

The Defense Health Agency is a joint, integrated Combat Support Agency that enables the Army, Navy, and Air Force medical services to provide a medically ready force in both peacetime and wartime.

- **Patents**

USP 9,697,468
USP 8,977,349
USP 8,694,085

- **Title**

Collection and Analysis of Vital Signs

- **Inventors**

Jaques Reifman, PhD
Maxim Khitrov, BS
Andrew Reisner, MD
Liangyou Chen, PhD
Thomas McKenna, PhD

- **Laboratory**

DoD Biotechnology High Performance Computing Software Applications Institute (BHSI), US Army Telemedicine and Advanced Technology Research Center (TATRC)

- **Nonexclusive License Available**

APPRAISE-Hemorrhage Risk Index (HRI)

DHA Research and Development seeks companies interested in licensing this technology.

The Technology

Hemorrhage is the leading cause of preventable death on the battlefield, where historically more than 90% of combat casualties die before ever reaching a medical treatment facility. APPRAISE-HRI is a mobile health app that provides medics with the means to automatically triage Service members for hemorrhage risk after a physically traumatic event and stratify casualties who need immediate attention and emergency evacuation. APPRAISE-HRI offers the unique capability to automatically integrate and extract information from standard vital signs in a systematic and reproducible manner, to improve situational awareness and help medics identify the most severely injured casualties. The device's risk score is easy to interpret and the use of standard vital signs will minimize training and facilitate dissemination.

Applications

This technology has applicability in multiple market segments:

- Military medicine (FDA cleared for US military use)
- Potential use by paramedics in civilian mass casualty events
- Other potential Emergency Medical Service uses

Highlighted Benefits

- AI algorithm trained and validated for FDA 510(k) clearance.
- License includes use of FDA regulatory information and software.



The Defense Health Agency is a joint, integrated Combat Support Agency that enables the Army, Navy, and Air Force medical services to provide a medically ready force in both peacetime and wartime.

- **Patent**
PCT/US2018/062916
filed 28 Nov 2018

EP Application No. 18884178.7, entered 11 June 2020

- **Title**
Individualized Heat Acclimation Tool and Method

- **Inventors**
Mark J. Buller, PhD
Simon Delves, PhD

- **Laboratory**
US Army Research Institute of Environmental Medicine (USARIEM) and UK Institute of Naval Medicine

- **Nonexclusive License Available**

Individualized Heat Acclimation Training Tool (IHATT) & ECTemp

DHA Research and Development seeks a partner interested in commercializing this technology.

The Technology

This technology was developed in collaboration with the UK Institute of Naval Medicine to meet a common need. Adjusting physiologically from a cold or moderate climate to a hot climate can take several weeks. The un-acclimated are at a greater risk of succumbing to exertional heat injury (EHI), especially during vigorous exercise in a new hot environment. With an individualized heat acclimation training tool, purposeful and faster heat acclimation can be achieved through exercising.

Used as a smart phone/smart watch app that can layout a daily heat-acclimation exercise training protocol. Exercise intensity is set by the app based upon physiological feedback to promote safer acclimation.

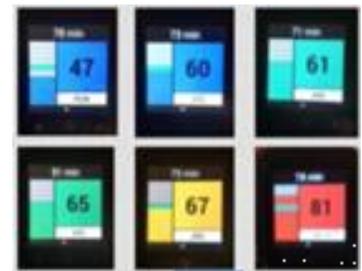
Application

This technology has applicability in multiple market segments:

- Safety Products for first responders
- Athletes/Sports Industry – training tool for summer, hot environments
- Clinic/Research

Highlighted Benefits

- Safe individualized acclimation routine
- Exercise bout acclimation efficiency gauge
- Acclimation “fuel gauge”
- Automatically adjusts for fitness to promote safe, fast heat acclimation.
- Uses body core temperature, skin temperature, and heart rate.
- Compatible with *ECTemp*, a technology for continuously and accurately monitoring body core temperature using heart rate data. *ECTemp* is available for licensing from USARIEM with or without *iHATT*.



The Defense Health Agency is a joint, integrated Combat Support Agency that enables the Army, Navy, and Air Force medical services to provide a medically ready force in both peacetime and wartime.

- **Patent**

US 11,241,194 issued 8 Feb 2022

- **Title**

Method and System for Measuring, Predicting, and Optimizing Human Cognitive Performance

- **Inventors**

Jaques Reifman
Jianbo Liu
Nancy Wesensten
Thomas Balkin
Sridhar Ramakrishnan
Maxim Y. Khitrov

- **Laboratory**

DoD Biotechnology High Performance Computing Software Applications Institute (BHSI), US Army Telemedicine and Advanced Technology Research Center (TATRC)

- **Nonexclusive License Available**

2B-Alert

DHA Research and Development seeks a partner interested in commercializing this technology.

The Technology

2B-Alert is a software app that can be used to optimize cognitive performance and alertness levels at desired times of the day. The app's user-friendly interface allows for user evaluation of the effects of caffeine consumption and/or nap schedules to optimize future performance at the desired times. The app includes a visual reaction time PVT test, which is the gold standard for estimating cognitive performance. An intuitive graphical user interface allows the user and, if desired, others such as a supervisor or safety officer, to view predicted cognitive performance levels at desired future times.

Application

This technology has applicability in multiple market segments:

- **Consumer Products** - added functionality for existing activity tracking and sleep monitoring devices (e.g., alertness test and nap/caffeine planning tool)
- **Industry** – safety tool for airlines, railways, manufacturing plants, etc.
- **Clinic/Research** - tool for pharma to study dosage impact on alertness and cognitive performance, tool for collecting additional objective data for sleep labs, etc.
-

Highlighted Benefits

- Provides 30-50% Force multiplier (alertness increase)
- Customized interventions optimize benefits of caffeine by 40%



The Defense Health Agency
is a joint, integrated
Combat Support Agency
that enables the Army,
Navy, and Air Force
medical services to provide
a medically ready force in
both peacetime and
wartime.

- **Patent**
not yet available
- **Filed/Issued**
US01-PRI: 63/322,448
- **Title**
not yet available
- **Inventors**
Adam Potter, PhD
David Looney, PhD
Karl Friedl, PhD
- **Laboratory**
US Army Research
Institute of Environmental
Medicine (USARIEM)
- **Nonexclusive License
Available**

3D Body Composition

DHA Research and Development seeks a partner interested in commercializing this technology.

The Technology

In 2019 home fitness caught up with commercial gyms, splitting the market 50/50. The CDC however states the estimated annual medical cost of obesity in the United States was nearly \$173 billion in 2019 dollars. Something more is clearly needed for both home and commercial fitness markets. Researchers at the US Army Research Institute of Environmental Medicine have invented a unique, non-invasive **method for predicting human body composition as well as bone, fat, and lean mass**. Predictions are made using three dimensional images of real or computer-generated human bodies. In one iteration this technology can be built into a home scanner in a smart household mirror.

Application

This technology has applicability in multiple market segments:

- **Consumer products** - home workout for athletes, fitness trainers
- **Health facilities** and clinical rehabilitation centers
- **Clothing designers**
- **Sports teams** - professional and universities

Highlighted Benefits

- Increased ability to understand lean muscle/fat mass percentage
- Reinforce fitness and health goals

