

Objective Measure of Activity Level After Total Knee Arthroplasty with the Use of the 'Fitbit' Device. Preliminary Results

INTRODUCTION

Mobility and physical activity are imperative to healthy aging. Measurable improvements in activity level have been reported after total knee arthroplasty (TKA)^{4,5}. However historically, activity level after TKA has been assessed with subjective questionnaires from patients⁴. The recent development and commercial release of non invasive, light weight, low cost accelerometers has great potential to more accurately assess activity level before and after knee arthroplasty from a small light weight wrist strap. These devices have been shown to be valid and reliable assessment tools for activity levels in normal subjects¹. After cardiac surgery, authors have demonstrated a relationship between activity level assessed with the FitBit device and length of stay³.



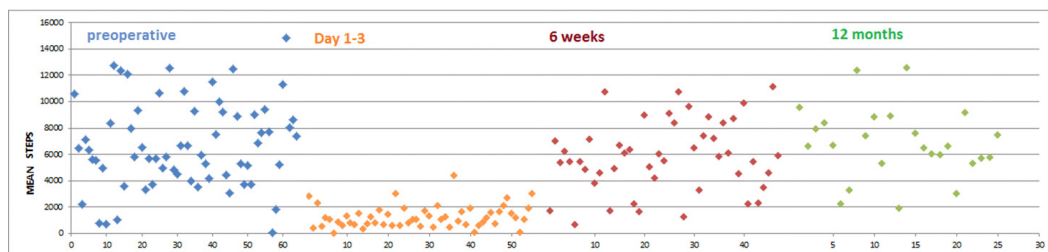
RESULTS:

54 patients (63 knees) participated over 12 months. There were 26 males and 28 females with a mean age of 70 years. The mean number of steps per day was 6596 preoperatively, 1168 in Day 1-3 post op, 5707 at 6 weeks and 7228 at 1 year after TKA. Preoperative activity level was significantly correlated with preoperative Pain Score ($p=0.003$), activity level in the first 3 days ($p=0.01$), and at 6 weeks ($p=0.001$). Short battery life and technical failure of the 'fitbit' device hampered successful data extraction in approximately 20% of this series

CONCLUSIONS

Modern accelerometers present a novel way to objectively measure activity level before and after TKA.

One year after TKA on average subjects are taking 7200 steps per day. Only 50% of participants were taking >7000 steps per day at 1 year, which is the



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AIM:

The aim of this study was to assess the efficacy of using a modern commercially available accelerometer known as a "FitBit" to assess activity level before and after TKA.

activity level recommended for 65+ years, and is well below the recommended daily average of 10,000 steps per day for healthy adults

METHODS

In this study the Fitbit device was worn by TKA patients for 5-7 days at 4 times periods: before surgery, day 1-5, 6 weeks and 12 month after arthroplasty. Subjective outcomes including preoperative and 12 month Knee injury and Osteoarthritis Outcome Score (KOOS), WOMAC Assessment and Patient Satisfaction Scale were collected.

Although KOOS scores significantly improved between preop and 12 months after TKA, this does not translate to an increase in activity level at 12 months

Continued follow up is in progress. Further studies are planned to see if activity levels after TKA can be improved by using these devices when patients are provided feedback and goals on daily activity.



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