

Accepted Manuscript

Physiological state in extreme environments

Glory Emmanuel-Aviña, Kristin Divis, Robert Abbott

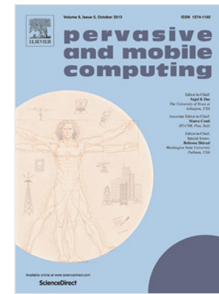
PII: S1574-1192(18)30116-0
DOI: <https://doi.org/10.1016/j.pmcj.2018.08.003>
Reference: PMCJ 960

To appear in: *Pervasive and Mobile Computing*

Received date: 7 March 2018
Revised date: 13 August 2018
Accepted date: 15 August 2018

Please cite this article as: G. Emmanuel-Aviña, et al., Physiological state in extreme environments, *Pervasive and Mobile Computing* (2018), <https://doi.org/10.1016/j.pmcj.2018.08.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Physiological State in Extreme Environments

Glory Emmanuel-Aviña, Sandia National Laboratories-California, Livermore, California, USA, gremman@sandia.gov [Corresponding author]

Kristin Divis, Sandia National Laboratories-New Mexico, Albuquerque, New Mexico, USA

Robert Abbott, Sandia National Laboratories-New Mexico, Albuquerque, New Mexico, USA

Abstract

Commercial off-the-shelf (COTS) wearable devices are used to quantify physiology during physical activities to monitor levels of fitness and to prevent overexertion. We argue that there are limitations and challenges to measuring physiological data with current state-of-the-art wearable devices, both with the hardware as well as the data itself. These limitations and challenges are exacerbated when wearable devices are used in extreme climate environments. We discuss these through empirical findings from our study where hikers are suited with wearable technologies as they cross the Grand Canyon. We discuss the performance of various wearable technologies in the extreme environment of the canyon as well as the concerns with downloaded data. These findings highlight the needs and opportunities for the wearable devices market, specifically how wearable technologies could mature to quantify performance and fatigue through real-time data collection and analysis.

Keywords: wearable devices, extreme environments, physiology, performance

Download English Version:

<https://daneshyari.com/en/article/11002603>

Download Persian Version:

<https://daneshyari.com/article/11002603>

[Daneshyari.com](https://daneshyari.com)