



## **Defense Health Agency (DHA) Clinical Communities Speaker Series**

### **2024 MAY CCSS: Bridging Gaps and Building Resilience in Primary Care**

#### **S05: Managing Musculoskeletal Injuries: Lessons learned from the Air Force's Special Warfare Human Performance Support Group**

##### **Resource List**

The Centers for Disease Control and Prevention (CDC) has developed [Musculoskeletal health programs \(2022\)](#) with The National Institute for Occupational Safety and Health (NIOSH). The mission of the NIOSH Musculoskeletal Health Program is to reduce the burden of work-related Musculoskeletal disorders (MSDs) through a focused program of research and prevention that protects workers from MSDs, helps management mitigate related risks and liabilities, and helps practitioners improve the efficacy of workplace interventions. The Program collaborates with the NIOSH Center for Workers' Compensation Studies (CWCS) on identifying industries with high risk for musculoskeletal disorders and determining effective interventions for reducing the risk of musculoskeletal disorders. In addition, the Program collaborates with the NIOSH Center for Occupational Robotics Research (CORR) and the NIOSH Center for Direct Reading and Sensor Technologies (NCDRST) on coordinating research projects focusing on emerging technologies for MSD prevention and providing assistance in making industry standards and guidelines.

The physical demands of military service place soldiers at risk of musculoskeletal injuries and are major concerns for military capability. The paper, [Maintaining soldier musculoskeletal health using personalized digital humans, wearables and/or computer vision \(2023\)](#) outlines the development new training technologies to prevent and manage these injuries. Recent work has shown that laboratory-quality biomechanical measurements and modelling can be performed outside the laboratory with a small number of wearable sensors or computer vision methods. The next stage is to combine these technologies into well-designed easy to use products.

The aim of the article, [The use of wearable assistive technology to increase soldiers' effectiveness \(2020\)](#) was to identify the most common physically demanding activities performed by soldiers and to identify target use cases that may benefit from the implementation of wearable assistive technology. A list of physically demanding tasks performed by Australian soldiers was clustered to identify the most common physically demanding activities. The clusters were created based on scenario and context where the task could be performed, the predominant physical capacity required to complete a task, the number of people involved in a task and details on the body worn clothing and equipment. Lifting and marching tasks were found to be the most common activities performed by soldiers. Wearable assistive technologies such as exoskeletons should target lifting and marching activities and be designed specifically for combat and non-combat applications. Design considerations should also include not only the execution of a specific task but also the different type of dresses worn during the execution of a task (e.g. combat uniform, etc.) and the main location (barracks, field) where the targeted task is commonly performed.

The [World Health Organization \(WHO\) \(n.d.\)](#) noted that mobile and wireless technologies, such as mobile phones and wearable devices, have the potential to reach millions of people and can help promote and increase physical activity and reduce sedentary behaviors that influence risk of injury. WHO is working with scientific partners and industry to learn what works and scale the reach and impact of applications and programs aimed at helping people of all ages be more active.



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### **References**

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