Title: A review of the current use of commercial wearable technology and smartphone apps with application in monitoring individuals following total hip replacement surgery.

Shayan Bahadori[1] (corresponding author)
Sarah Collard[2]
Jonathan Mark Williams[2]
Ian Swain[1]

Email: SBahadori@bournemouth.ac.uk. Telephone: +44 (0)1202 961647

Email: SCollard@bournemouth.ac.uk. Telephone: +44 (0)1202 964328

Email: JWilliams@bournemouth.ac.uk. Telephone: +44 (0)1202 962748

Email: ISwain@bournemouth.ac.uk. Telephone: +44 (0)1202 964010

[1]*Orthopaedic Research Institute, Bournemouth University, Bournemouth, Dorset, United Kingdom.*

[2]*Faculty of Health and Social Sciences, Bournemouth University, Bournemouth, Dorset, United Kingdom.*

Guidelines:

Text in the abstract must be limited to 300 words (text over 300 words will be disqualified). References, Tables, and Figures may not be included in the abstract submission but may be included in the presentation.

I will add articles summary table to the poster if this is accepted.

Word count: 273

Background

Total hip replacement (THR) is among the most successful operations for reducing pain and improving function. However, an objective evaluation of physical function and performance status post-surgery is difficult because patients spend the majority of their postoperative rehabilitation outside the clinic and self-report to healthcare providers using subjective methods such as patient reported outcomes measures (PROMs). Moreover, discrepancies are seen when PROMs are compared to performance based function and a number of studies have suggested caution with only using subjective data as the measure of recovery. This review aims to systematically identify all studies which utilised commercially available activity monitors or smartphone apps to measure physical activity in individuals both before and after total hip replacement (THR) surgery.

Method

This review is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. A search was conducted using the electronic databases including Medline, CINAHL, Cochrane, PsycARTICLES and PubMed. Articles published in the English language from January 2000 to January 2019 were reviewed. Studies included were commercially available activity trackers and smartphone apps capable of providing feedback to the end user following THR surgery.

Results

Six studies were identified which utilised currently available commercial wearable activity monitors and smartphone apps to measure physical activity before to after THR.

Conclusion

A review of the studies found very little evidence to support long term efficacy of digital technologies in enhancing rehabilitation and patient monitoring post THR. Future work is required to establish which commercially available monitoring technology is most valuable to patients, which ones improve clinical outcomes post THR, and what are the best economical models for their deployment.