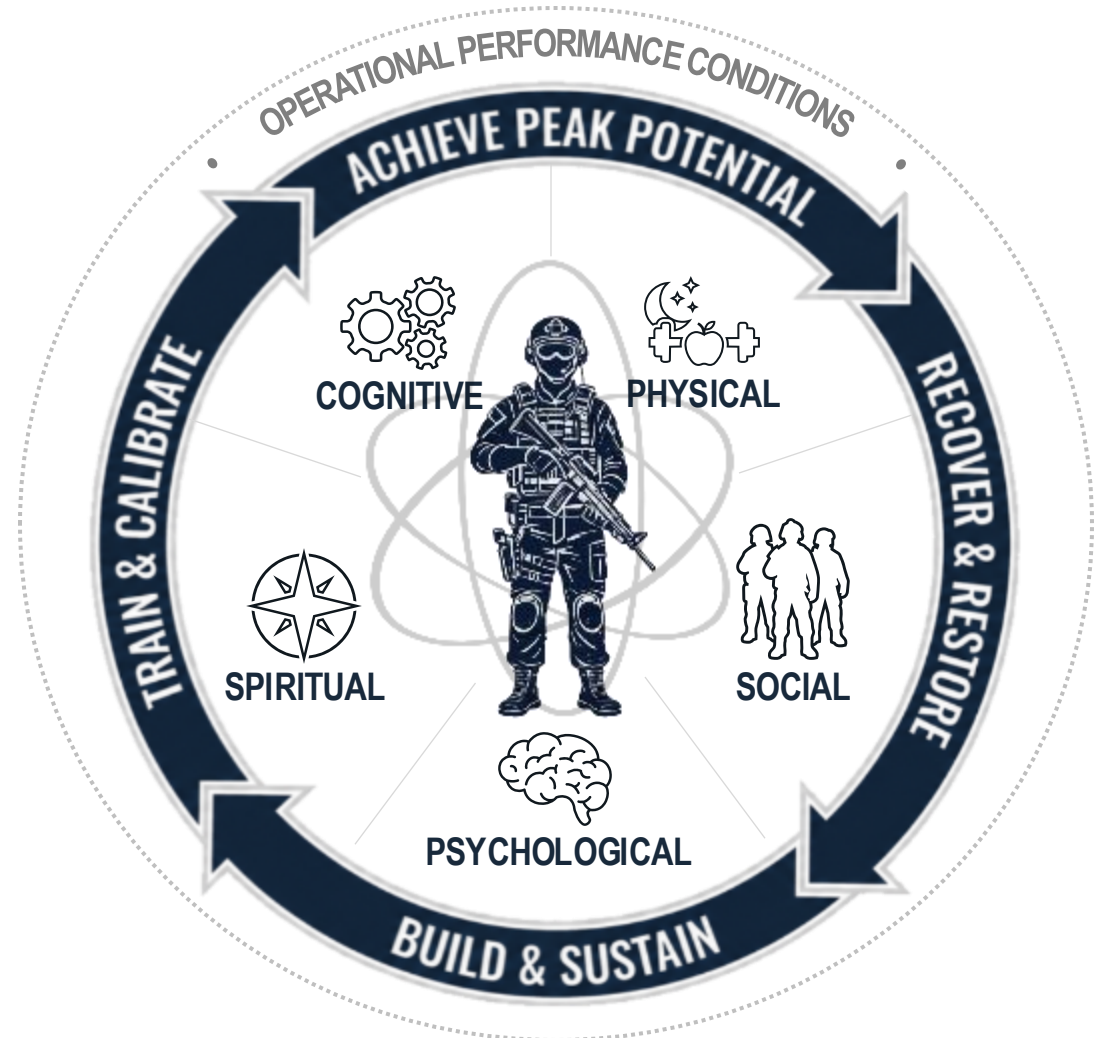
DEFEND • DETER • PREVAIL

PERFORMANCE IS MULTIDIMENSIONAL

Five interdependent, science-backed domains that define total fitness

A **four stage, cyclical process** of training, performing, and recovering to achieve peak readiness

Dynamic **external factors** (environmental, organizational, mission) that challenge and shape mission performance

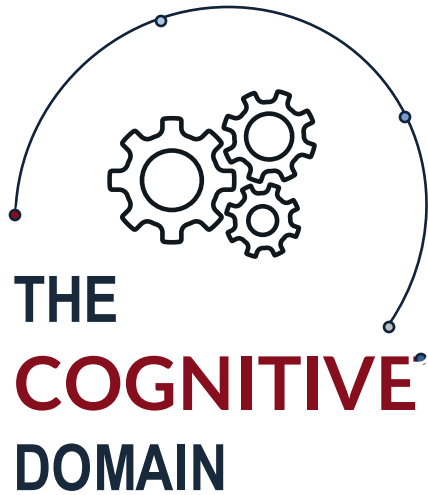




Elements of Operational Cognition

Defining the Core Elements of the Cognitive Domain

The WPO Directorate is collaborating across the Joice Force to **operationalize the Cognitive Domain**.



Optimizing how warfighters think, learn, plan, adapt, and decide.

1

Brain Health and Protection

Supporting the foundation for cognitive readiness and performance.

2

Cognitive Skills

Applying cognitive functions to solve problems, make decisions, and meet mission demands.

3

Human-Machine Interaction

Partnering with technology to enhance decision-making, speed, and mission effectiveness.

4

Performance Psychology Skills

Applying psychological skills that drive focus, resilience, and optimal performance under pressure.

5

Active Cognitive Recovery

Regulating and restoring cognitive functioning following occupational demands to preserve long-term performance and survivability.



Evidence to Action Imperative

Prioritized Area: Cognitive Fitness and Non-clinical Brain Health

EVIDENCE TO ACTION APPROACH



Literature Review

- Peer-reviewed evidence
- GAO and DoW reports
- Existing assessment approaches



WPO Enterprise Assessment

- Enterprise-wide data call
- 15 WPO programs
- First WPO enterprise baseline

Cognitive fitness and non-clinical brain health identified as a key evidence gap

INITIAL GAPS IDENTIFIED

CRITICAL PERFORMANCE DOMAIN NEED

42%

of WPO programs report a severe **operational gap** in the Cognitive Domain.

LACK OF VALIDATED TOOLS

Existing cognitive assessment measures are **frequently clinical or laboratory-based**, making them unsuitable for operational use.^{6, 10}

FRAGMENTED DATA

% of programs reporting challenges



■ Critical ■ Moderate ■ Minor ■ Not at all

Over **one-third** of WPO programs face moderate-to-critical **data and evaluation challenges**.

EVIDENCE TO ACTION IMPERATIVE

The imperative provides the evidence-based roadmap to build an integrated learning system, ensuring cognitive performance receives the same rigor as physical readiness.

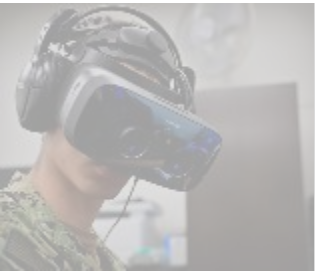


Operational Impact & Future State

Translating Cognitive Data into Decisive Operational Advantages

Through the TFF Framework and Evidence to Action Imperative, WPO is systematically closing the gap between **cognitive data collection** and **commander decision-making**.

EVIDENCE TO ACTION PRIORITIES



VALIDATED FIELD-READY TOOLS

Translating pilot projects into validated, field-ready cognitive tools to proactively mitigate safety risks.



INTEGRATED DATA ARCHITECTURE

Building an enterprise-wide data structure to provide commanders with a force-wide view of warfighter readiness.



EMBEDDED EVALUATION LOOPS

Prioritizing evaluation to ensure investments translate into high-yield interventions with proven return on investment.

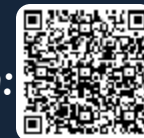


Discussion & Questions

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These are not cosmetic changes; they are *a return to what makes the American Warfighter lethal, resilient, and unbreakable*. I therefore expect every leader, from the fire team to the four-star general, to own this responsibility. *Your first duty is to forge a disciplined, lethal team ready to deploy, fight, and win whenever our nation calls*. There is no other standard – and there never will be.

— Secretary of War Pete Hegseth





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