



Does physical activity change following hip and knee replacement? Matched case-control study evaluating Physical Activity Scale for the Elderly data from the Osteoarthritis Initiative

T.O. Smith^{a,*}, M. Mansfield^b, J. Dainty^c, G. Hilton^d, C.J.V. Mann^e,
C.M. Sackley^f

^a School of Health Sciences, Faculty of Medicine and Health Sciences, University of East Anglia, Queen's Building, Norwich Research Park, Norwich, NR4 7TJ, United Kingdom

^b Guy's and St Thomas' Hospitals NHS Foundation Trust and Academic Department of Physiotherapy, King's College London, United Kingdom

^c Norwich Medical School, University of East Anglia, Norwich, United Kingdom

^d The Royal Ballet, Covent Garden, London, United Kingdom

^e Department of Trauma and Orthopaedics, Norfolk and Norwich University Hospital, Norwich, United Kingdom

^f Division of Health and Social Care Research, King's College, London, United Kingdom

Abstract

Objectives To determine whether physical activity measured using the Physical Activity Scale for the Elderly (PASE), changes during the initial 24 months post-total hip (THR) or knee replacement (TKR), and how this compares to a matched non-arthroplasty cohort.

Design Case-controlled study analysis of a prospectively collected dataset.

Setting USA community-based.

Participants 116 people post-THR, 105 people post-TKR compared to 663 people who had not undergone THR or TKR, or had hip or knee osteoarthritis. Cohorts were age-, gender- and BMI-matched.

Main outcome measures Physical activity assessed using the 12-item PASE at 12 and 24 months post operatively.

Results There was no significant difference in total PASE score between pre-operative to 12 months (mean: 136 vs 135 points; $p = 0.860$) or 24 months following THR (mean: 136 vs 132 points; $p = 0.950$). Whilst there was no significant difference in total PASE score from pre-operative to 12 months post-TKR (126 vs 121 points; $p = 0.930$), by 24 months people following TKR reported significantly greater physical activity (126 vs 142 points; $p = 0.040$). There was no statistically significant difference in physical activity between the normative matched and THR ($p \geq 0.140$) or TKR ($p \geq 0.060$) cohorts at 12 or 24 months post joint replacement.

Conclusions Physical activity is not appreciably different to pre-operative levels at 12 or 24 months post-THR, but was greater at 24 months following TKR. Health promotion strategies are needed to encourage greater physical activity participation following joint replacement, and particularly targeting those who undergo THR.

© 2017 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.

Keywords: Lower limb; Joint replacement; Physical activity; Community; Health promotion

* Corresponding author. Fax: +44 1603 593166.

E-mail addresses: toby.smith@uea.ac.uk (T.O. Smith), michael.mansfield@gstt.nhs.uk (M. Mansfield), jack.dainty@uea.ac.uk (J. Dainty), [gemma.hilton@sixphysio.com](mailto:gemmahilton@sixphysio.com) (G. Hilton), charles.mann@nnuh.nhs.uk (C.J.V. Mann), catherine.sackley@kcl.ac.uk (C.M. Sackley).

<http://dx.doi.org/10.1016/j.physio.2017.02.001>

0031-9406/© 2017 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.

Introduction

Total hip (THR) and knee (TKR) replacement are two of the most common orthopaedic surgery procedures undertaken worldwide [1]. These procedures are projected to increase annually to an estimated 95,877 THRs and 118,666 TKRs by 2035 in the United Kingdom alone [2]. Whilst a proportion of these procedures are performed for younger people, within the literature, the mean patient age ranges from 68 to 74 years [1,3]. The aim of both THR and TKR is to reduce the pain and disability associated with a degenerative joint pre-operatively, to facilitate greater quality of life and increased physical activity engagement [5].

Physical activity is a generic term which encompasses active living, active transport, and sports and exercise [5]. Active living includes the participation in household and social activities such as gardening, housework, shopping and recreational pursuits [6]. Active transport is defined as the expenditure of physical energy by an individual to move from one place to another [7]. Sports and exercise pursuits which are most commonly undertaken by this population post joint replacement include walking, cycling, golf and swimming [8,9].

Physical inactivity is a leading cause of mortality worldwide [10]. It has been estimated that between 6% to 10% of all deaths from non-communicable diseases are attributed to physical inactivity [11]. There is an established body of literature supporting the adoption and maintenance of physical activity in individual's lifestyles. Physical and mental health benefits associated with undertaking regular physical activity have included reduced risk of cardiovascular diseases and diabetes, enhanced mental wellbeing with decreased anxiety and depressive symptoms, and lower risk of some cancers [10].

Hypothetically physical activity should increase following THR and TKR through pain relief [12]. However recent research suggests that this may not be the case [13–18]. Furthermore, individuals may have considerable reluctance to be more physically active following lower limb joint replacement [12,13]. However the current evidence-base has focused on assessing changing participatory levels of sports and exercise, using general physical activity questionnaires rather than tools which are directed towards people aged 60 and older, or have assessed global physical activity with accelerometry, making it difficult to distinguish what forms of physical activity may (or may not) change [13–18]. It also remains unclear how physical activity relates to the normative, non-joint pathology population. As physiotherapists have a key role both in promoting physical activity [19] and in the rehabilitation of people post joint replacement [20], it is important that these clinicians are aware whether (or not) people following THR or TKR are at risk of being insufficiently physically active.

The purpose of this study was to determine whether physical activity levels change from pre-operative to 24 months post joint replacement when measured using the Physical Activity Scale for the Elderly (PASE) [21]. Secondly, we

aimed to determine whether there was a difference in physical activity engagement between people who undergo THR or TKR (baseline, 12 months and 24 months post operatively) and an age-, gender- and BMI-comparable cohort who have not joint pathology nor joint replacement, to ascertain whether there is a difference in physical activity compared to the normative population.

Materials and methods

Ethics approval

Ethical approval was granted by the Committee on Human Research, University of California, San Francisco (IRB approval number 10-00532; Approved 10th March 2015). All participants provided written informed consent prior to enrolling on the study.

Osteoarthritis Initiative dataset

Data used in the preparation of this article were obtained from the Osteoarthritis Initiative (OAI) database. This is available for public access at <http://www.oai.ucsf.edu/>. The OAI is a large, multicentre (four sites across the USA), longitudinal cohort study originally designed to investigate the role of biomarkers in the development and progression of knee osteoarthritis.

Baseline data were collected between February 2004 to May 2006 from community-dwelling volunteers who were considered at risk of developing knee osteoarthritis. Data were longitudinally collected at 12, 24, 30, 36, 48, 60, 72 and 84-month follow-up intervals. For this analysis, we identified data on: demographic characteristics, medical morbidities (prevalence of type two diabetes, Charleston Comorbidity Score [22]; Centre for Epidemiologic Studies depression (CES-D) score) [23], musculoskeletal health (joint pain), and the PASE [21] reported pre-THR and TKR, and then at 12 and 24-month follow-up intervals. These intervals were selected to ensure that it was possible to compare physical activity participation before joint replacement, at an early interval when recovery typically plateaus, and a later phase when post operative recovery would have ceased [24]. The PASE is a self-administered questionnaire designed for people aged 65 years and over, and consists of 12 questions regarding the duration, frequency, exertion level, and amount of physical activity undertaken during a seven-day period [21]. It assesses a breadth of physical activity pursuits including household tasks, occupational activities, active transport and sports and exercise [26]. The specific subsections of the PASE are: muscle strength/endurance, strenuous sports, moderate sports, light sports, jobs involving standing or walking, walking, lawn work or yard care, caring for another person, home repairs, health housework, light housework and outdoor gardening [21]. It has demonstrated good validity to other forms of physical activity assessment in older people [25–28] and

Download English Version:

<https://daneshyari.com/en/article/8562175>

Download Persian Version:

<https://daneshyari.com/article/8562175>

[Daneshyari.com](https://daneshyari.com)