

COMPARISON OF HOME SLEEP MONITORING TECHNIQUES IN A CONTROL AND LOWER BACK PAIN POPULATION

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Introduction: Poor quality sleep is commonly reported by patients suffering from lower back pain (BP). However, reliable objective or subjective measures of sleep quality in a LBP population have not been extensively investigated.

Methods: Sleep quality in a control and LBP population was measured using a wrist-mounted accelerometer (ActiWatch, Cambridge Neurotechnology), a non-contact biomotion sensor (MobiSesnor, BiancaMed Ltd), and a self-reported questionnaire (the Pittsburgh Sleep Quality Index). 13 control (38 yrs±16) and 13 LBP (43 yrs±12) subjects underwent a single night of sleep monitoring in their home environment. Sleep duration and efficiency was calculated automatically by the ActiWatch and MobiSesnor systems, and the PSQI produced a subjective measurement of sleep quality.

Results: The sleep duration and sleep efficiency measured by the two objective techniques were highly correlated ($r=0.78$). There was a statistically significant difference in sleep efficiency between the control and LBP populations. The control populations tended to over-estimate the quality of their sleep (as measured by sleep efficiency), whereas the LBP population typically underestimated their sleep efficiency. Both objective measurement devices were well accepted by the participants.

Conclusions: The actimetry and non-contact biomotion sensors provide a more reliable indicator of actual sleep parameters than self-reported questionnaires.