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Not Physical Activity, but Patient Beliefs and Expectations are Associated With Return to Work After Total Knee Arthroplasty

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ABSTRACT

Background: After total knee arthroplasty (TKA), 17%–60% of the patients do not or only partially return to work (RTW). Reasons for no or partial RTW remain unclear, warranting further research. Physical activity (PA) has proven beneficial effects on work participation. Therefore, we hypothesized that preoperative PA is associated with RTW after TKA.

Methods: Working TKA patients participating in an ongoing prospective cohort study were included. Preoperatively and 1 year postoperatively, patients were asked to define their work status and PA level according to the Dutch Recommendation for Health-Enhancing PA and the Fitnorm. Multivariate logistic regression analysis was performed to assess the effect of PA on RTW, taking into account established prognostic factors for RTW among TKA patients.

Results: Of 283 eligible patients, 266 (93%) completed the questionnaires sufficiently. Preoperatively, 141 patients (54%) performed moderate PA for ≥ 5 d/wk and 42 (16%) performed intense PA for ≥ 3 d/wk. Concerning RTW, 178 patients (67%) reported full RTW, 59 patients (22%) partial RTW, and 29 patients (11%) no RTW. Preoperative PA was not associated with RTW. Patients who reported that their knee symptoms were not or only partially work-related had lower odds of no RTW (odds ratio 0.37, 95% confidence interval 0.17–0.81). Also, for each additional week patients expected to be absent from work, the likelihood of no RTW increased (odds ratio 1.11, 95% confidence interval 1.03–1.18).

Conclusion: No association between preoperative PA and RTW after TKA was found. Patient beliefs and preoperative expectations did influence RTW and should be addressed to further improve RTW after TKA.

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In the Netherlands, an expected 57,900 patients will undergo total knee arthroplasty (TKA) in 2030 [1]. The greatest increase in TKA is seen in patients who are of working age. Already, the number of TKA patients below 65 years of age tripled between 1995 and 2003 in the Netherlands, and this number is expected to rise further [1]. Similar trends of increasing numbers of TKA patients below 65 years of age have been identified in the United States and the United Kingdom [2,3]. For the United States, it is estimated that

by 2030, up to 62% of TKAs will be performed in patients below 65 years of age [2], and for the United Kingdom, this estimation is 50% by 2035 [3]. This growing TKA population of working age is dependent on their job to generate income, and thus considers return to their own work as one of the most important outcomes of surgery [4]. Although many patients do successfully return to work (RTW), a reported 17%–60% of patients do not or only partially RTW after TKA [5–7].

To improve RTW rates, analysis of factors influencing RTW after TKA is essential. However, the remarkable conclusion of a systematic review by Kuijer et al in 2009 [8] was that there was an almost complete lack of literature on prognostic factors for RTW after TKA. A second systematic review in 2014 identified only 3 studies that reported on determinants of work status after TKA [9]. Factors associated with a faster RTW included female sex, age <50 years, self-employment, better mental and physical health scores, less comorbidity, and a handicap accessible workplace [7,9,10]. A slower RTW was found in patients with lower preoperative pain levels, with more physically demanding jobs and in those receiving workers' compensation [9,10]. More recently, these determinants were confirmed in several clinical studies [5,11–13], as well as a systematic review which identified 11 studies investigating 33 beneficial and limiting factors for RTW after TKA [14].

Although the abovementioned studies have identified several factors that influence RTW after TKA, these factors only partially explain why patients do not RTW after TKA, with a maximum explained variance of 50%, warranting further research [5]. None of the previous studies investigated the influence of preoperative physical activity (PA) on RTW. Evidence from a prospective cohort study, including 1228 workers, and a recent systematic review suggested that PA reduced sickness absence [15,16]. Workers with higher levels of PA were generally less likely to be absent from work because of sickness [15,17]. Also, Bernaards et al [18] found that strenuous leisure time PA might prevent long-term absenteeism in a working population. These findings seem to indicate that PA has a beneficial influence on work participation.

Based on the abovementioned findings, we formulated the hypothesis that preoperative PA is associated with RTW after knee arthroplasty. If, apart from current knee function and sociodemographic and work characteristics, preoperative PA is indeed an independent determinant of RTW, health care professionals could try to improve PA before and after surgery to further optimize RTW after TKA.

Materials and Methods

Study Design and Patient Selection

This study is based on TKA patients of working age participating in an on-going prospective longitudinal cohort study, the Longitudinal Leiden Orthopaedics Outcomes of Osteoarthritis Study (LOAS, Trial ID NTR3348), which aims to include all patients undergoing TKA at 6 regional hospitals and 1 university hospital in the Netherlands. Recruitment of patients in the LOAS has previously been described [19]. Patients were required to have a mental status allowing them to complete questionnaires, and had to understand the Dutch language. Patients with rheumatoid arthritis, a tumor, (hemi) paresis, or amputation of the leg, and patients undergoing a hemiarthroplasty or revision THA or TKA were excluded. All patients provided written informed consent. For the present study, a selection was made from this prospective cohort. Eligible patients were below 70 years of age and provided information on their work status and levels of PA preoperatively and 1 year postoperatively. In case of incomplete or unclear provision of data on working hours or postoperative work status, the primary investigator (AH)

performed a telephone interview between January and March 2017. Of the 1211 TKA patients who completed both questionnaires, 928 patients (76%) did not work preoperatively, and 283 patients (24%) were working preoperatively and provided information on their RTW postoperatively. These patients were included in the present analysis (Fig. 1). The study protocol was reviewed and approved by the local hospital review board (registration number P.12.047), associated with the regional Medical Research Ethics Committee.

General Patient Characteristics

The following patient characteristics were collected: sex, age (years), and body mass index (BMI; kg/m²). The presence of musculoskeletal and/or nonmusculoskeletal comorbidities was asked.

Work Status

Preoperatively, all patients were asked to indicate whether they had a paid job (yes/no). The following aspects of the patients' preoperative working situation were recorded: number of hours worked per week; self-employed or salaried; absenteeism from work because of knee complaints (yes/no); and the presence of work adaptations (yes/no), with yes including at least one of the following: change of tasks; performing fewer tasks; changes in working hours; other work-related adaptations or devices. Job title was recorded and classified as light, medium, or heavy, in terms of its physical demands on the knee, by 2 occupational experts who independently scored all jobs based on work-related physical demands. The scoring system was derived from the evidence-based exposure criteria for the work relatedness of hip and knee osteoarthritis developed by the Netherlands Center for Occupational Diseases [20].

Postoperatively, all patients were asked whether they were currently working (yes/no). If yes, they were asked to report their current number of working hours per week. Based on the difference in preoperative and postoperative working hours, RTW was classified as: full return (no difference in, or higher postoperative

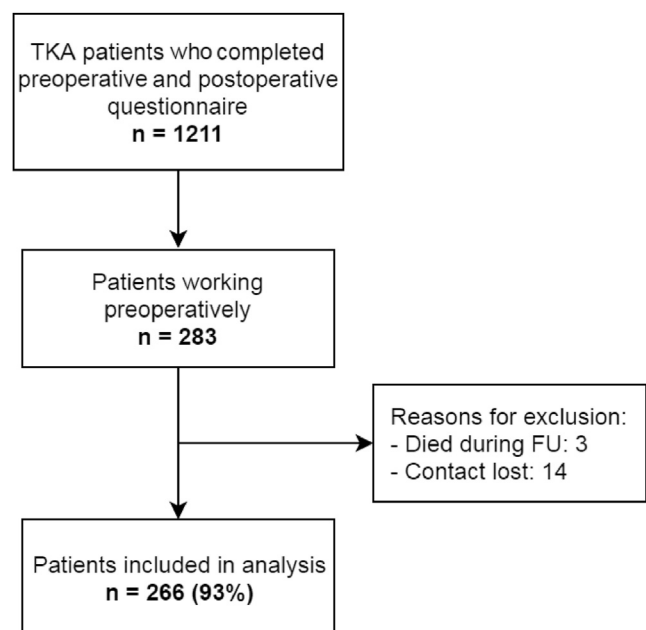


Fig. 1. Flowchart for patient inclusion and exclusion. FU, follow-up; TKA, total knee arthroplasty.

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