



SUCCESS

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

AIR FORCE PARTNERS WITH Athletes and Coaches for Evaluation of Stress and Development of Recovery Methods

CONTRACT NUMBER:

16-119-RH-02CRD1

COMPANY NAME:

The Ohio State University,
Columbus, OH

TECHNICAL PROJECT OFFICE:

Air Force Research Laboratory
711th Human Performance Wing
Wright-Patterson AFB, OH

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The Air Force Research Laboratory (AFRL), 711th Human Performance Wing (711 HPW), has signed a Cooperative Research and Development Agreement (CRADA) with the Ohio State University (OSU).

This collaboration will provide the 711th HPW access to immediate, continuous data so appropriate procedures can

be developed using Division 1 athletes that exhibit similar strength, power, and mentality as Spec Ops warfighters.

REQUIREMENT

Special Operations (Spec Ops) in the Department of Defense are elite both physically and mentally due to the training they endure. Since Spec Ops



Ohio State athlete, Craig Fada performing an OmegaWave heart rate variability and central nervous system test. This test is used to personalize recovery. (Photo Courtesy of The Ohio State University Athletics)

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personnel are not readily accessible at Wright-Patterson AFB, unique hands-on insight was required for rapid acceleration of human performance monitoring research, technology and tools for the battlefield.

TECHNOLOGY TRANSFER

Due to OSU's high quality athletic program and its close proximity to Wright-Patterson AFB in Dayton, Ohio, the 711th HPW will act as the sports science staff to the elite NCAA athletes and coaches at OSU.

The collected information results in a daily report for measuring stress and recovery states and determining the future workloads and specific recovery modalities to help athletes and ultimately warfighters. The data collected for personalized recovery are based off of real-time exertion, daily readiness and heart rate variability (HRV) technology.

"Ohio State is a very evaluation-friendly program," said OSU football coach, Urban Meyer, via Instagram. "And that means if it's not the very best – and that includes hydration, nutrition, training – then we're going to get the very best. That goes for the full-time sports psychologist to the hydration, and nutrition working directly with the Air Force."

The 711th HPW's primary intent is to assist with personalized recovery of both uninjured athletes and warfighters like Spec Ops that consistently train hard and are always prepared for a game or mission. OSU operates and maintains the technology and receives daily sports science reports and



Real-time performance monitoring technologies streaming physiological data during training. (Photo Courtesy of The Ohio State University Athletics)

analytics from AFRL researchers. The 711th HPW will determine what data should be collected and which sensors should be used to assist the coaching staff with personalized recovery methods.

PAYOFF

One technique adapted from the battlefield to OSU is flotation therapy, a very advanced form of both physical and mental recovery. In order to measure the effectiveness of this method and to fully capture the operational, objective data required for future testing of this technique, a flotation tank was installed at OSU.

"As a result of this agreement, the 711th HPW has access to all of the data collected and can directly transfer it into extremely useful analytics and reports for the coaches," said Dr. Josh Hagen, 711th HPW, Signature Tracking

for Optimized Nutrition and Training Team Lead. "In turn, we can learn and develop advanced sports science analytics and methodologies that are directly applied to the Department of Defense. That's the goal of CRADAs: each side collaborates and brings something of value to the table."

From a real-world perspective, understanding stress through HRV technology, and applying personalized recovery methods, has the potential to assist many individuals both on and off the battlefield with mental and physical recovery.

Linking technology with the mission and marketplace.

U.S. AIR FORCE TECHNOLOGY TRANSFER PROGRAM OFFICE

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