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In the Dark About Physical Activity – Exploring Patient Perceptions of Physical Activity After Elective Total Knee Joint Replacement: A Qualitative Study

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Running head

Physical activity after total knee replacement

Title

In the dark about physical activity – exploring patient perceptions of physical activity after elective total knee joint replacement: a qualitative study

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Conflict of interest statement

The authors declare no conflicts of interest

Abstract

Objective.

The study aimed to explore patient perceptions of and motivations for physical activity after total knee joint replacement.

Methods.

Participants were purposively sampled after completing a public outpatient rehabilitation exercise group. Semi-structured interviews were completed with 22 participants (mean age 70 years, 45% women) 6 to 12 months after total knee joint replacement. Interviews were audiotaped and transcribed verbatim. Themes were identified by an inductive and iterative process of data analysis.

Results.

The main theme to emerge was participants were in the dark about physical activity. Participants were typically not familiar with physical activity guidelines and had difficulty distinguishing between low and moderate-intensity physical activity. Three subthemes were identified: (1) people prioritise participation in meaningful life situations after total knee joint replacement; (2) rehabilitation was perceived to not explicitly address moderate-intensity physical activity levels; and (3) other health and social reasons replaced knee osteoarthritis as barriers to physical activity.

Conclusion.

Limited understanding of physical activity recommendations, prioritisation of participation in meaningful life situations, rehabilitation that was impairment focused and other health and social reasons appeared to contribute to low levels of moderate-intensity physical activity for adults after knee joint replacement. Addressing being in the dark about physical

activity may be an important first step to increase the effectiveness of behavioural interventions designed to promote physical activity after total knee joint replacement.

Significance and innovations

- Limited understanding of key physical activity constructs (e.g. mistaking 'being busy' for moderate-intensity physical activity) may contribute to low levels of physical activity after total knee joint replacement
- Addressing people's limited understanding of physical activity may be an important first step in increasing the effectiveness of behavioural change interventions designed to promote physical activity after total knee joint replacement
- After total knee joint replacement, people prioritise participation in life situations that are meaningful and bring self-fulfilment, but these are often of low intensity
- Outpatient rehabilitation after total knee joint replacement was perceived to focus on knee impairment and may miss an opportunity to address low physical activity levels

Low physical activity levels are a problem for people with knee osteoarthritis as their cardiovascular-associated mortality rates are almost double that of the general population (1-7). Physical activity is any body movement produced by skeletal muscles resulting in energy expenditure such as walking, swimming, gardening and doing housework (8). To obtain physical health benefits (e.g. prevention of cardiovascular disease), guidelines recommend adults do at least 150 to 300 minutes of moderate-intensity aerobic physical activity (activity that requires some effort but still allows people to talk easily e.g. brisk walking (9)) each week (10), although smaller amounts of physical activity also provide physical health benefits (11-13). It may be assumed by people with knee osteoarthritis (14), and health professionals (15), that physical activity levels naturally increase after knee joint replacement. However, despite reduced pain and improved knee function (16,17), physical activity remains low (18-20); people after knee joint replacement average just 12 daily minutes of moderate to vigorous-intensity physical activity daily with 95% failing to meet physical activity recommendations (21). Further, moderate-intensity physical activity remains reduced five years after knee joint replacement; people after knee joint replacement completed almost 30% less walking activity than aged-matched peers without osteoarthritis or joint replacement (22). Consequently, after knee joint replacement, people typically remain at high risk of cardiovascular disease.

Qualitative studies have explored people's perceptions of physical activity after knee joint replacement (23-26). Key findings of these studies are physical activity is for enjoying living, physical outcomes vary after surgery, understanding of the health risks of sedentary behaviour was limited, apprehension of new joint damage limited physical activity and the emergence of new limitations to post-surgical physical activity. However, these studies

comprised mixed samples of participants after hip joint replacement or knee osteoarthritis (23,25,26), primarily explored people's awareness and understanding of sedentary behaviour (25) or were conducted in developing countries where cultural factors could limit generalisability (24). How people perceive physical activity, and what motivates physical activity after knee joint replacement is not well understood. Additionally, there has been little exploration of knowledge of physical activity guidelines. Therefore, there is a need to explore people's perceptions of and motivations for physical activity and knowledge of physical activity recommendations after knee joint replacement, as this may assist health professionals address low physical activity levels.

Patients and methods

Study design

A qualitative study was completed to explore perceptions of physical activity after knee joint replacement. The theoretical framework chosen was interpretive description (27). An advantage of interpretive description is it facilitates the development of comprehensive knowledge through the identification of themes and patterns from subjective perceptions and experiences of a clinical phenomenon that may inform clinical practice (28). The study is reported in accordance with the consolidation criteria for reporting qualitative research checklist (COREQ) (29). The health service and university ethics committees approved the study and written informed consent was obtained from all participants.

Participants

Purposive sampling was used to recruit participants representative of gender, age and cultural background (30). Participants were 6 to 12 months after elective total knee joint

replacement for osteoarthritis. This timeframe was chosen as participants were expected to have had an opportunity to resume their usual physical activities (16). People who had knee joint replacements due to trauma or medical conditions other than osteoarthritis (e.g. rheumatoid arthritis) were not eligible. Recruitment took place after completion of a 6-week public outpatient rehabilitation group exercise program, led by a physiotherapist and two allied health assistants. The program typically commences 2 to 4 weeks after discharge following knee joint replacement and is the standard of care at the health network where the study was conducted. Each session comprised 60 minutes exercise, including knee-specific strengthening and range-of-motion exercises, functional exercises (e.g. stairs) and general exercises (e.g. treadmill) without an education component.

Data collection

In-depth interviews were conducted by one male researcher (LH) using an interview guide. The interviewer did not limit the questions to those included in the interview guide but had the freedom to ask additional follow-up questions. Follow-up questions were asked to allow participants the opportunity to provide rich responses and the interviewer to follow new lines of enquiry (Table 1). The interview was conducted either in the participant's home, workplace or in a private consulting room at the rehabilitation service. At the start of the interview 'physical activity' was defined. Physical activity recommendations (10) were also discussed with participants mid-way through the interview. Additional field notes were made, and participant information collected, including medical history, gender, age, education, country of birth, post-surgical complications, perceived success of knee joint replacement and any exercise facilities accessible from the participant's home. Interviews were audiotaped and transcribed verbatim. Transcripts were mailed to participants with a

stamped return-addressed envelope inviting them to review the transcript (31).

Recruitment was guided by the principle of data saturation and ceased when no new themes emerged.

Data analysis

Transcripts were coded line by line by two researchers (LH and either NT or NS). Descriptive codes were generated, using an inductive approach, to represent concepts in the data.

Independent working notes on each transcript were generated and managed using NVIVO 12 software or manual methods. Through discussion, the descriptive codes were categorised, and further integration and refinement of higher-level concepts took place until the main and sub-themes emerged (32). The descriptive codes were reviewed by one researcher (LH) to selectively search for data representative of the main and sub-themes (selective coding) to ensure all relevant data had been captured (32). Following further discussions and transcript reviews, the main and sub-themes were modified until consensus was reached. Two researchers (MD, PC) reviewed the final interpretation of results.

Rigour and trustworthiness

Credibility was enhanced by having multiple researchers independently code, analyse and interpret data (investigator triangulation), member checking of transcripts and purposive sampling. Transferability was enhanced by providing detailed descriptions of the methods used, and participant information. An audit trail together with thick descriptions of the data was used to enhance dependability. A process of deliberate and regular reflection and discussion between the researchers enhanced confirmability (33). Brief descriptions of the researchers are included to enhance reflexivity (34). The principal researcher (LH) was the

senior physiotherapist at the community rehabilitation centre where the outpatient rehabilitation program was conducted. The other researchers (NT, NS, MD, PC) have backgrounds as physiotherapists, a nurse and an orthopaedic surgeon, work at affiliated universities, have qualitative research experience and supervised the study.

Results

Participants

Twenty-two participants were interviewed once (Table 2). Four potentially eligible women declined an invitation to participate and were not included. Consistent with purposive sampling, subsequent recruitment targeted women. Five participants were previous patients of the interviewer. Spouses were present during two interviews. Three transcripts were returned from participants with only minor clarifications to some discussion topics. Analysis of interview transcripts to determine data saturation took place after 20 interviews, which was confirmed after two further interviews. Interview length averaged 40 minutes (shortest 26 minutes, longest 58 minutes). Selected quotes supporting the emergent theme and subthemes are included in the text and in Table 3.

Context

Most participants said they led an active life prior to developing knee osteoarthritis. Many participants reported they previously walked regularly, attended group exercise (e.g. hydrotherapy, tai chi) or played sports. Some participants had physically active occupations (e.g. factory worker) or led an active social life (e.g. dancing, minding grandchildren). However, participants described that as their osteoarthritis progressed, mobility limitations increased restricting their ability to participate in meaningful life situations. The opportunity

for mobility unhindered by pain or knee joint impairment was a key motivator reported by participants to proceed with surgery. Twenty-one (96%) participants perceived their surgery was successful (Table 2).

In the dark about physical activity

The main theme to emerge was participants were in the dark about physical activity after knee joint replacement; they had limited understanding of physical activity recommendations and of the physical health benefits of physical activity. Being in the dark influenced participants' understanding of physical activity, how physically active they were (almost all participants described low physical activity levels after knee joint replacement) and how physical activity was prioritised.

A key barrier to physical activity after knee joint replacement appeared to be participants' lack of familiarity with physical activity recommendations. Most participants said they were not aware of physical activity recommendations (prior to the recommendations being outlined in the interview) or were not able to recall the details accurately. Consequently, the majority of participants did not know the type or amount of physical activity required to achieve health benefits. Seven participants correctly identified physical activity recommendations for health benefits as 150 minutes of moderate-intensity physical activity per week (10) but they struggled to appropriately self-apply the recommendations. In particular, participants had difficulty interpreting what was meant by 'moderate-intensity' physical activity. Most participants expressed confidence they were doing enough physical activity to meet recommendations. However, when participants described the type, amount and intensity of physical activity they were doing, it became apparent almost all failed to

meet recommendations, as the physical activities they did were low intensity. Further, some participants considered sedentary activities as being physically active.

“I do sewing, art, craft. I’m busy, I’m always doing something.” (Interview 10, woman age 80)

Many participants appeared to believe that as long as they were ‘busy’, they were engaging in physical activity that provided physical health benefits. Consequently, many participants over-estimated their compliance with physical activity recommendations.

While the majority of participants were able to attribute health benefits to being physically active, psychosocial benefits resonated more strongly than physical benefits. Many participants associated ‘feeling good’ or ‘feeling better about yourself’ with physical activity. Few participants acknowledged cardiovascular and musculoskeletal health benefits from physical activity.

“(Physical activity provides) a sense of well-being, I think. You know, obviously being active keeps you younger for longer and your health in better shape and your blood pressure etcetera, so yeah, definitely important.” (Interview 4, woman age 69)

When participants did discuss cardiovascular or musculoskeletal health benefits of physical activity, they often did so in a way that implied these benefits were not really relevant to them.

People prioritise participation in meaningful life situations after total knee joint replacement

A subtheme was participants stated their priority after knee joint replacement was to participate in meaningful life situations compromised or abandoned because of knee osteoarthritis.

"It is just really important to me to be able to do the things I want to do in life"

(Interview 4, woman age 69)

Participants prioritised participation in life situations that restored social relationships and community engagement, achieved life goals and restored a sense of self-identity.

"I've got five kids (and) 10 grandkids ... We like to go away, we like to do things and when you go somewhere, you've got to walk when you get there, like to the beach or to the shops or to the cafes or anything, just general life." (Interview 15, man age 57)

Typically, the life situations that held the most meaning after knee joint replacement were low-intensity activities that provided participants with a sense of independence, control and self-worth e.g. minding grandchildren, gardening, attending a craft group. A few participants placed a high value on moderate-intensity physical activities (e.g. hiking), however, these activities generally occurred infrequently (e.g. while on vacation) and were closely aligned with meaningful activities participants engaged in before the onset of their functional limitation.

"Once a month on average (I'd bushwalk with the cadets) ... It's the cadets that's more important to me than actually being physically active." (Interview 11, man age 67)

No participants increased their physical activity levels after knee joint replacement surgery.

The one participant whose reported physical activity levels met physical activity recommendations said he was motivated by returning to activities he enjoyed.

"I would say (I'm) back to normal (after knee replacement surgery) ... I've always been a very active person, lots of bushwalking, trekking, all that sort of stuff. I need to keep myself going like that; that's part of me." (Interview 16, man age 57)

Rehabilitation was perceived to not explicitly address physical activity levels

Another subtheme was participants did not perceive rehabilitation aimed to increase their moderate-intensity physical activity. Consequently, participants did not appear to use rehabilitation as an opportunity to evaluate the extent to which their current physical activity levels provided physical health benefits. Rather, they perceived rehabilitation would 'fix the knee' in order to optimise participation in meaningful life situations.

Physiotherapists were perceived to address knee impairment rather than recovery of the 'whole person'. Further, the content of the rehabilitation program was described as focusing on body structures and functions, and activity limitations. For example, almost all participants clearly recalled that physiotherapists advised them to continue their 'knee exercises' at home, which many participants did, sometimes for many months after rehabilitation attendance stopped.

"I use it (printed knee exercise handout provided by rehabilitation program) every day ... I still use it; I still take it out every now and again and go through the (knee) exercise routine." (Interview 1, man age 64)

On the occasions when communication from physiotherapists was perceived to address moderate-intensity physical activity, their messages were described as general rather than specific, like 'just do a bit more every day' or 'keep active'. Although participants

acknowledged physiotherapists encouraged walking, they said that they did not receive details around how much walking to aim for, or information about other moderate-intensity physical activities.

“Nobody ever told me (about moderate-intensity physical activity). They told me to be active but for how long and – no.” (Interview 17, woman age 74)

Other health and social reasons replaced knee osteoarthritis as barriers to physical activity

A third subtheme was participants reported other issues now prevented them from being physically active despite improvements in knee pain and function after joint replacement. While many participants held the view that their physical activity levels would likely increase in the future, they were focused on managing other issues, most prominently, health co-morbidities. Managing pain in other body parts, other medical conditions and fear of falling were expressed reasons why they were not more physically active.

“I’m (dealing) at the moment (with) these hormone things; you’re so lethargic that you don’t want to do anything, you won’t do it, and it’s always tomorrow.” (Interview 20, man age 68)

Social isolation, lack of motivation and additional financial costs (e.g. paying for a gym membership) were also identified as barriers to activity.

Some participants reported that increasing physical activity levels was for the future e.g. part of a special event that aligned with their life goals like an upcoming vacation. However, increasing their current physical activity levels did not appear to be a priority. Participants also said that, because they had experienced a good result from their knee joint

replacement, setting aside time to commit to structured, moderate-intensity physical activity was too difficult; they were now busy participating in meaningful life situations they previously struggled with, like running the household.

Discussion

Our qualitative study adds to the literature by exploring people's perceptions of and motivations for physical activity, and their understanding of physical activity recommendations following knee joint replacement. We found limited knowledge of key physical activity constructs may be an important contributor to low physical activity levels after knee joint replacement. Many participants were unaware of physical activity recommendations such as the amount and type of physical activity needed to bring about health benefits or struggled to distinguish between low and moderate-intensity physical activity. Consequently, participants were typically unaware their current activity levels were low and did not perceive an incentive to increase their physical activity levels after knee joint replacement. As they were in the dark about key physical activity constructs, people who may have found meaning and fulfilment in improving their health outcomes after knee joint replacement did not have the opportunity to set goals around increasing their physical activity.

Health behaviour theories have identified adequate knowledge as an important first step to implementing behaviour change. Social Cognitive Theory stipulates knowledge of health risks and benefits creates the precondition for change (35). The Theory of Planned Behaviour also posits that beliefs (knowledge) of a behaviour are required to form an attitude about that behaviour, which directly influences the intention to carry out that

behaviour (36). People who lack knowledge about how their behaviours affect their health have little reason to put themselves through the effort of changing their behaviour (35). Consequently, being in the dark about physical activity may explain why moderate-intensity physical activity levels remain low after knee joint replacement surgery.

Our findings may help inform strategies to address low physical activity levels after knee joint replacement, especially when viewed in the context of health behaviour theory. Health behaviour theory suggests that after knee joint replacement, people would benefit from increased understanding of key physical activity constructs including current physical activity recommendations, what comprises 'moderate-intensity' physical activity, and health benefits associated with recommended physical activity levels. Consistent with our findings, people after knee joint replacement are likely to find messaging intended to increase knowledge about physical activity more effective when associated with an outcome they find meaningful. For example, how increased moderate-intensity physical activity using their improved knee function positively impacts participation in meaningful life situations, such as being a grandparent, a gardener or spending time with family on vacation. Further, consumer involvement in codesigning interventions results in information that is more likely to be relevant, readable and understandable to consumers (37) and can result in increased consumer knowledge compared with usual education (38). Involving consumers in the design of interventions that raise awareness of physical activity recommendations and explain the importance of increased moderate-intensity physical activity may be more effective than interventions designed entirely by health professionals. A recent study found an education and exercise intervention did not increase physical activity in people with knee or hip osteoarthritis (39). However, information sessions did not appear to define physical

activity recommendations, explain the health benefits of moderate-intensity physical activity, include behaviour change strategies or provide evidence of codesign, suggesting the design of an intervention to address the physical activity knowledge gap after knee joint replacement requires careful consideration.

After knee joint replacement, participants were willing to act on physical activity advice from physiotherapists, albeit in the context of exercises to reduce knee impairment. However, this suggests people with knee joint replacement may change their health behaviours when communication is clear and relates to a meaningful outcome. We speculate that physical activity messaging delivered during rehabilitation may hold more relevance and more effectively shine a light on limited physical activity knowledge than if delivered prior to surgery, when people's knee pain and functional disability are likely significant barriers to movement, or if delivered many months after surgery, when habitual post-surgical levels of physical activity may have been established (40). Finally, our results indicated that rehabilitation clinicians may have missed an opportunity to address physical activity levels by focussing on knee impairment (e.g. knee range-of-movement or strengthening exercises). Consequently, clinicians may benefit from familiarising themselves with physical activity recommendations and their relevance to people following knee joint replacement.

Knowledge of physical activity alone, however, is unlikely to translate to sustained engagement with moderate-intensity physical activity after knee joint replacement; health behaviour theory suggests for behaviour to change, self-efficacy is elevated (35) or intent to perform a health behaviour is strengthened (36). Consequently, behavioural change

interventions have been advocated as the most effective interventions to increase physical activity after knee joint replacement (19,41-45). However, identifying behavioural change interventions that effectively increase moderate-intensity physical activity after joint replacement is limited by a paucity of literature (40). Our results suggest the hypothesis that appropriately increasing people's knowledge of key physical activity constructs after knee joint replacement is initially required so the next steps of the behaviour change process (e.g. the steps that lead to increased self-efficacy or strengthened intent to change) can take place. For example, successfully implementing the behavioural change intervention of Motivational Interviewing (an approach that promotes self-efficacy and the development of a behaviour change action plan (46)) may be difficult if the person remains in the dark i.e. not in a position to form beliefs about physical activity in the first place. It is possible that addressing being in the dark about physical activity may be an important first step in efforts to increase physical activity after knee joint replacement; further research to test this hypothesis is required.

Strengths of this study include that sampling continued until data saturation was achieved, adherence to the COREQ reporting framework and a qualitative methodology that allows for clinical application of findings. Although there was diversity in the age, gender and cultural backgrounds of the participants recruited, percentage of women (45%) was lower than the national percentage who have total knee joint replacement (56%) (47).

Consequently, our study may under-represent the voice of women. The study was conducted with English-speaking participants, most of whom were Caucasian, who had attended an outpatient rehabilitation program in a metropolitan setting of least socio-economic disadvantage. The findings may not be transferable to people from non-English

speaking backgrounds (24), rural or remote areas or areas of socio-economic disadvantage, who have not attended outpatient rehabilitation; further qualitative studies are needed to confirm if similar results would be found in those populations. Additionally, there exists the potential for bias as the main interviewer was part of the team that delivered therapy to five participants; participants may have felt uncomfortable discussing their rehabilitation experiences with someone who was part of their health professional team or alternatively, given rapport was already established in these cases, participants may have provided more depth about their experiences. The qualitative research design aims to provide detailed understanding of underlying social processes and mechanisms and to provide new theoretical models, propositions or program logics. This study exploring perceptions about physical activity of people after knee joint replacement has generated a hypothesis that their knowledge of physical activity and its importance to their health is low; this hypothesis provides the basis for future quantitative research.

Conclusion

After knee joint replacement, people were in the dark about physical activity due to limited knowledge of key physical activity constructs. This included a limited understanding of physical activity recommendations and how to appropriately apply them e.g. mistaking 'being busy' for moderate-intensity physical activity, and the cardiovascular and musculoskeletal health benefits of physical activity. Further, rehabilitation may not have effectively promoted increasing physical activity levels, in particular, increasing moderate-intensity physical activity. Additionally, other health and social reasons replaced knee osteoarthritis as barriers to physical activity. Consequently, people may remain at risk of developing cardiovascular disease after knee joint replacement due to ongoing low levels of

physical activity. Addressing people's limited understanding of physical activity may be an important first step in increasing the effectiveness of behavioural interventions designed to promote physical activity after total knee joint replacement.

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Table 1 Interview guide

Context	The interviewer explains the purpose and goals of the research project
Introduction Aim to build participant rapport and confidence	Tell me about why you decided to have a knee replacement.
Outcomes Aim to obtain information on impact of knee replacement	‘Physical activity’ is defined - How much physical activity you were doing before your knee replacement surgery? - How has having a knee replacement changed your ability to be physically active? - Tell me about the physical activities you currently do. - How does this compare to the physical activities you were doing before the surgery? (<i>Example of follow up question</i>)
Beliefs and Knowledge of Physical Activity Aim to obtain information on perceptions of physical activity and knowledge of physical activity guidelines.	- Why is being physically active important to you? - What health benefits, if any, do you associate with physical activity? (<i>Example of follow up question</i>) - How much physical activity do you think someone needs to do after a knee replacement? - How much physical activity do you think you need to do for your health? (<i>Example of follow up question</i>) - Tell me about what having rehabilitation after your knee replacement was like. - What type of exercises did you do during the rehabilitation program? (<i>Example of follow up question</i>) - What type of physical activities were you advised to do at home by the rehabilitation therapists? (<i>Example of follow up question</i>) - Thinking about your time in rehabilitation, describe things about your rehabilitation that helped you be more active. - There are recommendations/guidelines that outline how much physical activity people should be doing for their health. What do you know about these guidelines? Physical activity recommendations are defined - How well are you currently meeting the physical activity recommendations? (<i>Example of follow up question</i>)

Design

Aim to obtain information about patients' perceptions of rehabilitation and changes to rehabilitation that may impact on physical activity

- Tell me about any physical therapy recommendations provided by the rehabilitation therapists. (*Example of follow up question*)
- Describe what could be changed or included in the rehabilitation program that would have helped you to be more physically active after your knee replacement.

Table 2 Participant characteristics (n = 22)

	<i>n (%) or mean (SD)^</i>
Age (years)	70 (8.7)^
Gender – number of women	10 (45)
Number of participants who completed high school	13 (59)
Number of participants currently working	5 (23)
Number of participants able to access PA facilities*	21 (96)
Born in Australia	9 (41)
United Kingdom	9 (41)
Germany	1 (5)
India	1 (5)
Italy	1 (5)
Netherlands	1 (5)
Ethnicity – Caucasian	21 (96)
Socio-economic disadvantage index (national percentile)** 51-75	16 (73)
76-100	6 (27)
Ave length of interview (mins)	40 (10.1)^
Number of participants who reported complications after TKR***	5 (23)
Number of participants who reported successful outcome after TKR	21 (96)
Number of participants with previous THR or contralateral TKR	3 (14)
BMI	29.6 (6.4)^
Mean number of health co-morbidities per participant****	4 (2.7)^

Ave = average; mins = minutes; n = number; PA = physical activity, SD = standard deviation;

THR = total hip replacement; TKR = total knee replacement

*Parks, walking tracks, sporting ovals, gyms or public swimming pools etc were considered easily accessible by participant; home situated on flat ground

**Based on participant's suburb of residence; higher numbers indicate lower incidences of socio-economic disadvantage e.g. scores between 76-100 indicate participants live in the nation's 25% least disadvantaged suburbs (48)

***Complications after TKR included: delirium, code called for acute medical deterioration, wound infection, arthrofibrosis, tachycardia, medication prescription error resulting in adverse reaction, manipulation under anaesthetic for stiff post-replacement knee joint

****Health co-morbidities included: respiratory conditions, musculoskeletal conditions, cardiovascular conditions, mental health conditions, cancer, diabetes, obesity, severe allergies, major surgeries, liver conditions, gastro-oesophageal reflux disease, sub-dural haemorrhage, Hashimoto's disease, benign essential tremor

Table 3 Illustrative quotes

Theme/Subtheme	Illustrative quote
Context	
Knee osteoarthritis restricted participation in meaningful life situations	"I couldn't get out and walk in the hills... and go hiking near the river... I couldn't do any of that. So, it was basically hobbling around the house, getting into work, doing my day's work and hobbling back again... I wasn't going out and about taking the dog for a walk every night as I used to always do. Those sort of things had to stop." (Interview 16, man age 57) "On holidays I'd watch other people go for a walk while I had to wait for them to come back... Sometimes you just get worn out from the pain and you just don't want to be bothered, and you avoid social situations that you wouldn't otherwise." (Interview 4, woman age 69) "We loved dancing, my husband and myself, so that also stopped. I couldn't really dance the fast dances." (Interview 8, woman age 64)
The opportunity for improved mobility was a key motivator to proceed with total knee replacement	"In the end I had to stop going (to a regular support group) because it was upstairs, and I couldn't climb the stairs because of my knee. That's when I realised how much I needed to get out of the surgery." (Interview 1, man age 64) "I was waddling like a duck... I was having trouble walking a couple of hundred metres, had to stop, couldn't do it; and getting up the stairs... was a nightmare... Mowing the lawn (was) just agony... All I wanted was this knee fixed. That was it." (Interview 19, man age 73) "We travel a lot so my knee needed to be fixed because we tend to go into national parks and hiking and stuff and I couldn't do any of that. So yeah, I had to bite the bullet and get the knee done." (Interview 22, woman age 66)
In the dark about physical activity	
Limited knowledge of physical activity guidelines: 'What do you know about physical activity guidelines?'	"Nothing at all." (Interview 1, man age 64) "Nothing, not anything... It's kinda they're, ah, lost." (Interview 2, woman age 81) "Nothing." (Interviews 11, man age 67; 15, man age 57; 18, man age 80; 21, man age 79) "No, I don't know much about that. I'm not a doctor, no." (Interview 13, man age 72)

Overestimated compliance with physical activity guidelines

“People would do them (meet physical activity guidelines) in their normal life, I would imagine. Just walking backwards and forwards and moving around in their jobs and stuff. Um, yeah, it’s nothing, it’s nothing outrageous.” (Interview 11, man age 67).

“I think I am moderately (intensity) active. I would end up doing more (than 30 minutes of moderate-intensity physical activity per day), and it’s all involved in housework; what I do is in that activity.” (Interview 9, woman age 67)

‘Busy-ness’ (low-intensity physical activities) viewed as physical activity that complied with physical activity guidelines

“... but you know over a day I'd do an hour, hour-and-a-half (of moderate-intensity physical activity). I look after the house. My wife is working full-time so I do the dish washing. I do this, I do that; that sort of thing.” (Interview 18, man age 80)

“I’m just assuming that if I am busy all day I’m doing enough to qualify to be active” (Interview 12, man age 74)

“I do sewing, art, craft. I’m busy, I’m always doing something. That’s the best way to explain it.” (Interview 3, woman age 75)

“Myself, I think I do that half an hour (of moderate-intensity physical activity per day). I have to cook or go to do the shopping or things like that.” (Interview 13, man age 72)

Psychosocial benefits of physical activity resonated strongly with participants

“I think it (physical activity) gives you (a) good mindset too. It makes you think better, and I’m in a few (social) groups and I have to be on the ball.” (Interview 5, woman age 75)

“I think that just your state of mind; you're a lot happier (when you are physically active). You're not worried about anything.” (Interview 20, man age 68)

“If I don’t exercise or I don’t have an athletic output, I get cranky, you know, I need it!” (Interview 3, woman age 75)

People prioritise participation in meaningful life situations after total knee joint replacement

“(My husband is) a bit older than me so there will come a time when his capabilities won’t be there to be doing all this so for the next five years I really need to be up and running and getting around... I need to be able to get around and do

Rehabilitation was perceived to not explicitly address involvement in moderate-intensity physical activity

Rehabilitation was perceived to focus on knee impairment exercises

Other health and social reasons (e.g. pain in other body parts, fear of falling, financial concerns) replaced knee osteoarthritis as barriers to physical activity

the things we wanna do in the next five years.”
(Interview 22, woman age 66)

“All my ambition is that I walk properly; I then can look after my wife going on a holiday. She has a wheelchair and she has a walker.”
(Interview 7, man age 87)

“Oh, I feel full of spark in that I go out, as I said most days, meet my two daughters, go shopping. They like shopping and (laughs) lots of shopping!”
(Interview 2, woman age 81)

“I was really keen to get back to life again.”
(Interview 14, man age 52)

“But (I) take it that when they said, ‘do these exercises at home’ which is just basically the same thing (as doing moderate-intensity physical activity) I suppose really” (Interview 21, man age 79)

“There was a little bit of ‘well, you know what you should be doing anyway’.” (Interview 22, woman age 66)

“I could see myself getting better and better, so that was (an) incentive...but it (working towards doing more moderate-intensity physical activity) wasn't so much the drive of the actual staff at the rehabilitation place.” (Interview 14, man age 52)

“I still do knee bends and squats, and I tend to integrate them into whatever I’m doing. If I’m in the kitchen at a bench or something, I’ll start doing some knee bends, do half a dozen squats before I leave the bench space. So, while it’s not structured into a timetable, it’s sort of structured more into my day.” (Interview 22, woman age 66)

“I did the exercises even after I’d finished (attending the rehabilitation program). Probably took about twenty minutes in a day to do them.”
(Interview 2, woman age 81)

“I knew I couldn’t keep going and do any exercise (at the local gym) because I had that tear (in shoulder tendons) and until I had it repaired... But then I’ve sort of got to watch the right knee because that’s thirteen years now since I’ve had the partial (replacement) done on that and I’m sort of worried about how much longer I have got

left with that knee before that one wears out.”

(Interview 6, woman age 65)

“I’ve got that fear that I’m going to fall over.”

(Interview 9, woman age 67)

“Well I think probably another thing is I’ve got to spend the money to go to the gym, but I don’t want to buy a membership though. I think that would be a waste.” (Interview 5, woman age 75)
