Physical activity levels in acute burn patients: A pilot observational study.

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Early activity and increased exercise after acute burn is proposed to contribute to enhanced functional outcomes. This pilot observational study aimed to provide baseline data describing physical activity levels in acute burn patients and factors which influence activity. Secondly, the reliability of the activPAL in burn patients was examined.

Methods: The activPAL monitor is a uniaxial accelerometer sensitive to gravitational and segmental acceleration of the body. It provides step count; cadence in real time; and, a unique monitoring of time spent in different postures, including sitting/lying, standing or stepping. Adult burn patients at Royal Perth Hospital were recruited and patients were tested in two ways. Firstly, activity was monitored for 18+ hours per day, twice in the first week post-burn. Secondly, patients underwent a standardized treadmill test observing the actual vs recorded steps at 1-5 km/h.

Results: Nineteen serial acute patients completed the study. Baseline activity measures showed that patients spent 70% of their time lying, and only 2% standing or stepping. Increased TBSA was associated with *increased* steps with 7% increase per % TBSA ($p<0.001$). Lower limb injuries decreased step count by 65% ($p<0.001$) while surgery did not ($p=0.350$). The activPAL was reliable in distinguishing sedentary periods. There was significant variance in activPAL step count measures at speeds ≤1km/h. The Weighted Kappa test revealed 92.2% agreement ($k=0.74$, $p<0.001$) and Lin's concordance ($rho=0.88$, 95% CI= 0.85-0.92, $p< 0.001$) for speeds >1km/h. Detail of the influence of age and gender on activity is pending, and recruitment is planned to increase the sample size.

Conclusion: This pilot observation study quantified the baseline physical activity levels in acute burn patients and demonstrated the reliability and accuracy of the *activ*PAL was adequate at speeds > 1km/h.

Key Words

Acute burn; activity level; activity monitoring; surgery.

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