Warrior Performance Platform for U.S. Navy

Leveraging Best-of-Breed Human Performance Tracking and Analytics Technology To Enhance Navy's Physical Fitness, Wellness, and Nutrition Capabilities

Partners In Human Performance

JAKE REPANSHEK

Jake Repanshek is an experienced technologist with 14 years' experience leading and executing programs and projects for DoD and federal customers. As *tiag*'s Director of Solutions and Technology, he oversees *tiag*'s internal IT investments and works with senior leadership to develop and execute the company's innovation strategy. He serves as facilitator and technical solutions lead for *tiag*'s Technology and Innovations Strike Team, comprising highly specialized *tiag* innovators who develop cutting-edge technologies that enhance and elevate customer missions.

KEVIN DAWIDOWICZ

Kevin Dawidowicz is the co-founder and President of CoachMePlus. In his role as President, he is responsible for ensuring a unified strategic vision for the management team, along with spearheading partnership efforts. He boasts over 15 years of working side-by-side with strength and conditioning coaches and sports scientists to build high-performance software systems for tracking and managing human performance.

WP2 Overview
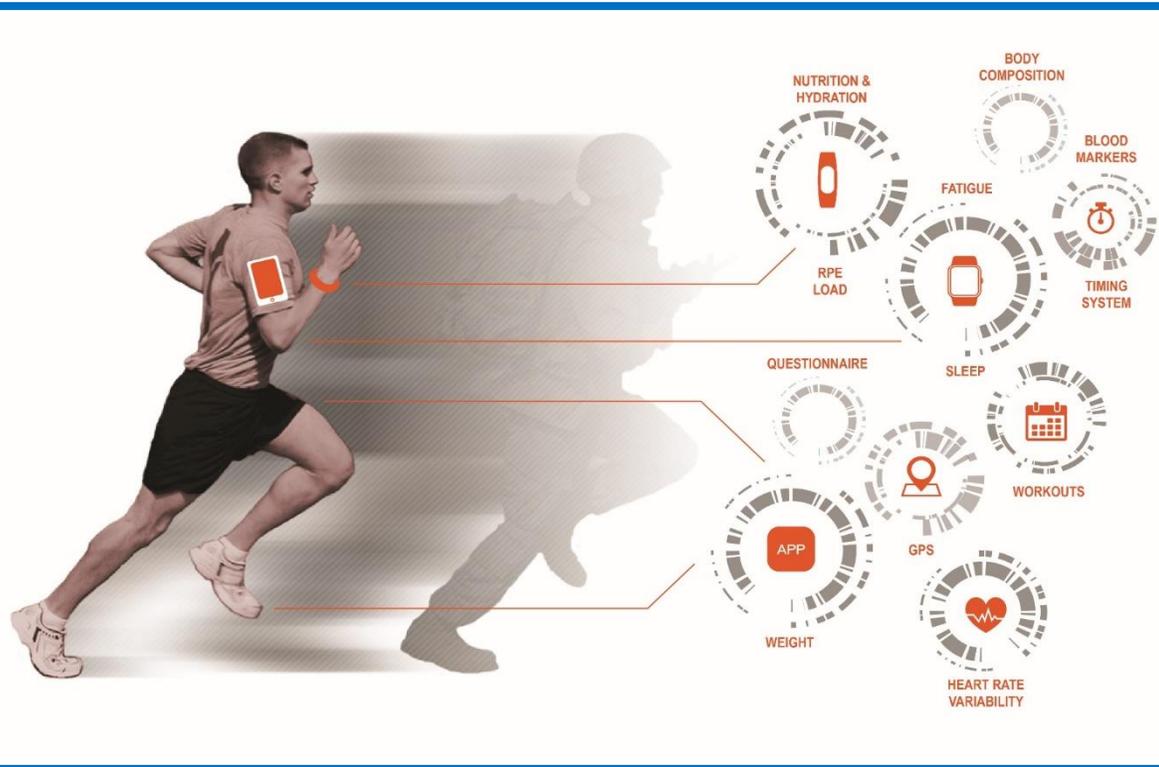
Human performance tracking and analytics to enhance physical fitness, wellness, and nutrition capabilities. WP2 platform monitors Warriors throughout the readiness cycle, informing key command decision makers to support mission and training adjustments. Holistic evaluations can be tailored to reflect each command's unique requirements. Provides the ability to uncover trends, develop insights, reduce risk, and customize training programs. Leaders measure human performance based on preparation, physical fitness, strength and capabilities. Facilitating individualized training and readiness.

Advancing Proactive Human Performance Management
- Amplifies effectiveness and advances in human-performance
- Delivers the information at the right time to the right person
- Enhances military readiness and performance
- Promotes improved performance through real-time individual assessments
- "Just in Time"…"Ready to Perform" decisions
- Secure, accreditation-ready platform

Speed of Information
- Advanced analytic capabilities
- Centralized data
- Centralized management
- Centralized workflow features
- Customized dashboards
- Increase accountability
- Secure, accreditation-ready platform
- Rapidly discover and locate outliers

Informs Performance Decision-Making
- Immediate and long-term data for "ready to perform" decisions

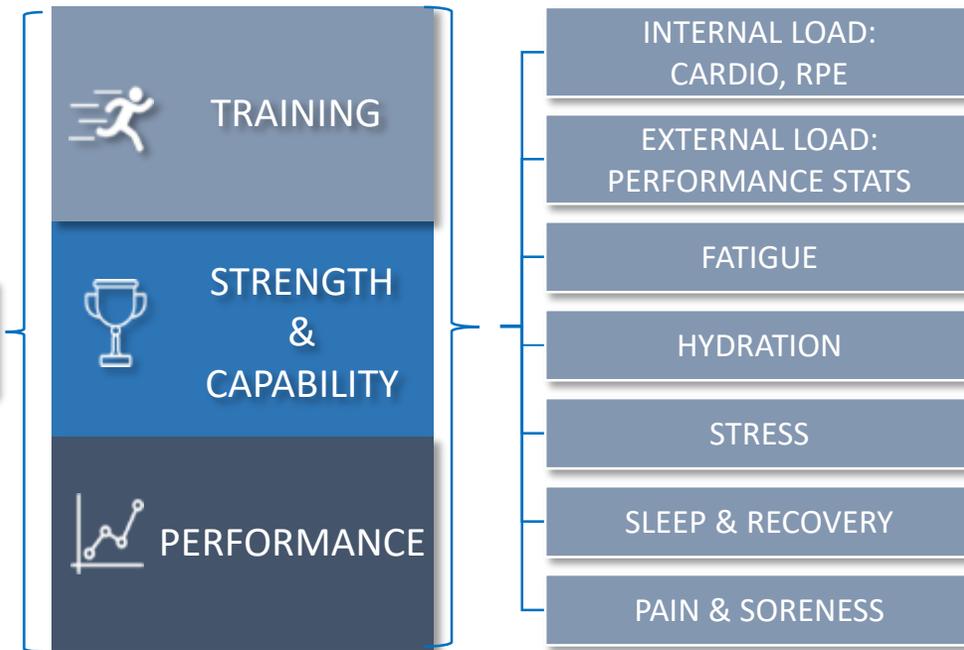**Precision vs. Subjective Assessment**
- Assesses key performance indicators of entire units and each individual warrior's capability to advance mission

Benefits

Benefits

- Warriors are operationally ready
- Take immediate action
- Store fitness tests, medical information, performance analysis, profiles, testing, training programs and training
- Reduce stress-related injuries

- Manage injuries
- Keep warriors at their best
- Enables customize training programs
- Determine risk factors
- Curtail chronic/overuse
- Centralized Repository
- Automate Reporting

Measures of READINESS

- TRAINING
- STRENGTH & CAPABILITY
- PERFORMANCE

- INTERNAL LOAD: CARDIO, RPE
- EXTERNAL LOAD: PERFORMANCE STATS
- FATIGUE
- HYDRATION
- STRESS
- SLEEP & RECOVERY
- PAIN & SORENESS

Non-Combat Injuries Reduce Readiness

- Physical Training and sports-related activities account for 90% of musculoskeletal injuries (MKSI)
- MKSI accounted for 2.4 million visits to military medical treatment facilities and $548m in direct patient care costs
- Traumatic overload and overuse in lower body accounted for 4.8 million of the 11 million annual limited duty days related to injury
- 80% of MKSI are considered overuse in nature
- Majority of MKSI in the deployed setting are non-battle related
- 34% of deployed troops experience non-combat MKSI

(Source: American College of Sports Medicine, Vol 13, No 1. Jan/Feb 2014, Consortium for Health and Military Performance and American College of Sports Medicine Summit)

**Large Population of Non-Deployable Soldiers**

- As of late 2015, Army Active component had 50,000 non-deployable Soldiers
- Represents ~10% of total active force
- "Having 50,000 non-deployable active soldiers is comparable to three of the Army's 10 active combat divisions"
- Roughly 37,000 of the 50,000 non-deployable soldiers are unavailable for medical reasons

(Source: "Army Has 50,000 Active Soldiers Who Can't Deploy, Top NCO Says", Miltary.com, 11/15/15)

The Army estimates $4 billion is spent each year due to injuries, non-deployable Soldiers, accidents and other health-related costs.

Human Performance Self-Service Kiosk & Application

- Human Performance Self-Service Kiosk and Application, (SBIR N171-079), sponsored by the US Naval Supply Systems Command

- Builds upon core WP2 functionality, but adds:
  - Nutrition
  - Ruggedized Touchscreen Kiosk
  - Support for Austere Environments
  - Shipboard Integration
  - Data Source Integrations (Naval Operational Fuel and Fitness System, MyPlate and Go for Green)
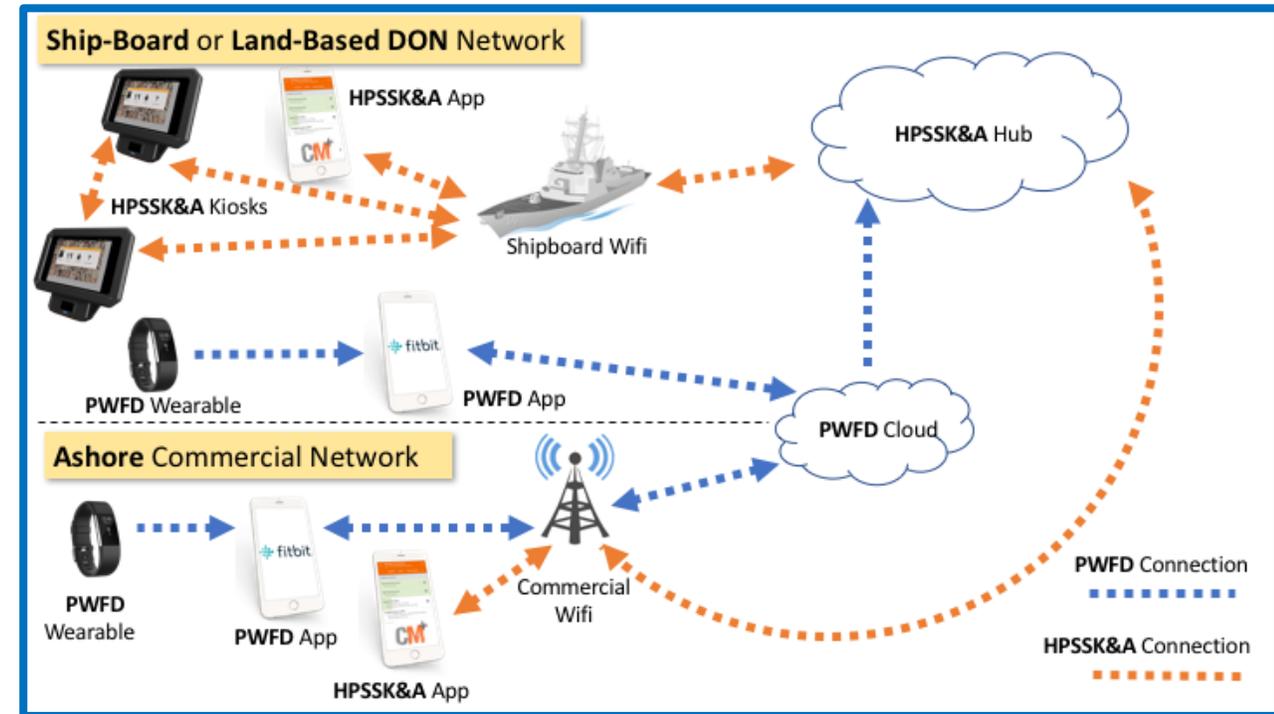
- Supports app-based access from personal mobile devices, as well as data integration from select wearables

- Completed Phase I, down selected for Phase II. Kickoff in August 2018.

Challenges and Way Forward

Challenges

- Cybersecurity Considerations
  – Cloud hosting/SaaS model
  – Personally Identifiable Information
  – Protected Health Information
  – Reciprocity between organizations
- Synchronization in Auster Environments
  – Shipboard
  – Theater
- Adoption/Buy-In

Future State

- Advanced Analytics / Machine Learning
  – Predictive vs. Reactive
- Mental/Behavior Health Applications
  – Post-traumatic Stress Disorder (PTSD) Event Detection
  – Traumatic Brain Injury Assessments
- External Integrations with Systems of Record

Questions

Backup Slides

Value Proposition For The Military Community

In America's fight against terrorist groups and ongoing threats to national security, the Military is deployed to 70% of the world's countries. Enhancing the intensive training and fitness of these warriors, now there's a technology to help ensure their endurance and survival.

Continually evaluating, adjusting and optimizing military training, performance and readiness directly correlates with . . .

ensuring the strength, endurance and survival of military units in the fight against threats to America's security.

Leveraging Applied Science and Technology

Advancing proactive performance management from training through deployment, WP2:

- Is powered by applied science and next generation human performance analytics

- Leverages the technology of 60+ wireless, wearable devices, integrates all data into one centralized platform for enhanced overall warrior analysis

- Fuses tiag's expertise in data analytics, telemedicine and cutting-edge health IT solutions

- Incorporates decades of lessons learned in military communities and professional sports arenas

- Integrates the CoachMePlus performance-optimization solution used by major teams across the NFL, NHL, MLB, NBA, NCAA, MLS, CFL and military

Measures of READINESS

TRAINING		INTERNAL LOAD: CARDIO, RPE
		EXTERNAL LOAD: PERFORMANCE STATS
STRENGTH & CAPABILITY		FATIGUE
		HYDRATION
		STRESS
PERFORMANCE		SLEEP & RECOVERY
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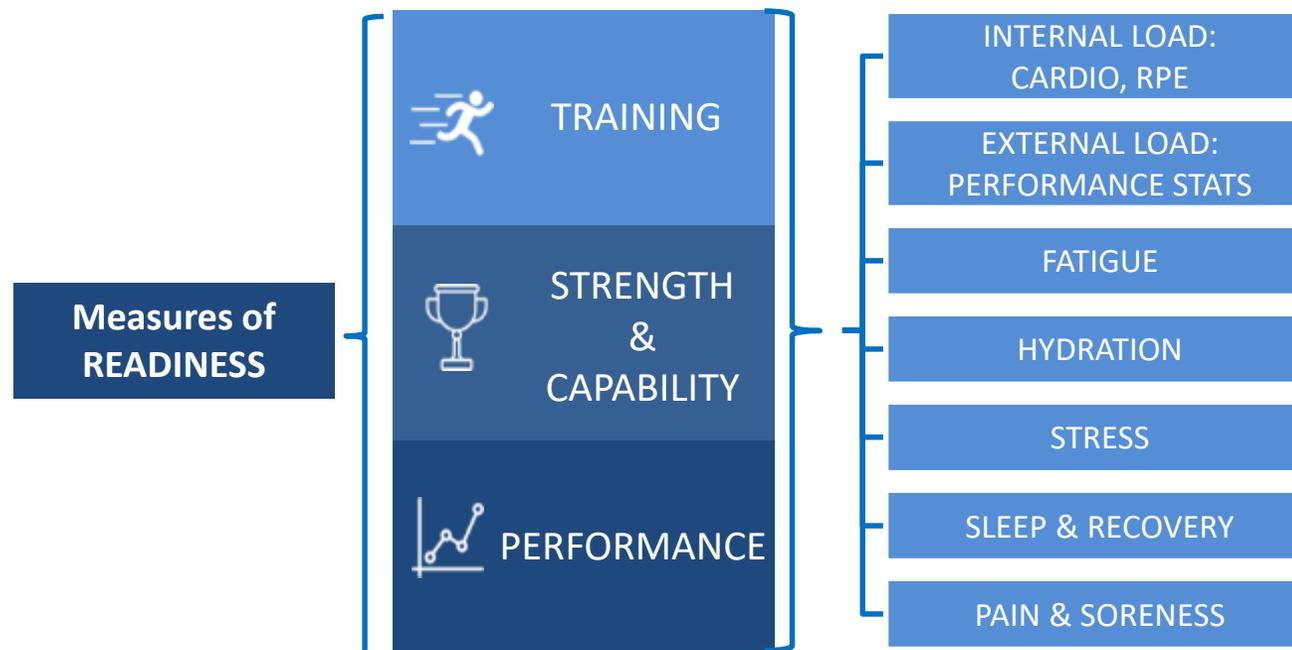
Centralized Management of Data

High-Performance Data for enhanced military readiness
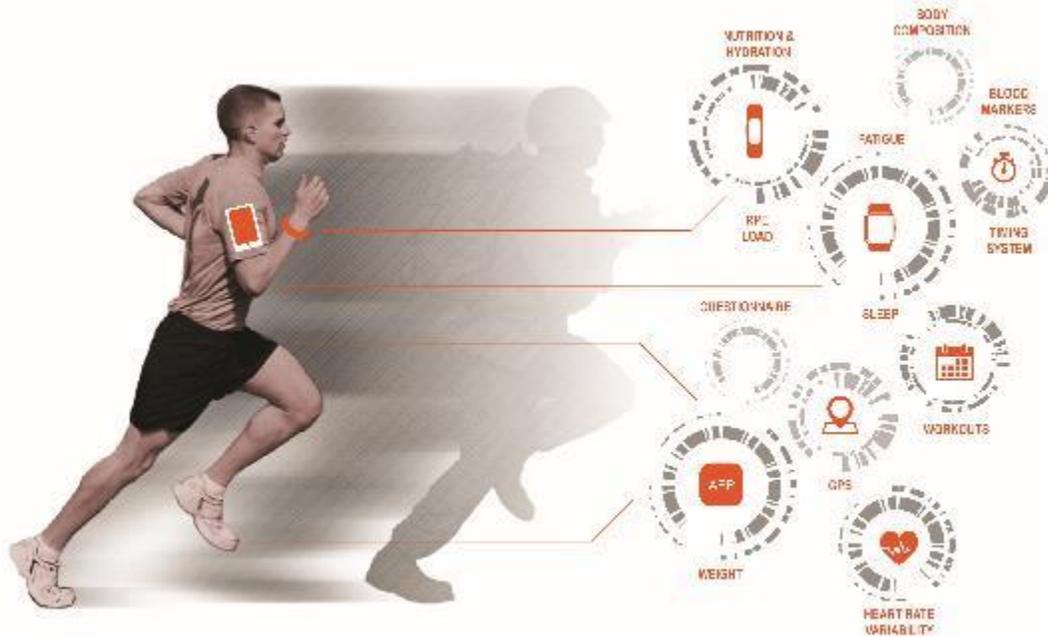
Speed of Information

- Centralized location for performance data, all in one place
- Enterprise application includes front office, warrior profiles, reporting, permissions and security features
- Centralized workflow features warrior app, unit access point and additional workflows
- Individual, customized dashboards and advanced analytic capabilities to meet specific command needs

Informs Performance Decision-Making

- Immediate and long-term data for "ready to perform" decisions

Precision vs. Subjective Assessment

- Assesses key performance indicators of entire units and each individual warrior's capability to advance mission

Individual Dashboards

SPEED OF INFORMATION— creating a "performance gestalt"
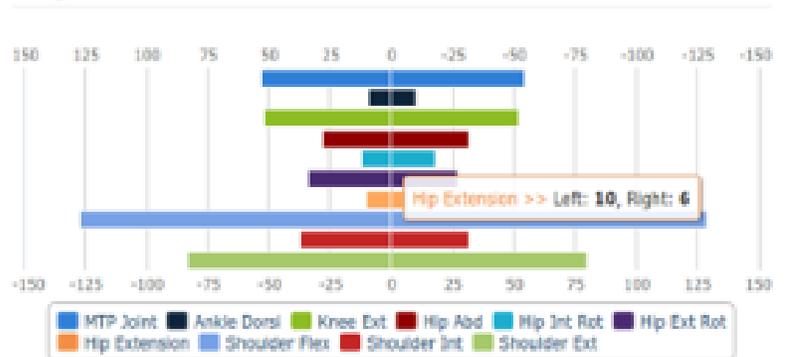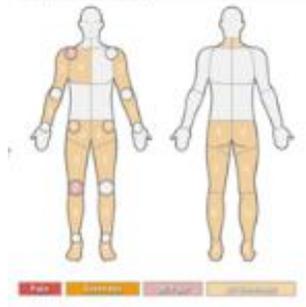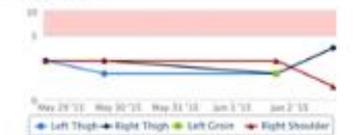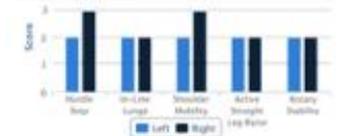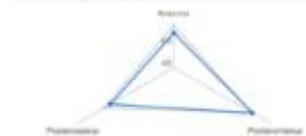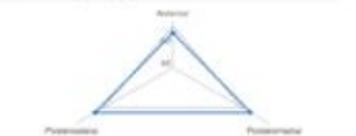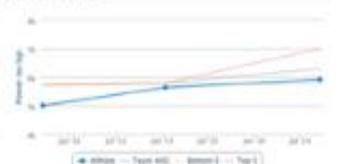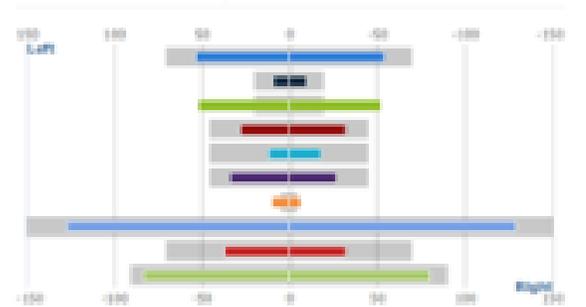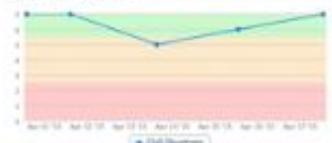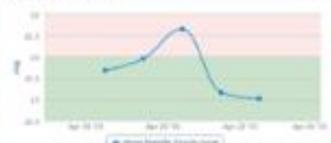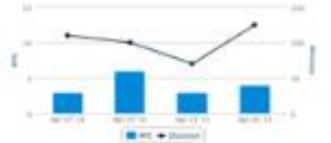
Unit Reports

SPEED OF INFORMATION— just-in-time, "ready to perform" decisions

"It allows you to stay ahead of the curve and be smarter in your decision making, which allows you to keep your players healthier and train them harder."

-Director of Olympic Sports Strength and Conditioning, Clemson Univeristy

Individual Insights
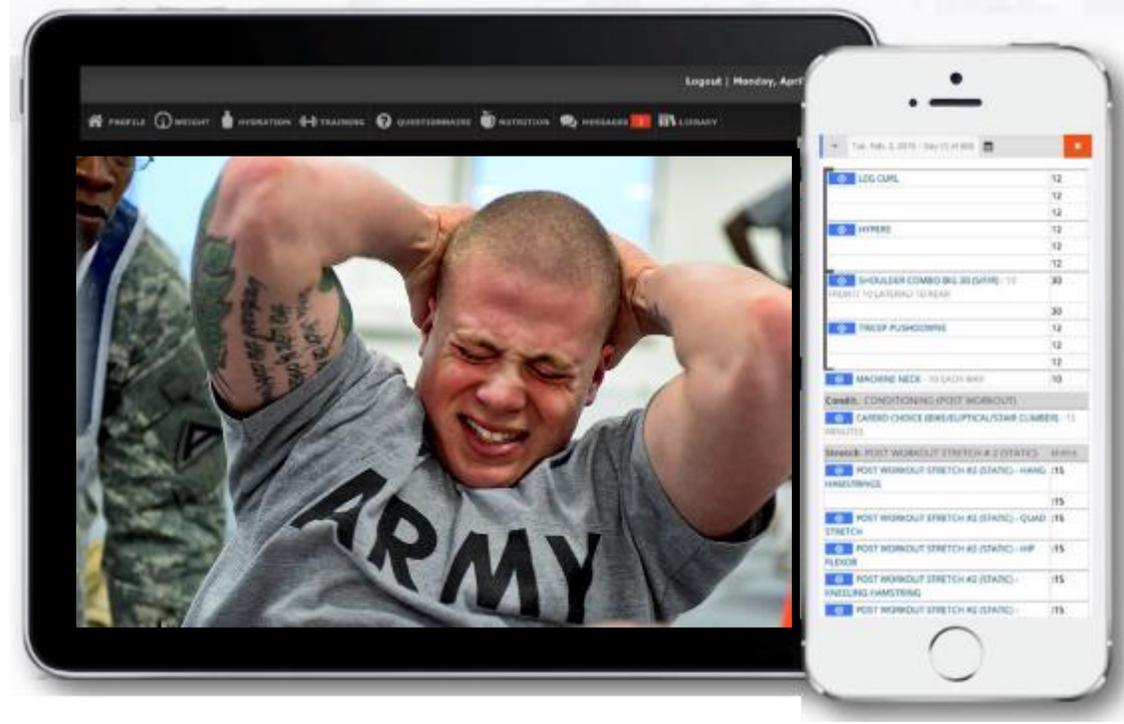
Promotes improved performance through real-time individual assessments

- Evaluates all objective and subjective warrior information
- Records all testing, resistance training and joint ROM data in one location
- Shares individual performance information back to the warrior as an educational tool
- Prevents mission injuries through increased understanding of individual metrics
- Motivates warriors with improved insights into their own performance statistics
- Highlights required adjustments from improved hydration to increased recovery time

Unit Access Point

CENTRALIZED WORKFLOW

"If you choose to integrate technology into your strength and conditioning program, you can benefit from the ability to assign and track workouts and monitor hundreds of [individuals] as well as update training programs throughout ... using phones, tablets, etc."

-Head Strength Coach, National Strength and Conditioning Association

Amplifying Training Effectiveness

Significantly enhances military readiness and performance

- Focuses analysis and insights on human performance metrics most applicable to the DoD
- Monitors key indicators of warrior fitness, health and capability, maximizing real-time and historical data within one centralized system
- Enables leadership and instructors to customize training programs that push warriors to top performance, while curtailing chronic/overuse and stress-related injuries

Amplifies effectiveness and advances in human-performance research

- Delivers capability to uncover trends, develop actionable insights, reduce risk and prevent negative outcomes
- Provides holistic evaluations tailored to reflect each command's unique requirements

Delivers the right Information at the right time to the right person

- Empowers leadership to continually evaluate, adjust and optimize training, performance and readiness of deploying units
- Informs key command decision makers to support mission and training adjustments

Accreditation ready

Robust security and permissions management system for units and individuals

Provides secure, 24/7 information access

All information is encrypted in transit and at rest

Maximizing Mission Readiness

Seamlessly integrates wearable data with applicable information

- Aligns medical and human performance staffs
- HRV and hydration data reflected on the same page
- Includes manual measurements such as girth measurements and caliper pinch testing

Allows instructors to adjust exercise programs and assign back to warriors

- Includes exercise types, videos and measurable metrics
- Tracking automatically updated as warriors enter info when completing exercises and programs
- Provides ability to communicate with individuals or units publicly or privately

Provides cross-data reporting that other systems cannot

- Precision Performance builds tests for the unit, replacing difficult-to-share spreadsheets
- Allows analysis at individual level and also against unit-wide performance standards
- Import data from across multiple commands to provide leadership with overall readiness synopsis
- Empowers leaders / instructors to spend more time with warriors and less time in spreadsheets

Cutting-edge Expertise

tiag **brings a history of transformational leadership advancing military medical science and telehealth technology**

- Leads web application efforts at DoD's National Center for Telehealth &Technology (T2)
- Delivers cutting-edge health IT solutions (e.g., VA's open-source EHR)
- Developed the Army's Research Management Enterprise System, providing autonomous big data management across numerous laboratories

Delivering end-to-end individual training and readiness solutions for DoD, WP2 leverages tiag's demonstrated military experience and technical expertise

- Quick, all-in-one-place information access empowers leaders to determine risk factors and take immediate action
- Warriors are operationally ready and less likely to sustain injuries that keep them out of the fight