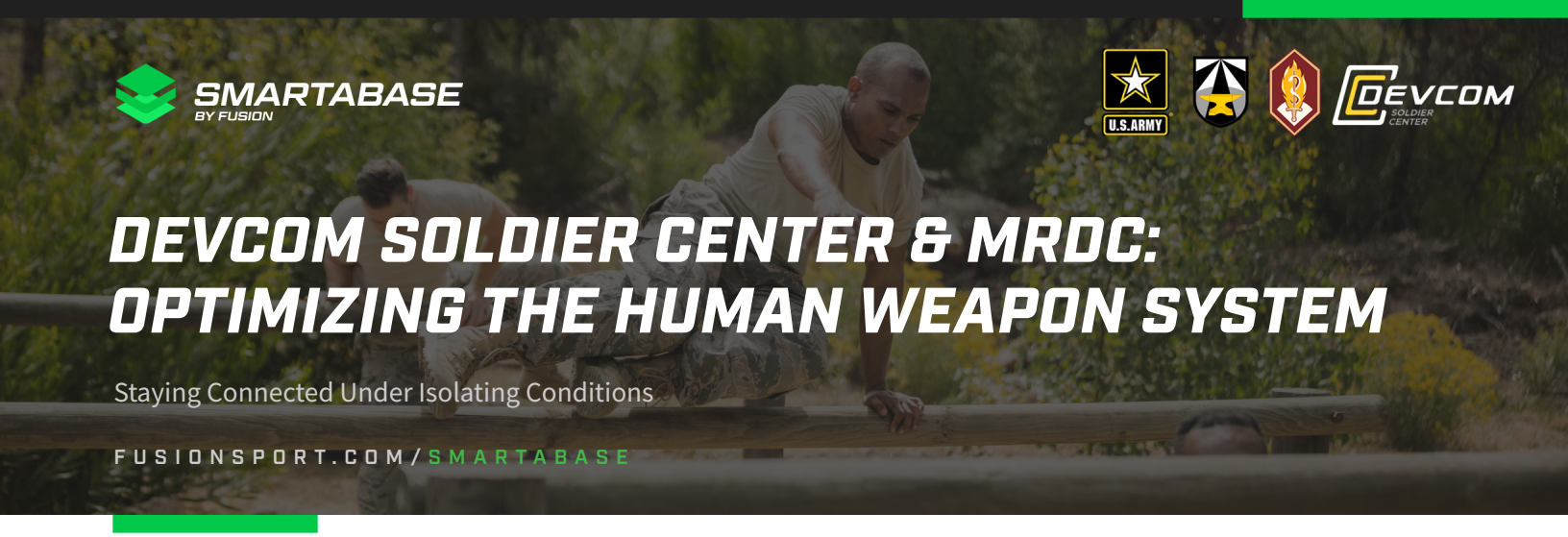

DEVCOM SOLDIER CENTER & MRDC: OPTIMIZING THE HUMAN WEAPON SYSTEM

Staying Connected Under Isolating Conditions

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ABOUT THE DEVCOM SOLDIER CENTER

The US Army Futures Command's Combat Capabilities Development Command (DEVCOM) Soldier Center provides Soldier-related research, development, testing, and evaluation of science and technology solutions. Established in 1954 and comprised of scientists, engineers, technologists, and equipment designers, their goal is to field-test innovations and develop rollout strategies to optimize Soldier performance. They proudly say that "if Soldiers wear it, eat it, sleep under it, or have it airdropped to them in theater, it can be traced back to the DEVCOM Soldier Center."

The Optimizing the Human Weapon System (OHWS) is a partnership between DEVCOM Soldier Center, the 10th Mountain Division (LI), the Army Medical Research and Development Command (MRDC), and the Army Holistic Health and Fitness (H2F) system.

OVERVIEW: THE DEVCOM SOLDIER CENTER AND SMARTABASE PARTNERSHIP

Opportunity

The DEVCOM Soldier Center, in support of and resourced by Medical Research Development Command (MRDC), and working with the 10th Mountain Division, launched the Optimizing the Human Weapon System (OHWS) project in response to the COVID-19 pandemic. The goal was to collect wearable and self-reported data to monitor and mitigate the spread of illness amongst Soldiers.

Challenge

In the initial pilot, the OHWS needed to determine the feasibility of screening 560 total Soldiers across an infantry battalion for illness and triaging when suspected cases occurred. This required the efficient, accurate, and secure capture and deidentification of Soldier data. The data needed to be disseminated and presented to the various levels of unit leadership in a meaningful way to inform decision making and change behavior.

Solution

The OHWS used Smartabase, a Tactical Human Performance Platform, to collect, centralize, and analyze health and performance data. Mobile forms were used for daily wellness questionnaires while seamless integrations captured biometric data from Polar watches and Oura rings. Personalized dashboards presented data to Soldiers and leadership while educating them on the value of the wearables and how their choices, habits, and behaviors impact physiology.

Impact

While the OHWS research project was specifically focused on monitoring susceptibility to illness, they also found that military leadership was better able to stay connected with their Soldiers, especially when on deployment where conditions can be isolating. The project helped the DEVCOM Soldier Center better understand how objective and subjective data can be combined to help leaders keep a pulse on their fighting force. The impact of the OHWS work reinforced the fact that the Human is the #1 capability the Army should invest in.

THE OPPORTUNITY

> COVID provided a tremendous opportunity to build and field-test the capability of a human performance optimization platform.
>
> - Joseph Patterson, Soldier Performance Strategist, CCDC Soldier Center

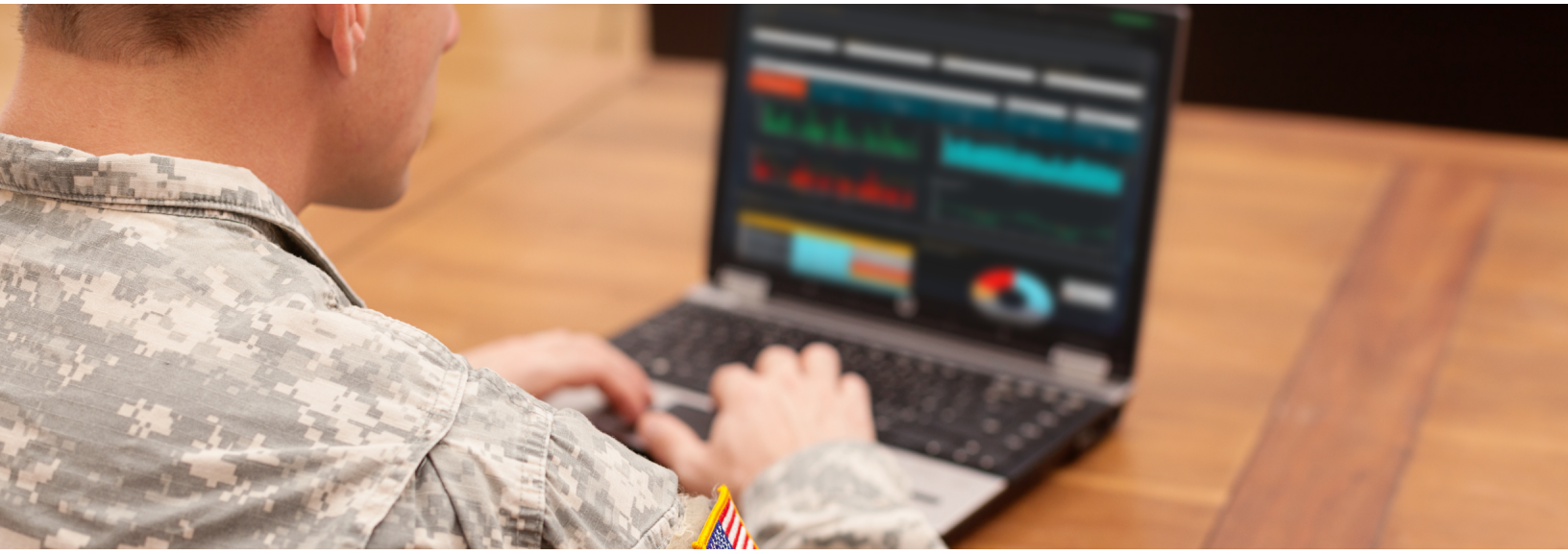
When the COVID-19 pandemic hit, funding was made available to rapidly develop and test solutions to effectively track and manage the spread of COVID amongst Soldiers. To this end, the DEVCOM Soldier Center partnered with the 10th Mountain Division and launched the Optimizing the Human Weapon System (OHWS) initiative. The aim of OHWS was to screen for illness in the ranks by looking at changes in physiological states in conjunction with subjective data from daily wellness questionnaires.

"COVID was the impetus, but flu and strep throat can illicit similar physiological changes," noted Joseph Patterson, Soldier Performance Strategist at the CCDC Soldier Center. "By combining objective and subjective data, we believed we could proactively manage the spread of illness and quickly react when needed."

THE CHALLENGE

> It's exciting to experiment with or adapt commercial tech and apply the latest scientific research. But if it doesn't improve outcomes at the scale we need, it's worthless.

The DEVCOM Soldier Center has played a vital role in the U.S. Army for decades because the research and development organization is always thinking about operational roll-out. On a practical level, a solution, no matter how innovative, must be able to work at scale. The OHWS project was no exception.



To succeed, the team needed to efficiently, accurately, and securely capture and deidentify data for 560 Soldiers across an infantry battalion, and then create a plan to operationalize it for a much larger scale. Selecting the right wearables, amongst the hundreds on the market, also posed a challenge.

Once the right data was captured and centralized, the OHWS team required an effective solution to disseminate the information and insights across multiple levels of military leadership. Battalion and Company leaders needed to see how their group was performing as a whole and identify trends over time, while restricting access to Soldier-specific data. Platoon leaders needed both aggregate and Soldier-level data to effectively monitor and manage illness in their group. "There's so much tech and data you could use," said Patterson. "But in the end, we have to be clear about the outcomes we're aiming to achieve. We need the context of training – for example, road marching for aerobic fitness – to determine exactly what we want to measure and how we'll show improvement or regression over time."

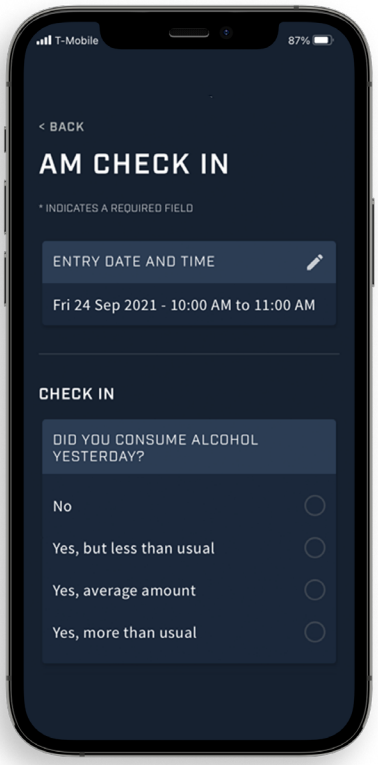
THE SOLUTION

We rapidly deployed a human performance solution that's flexible, scalable, and integrates with the wearables we're using today and may utilize in the future.

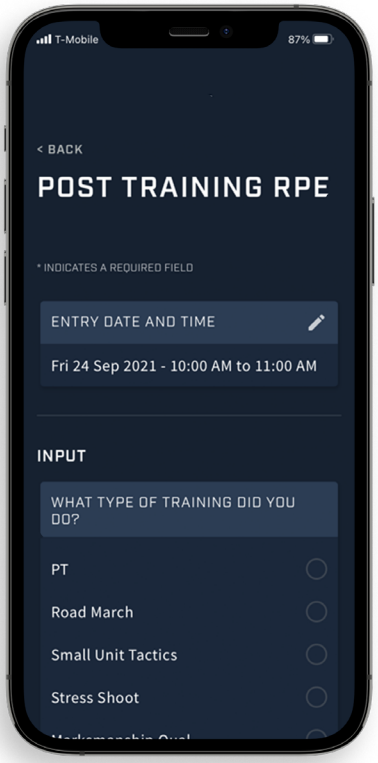
Smartabase's experience working in military environments and their flexible and robust human performance platform, Smartabase, made them the ideal partner for the OHWS initiative.

The Smartabase team worked closely with the OHWS staff to rapidly stand up the solution in 30 days. Smartabase served as the central data warehouse and provided the necessary input forms, device integrations, and personalized views of the data.

Using the mobile Smartabase Tactical App, wellness questionnaires were created for Soldiers to use for their morning check-in. After every training event, Soldiers also completed a Rated Perceived Exertion (RPE) questionnaire to capture subjective performance data.



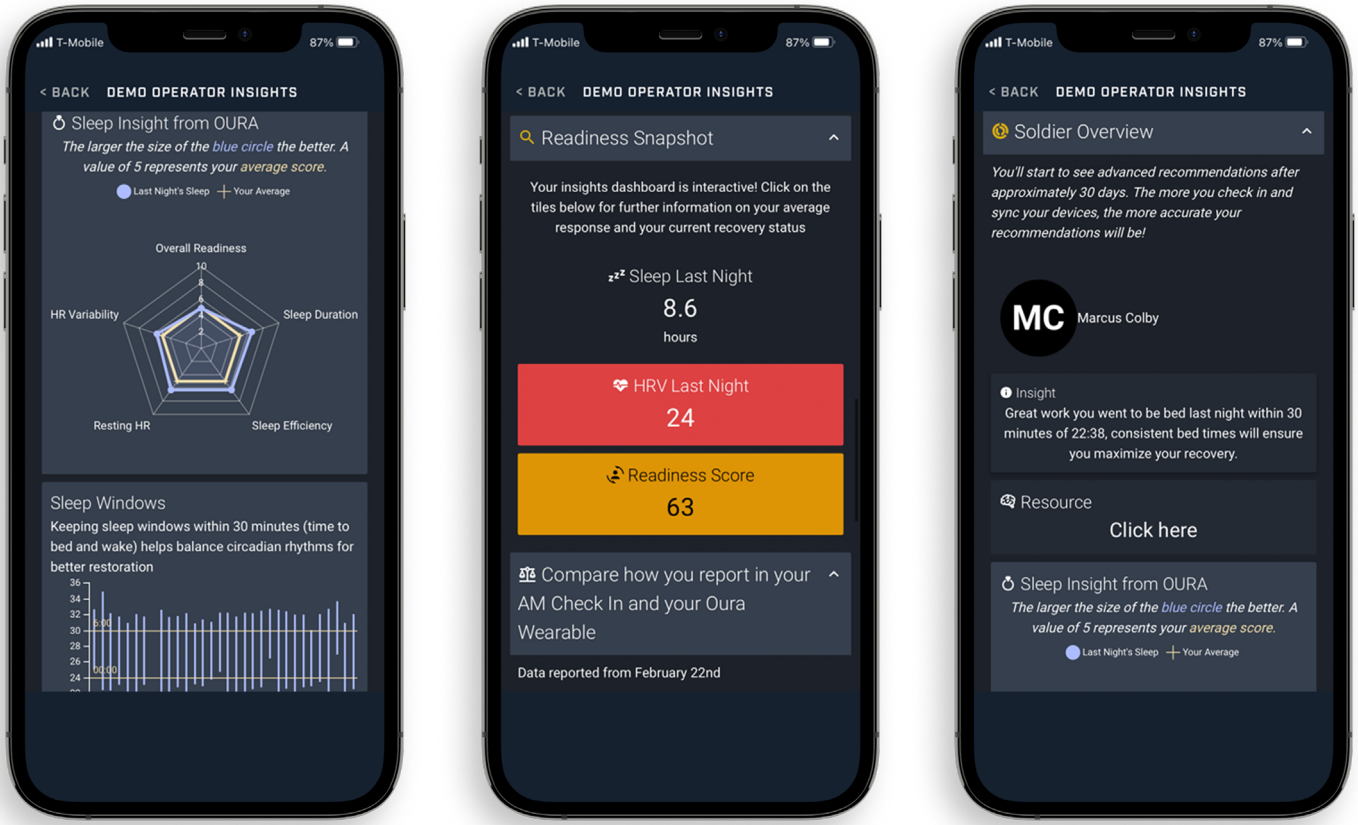
Wellness Questionnaire



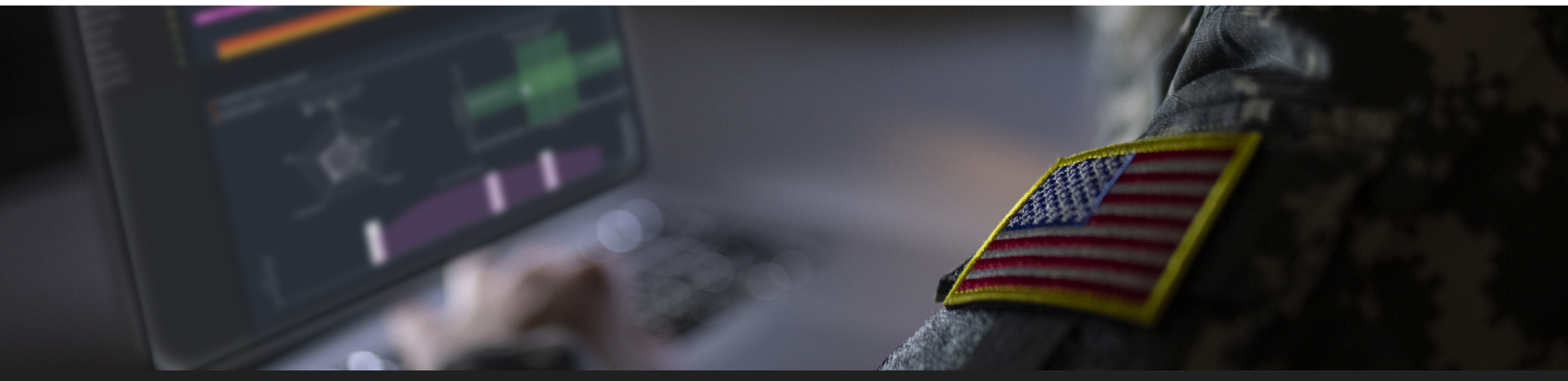
RPE Questionnaire

For wearables, the military-grade Polar Grit X watches were selected to monitor training load, reporting on daily activity such as distances covered, heart rate, and fuel status. Oura rings tracked sleep and recovery data such as hours of sleep, heart rate variability, and respiration rate. In both cases, the wearable devices captured the targeted biometric data and directly synced to Smartabase where it was combined and analyzed alongside subjective questionnaires.

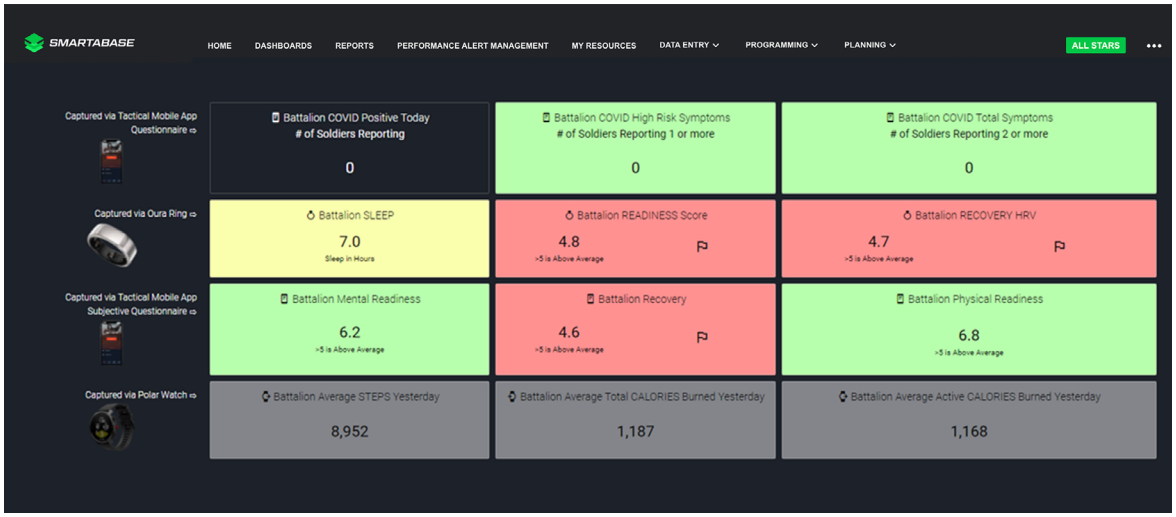
To drive compliance, it was important to make the process as simple and engaging as possible. In total, Soldiers spent 1 – 2 minutes daily entering, recording, or syncing their data. Using the Smartabase mobile Tactical Athlete App, Soldiers could easily view and interpret their own data, see how they compared to their personal norms, and track changes over time. Infographic-style resources and dynamic tips, such as a suggested sleep hygiene practices, helped educate Soldiers on health, wellness, and performance.



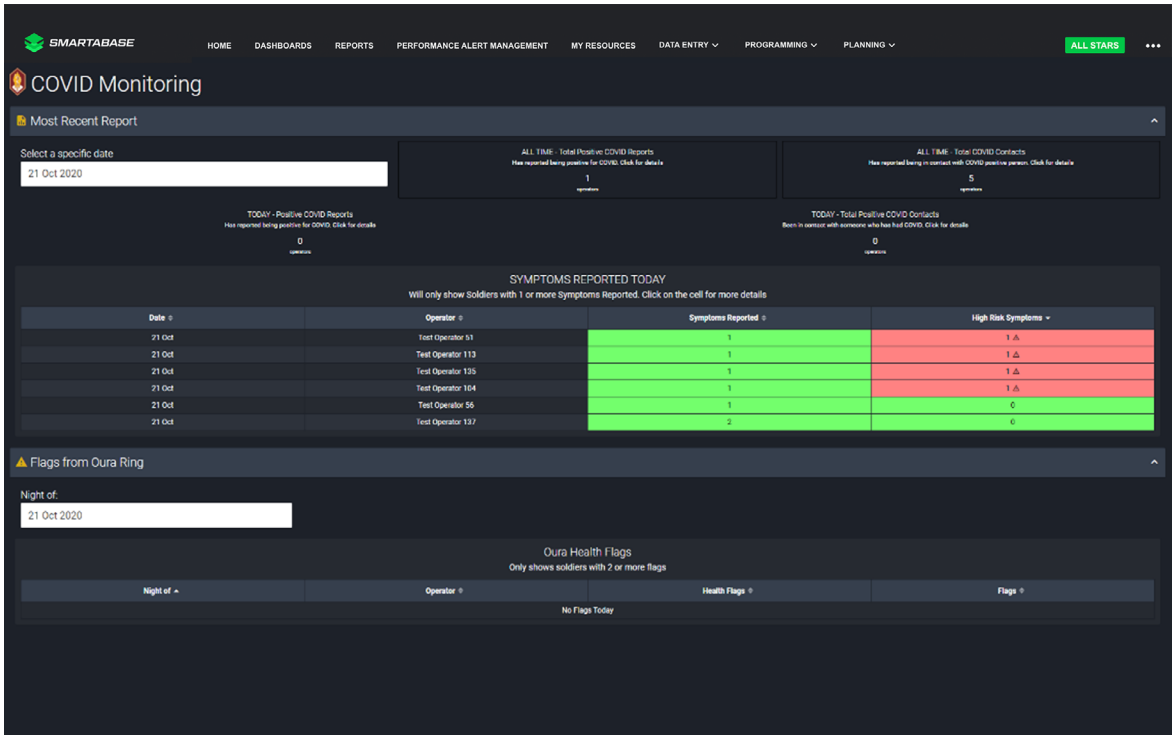
Operator Insights



Battalion, company, and platoon leadership was able to view the data that was meaningful to them in secure and customized dashboards accessible via the web or mobile device. A COVID Monitoring view provided a real-time assessment of test results and symptoms and flagged any early signs of potential illness. The Performance Monitoring view provided the leadership with insights into sleep, recovery, and training load, and flagged any concerning trends such as a below-average sleep score.



Battalion Report



COVID Dashboard

THE IMPACT

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With the right leadership, science and technology can help us keep a pulse on our Soldiers even in the most austere of conditions.

The OHWS achieved its desired outcome – to develop and test a solution for illness monitoring and mitigate the spread of COVID amongst 560 Soldiers.

As part of the research project, they identified areas that needed to be improved for a successful operational roll-out. For example, improving the consistency of Soldier’s data input by varying the frequency of reporting from daily to weekly or bi-weekly or providing personalized prompts to complete a questionnaire. They were also able to experiment with various models, such as predicting how a Soldier would self-report on mood after a night of poor sleep.

However, the most meaningful impact is best illustrated by the personal story of one particular Soldier. A platoon leader noticed a Soldier was flagged because his mood and sleep numbers were trending the wrong way. When he spoke with the Soldier, he learned that the Soldier had been dealing with some challenges back home – being deployed in an austere environment was adding to his struggle. Leadership was able to intervene and provide this young man with the help he needed.

Patterson notes, “We often focus on what engineered solutions can do to optimize Soldier performance and readiness. But every now and then we get a powerful reminder of the impact of this work can have at the human level – solidifying that the Human is the #1 capability the Army should invest in.”

ABOUT SMARTABASE

Smartabase is the leading Human Performance Platform, providing organizations with a central hub for performance, medical, health, and wellness data. Our customers include many of the world's highest profile military, government, sports teams, national sporting federations, Olympic committees, and research organizations.

To discuss how we can help you can realize the full potential of your data and improve warfighter health and wellness, contact us.

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