Scientific summary (Scientific report)

The main objectives of the grant were to:

1. Determine the association between musculoskeletal disorders, joint pain, physical activity and sleep using objective physical activity (from accelerometers) and sleep measurements, including total sleep time, sleep onset latency, sleep efficiency and time spent awake overnight, sleep macroarchitecture (time in slow wave sleep, REM sleep) and sleep microarchitecture (power spectral analysis of sleep quantitative EEG [qEEG]).
2. Examine the prospective associations between sleep, and subsequent musculoskeletal disorders/ joint pain and physical activity using longitudinal data in a representative community-dwelling cohort of Australian men.

The main scientific achievements were obtaining objective measurements of sleep and physical activity and combining these with a wide range of other measurements. To our knowledge, this study is the first to combine objective measurements of both sleep (using PSG) and physical activity (using actigraphy) with self-reported joint pain and doctor-diagnosed musculoskeletal disorders to determine the association between these factors. There has also been the opportunity to conduct longitudinal analyses which have not previously been undertaken in this population. The extensive range of variables (anthropometric, sleep measured objectively and by questionnaire, other chronic conditions, objective physical activity measures and linkages with administrative databases, which includes medication use) has also allowed us to obtain an in depth picture of the relationship between activity, sleep and pain. In terms of our sleep measurements, it is the first to obtain measures of sleep efficiency, sleep macroarchitecture (time in slow wave sleep, REM sleep) and sleep microarchitecture (power spectral analysis of sleep quantitative EEG [qEEG]) in conjunction with pain and physical activity. These measures have also not been previously undertaken in association with the wide range of other information that has been collected as part of this study.

This study will enable the development of effective treatments which address pain levels by improving sleep and

The data collection phase of our study was delayed for a short time due to COVID-19. This delay, in turn, has impacted the analysis time. However, publications and presentations are currently in preparation.