



North Carolina Center for Optimizing Military Performance (NC-COMP)

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Physical & Mental Performance

Research

Development

Test & Evaluation

Transition

Dual-Use
Commercialization



Along 3 stages



Prevent/recovery



Maintain under
multi-stressors



Enhance beyond
baseline

Wearable Technologies/Data Analytics

Why do we need a NC-COMP?

- **People are the key to Multi-Domain Operations (MDO) & all future operations** – most current innovation efforts are focused on the equipment, not the Service member
- Defense Alliance of North Carolina (DANC) Cluster Analysis – 6 technology areas – 1) Advanced manufacturing, 2) Autonomous Systems, 3) Data and Knowledge Management, 4) **Human Performance (HP)**, 5) Materials and 6) Power
- NC is #4 in number of SMs and #5 in Manufacturing BUT only 21st in Defense contract spending

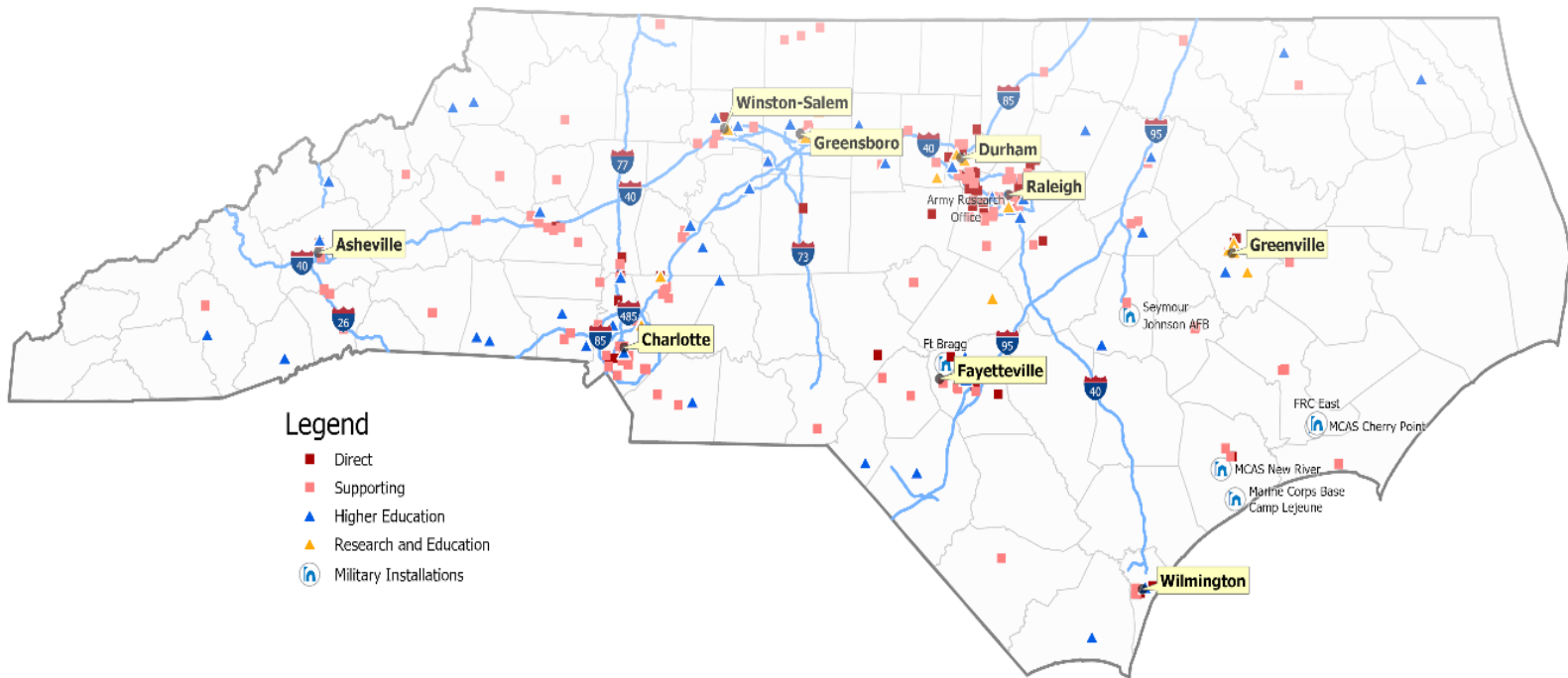


“We know more about our trucks than we do about our Soldiers”

LTG (Ret.) Patricia Horoho
USA Surgeon General

NC-COMP will be the National leader for all DoD Human Performance efforts unifying NC academic institutions, NC businesses NC bases and DoD Partners to optimize Service member physical and mental performance

Human Performance



Background

- **NC Organization Discussions:**

- UNC-System, NC Biotech, Ft. Bragg Research Institute, and RTI “plank holders”
- DANC/NC DEFTECH Office, NC Dept of Commerce ST&I conversations, NC Defense Industry Diversification Initiative (DIDI)/NC Department of Health & Human Services (DHHS), and NC Governor’s Working Group on Families

- **DoD Human Performance Efforts (examples):**

- Army Futures Command Soldier-Centered Design/Army Research Lab (ARL) and Army Research Office (ARO)
- US Army Medical Research & Development Command (MRDC)/US Army Institute for Environmental Medicine/ARL/ARI - Maximizing Human Potential –early positive feedback on NC-COMP
- US Army Medical Materiel Development Activity (USAMMDA) Health Readiness and Performance Program (Wearables)
- **USASOC/MARSOC/NSW Human Performance efforts**
- 82nd ABN DIV Human Performance efforts
- Holistic Health and Fitness (H2F)
- Others



North Carolina
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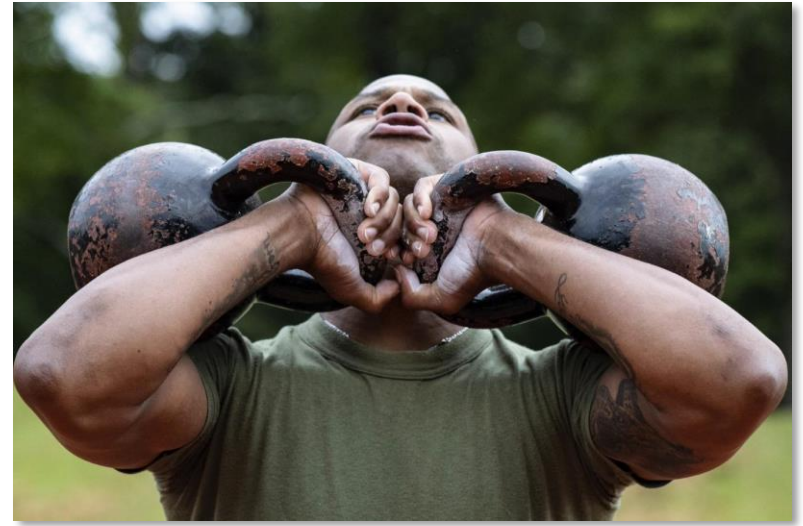
NC-COMP 5 Ws

- **What:** “coalition of the willing” who want to unify & grow efforts in improving the health and performance of Soldiers/Service members across the DoD
- **Who:** academic Institutions, Businesses and Organizations across the state uniting with DoD stakeholders, funders and partners
- **Where:** all over the state of NC in collaboration with DoD stakeholders across the USA
- **When:** first brainstorming meeting 4 AUG 20; DANC Webinar 9 SEP; follow-on meetings SEP/DEC/FEB 2021/JUN 21
- **Why:** DoD recognizes the need to improve the health and performance of Service members but has no unifying effort to do so



Human Performance Optimization Inputs

- Cognitive skill training
- Exercise
- Genomics
- Mental Fitness/Resilience Training
- Microbiome interventions
- Nutrition
- Nutraceuticals
- Pharmaceuticals
- Sleep
- Virtual Reality/Augmented Reality/Mixed Reality (VR/AR/MR) for training and other applications
- Environmental conditions
- Others

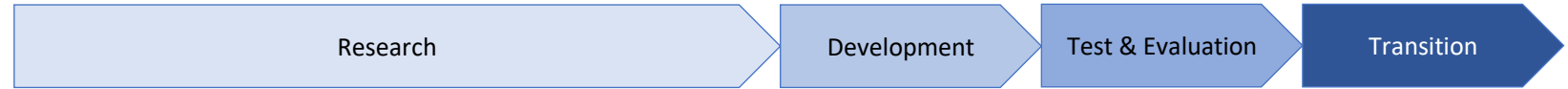


Human Performance Optimization Outputs

- Increased power/speed/stamina/strength
- Increased cognitive ability (faster decision making, more accurate decisions, greater cognitive capacity, shared cognition)
- Increased mental health & fitness/resilience (need to develop better measures – use VR/AR/MR?)
- Microbiome efficiency?
- How well can we measure these with wearables?
- What data analytic capes do we need to make the data more meaningful?
- Improved physical, cognitive and psychological health using H2F for COMPOs 1, 2 & 3
- Others



Representative NC-COMP Organizations, DoD Partners and Funders (DRAFT)

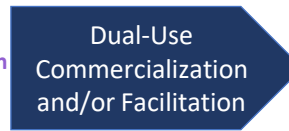


- **RTI International**
- **Fort Bragg Research Institute**
- **University of North Carolina System (16 Universities)**
- NC A&T
- Duke University
- Wake Forest University
- Atrium Health Musculoskeletal Institute
- NSF-Funded NCSU ASSIST Center
- MOTION Science Institute
- Michael W. Krzyzewski Human Performance Laboratory (K-Lab) Duke
- North Carolina Research Campus (NCRC) - Nutrition Research Institute
- App State NCRC Human Performance Laboratory
- United States Performance Center at NCRC (USPC – NCRC)
- N.C. State’s Plants for Human Health Institute (PHHI) – NCRC
- SAS Institute
- Biomojo
- TRX Elite
- **U.S. Army Combat Capabilities Development Command (CCDC) & CCDC Soldier Center (CCDC-SC)**
- **US Army Research Lab (ARL) & ARL’s Human Research and Engineering Directorate (HRED)**
- **United States Army Special Operations Command (USASOC)**
- **Joint Special Operations Command (JSOC)**
- **U.S. Army Medical Research and Development Command (MRDC) Program Areas & Labs**
- **United States Special Operations Command (USSOCOM)**
- **Under Secretary of Defense for Acquisition, Technology, and Logistics**
- **US Army Asst Sec of the Army for Acquisition, Logistics & Technology**
- **US Army Research Office (ARO)**
- **Congressionally Directed Medical Research Programs (CDMRP)**
- **US Army Forces Command (FORSCOM)**
- **Foundation for Food and Agricultural Research (FFAR)**
- **National Institutes of Health (NIH)**
- **USDA National Institute of Food and Agriculture (NIFA)**

- **Defense Alliance of North Carolina** (company members)
- SAS Institute
- Metabolon
- Valencell
- Bennett Aerospace
- BNNano Inc.
- **NSF ASSIST Center**
- Device Solutions
- **CCDC**
- **USSOCOM**
- **USASOC**
- **U.S. Army Medical Materiel Development Agency (USAMMDA)**

- **Emerging Technology Institute (ETI)**
- United States Performance Center
- **NSF ASSIST Center**
- REX
- North Carolina Research Campus (NCRC)
- **U.S. Army Aeromedical Research Laboratory (USAARL)**
- **USASOC**
- **82nd Airborne Division – Fort Bragg**
- **Womack Army Medical Center -, Fort Bragg**
- **Geneva Foundation**
- **24th Special Tactics Squadron (24th STS)**
- **United States Air Force Special Operations Command (AFSOC)**
- **Security Operations Training Facility (SOTF)**

- **Device Solutions**



- **RTI International Innovation Advisors**
- **North Carolina Biotechnology Center**
- First Flight Venture Center
- Raleigh HQ
- UNC System Office
- Digital Health Institute for Transformation (DHIT)

DoD Partners & Funders

Non-DoD Funders

Plank Holders

- **Investors/Venture Capitalists (VCs)**
- **National Science Foundation(NSF)**
- **UNC Innovate Carolina**
- **Carolina Angel Network**

- NC Department of Commerce
- NC Military Business Center
- NC Defense Technology Transition (DEFTECH) Office
- NC Defense Industry Diversification Initiative (NCDIDI)
- NC Dept of Health & Human Services (HHHS)

- NC DoD Posts/Bases**
- Ft. Bragg
 - **Camp Lejeune**
 - **MCAS Cherry Point**
 - **MCAS New River**
 - Seymour Johnson AFB

Value of NC-COMP



- Connective Tissue
 - World-class researchers, curriculum developers, trainers, evaluators, etc. across NC and with partner consortium (e.g., U of Iowa/TAMU & Rice)
 - Links across H2F sites and other DoD efforts (e.g., Maximizing Human Potential, POTFF, USASOC HPO)
 - Direct access to/input & feedback from partner operators at Ft Bragg
- Having all data in one place allows for real-time analyses, modeling, recommendations and subsequent actions
- Multiple SMEs/analyses/research allows for rapid, independent yet integrated (e.g., MSKI, Cognitive, PH, Nutrition & Sleep) delivery of curriculum and dynamic recommendations
- Comprehensive data reporting provides Common Operating Picture across entire H2F continuum
- Allows for inclusion of COMPOs 1, 2 & 3



THANK YOU

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