

Designing Technology for Special Operators: A Real-World Evaluation of Wearable Sensors

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Abstract: Battlefield airmen, soldiers, special operators, and athletes are impacted with illnesses stemming from dehydration, heat exhaustion, and a number of other physical ailments. In 2010, over 1,700 soldiers were treated for dehydration alone. Wearable technologies have the potential to offer solutions to address these problems and enhance human performance through biofeedback. However, depending on their design, they also have the potential to be intrusive in nature and negatively influence performance. Using a more ecologically-valid usability approach, we simulated a Military Operations in Urban Terrain (MOUT) mission to evaluate three different wearable technology designs. Each design enabled the collection of adequate levels of physiological data. Additionally, the designs yielded high levels of perceived usability and comfort based on surveys completed following the event. The results have informed future design and integration of the wearable technologies within the special operations community.

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