

TASCTM: LEVERAGING PHYSIOLOGICAL BIOMARKERS AND SMARTWATCHES TO IMPROVE MENTAL WELLNESS AMONG SERVICE MEMBERS

Psychological stress stemming from a host of issues such as relationships, traumatic experiences, life changes and loss can negatively impact mental and physical wellness, increasing the risk of behavioral health conditions such as depression, post-traumatic stress disorder, and substance use disorders. This in turn may have a direct impact on force readiness.

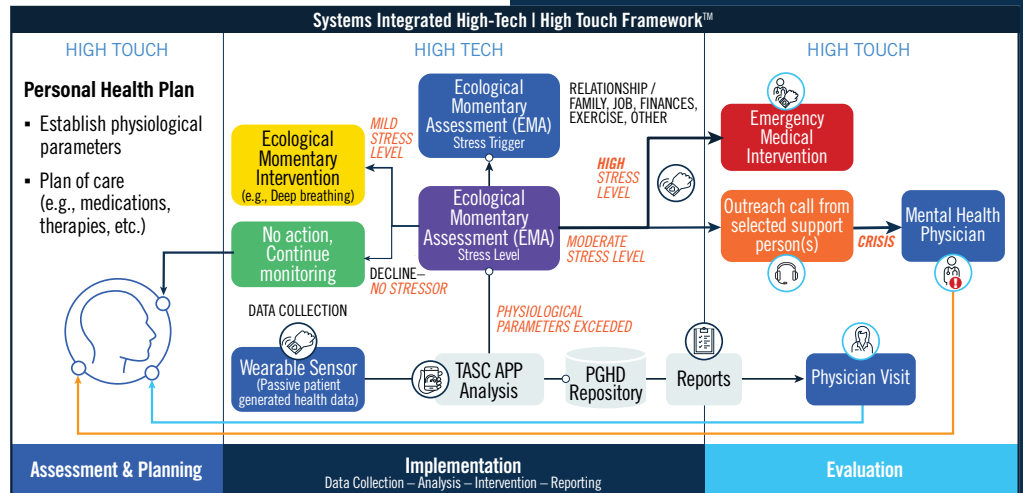
To address this critical issue, MITRE has developed the Technology Assisted Stress Control (TASCTM) application, which is a high-tech/high-touch, data-driven approach that can be used to proactively support unit-level changes to improve individual wellness and unit readiness over the long term. Most importantly, service members receive the right help they need, when they need it.

High-Tech. MITRE's Technology Assisted Stress Control (TASCTM) is an application that works with off-the-shelf smartwatches to build individualized models that identify and predict perceived stress. With real-time monitoring through the watch's sensors, the TASCTM algorithm continuously collects physiological data, ecological momentary assessments of perceived stress levels and stress triggers, includes a journaling function, and provides pre-programmed interventions when needed.

Service members understand the importance of human performance and leveraging technology to achieve peak performance. TASCTM allows them to monitor and manage stress for both performance and health without stigma.

Through web-based and mobile platforms, TASC™ provides users with a visualization of their stress and sleep scores that can also be shared with healthcare providers to track health progress between visits and unit commanders to provide a snapshot of a unit's overall mental wellness.

High-Touch. Based on the wearer's level of stress, sleep disturbance, and self-reported mood, the TASC™ app displays custom messages ranging from encouragement to maintain healthy behaviors to feedback on poor sleep quality. The app also provides practical strategies to mitigate psychological stress (e.g., a breathing exercise) based on the wearer's stress, sleep, and mood. When concerning trends of psychological stress are detected, prompts are displayed to either contact support persons (for moderate stress) or a crisis line (for high stress).



Outcomes

The TASC™ app can support mental well-being among service members by:

- Empowering them with data to monitor stress levels and manage their unique triggers.
- Allowing for an appropriate intervention based on the level of psychological stress.
- Using customized individual, healthcare provider and commander dashboards to deliver data-driven interventions at the individual and command levels.
- Providing a framework and technology that can be used for other evidence-based treatments such as cognitive behavioral therapies (e.g., stress inoculation training), mindfulness, and self-monitoring.

Next Steps

MITRE seeks to partner with government sponsors to further refine and customize the prototype, and to test the effectiveness of the TASC™ application in a larger-scale research project. TASC™ includes a Fast Healthcare Interoperable Resource (FHIR) Application Programming Interface (API) to allow for interoperability with DoD and VA electronic health records and other third-party health applications. It also leverages the Apple HealthKit that allows for health and fitness data to be pulled from other smartwatches.

MITRE can transfer the technology to a government sponsor free of charge. For information about MITRE's TASC™ App, contact Dr. Linda Desens, ldesens@mitre.org or Lionel Levine, llevine@mitre.org.

MITRE's mission-driven teams are dedicated to solving problems for a safer world. Through our public-private partnerships and federally funded R&D centers, we work across government and in partnership with industry to tackle challenges to the safety, stability, and well-being of our nation.