

# Better Before — Better After

## A Qualitative Phenomenology Study of Older Adults' Experiences With Prehabilitation Before Total Hip Replacement

Katrine Halsen ▼ Odd Einar Svinøy ▼ Gunvor Hilde ▼ Birgitta Langhammer

Total hip replacement is considered a successful intervention for pain relief and improved function. However, poor presurgery physical function may increase the likelihood of delayed postsurgery recovery. The purpose of this study was to describe community-dwelling older adults' experiences with a prehabilitation program (preoperative exercise) before total hip replacement. Four participants were interviewed 13 and 15 weeks postsurgery. The interviews were recorded, transcribed, and analyzed with systematic text condensation. Physical, mental, and social limitations were, to a higher or lesser degree, part of the participants' life presurgery. The results indicate that tailored close supervised training presurgery increased the participants' amount of and adherence to exercise, confidence, and sense of control. The participants had a positive experience of increased strength during the training period and gained motivation to perform progressive training. The exercise program helped the participants be physically and mentally prepared. The results indicate that close supervised prehabilitation in community-dwelling older adults undergoing total hip replacement can contribute to improved function and increase the level of activity and self-efficacy postsurgery.

### Introduction

Musculoskeletal disorders are common health problems in older adults living at home, and the combination of changes in muscle strength and bone mass has consequences for motor skills, gait function, and balance (Romøren, 2014; Wyller, 2015). Osteoarthritis presents as a high financial burden because of disability, comorbidity, and costs of treatment; large parts of the expenses go to the surgical treatment (Bitton, 2009). Although surgery is expensive, it seems to be cost-effective, reducing pain and activity limitations (Bitton, 2009; van Aalst et al., 2014). For end-stage hip or knee osteoarthritis no longer responsive to conservative exercise therapy, the insertion of a total prosthesis into the hip or knee joint is recommended and considered to be a successful procedure for pain relief and improved physical function (Hoogboom et al., 2014; McHugh &

Luker, 2009). A gradual increase in total hip replacement has been recorded over the past 20 years, mainly in the age group 70–79 years (Furnes et al., 2021). In 2020, around 8,535 primary insertions of a hip prosthesis were performed in Norway. Length of stay after hip replacement varies between 3 and 7 days (Furnes et al., 2021).

Prior to surgery, the orthopaedic surgeon assesses the state of health of a person with hip arthrosis. An important part of the surgeon's examination involves a physical examination of the hip to assess mobility in the joint and strength of the muscles around the hip. Blood tests and radiographs are also included in the preoperative evaluation for hip replacement. At present, no standard exists for prehabilitation programs for persons with hip arthrosis. Only general recommendations are routinely provided to persons prior to hip replacement surgery, such as to lose weight and to perform muscle strengthening exercises before surgery, because these have a beneficial effect on postoperative outcomes.

Postsurgery, most people will experience an uncomplicated course with limited pain, and the majority will be able to resume their usual activities (Geisler et al., 2019). The orthopaedic nurse is responsible for ensuring

**Katrine Halsen, MSc**, Physiotherapist, Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway.

**Odd Einar Svinøy, MSc**, PhD candidate, Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway.

**Gunvor Hilde, PhD**, Associate Professor, Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway.

**Birgitta Langhammer, PhD**, Professor, Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo, Norway.

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**Correspondence:** Birgitta Langhammer, PhD, Department of Rehabilitation Science and Health Technology, Faculty of Health Sciences, Oslo Metropolitan University, Oslo 0130, Norway (Birgitta.Langhammer@oslomet.no).

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that the patients are cared for during their hospital stay (Norsk ortopedisk forening, 2023).

During hospital stay, the physiotherapist helps the patient to achieve optimal function postsurgery with early mobilization to prevent thrombosis and to improve muscular control, stability, and mobility. The goal is to normalize walking function and to guide the patient toward personal responsibility and self-reliance in daily activities. The terms “physiotherapist” and “physical therapist” are synonymous, and in this article, the term “physiotherapist” is used.

The time before surgery, however, is often characterized by increased pain and loss of physical function, which can limit an individual's activities of daily living (ADL) (Raad et al., 2019; van Laar et al., 2017). Consequently, psychological stress can reduce quality of life (Leichtenberg et al., 2021). Patients have described the presurgery period as having their lives being put on hold, a feeling of powerlessness, loss of dignity, frustration, and lack of control and influence over the date of surgery (Johnson et al., 2014; Jourdan et al., 2012). Studies have shown that older adults with a reduced level of function presurgery may have a higher risk of postoperative complications and longer hospital stays. In this context, reduced physical function before total hip replacement is a strong indicator of delayed recovery of physical activity levels postsurgery (Elings et al., 2016; Hoozeboom et al., 2014; van Laar et al., 2017). Physiotherapists, as well as orthopaedic nurses, play an important role in motivating and helping older adults maintain independence in ADL and level of function for as long as possible (The Norwegian Medical Association, 2018). Therefore, it is desirable to investigate whether older adults with reduced function presurgery of total hip replacement through preoperative training (prehabilitation) can gain improved physical and mental function and increase their likelihood of achieving independence and activity in everyday life postsurgery.

The project “Better Before—Better After: Prehabilitation Program for Older Patients Awaiting Total Hip Replacement” registered in ClinicalTrials.gov (NCT03602105) is a randomized controlled study (RCT) hypothesizing that training before total hip replacement in older adults with low levels of function can provide a better prognosis and counteract dysfunction postsurgery. The current substudy utilizing information from participants of the aforementioned RCT aims to give insights into community-dwelling older adults' experiences of participating in a prehabilitation program before primary surgery for total hip replacement. The current study, as a part of the Better Before project, investigated the motivation to participate in such a program and whether this improved the participants' condition both physically and mentally during postsurgery treatment and rehabilitation.

The research questions are as follows:

- What were the challenges of the informants who underwent total hip replacement prior to the surgery?
- How do older adults living at home experience participating in preoperative training before total hip replacement?

- What thoughts did the informants have about the usefulness of preoperative training after the surgery?
- How did the informants experience carrying out training after the surgery?
- What were the informants' thoughts about returning to their everyday activities after the surgery?

The main project was approved by the Regional Ethics Committee for Medical and Health Research (REK) No. 2018/503. The project was approved to interview up to 10 informants.

## Methods

This substudy is based on a phenomenologically inspired understanding that reality is what one perceives (Brinkmann & Kvale, 2014; Kvale & Brinkmann, 2015). Phenomenology was developed in the 19th century by philosophers such as Edmund Husserl, Martin Heidegger, and Maurice Merleau-Ponty. Using this method, the phenomenon to be investigated is described as accurate and detailed as possible. The perception and body experience of the individual are central in the phenomenological description. The individual's subjective experiences are at focus (Malterud, 2017). Hence, the goal is to describe the world from the informant's point of view.

The empirical data were collected using a semistructured interview. Prior to the interview, an interview guide was prepared, with suggestions for the questions and subquestions for each topic. The informants were interviewed individually to give the informants time and space to share their experiences and reflections (Malterud, 2017).

The plan was to conduct the interview face to face, hence creating a safe arena for the informants to share their experiences 12 weeks after the surgery. Because of the COVID-19 pandemic, a pragmatic decision to conduct telephone interviews was made to ensure progression of the project could ensue. To practice the setting and test out questions from the interview guide orally, a pilot telephone interview was conducted. The telephone interviews were recorded via the Dictaphone app developed by the Service for Sensitive Data (TSD), University of Oslo.

## SUBJECTS

The main RCT recruited patients from three hospitals: Oslo University Hospital, Diakonhjemmet Hospital, and Akershus University Hospital (Ahus) (Svinøy et al., 2019). The inclusion criteria were participants 70 years or older living at home, with residential addresses in the municipalities within the region of the South-Eastern Norway Regional Health Authority, who were scheduled for elective primary total hip replacement because of end-stage osteoarthritis, had a Harris Hip Score of 60 (Harris, 1969), were mentally capable of receiving and comprehending instruction during the exercise sessions, and were capable of reading, understanding, and filling out the questionnaires on their own. Recruitment for the substudy was done at the same time. Using the same consent form, the informants had the opportunity

to answer whether they wanted to be interviewed after the intervention. The interviews were scheduled 3 months postsurgery.

## INTERVENTION

The prehabilitation involved education and exercise with three to four sessions per week for 6–12 weeks. Two of the weekly sessions were to be guided by a physiotherapist, and the remaining sessions were home exercise/self-training. The exercise program was individually adapted and consisted of progressive strength, neuromuscular, and cardiovascular training, with a focus on functional training. Physiotherapists in primary healthcare in South-Eastern Norway who had attended the 8-hour ActivA course for physical therapists delivered the intervention (Risberg et al., 2018, 2023). The control group followed the usual hospital procedures for hip surgery. The participants were tested at baseline (1 week before the start of prehabilitation), at 1 week, and at 6 and 12 weeks postsurgery (Svinøy et al., 2019).

## ANALYSIS

Transcription of the interviews was completed verbatim by the first author. The thematic analyses were inspired by Malterud (2017). This analytical strategy is a rigorous, systematic, and fluid approach to coding and theme development, drawing on a four-phase model. The systematic text condensation focuses on relatively few topics and code groups to bring out the most relevant aspects of the phenomenon being investigated as accurately as possible; this consists of four steps (Malterud, 2017):

- *To form a holistic impression of the text*  
The transcribed interviews were read multiple times to review the material as objectively as possible, and the material was sorted into seven preliminary topics related to the research questions.
- *To identify meaningful units and code them*  
The units were then sorted into five code groups related to the preliminary topics that had been identified.
- *To condense the meaningful units, the empirical material was reduced/abstracted to a decontextualized selection of the sorted meaningful units*  
The five code groups were divided into three subgroups based on the main aspect from the material that reflected on the perspective of the study.
- *To convert code groups into analytical text using condensates from the subgroups and associated citations that concretize the main findings*

The condensed subgroups were recontextualized into text with three main themes. These themes were analyzed in view of aging and motivation theory.

The member checking was done during the interview process. The interviewer strived to build the interview guide and the interview to get honest and open responses.

## Results

Recruitment for the main project was paused in the spring of 2020 because of COVID-19. A total of four informants were interviewed, and their demographics, verified and accepted for publication by the informants, are presented in Table 1. The interviews were conducted from the end of March to the end of April 2020 and lasted between 40 and 55 minutes. For the informants, the interview took place 13–15 weeks postsurgery, with an average of 14.5 weeks.

Three main themes evolved during the process of data analysis and text condensation: (1) challenges prior to surgery; (2) experience participating in preoperative training; and (3) experience of performing training after the surgery/“back to normal activity” (see Figure 1).

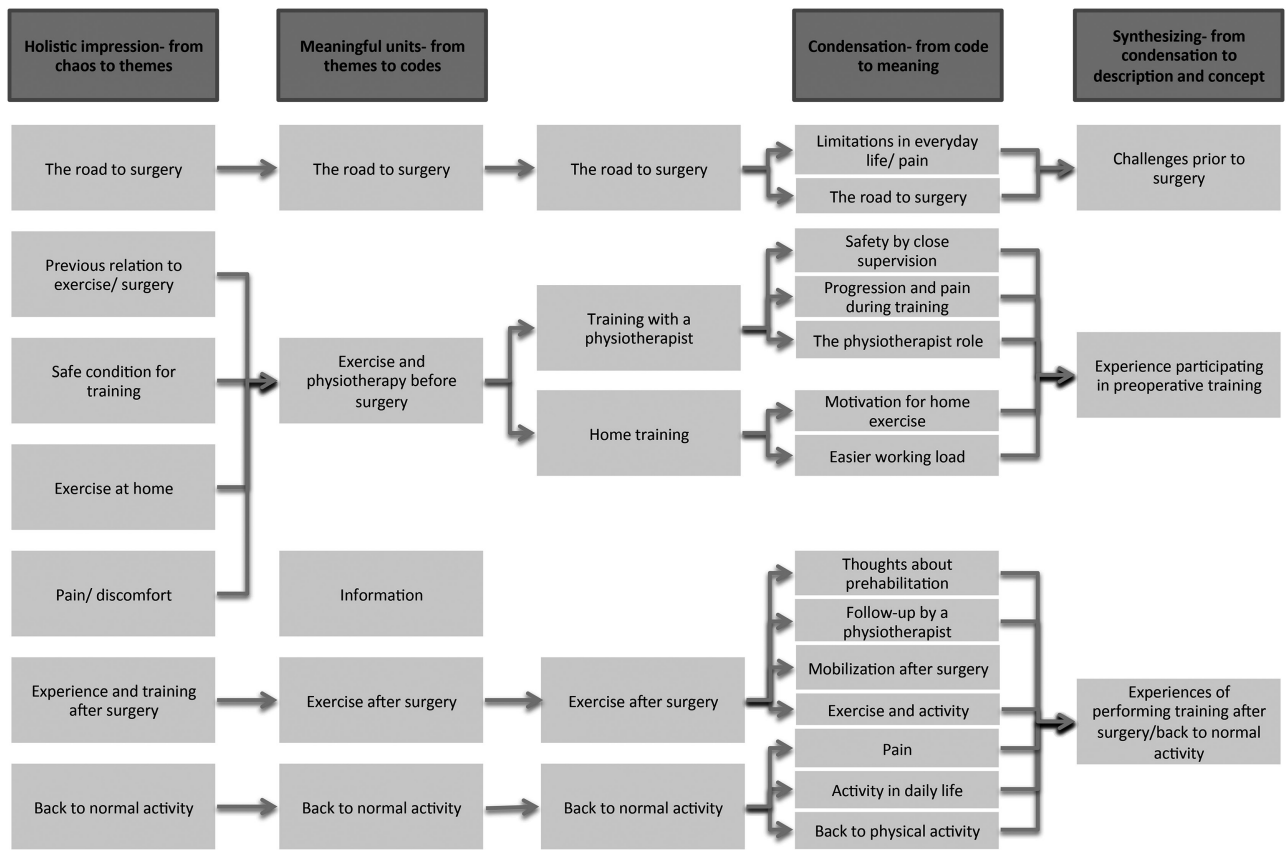
The four informants had experience with physical activity presurgery, such as walking both on solid and rough terrains. Three of the informants were followed up by a physiotherapist during the training program prior to surgery, whereas one of the participants received a follow-up from a personal trainer (PT) and participated in group training at a fitness center. One of the four participants had completed three previous prosthetic surgeries in other joints before the upcoming hip replacement (see Table 2).

### CHALLENGES PRIOR TO THE SURGERY

Presurgery, the informants experienced pain and discomfort, but not all had the same physical limitations. Informant 1 had the most ailments when he was inactive. To reduce the murmur in his legs, he had to get up and walk or pound on his leg. He told us, “I could hardly sit a day without it hurting.” Informants 2–4 described pain present both at night and during the day, and Informant 3 added, “I was not limited in activity, but I was in pain all the time.” Several had pain when walking and used assistive devices. Using stairs was challenging, and Informant 3 said that stairs were the worst thing he did and that he avoided stairs as much as he could. He experienced restrictions in outdoor activities, as well as in daily life activities. He had an apartment at a ski resort located on the third floor, where he struggled with the stairs. However, he noted, “Paradoxically, I could go downhill skiing!”

TABLE 1. THE INFORMANTS' CHARACTERISTICS

	Informant 1	Informant 2	Informant 3	Informant 4
Sex	Male	Female	Male	Female
Age	74 years	82 years	81 years	78 years
Marital status	Married	Cohabitant	Married	Married
Education	One term in college	Certificate of apprenticeship in healthcare	Two master's degrees	PhD



**FIGURE 1.** Depiction of the application of Malterud’s four steps of systematic text condensation in identifying preliminary topics, organizing code groups, and dividing into three subgroups with three main themes.

For Informant 2, the pain prevented her from participating in the activities she had been involved in, such as dancing and going for walks. She managed to carry out chores in the house: “It was not so that I sat down, no.” She also stated the following:

There was a limitation in range of movement affecting the daily routine in getting around, and I was as stiff as a stick, right. (...) So, it was a lot of fuss with pain and mobility impairments. And it was in a way a reduction in my quality of life, to sum it all up. (Informant 3)

The informants outlined the various processes leading to surgery. Informant 1 had tried different

approaches and treatments: “Yes, I would say that it was a period I spent a lot of time and effort and an unnecessary amount of money to alleviate the pain because it did not help.” Eventually, he consulted his general practitioner (GP) and was referred for diagnostic imaging to the hospital for surgery. The other informants were diagnosed early.

Informant 3 had performed strength training for 5 years at home in an attempt to avoid surgery. “It meant that I already bought these weights with slings in the ceiling and all that and, thus, started an exercise regime.” Nevertheless, he experienced that the pain worsened and he finally consulted his GP to get a referral for

**TABLE 2. EXPERIENCE WITH PHYSICAL ACTIVITY, PREVIOUS SURGERY, AND INFORMATION OF RELATED POSTOPERATIVE COMPLICATIONS AND FOLLOW-UP TREATMENT/REHABILITATION**

	Informant 1	Informant 2	Informant 3	Informant 4
<b>Experience with physical activity</b>	Walks, Nordic and downhill skiing, not familiar with strength exercise	Mensendieck group exercises, dance, and walks	Alpinist. Regular strength exercises over the past 5 years	Exercise with a PT and group training in a fitness center since start of retirement
<b>Previous prosthetic surgery</b>	No	Three: two knee and one hip prosthesis	No	No
<b>Postsurgery complications</b>	No	Yes, drop foot	No	COVID-19
<b>Follow-up in the project period</b>	Physiotherapist	Physiotherapist <sup>a</sup>	Physiotherapist	PT + group sessions

Note. PT = personal trainer.  
<sup>a</sup>Had not performed ActivA course.



surgery. Informant 4 said that she experienced several years of hip pain that came and went. The informant described that she was able to live with the pain, and she trained, as before, but adapted the activity somewhat. However, in the last 3 years, it got increasingly worse. So, she wanted surgery before she got too old, but she had to wait longer for the surgery than anticipated: "I wanted surgery because I reckoned, I would not get any better. So, if I was to have the surgery, I should have it before I got too old" (Informant 4).

## EXPERIENCE PARTICIPATING IN PREOPERATIVE TRAINING

Several of the informants stressed that to be followed up by the physiotherapist prior to the surgery led to a sense of security and motivation. Informant 2 said that training with the physiotherapist contributed to her adhering to and completing the pretraining. "Without it, I would probably be inactive and do nothing. Of course, it helped me a lot." Most informants described a close follow-up from the physiotherapist, and Informant 3 said, "She was a sympathetic but tough person, so I called her my little sergeant. In the sense that she literally was close and made sure I did not cheat." Close follow-up with the physiotherapist enabled progress of resistance during the preoperative training period. He was very satisfied that he had met a physiotherapist who supported and helped him progress in his training.

Prior to the project, Informant 4 had exercised once a week with a PT whom she trusted and had a good relationship with, in addition to regular group sessions at the local fitness center. She had held expectations of closer follow-ups when participating in the project, as well as continuing with the same training as before. However, Informant 4 did not receive the intended pre-surgery follow-up. Instead of the special individual program recommended by the project, she was invited to join a group session. When the informant realized that this was equivalent to what she did at her local gym, she chose to continue with the training program she already knew: "I thought I did not have to go to him, this physiotherapist because he did not have much time for me, and I think it was not necessary. I think I trained as I should."

Informant 1 had the same expectations and plans as Informant 4. He was aware that physiotherapy post-surgery was necessary but had low expectations of the content:

I've heard a lot about it, physiotherapy after the hip surgery is more or less self-exercises where you exercise alone with rubber bands, jumping, and running around on your own at home and well, it did not suit me very well.

He wanted a more organized follow-up where he did not have to "push himself" alone but could become "pushed" and receive some support. This was also in agreement with what he experienced during the project. He stressed that close follow-up was positive:

My experience is that they (the physiotherapist) followed closely what type of exercises I was doing, and it was not just walking, pulling rubber bands or weights. They followed me closely, commenting: "This is not for you and so on."

Because Informant 1 was not used to exercising before, he felt it was good that he was guided through the exercises. He experienced self-efficacy when carrying out exercise with training equipment: "Made me motivated, it did. Because when I was successful with the different devices, I almost looked at myself as a bit like a world champion." It was useful to have one person to relate to, and he said that it was a positive that he had a flexible arrangement when it came to the time of the appointment. This is in contrast with what Informant 3 said:

I would probably have appreciated that I was followed up by someone who was knowledgeable because I was all the time unsure if I did things right (...). It's easy to use wrong muscles and such, so I would like to have a closer arrangement like the one person I talked to at the hospital had. I was a little jealous of that.

The four informants had different reflections and experiences about the strength exercises and pain associated with them. Informant 2 experienced getting stronger in general and that the exercises with the physiotherapist had helped her a lot. "I think it strengthened me in general, and I think I got better. So, I had better muscle strength in my hip before I had the surgery, so to speak." Not all the informants had the same experience. Informant 4, who had follow-up with a PT, said that she felt quite strong before entering the project and that she was not sure whether the presurgery physiotherapy actually made a difference. She expressed that she exercised to be stronger, but her pain threshold was low, so there was a limit to what she could endure:

There was a limit to how much I could endure, so I was happy when my PT said the exercises were to be adapted when it was decided I was going to have surgery. So, before the adaptations I exercised to get better somehow, after I exercised to become stronger. (Informant 4)

Pain in connection with exercise was something that several of the informants experienced. The informants had varying degrees of pain during exercise, and Informant 3 reported that the affected hip was very painful and limited how much he could push himself. He did resistance exercises for both legs, but he had more resistance to the "healthy one": "The exercises on the 'sick hip' were limited by the pain. The exercises on the 'healthy hip' were limited by the fact that I could not do more." The informant's goal was to push himself as far as he could, and he said that he was able to increase resistance during the training period. Informant 2 also experienced that the pain increased during the training: "Yes, I undoubtedly felt pain in my hip. However, in the end, I think I became, I would say, it almost got better. Yes. Yes?" Informant 1 was not limited by pain during exercise. He described that this allowed him to exercise and be active to the maximum:

"Pain did not really restrict me, so obviously that I could take it 'all the way' made me in better shape." And that resulted in that I had, shall we say, an increase of resistance in all the various machines (...). So yes, I pushed myself, right, before the surgery. It was painful, but I did not cross any borders. I did not hurt myself, but I pushed myself as far as I could. (Informant 3)

It varied how many times the informants had appointments with a physiotherapist and how many times they exercised on their own at home. Informants 2 and 4 tried to do some home training every day, but Informant 4 expressed that it was not always quite so often. She preferred shorter periods of exercises, approximately 20 minutes, instead of a whole hour at a time. In addition, she varied exercises so that she did not do the same thing every day. Informant 1 said that he trained at home three times a week, whereas Informant 3 carried out home training six times a week: "Yes, we were given six days a week, I took one day off ... but in addition, to the exercise at the physio I did six days a week, and I still do" (Informant 3).

The informants described the intensity of home training as less than the training they had when supervised by the physiotherapist. The home training was expressed in terms of a "prework warm-up" and "low intensity." During home training, Informant 3 was unable to replicate what he managed when supervised by the physiotherapist, even though he had weights, slings, and a balance pillow at home. Informant 2 had the same experience: "Training with the physiotherapist it is better." She said that home training was a bit "sloppy" when she knew she was going to physiotherapists later. Informant 1 expressed that the home training was of a slightly different quality and described the exercises as "in front of the television training" and "housewife exercises" (with laughter). He expressed that TV was a good distraction so that he could do what he considered boring exercises. It worked for him when he did it this way:

Since I was sitting there, it became a bit like in front of the TV training. Among other things, I had these rubber bands, the ones you have around your legs. And I just put it on the whole time in front of the TV, right. And then it did not "feel" like training, but just that I sat there for an hour and pulled that elastic band without really thinking about it ... without feeling it was exercise or something I had to do ... It became a bit like TV-exercise, I just sat there and lifted my legs. (Informant 1)

In general, the informants expressed that the project gave them motivation for self-training and that the physiotherapist's program was carried out to the best of their ability. Informant 4 expressed that she would not have exercised at home if it were not for the project: "You can say that what was a difference was that I trained at home, I wouldn't have done that if it hadn't been for the project. I would have thought that was an exaggeration." She described herself as dutiful, and it was satisfying to do self-training, but she preferred group exercises. Informant 1 confessed he would never have had the energy to do self-training if he had not received a plan from the physiotherapist. He kept a log over completed exercises and performed these as instructed. Informant 3 had completed self-training at home prior to the project, so it was not a big change for him.

### **EXPERIENCES OF PERFORMING TRAINING AFTER SURGERY/"BACK TO NORMAL ACTIVITY"**

A link between before and after surgery training was emphasized. All the informants would recommend

doing prehabilitation with a physiotherapist prior to hip surgery. Informant 1 expressed that he could recommend doing preoperative training the way he did "...and especially if you are not a top athlete or anything like that. However, if you are in good physical shape, it may not be so helpful..." So, he stated, that each and everyone needs to assess their own fitness level and their need for presurgery training. He was convinced he would have been worse off without this prehabilitation intervention. Informants 2 and 3 had similar experiences and reflections as Informant 1. All four informants felt physically stronger presurgery because of the prehabilitation, which transferred over to postsurgery. Informant 4 stated that because of the prehabilitation, she was quite strong and had a reasonably good balance postsurgery. Informant 2, had postsurgery complications, had other challenges. Although the pain from the hip was gone, her drop foot lowered her ability in all activities, which made her sad. Another "complication" was reported by Informant 3. The orthopaedic surgeon had commented that he had well-developed muscles, which complicated the surgery somewhat because they were reluctant to cut into the muscles. He experienced a better starting point postsurgery, where he had a faster recovery and mobilization than his roommates. This was also apparent at the postsurgery rehabilitation center, where he exercised with people who had undergone the same type of hip surgery, who could say, "No, I cannot endure this, and no, now it hurts and no, it does not work, etc. I did not have so much pain, and I reckon I owe that to the presurgery exercises." He said this was proof that the exercises had helped him: "All human experience indicates that exercises in advance is good prevention. Well, that is something everyone knows" (Informant 4).

Three of the informants described early mobilization postsurgery. Informant 3 described walks with crutches in the corridors of the hospital three quarters of an hour a day. Informant 4 also walked with crutches. She was inspired by a fellow patient to walk more, which she appreciated. Informant 1 used a high walker: "And that was no problem for me, I strolled as if nothing had happened, and the physiotherapist was a bit surprised." He observed a big difference compared with the others who had undergone the same surgery, and he believed that the presurgery exercises contributed to this more rapid recovery. Gait training was something that many of the informants highlighted as an important part of the exercises, and the long daily walks were put forward as excellent training: "Yes, well, it was said from day one that the best training I can do is to walk" (Informant 3).

The postsurgery exercises were different for the informants, and some had unexpected challenges in connection with rehabilitation after surgery. It varied whether the informants had follow-up by a physiotherapist postsurgery or not. Almost all the informants performed exercises after surgery, except Informant 1, who refrained from exercises because of increased pain. He performed the same exercises he had done presurgery in the hospital but at a less-intense rate because of the pain:

Well, you can say that a bit like self-training at home. Because you are in pain, it gets a bit reduced. You

cannot push yourself, so to speak. It's not that you cannot do it 30 times, but you do not want to hurt 30 times! It should not hurt every time. Because then something in your mind says it hurts here and you should stop.... (Informant 1)

At the time of the interview, pain was a minor issue. However, 1 month after surgery, as he reduced medication and pain killers, he experienced some pain. He did not believe he would have been able to complete any strength training at that time. Informant 3 did not have a follow-up with a physiotherapist either, but he had in-hospital rehabilitation postsurgery, and he continued with the presurgery exercises.

Informant 4 did the exercises she was given from the hospital, but she felt they were too "easy" and underdosed. She was advised by an acquaintance to contact a municipal physiotherapist for exercise guidance, but because of a COVID-19 infection, she only had three follow-up hours. The quarantine lasted for more than a month, and the limited exercise opportunities set her back: "...it was a big draw-back." After the COVID-19 infection, she contacted her PT and continued exercises, as she had done presurgery. The informant said that she liked to have a program to follow and structure in the training: "...because I have to have structure; write it down and to have a plan—and not just do a little bit of this and that—I do not like that, that's not the way I do it."

Two of the informants had had some follow-up from a physiotherapist, and Informant 2 had had 2 hours with a private physiotherapist and 1 hour per week with a municipal physiotherapist because of the drop foot: "...if I had not had that drop foot, then I would have been very active."

The informants described how the challenges experienced presurgery changed postsurgery. Informant 1 no longer had any problems with restless leg, which had been the biggest problem before surgery. In addition, he was able to sleep without discomfort. For Informant 2, she no longer had pain during the day in her hip. However, because of her drop foot, her balance was poor, and she was dependent on walking aids, something that led to strain and pain in her shoulders. This prevented her from going for longer walks outside. The informant did some gardening and then had a chair that she used because of balance problems.

Presurgery, several of the informants had pain when climbing stairs, including Informant 4. However, the pain was reduced when she walked several floors. Informant 3 experienced an improvement, but he could still feel a little discomfort: "...it takes no more than a small hill or a staircase then I feel it a little discomfort, but I will not consider it as pain, that phase is over." Several of the informants experienced stiffness in the hip joint. This was especially pronounced after inactivity. Informant 4 expressed: "The paradox is that I'm stiff as a stick, and then, I walk five steps and I'm good." Postsurgery, he had an extra focus on his walking because his leg had been corrected for length difference:

So I practice walking correct to achieve automatism in "normal walking," as the doctors said, the limping is "learned" and is memorized in your spinal cord so

in the end you are good at it. And I do not like the idea of that.

All the informants expressed a desire and goal to return to the physical activities they had practiced before hip arthrosis. Informants 1, 3, and 4 expressed that they would return to regular activities such as walks and Nordic and downhill skiing. Informant 1 felt he was in a very good shape. Informant 2, on the contrary, had big challenges with postsurgery complications and felt that her quality of life was reduced. Her drop foot made it difficult to do the activities she had done before, such as dancing and going for walks in the woods. Informant 4 was looking forward to going to her holiday cottage where she could go for walks and "strengthen up herself." In addition, she was ready to go to the gym and participate in the exercise group. Informant 3 was looking forward to pursuing his winter activities: "...so hope is to be able to resume my alpine pursuits when winter gradually emerges...."

## Discussion

The aims of the current study were to elucidate community-dwelling older adults' experiences of participating in prehabilitation before total hip surgery, what motivated the informants to participate, and whether the prehabilitation was useful in terms of getting back to ordinary activities postsurgery. The results are discussed in line with the three themes that evolved after the analysis: challenges prior to surgery; experience participating in preoperative training; and experience of performing training after the surgery/"back to normal activity."

The results showed that the close follow-up presurgery gave the informants a sense of security and motivation postsurgery. The informants reported benefits such as early mobilization, better strength, and a subjectively quicker recovery after having completed the prehabilitation. Three out of four continued exercising after their surgery.

The informants were gender balanced and ranged in age from 74 to 82 years, with an average age of 79 years. This corresponds to the age group in which hip surgery is performed in Norway, meaning the sample was representative of the general patient group (Furnes et al., 2021). Three of the informants reported having higher education and further being in good health. One participant, who had undergone several prosthetic surgeries previously, had a more physically demanding profession than the other informants and thus probably had a greater body strain throughout the working life (Spirduso et al., 2005). All the informants had been engaged in physical activity prior to their hip problems; this is a factor that may have counteracted the dysfunction and vulnerability of the informants (Hansen et al., 2015; Ranhoff, 2014). All the informants had a goal to go on longer walks postsurgery.

### CHALLENGES PRIOR TO SURGERY

The aim of the main project, the RCT, was to recruit frail older adults with low levels of function presurgery. However, poor health and reduced mobility can also be



factors that prevent vulnerable older adults from taking part in research, which makes it challenging to recruit this group of people into research projects (Provencher et al., 2014). This is a limitation, as these participants probably would have the greatest benefit from the training, as seen from the dose–response curve for physical activity and health gain (National Institute of Public Health, 2018). Previous research has also shown that the poor effect size in studies is related to the fact that the participants have relatively good function at baseline (Clode et al., 2018; Hoozeboom et al., 2014). The informants in the present substudy had good function and were physically active every day, even though they had their own challenges in terms of moderate limitations in their ADL. Therefore, one may question whether the Harris Hip Score provided adequate assessment of symptoms and pain problems for recruiting the intended participants (Elings et al., 2016). When disease burden, self-reported physical health, low gait speed, and gait length predict low recruitment, this may indicate that this type of study appeals to a part of the population that is initially active and has relatively good health (Provencher et al., 2014). Furthermore, those individuals evaluated for total prosthesis surgery may not have the physical limitation that has been assumed and been offered surgery before their functional level was reduced and impacted on their ADL. We could also ask whether the barriers, poor health, and reduced mobility hindered the recruitment of this vulnerable group.

Most of the informants experienced having a close follow-up with their physiotherapists. Support from health professionals can be a factor that promotes physical activity in the elderly and can facilitate adherence and individual adaptation of exercises (Costello et al., 2011; Torjuul et al., 2015). Corresponding to previous research, several of the informants expressed that close follow-up contributed to perceived motivation, self-efficacy, and safety (Granbo et al., 2015; Lindelöf et al., 2012). In addition, they felt and experienced increased physical performance. It is conceivable that no or little experience with exercise may lead to reduced adherence, a notion supported by the reflections of the informant who had no experience with strength training in advance of the project. Costello et al. (2011) noted that physically inactive individuals have a greater need for individually tailored exercise programs and that individual follow-up can contribute to participation. The results of the present study may also suggest that those unfamiliar with strength training may also need individual follow-up. The correct technique, together with individually tailored intensity and progression, was assured by the physiotherapist. This reassurance probably contributed to the participants daring to “push themselves” more, which led to an experience of progress, self-efficacy, and security that physical exertion is not dangerous (Granbo et al., 2015; Lindelöf et al., 2012; Torjuul et al., 2015). The current study supports this concept, showing that the close follow-up provided the participants with reassurance to carry out heavier strength training, experiencing the situation as manageable and safe, even though the exercises led to some pain or discomfort.

The aim of prehabilitation was to give the informants a close follow-up, contributing to safety and security during exercise and motivation to adhere to, in addition to increasing the amount of exercise presurgery. The follow-up by a physiotherapist presurgery can be seen as an external motivational factor, and several of the informants said that they would not have completed the exercise presurgery if it was not for the tailored exercise program and supervision they received. Thus, the program helped increase the motivation of these informants. The fact that one should report how much exercise should be viewed as an external motivational factor. Having a goal for one’s training can help increase one’s inner motivation (Weinberg & Gould, 2018). The informant who had little follow-up during the exercise period reinforced this notion. Despite no close follow-up, she carried out a larger amount of training, but she was uncertain about her own performance and the quality of exercises. This indicates that the motivation of adherence to training may be linked not only to a close follow-up but also to internal and external factors (Lohne-Seiler & Langhammer, 2018).

### EXPERIENCE PARTICIPATING IN PREOPERATIVE TRAINING

The planned intervention provided up to three exercise hours per week, where two sessions were to be guided by a physiotherapist and the remaining were to be carried out as self-training at home. Some hours with the physiotherapist were to be educational, but it did not seem as if the informants perceived that they had received any education, or they did not mention this during the interview.

The informants in the present study experienced a higher level of activity and exercise presurgery than they would have been able to carry out on their own. The challenge in the future, where the proportion of older adults in the population will increase, will be to find measures that can help maintain or increase the level of activity in the elderly (National Institute of Public Health, 2018). This could contribute to the elderly being able to live at home longer and being independent for as long as possible (Hansen et al., 2015; Helsedirektoratet, 2016; National Institute of Public Health, 2018). An exercise program like the one implemented for the informants in the training arm of the RCT may help limit individual barriers, such as a lack of knowledge, reduced self-efficacy, or reduced motivation (Bergland, 2012). The informants expressed that they were more active during the implementation of the presurgery training program and expressed that they probably would not have carried out strength training with a physiotherapist in addition to self-training if it was not for the project. This is in line with a previous study indicating that follow-up with a physiotherapist can contribute to increasing the level of physical activity in patients with a total hip prosthesis (Withers et al., 2016).

Several of the informants described that the training at home was less intensive than that with the physiotherapist. It seemed that the informants were less satisfied and less motivated to perform home training than the exercises with the physiotherapist. Satisfaction seem to be important for motivation (Lohne-Seiler &



Langhammer, 2018), and previous studies have shown that training in groups has led to increased well-being compared with exercising alone and that this is probably related to social group interaction (Helbostad et al., 2004; McAuley et al., 2000). Exercise instructors may act as motivators, contributing to a feeling of safety, in addition to ensuring the quality of exercise (Granbo et al., 2015; Lindelöf et al., 2012). This is in line with the results of the current study, where the physiotherapists were motivators, both for the training performed at the primary health care clinic and for the self-training at home. The informants described the exercises with the physiotherapist as more intense, and it is conceivable that this training gave the informants a sense of increased satisfaction and mastery, which again increased their motivation. Training at home was less tiring and appeared less motivating but was still accomplished. A sense of meaning is an important factor for motivation and for keeping up with physical activity (Bandura, 1982); here, some of the informants experienced the usefulness of self-training as low, and this may have reduced the sense of meaning with the activity.

### **EXPERIENCE OF PERFORMING TRAINING AFTER THE SURGERY/"BACK TO NORMAL ACTIVITY"**

The informants found the presurgery exercises useful in terms of better fitness, stronger bodies, and a feeling of self-efficacy after completion of the exercise program. Furthermore, it was stated that they felt physically prepared for the surgery, and some also expressed being mentally prepared for the postsurgery rehabilitation, which is in line with the results in Clode et al.'s (2018) study. The participants in the prehabilitation group felt physically and mentally prepared for surgery compared with the control group; they stated that it was useful to meet others in the same situation, which increased their motivation for exercise (Clode et al., 2018). The participants would recommend the prehabilitation program to others in a similar situation, which again is in line with Clode et al.'s (2018) study.

One of the informants stressed the benefit of receiving prehabilitation if one was not familiar with strength training. Others who had participated in organized exercise previously expressed the benefits of the prehabilitation in terms of motivation and the motivation to progress resistance when implementing the exercises.

The same recommendations of physical activity, exercise, and dosage can apply to the elderly population as in the younger population (Liguori, 2021; The Norwegian Medical Association, 2018). To achieve increased muscle strength, the resistance should not be so heavy that one is unable to complete more than 4–12 repetitions per series (Raastad, 2010). However, studies of elderly persons doing strength exercises have shown varying effects, indicating that older adults may need closer follow-up than younger people (Raastad, 2010). This may indicate that the elderly will benefit from individual follow-up when the goal is to carry out heavier strength training to achieve muscle growth.

With the help of a physiotherapist, the informants were mobilized and up walking early postsurgery. Compared with other patients with hip replacements, the informants felt they had an earlier start with

progressively more intense training, in comparison with presurgery exercises. This is in line with Su et al.'s (2018) study, where the results indicate that early mobilization postsurgery is associated with a better level of function. Presurgery use of walking aids and problems with stair walking have been associated with an increased hospital stay (van Aalst et al., 2014). This contrasts with the present study, in which several of the informants used walking aids and had problems with climbing stairs presurgery. However, none had extended hospital stays related to presurgery problems. Only one informant had an extended stay because of postoperative complications. Therefore, the results of the present study support van Aalst et al.'s (2014) hypothesis that prehabilitation may be useful for persons with presurgery challenges.

The informants with no postsurgery complications had a minimal follow-up, indicating that they were mentally and physically prepared postsurgery (Clode et al., 2018). The knowledge of what exercises they could do and the self-efficacy they experienced motivated the informants and made the threshold for starting exercises postsurgery lower than it might have been without this presurgery experience.

As a goal, the informants wanted to return to the activities they had done before pain and osteoarthritis began to limit their function. It is important to focus on the patient's own goals (Østerås & Helbostad, 2016). Hip surgery provides pain relief and improvement in function but does not automatically lead to more physical activity (Jeldi et al., 2017). Routines for physical activity should be established during the time before the surgery (Jeldi et al., 2017). New activities that are introduced presurgery may not be established and carried out in the long term. The informant who had no experience with strength training previously did not continue the exercises postsurgery, indicating that the intrinsic motivation for the activity was low. This informant had not experienced presurgery pain when conducting the exercises, which is in contrast to the other informants, and this may have influenced his strategy for overcoming postsurgery pain. However, it may also serve as an example for those habits for strength training that must be incorporated well in advance of any surgery and that information about the benefits of postsurgery exercise to achieve as good a function as possible in the new joint is important. The inner motivation and conviction of the exercise benefits are vital for maintaining physical function (Bandura, 1982).

### **LIMITATIONS**

This project recruited informants from an ongoing RCT (NCT03602105). Because of the COVID-19 pandemic, the recruitment of participants was delayed, thus leading to delays in the current subproject and a smaller sample than planned. This substudy was not allowed to complete interviews until 12 weeks postsurgery, to avoid confounding the quantitative results of the RCT. Although we had planned to include 10 participants, only four were interviewed, as such saturation cannot be assumed. In addition, the worldwide outbreak of COVID-19 became a challenge for conducting the interviews face to face in the

spring of 2020 and the interviews were therefore conducted by phone.

## Conclusion

The purpose of the current study was to gain more knowledge about the experiences of community-dwelling older adults participating in a prehabilitation program before total hip replacement. Physical activity was important to the participants, but their pain limited presurgery activity. Some also experienced social constraints and reduced quality of life. Findings revealed that most of the informants experienced close follow-up and individual guidance from a physiotherapist. This guidance provided a sense of safety and increased patient self-efficacy. In addition, several of the participants had a positive progression postsurgery because of this training. The close follow-up was a motivation to be part of the project, to be motivated and “pushed” to implement heavier exercise resistance, and, as a result, to increase strength. It was also a motivator for self-training, which the informants perceived as a lighter type of training. The presurgery exercises contributed to the informants being physically and mentally prepared for surgery, as well as facilitating early mobilization and an early start with postsurgery training. As a goal, the informants had to return to their usual physical activities, and this was motivation to perform their pre- and postsurgery exercises.

The current study shows that a close supervised training program presurgery may increase the activity levels and maintain physical function in community-dwelling older adults undergoing total hip replacement.

## Data Sharing

Because of the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data are not available.

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