

Introduction

Total hip replacement (THR) is one of the most common and successful orthopaedic operations worldwide (Ferguson et al., 2018; National Joint Registry, 2022) that offers pain relief even at week one post-surgery (Culliford et al., 2015; Learmonth et al., 2007). However, a recent study monitored the recovery post THR and data showed that the physical activity decreases temporarily after surgery and does not reach the same level as before surgery, even after 12 months (Culliford et al., 2015; Ewen et al., 2012).

Research question

This randomised pilot trial aimed to determine the effect of an outdoor walking intervention where walking distance is used as a goal to increase daily walking activity using a Fitbit Charge 4 (FC4) activity monitor in THR patients 3 to 6 months post-surgery.

Methods

The 5 weeks long intervention was compared against a control group who reported their daily steps as opposed to a daily distance outdoor walk. Data were collected on gait, hip-related subjective outcome measures (Hip Disability and Osteoarthritis Outcome Score (HOOS) questionnaire), and the effects of the activity monitor as an assistive device on functional independence, well-being, and quality of life (Psychosocial Impact of Assistive Devices Scale (PIADS) questionnaire). Furthermore, participants were provided with an activity diary to record their daily walking activity. The activity diaries for both the intervention and control groups had a section where participants were able to document their feelings or reasons which may have affected their attempts to do their daily walk.

Results

Twelve adults were recruited to take part in this study. The participants who received the walking intervention using an FC4 activity monitor with a daily outdoor distance goal had higher activity levels after THR, compared to participants who were in the control group and reported daily step counts. The data for gait, HOOS, and PIADS were better in the intervention group in contrast to the control group. The main theme derived through analysis of the activity diary for the intervention group was the '*enjoyment*' of walking outdoors and '*exceeding expectations*' (i.e. going beyond the level they felt capable of). Furthermore, Table 1 outlines the Cohen's effect size (*d*) for the normalised walking amount, gait, and HOOS data.

Table 1. Within group and between group mean difference (pre to post intervention) (M_D), standard deviation (SD), and the Cohen's effect size (*d*).

	Intervention			Control			Between group
	M_D	SD	<i>d</i>	M_D	SD	<i>d</i>	<i>d</i>
Walking	104.68	60.98	1.72	-9.80	25.08	-0.39	1.27
Step length (m)	0.11	0.11	0.98	0.03	0.07	0.47	0.87
Walking speed (m/s)	0.25	0.23	1.06	0.09	0.11	0.79	0.89
Cadence (stride/min)	2.96	5.53	0.54	3.80	5.83	0.65	-0.15
HOOS	17.68	15.12	1.17	5.12	3.81	1.34	1.14

Discussion

This study was the first randomised trial to report the effect of the outdoor purposeful walk, monitored using a commercial activity monitor. The study findings suggested that the participants who received the purposeful intervention using an FC4 activity monitor with a daily outdoor distance goal had higher activity levels after THR, compared to participants who were in the control group and reported daily step counts. However, further research with a larger sample size is required to provide tangible evidence on the significance of the effect of the purposeful walk in contrast to step count.

References

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