

Assessment of Physical Activity in Search and Rescue Operations Using Accelerometer Based Technologies.

Gregory C. May, John Burke, Sarah Colclough, Brendan Maloney, Ciaran O' Cathain, Shauna O' Connor, Stephen Ryan, Giles D. Warrington.

Helicopter search and rescue crews (SARC) operate on a 24 hour shift with crew members either sleeping on-base or at home depending on their proximity to the base. This may lead to possible variations in the level of physical activity (PA) that occurs between members of the crew. **Aim:** To investigate the levels of PA of members of the SARC during a 24 hour on-call shift using several novel sensing technologies. **Method:** Ten members of the Dublin SARC were instrumented with 2 tri-axial accelerometers (GT3X+), a Sensewear armband (SW) with an internal accelerometer (SW_{XL}) and a Sensecam with an internal accelerometer. Data was recorded for a 26 hour period during which the subjects kept a written record of their activity. Sensors were kept on during all operations, the Sensecam was the only sensor removed while sleeping. **Results:** *Within Group:* Significant differences were observed for PA ($p < 0.01$) due to the location of the sensors on the subject. *Between Home and Base:* Significant differences were seen for PA on the SW and SW_{XL} ($p < 0.01$). **Conclusion:** The location and type of sensor utilised in SARC operations appears to play a role in measurement of PA. The SW recorded significant differences in PA between SARC on-base and off-base, however the GT3X+ and SW_{XL} were no different. Further research is required to align data from the Sensecam with the sensors used in this study to determine if it is possible to measure PA in this population with the Sensecam accelerometer data while also adding visual contextual data.