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# The Phys-Can study: meaningful and challenging - supervising physical exercise in a community-based setting for persons undergoing curative oncological treatment

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## ABSTRACT

**Introduction:** Supervised exercise may improve physical function and quality of life during oncological treatment. Providing supervised exercise to all patients at hospitals may be impractical, with community-based settings (e.g. public gyms) as a possible alternative. To facilitate implementation, knowledge about the experiences of professionals who deliver exercise programs in community-based settings is crucial.

**Objective:** To explore how physical therapists and personal trainers experience supervising exercise in a community-based setting for persons undergoing curative oncological treatment.

**Methods:** Nine physical therapists and two personal trainers (coaches) were interviewed individually. The semi-structured interviews lasted 33–67 minutes and were analyzed using thematic analysis. **Results:** Two main themes emerged: “A meaningful task” and “A challenging task,” with nine sub-themes. The coaches experienced supervising exercise for persons undergoing treatment as meaningful, as they became a link between oncology care and health promotion. They grew more confident in the role and ascertained that exercising during treatment was feasible. Challenges included managing side effects of treatment and contradictory information from oncology care staff at hospitals, advising patients not to exercise.

**Conclusion:** Supervising exercise for persons undergoing oncological treatment in a community-based setting may be highly rewarding for professionals who deliver exercise programs, which is promising for implementation. However, patients receive contradictory information about exercise, which may prevent physical activity. Also, supervising exercise for persons undergoing oncological treatment requires skills training; this is suggested for inclusion in educational programs for physical therapists and others. Future research should focus on strategies for cooperation between oncology care and health promotion.

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## Introduction

It is well-established that physical activity (PA), including exercise, is an important part of health promotion (i.e. interventions aiming to improve and protect health) (World Health Organization, 2010). PA has also been introduced into rehabilitation for a wide range of conditions and diseases, including cancer (Buffart et al., 2014; Patel et al., 2019; Segal et al., 2017). PA may improve health-related quality of life and prevent and reduce cancer-related fatigue, both during and after oncological treatment (Lahart, Metsios, Nevill, and Carmichael, 2018; Mustian et al., 2017; Segal et al., 2017). However, performing PA during treatment is challenging due to: treatment-related

side effects (e.g. pain and cancer-related fatigue); lack of time; concerns regarding the safety of engaging in PA during treatment; and lack of support from oncology nurses and oncologists (Clifford et al., 2018; Lavallée, Abidin, Faulkner, and Husted, 2019). Thus, PA levels often decrease during treatment and remain low after treatment has ended (Huy et al., 2012; Kwan et al., 2012; Littman, Tang, and Rossing, 2010).

The importance of professional support has been highlighted in a systematic review and meta-analysis, identifying supervised exercise as more efficient than non-supervised exercise in improving quality of life in patients undergoing oncological treatment (Sweegers et al., 2017), probably due to improved adherence to

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exercise programs (Lavallée, Abdin, Faulkner, and Husted, 2019; Sweegers et al., 2017). A mixed method systematic review (Clifford et al., 2018) and a meta-synthesis of cancer survivors' experiences of PA (Lavallée, Abdin, Faulkner, and Husted, 2019) identified exercising with other cancer survivors and having a skilled coach as facilitators.

In line with the patients' experiences, nurses and physicians involved in oncology care report uncertainty regarding the safety of exercise, as well as insufficient knowledge about exercise and referral routines (Crandall, Maguire, Campbell, and Kearney, 2018; Fong, Faulkner, Jones, and Sabiston, 2018; Nadler et al., 2017; Santa Mina et al., 2015) and lack of time to address this issue with patients (Nadler et al., 2017). Studies describing the experiences of professionals who deliver exercise programs (e.g. physical therapists and personal trainers) for cancer survivors are scarce. We identified one study regarding physical therapists' experiences of implementation, at a community-based physical therapy clinic, of an exercise program for persons who had completed treatment against breast cancer. The physical therapists found it difficult to supervise group exercise because of the variability in the individuals' exercise abilities (Beidas et al., 2014).

Given the increasing number of cancer survivors and lack of public funding and hospital-based physical resources (Dalzell et al., 2017), health care will probably not be able to provide exercise programs to all patients at hospitals. Community-based exercise programs are one of several potential alternatives (Catt, Sheward, Sheward, and Harder, 2018; Schmitz et al., 2019). Given the barriers to exercise that patients face during treatment, it is interesting to explore how physical therapists and personal trainers experience supervising exercise, especially in community-based settings (e.g. like public gyms) and to our knowledge this has not previously been done.

Phys-Can (Physical Training and Cancer) was a Swedish multicenter randomized controlled trial aiming to compare the effects of low-to-moderate versus high intensity exercise with or without behavior change techniques (BCTs) on cancer-related fatigue during curative oncological treatment (i.e. chemotherapy and/or radiotherapy and/or endocrine therapy due to breast, colorectal or prostate cancer) (Berntsen et al., 2017). Physical therapists and personal trainers supervised the exercise, which was performed at public gyms, and thus Phys-Can provides a unique opportunity to explore the views on exercise supervision among professionals who deliver exercise programs in a community-based setting during treatment. Their experiences may inform implementation programs of supervised exercise in cancer

rehabilitation. Therefore, the aim of this study was to explore how physical therapists and personal trainers experience supervising exercise in a community-based setting for persons undergoing curative oncological treatment.

## Methods

### Design

This study was an explorative interview study. Methods and results are reported in accordance with the Standards for Reporting Qualitative Research (O'Brien et al., 2014).

### Setting

The design of Phys-Can has been reported elsewhere (Berntsen et al., 2017). Briefly, the persons included in the Phys-Can study hereinafter referred to as participants were randomly assigned to a 6-month exercise program including low-to-moderate or high intensity exercise, with or without BCTs. They were given an introduction at a public gym at one of three study sites and supervised by physical therapists and/or personal trainers. The exercise program included group-based resistance training, conducted twice a week at the gym, and home-based endurance training. The BCTs included regular support in goal-setting, self-monitoring, problem-solving, basic functional behavior analysis and long-term coping planning of exercise with a focus on the home-based endurance training.

All physical therapists and personal trainers participated in a study-specific three-day course including lectures and seminars on cancer, cancer treatment and exercise physiology and multiple practical sessions on supervising exercise. The physical therapists and personal trainers who would be supervising groups with BCTs received three additional days of education, with home assignments.

### Participating physical therapists and personal trainers

During the spring of 2017, 13 physical therapists and personal trainers, from all three study sites, who had  $\geq$  six months current experience of supervising exercise within the Phys-Can study, were deemed eligible and invited to participate. Those who had ceased employment  $>$  six months earlier ( $n = 3$ ), and the coauthors of this study, were not eligible. One physical therapist declined participation and one personal trainer did not respond after initially expressing interest in participating. Nine physical therapists and two personal

trainers, a total of 11 hereinafter referred to as the coaches (Table 1), participated and signed written informed consent before data collection began.

The personal trainers were licensed through a national nonprofit organization that runs a chain of community-based exercise facilities in Sweden. Their education program includes a four-day course in basic exercise physiology and exercise prescription, as well as a course in skills training. The personal trainers worked at community-based exercise facilities, providing exercise supervision and instruction to gym visitors.

This study was performed in accordance with the Declaration of Helsinki. An application for ethical vetting was sent to the Regional Ethical Review Board in Uppsala; however the study was deemed not to require an ethical review (Registration Number 2014/249). Furthermore, it was emphasized to the coaches that their participation was voluntary.

### Data collection

All coaches responded to study-specific questions about background variables, their expectations regarding the benefits of exercise during oncological treatment and their self-efficacy in supervising exercise for persons undergoing oncological treatment (Table 1).

The interviews were performed individually, based on an interview guide (Table 2) that was piloted on two of the authors, who were also physical therapists (HI and ID). The interviews lasted 33–67 minutes and were recorded on

**Table 1.** Coaches' characteristics, outcome expectations and supervision self-efficacy.

<b>Profession</b>	
Physical therapist n	9
Personal trainer n	2
<b>Age</b> , years median (min-max)	46 (27–69)
<b>Gender</b>	
Women n	10
Men n	1
<b>Previous Experience</b> of supervising exercise	
for persons with cancer n	4
Years median (min-max)	10 (1–15)
for persons with other diagnoses than cancer n	6
Years median (min-max)	4 yrs. (3 mth. – 21 yrs.)
for persons in a public setting (gym, etc.) n	5
Years median (min-max)	13 (6–47)
<b>Outcome Expectations</b> (Scale 1–5)	
• How certain are you that exercise during oncological treatment is healthy in the long term? Median (min-max)	5 (4–5)
• How certain are you that exercise during treatment can reduce side-effects from treatment? Median (min-max)	5 (4–5)
<b>Supervision Self-Efficacy</b> (Scale 1–5)	
• How certain are you about your ability to supervise endurance training and resistance training at minimum of moderate intensity for persons undergoing oncological treatment? Median (min-max)	5 (4–5)

**Table 2.** Interview guide.

Main questions	Follow-up questions
Can you tell me how you have experienced supervising exercise for people undergoing oncological treatment?	What has been positive? What has been difficult?
Have your views on supervising exercise for persons undergoing oncology treatment changed?	Regarding who and how much you can exercise? Regarding your own role as a coach?
Based on your experiences that you have told me about, what do you think about the future of supervising exercise for people undergoing oncology treatment?	

a digital audio recorder. Interviews were conducted face-to-face at the university (n = 7), the hospital (n = 3) or by telephone (n = 1), depending on each coach's preferences. To limit the risk of coaches not feeling free to be open about their experiences, the interviewers were persons with limited previous contact with the coaches. The interviews were conducted by AH, CA, an oncology nurse and a researcher who had not been involved in Phys-Can. They were all experienced in interviewing, except AH, who conducted a test interview with a coauthor and listened to interviews performed by experienced interviewers to compensate for this. The interviewers were all nurses and had experience and knowledge of oncology care, but had limited or no experience of supervising exercise.

### Data analysis

Interviews were transcribed verbatim and a thematic analysis was performed in accordance with Braun and Clarke (2006) using an inductive approach (Clarke and Braun, 2017). Each interview was listened through in its entirety and transcribed soon after being completed. However, the interview guide was not changed during data collection. The next steps of the analysis started when all data were collected, except the final interview, which was conducted after the start of analysis.

The analysis was performed in six phases, including reading the transcripts several times, coding the interviews, generating, naming and reviewing themes (Braun and Clarke, 2006). NVivo Pro Qualitative data analysis software (QSR International Pty Ltd., Version 11) was used to organize the data. The codes and themes were discussed and reviewed on several occasions within the group of authors, with AH being principally responsible for the analysis (Table 3).

The authors performing the analysis were three research nurses experienced in oncology nursing (AH, CA, BJ), two physical therapists (ID, HI), who developed and held the study-specific course for the physical therapists and personal trainers, and one psychologist (KN) with expertise in cancer rehabilitation research.

**Table 3.** Examples of coding from text extracts.

Data extract	Code	Theme (sub-theme)
Coach 6 "With the patients [participants] we have in the gym, it's important to show them, be specific, to start at an easy level. So they get used to it, just like we need to do in this study and also in this introduction. To get used to the environment, where do I change? That kind of familiarity. What is expected of me? That everything becomes clear. 'This is what we'll do and then that's all, you do this, then you'll rest, we'll do 10 repetitions, then we'll increase the weight.' That they always know what's happening."	Dealing with uncertainty through continuous information	A challenging task ( <i>Barriers to exercise</i> )
Coach 8 "It's not focusing on talking [about cancer], instead it's focusing on exercising and on the healthy, and then the disease becomes a small side issue. So I think it's nice for them to let go of that focus for a while and feel that they can do something." Coach 5 "It has been the most meaningful thing I've done in all my professional years. Absolutely amazing. Very meaningful and fun, and active participants who have done what I tell them to, and that it is not always that easy."	Focus on the healthy Meaningful and fun	A meaningful task ( <i>Linking health care and health promotion</i> ) ( <i>Making an important difference</i> )

Both physical therapists supervised exercise in the Phys-Can study, with one of the nurses (AH) substituting on a few occasions. All of the authors had previous experience of qualitative research.

## Results

The analysis resulted in two themes: 1) "A meaningful task"; and 2) "A challenging task," with four and five sub-themes, respectively (Figure 1). Quotes are presented below to illustrate the themes and text in brackets has been added when needed to clarify the context.

### Theme: a meaningful task

The coaches experienced supervising exercise for persons undergoing oncological treatment as meaningful on the personal and professional levels. They felt that they made an important difference for the participants and became a link between oncology care and health promotion. They also felt that they were gaining skills and applying clinical work experience in the healthy environment of a public gym.

### Making an important difference

The coaches described that watching the participants push, support and help each other during exercise sessions was enjoyable. They felt that they made a difference

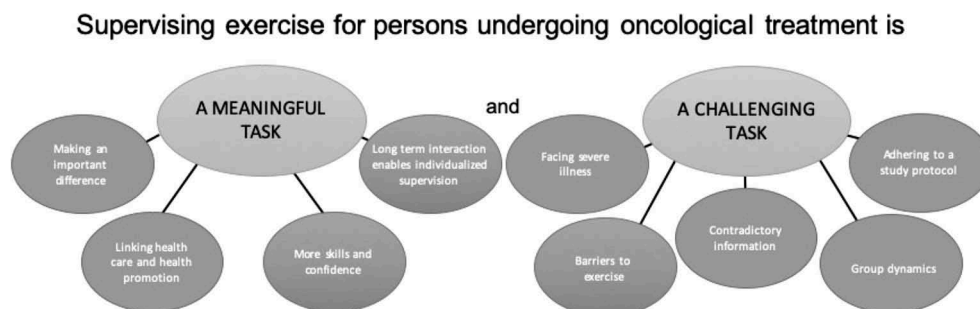
and contributed to the participants' cancer care. They were committed to the task, wanted the participants to succeed in their exercise and held a strong belief that exercise was good and health-enhancing.

Coach 1: I am surrounded by people who are not feeling well, who are ill, but who are so positive all the time, I think it gives me so much energy and love too, I think. And it feels like what you are doing makes a difference, that it's important.

### Linking health care and health promotion

Supervising exercise at a public gym felt like being a link between oncology care and health promotion, but the coaches expressed a need for experience from oncology care. This could be either from own experiences of treating patients as a physical therapist or from having someone in the coach team with such experience. The coaches felt that the setting and exercise helped both the participants and themselves to shift their focus from illness to health, describing exercise as something the participants could do for themselves to feel better.

Coach 4 ... a very nice complement to my work as a physical therapist [at the hospital]. Supervising them in a healthy environment, while at the same time having this connection to the clinic ... and being impressed by their determination and willingness to do something for themselves to get through their illness and treatment ...

**Figure 1.** Overview of themes and sub-themes.



### **More skills and confidence**

Initially, the coaches sometimes felt hesitant because they thought that it might be difficult to exercise during oncological treatment, which made them reluctant to push the participants. They experienced that participants who were new to exercise often underestimated their ability to exercise. In such cases, they attempted to encourage the participants to try even if the participants felt hesitant. However, this had to be done while respecting their autonomy and not being too insistent, as it might make them lose interest. As the coaches gained more experience, it became easier for them to push the participants, because the coaches had seen the positive effects of exercise and become skilled in identifying who they could push and how.

Coach 11 I had a hunch maybe, that this would be a bit difficult ... I mean this is kind of a tough patient group. But I was really positively surprised, because they are really motivated ... they can handle so much more than I thought at the beginning ...

Previous experience of supervising exercise for cancer survivors facilitated for the coaches, while not having such experience could make them feel unprepared for the task. In addition, previous experience of supervising exercise in a gym was perceived as an advantage because this helped make the coaches who were physical therapists feel comfortable with the environment. Supervising group exercise was regarded as educational, as this helped the coaches learn how to organize exercise sessions and speak in front of a group. They also learned about group leadership and became more skilled in guiding participants.

### **Long-term interaction enables individualized supervision**

Supervising exercise regularly over a long period made it possible for the coaches to get to know the participants, learn more about their physical and psychological capacities and gain their trust. This made it easier to provide individualized supervision. However, getting to know a participant required that he or she participated on a regular basis. The coaches who were physical therapists reflected over the fact that they, in their clinical work, normally did not have the opportunity to meet patients this regularly and over such a long period.

Coach 8 ... I feel like you get the time to build a relationship and gain some trust, it feels like they really listen to you and dare to trust me and I learn what they are like and how they behave and how they want to structure their exercise. [...] And that's the kind of thing you notice with time, if I'd only met someone once or twice then I wouldn't have seen that

she was bedridden for ten days after treatment; you've been able to use that and try to encourage her to get going more than you would if you only meet them in the short term.

### **Theme: a challenging task**

Supervising exercise was not without challenges: the coaches had to deal with their own emotional stress, the participants' barriers to exercise, group dynamics and contradictory information about exercise. They also had to strike a balance between providing adequate exercise and allowing for the participants' special needs due to the cancer and its treatment.

### **Facing severe illness**

Supervising exercise for persons with cancer was sometimes emotionally difficult, for example if a participant had a relapse of cancer. The coaches developed long-term personal relationships with the participants during the exercise period, but needed to remain professional in providing support. The coaches handled the emotional challenges that they experienced by talking to their colleagues. On one occasion, coaches received support from an external counselor to handle a difficult situation.

Coach 1 Even if the professional is who must, which is priority number one of course, must be there, but the person with feelings is also there, so it isn't easy to differentiate between the roles, I think. So, it can be a bit difficult in a way, dealing with the emotions when there's bad news ... about people you also like ...

### **Barriers to exercise**

Coaches reported that side effects from oncological treatment could cause participants to give up, and this could be a considerable challenge. They also experienced that participants sometimes held back because of fear or discomfort during exercise. For instance, it was difficult to know if the participants were experiencing actual pain or just the feeling of physical exertion. The coaches tried to handle these concerns by being attentive to the participants' fears and providing accurate information. In addition, it was regarded as important that the participants felt safe, and that safety was created through the coaches' knowledge.

Coach 4 That the participants feel safe when they exercise, that they feel that those who are training me, they have control over the situation, they are informed ... so I think it's important too, you can't just exercise anywhere so to speak, or with anyone, it is important that you have knowledge around you.

If medical issues arose that the coaches did not know how to address, a nurse or physician was contacted. However, it was often complicated to get in touch with

these health professionals and the coaches felt that it would have been valuable to have someone (e.g., a designated nurse or physician) they could contact directly with their questions.

The coaches perceived the home-based endurance training as more challenging for the participants, especially for those in the high-intensity groups. In addition, the coaches found it difficult to address barriers such as not having enough time or not prioritizing exercise. Lack of motivation to exercise was considered especially difficult to address.

Feedback from follow-up tests was perceived as encouraging to the participants, but they could also be disappointed if their results did not improve.

### **Contradictory information**

When the participants received information from nurses, physicians or hospital-based physical therapists within oncology care, that exercise was not advised or that they should avoid public areas during chemotherapy because of the risk of infections, they became worried and reluctant to engage in exercise. Such information was difficult for the coaches to address, as they wanted to avoid giving the participants contradictory information. Therefore, the coaches did not directly contradict the information, but just encouraged the participants to engage in PA. Coaches also emphasized the importance of oncology care staff endorsing exercise during treatment, as they believed it helped physically inactive patients to start considering exercise.

Coach 3 But just this getting support, for many to dare to take the step, that the health care system is on board and pushes them ... because I think is really important. I think that the health care system has the most important role: that it's ok, you can exercise ...

### **Group dynamics**

The coaches described the challenges of relating to several people at once and ensuring that new participants felt welcomed and included in the group. This could be particularly difficult if some participants did not get on with others in the group or if they had different needs in regard to talking about their illness and situation. This could be solved by letting a participant join another exercise group.

Coach 8 It's gone wrong sometimes, we've had someone who has been, well, who has had a great need to talk about how hard this is to go through, the chemotherapy and so on, where it feels like the other patients [participants] find it a bit hard to listen to.

Another challenge was participants talking too much and therefore not adhering to the predetermined pace

of exercise sets or pauses between them. In addition, group dynamics could lead to competitiveness between participants, which could be problematic if it became extreme.

Sometimes, the social interaction between coaches and participants did not work well; therefore, it was considered an advantage to have more than one coach supervising a group. Peer support between participants was perceived as important, as they shared an experience that the coaches lacked.

### **Adhering to a study protocol**

Adhering to the study protocol was sometimes difficult when participants needed adjustments to their exercises. The coaches could perceive a conflict between their responsibility to follow the protocol and a participant's need for adjustments. Another challenge was to not provide extra BCTs in the groups that were not randomized for this, especially to participants who really needed them. Furthermore, handling time pressure and knowing what to prioritize in the study protocol could be difficult. In such instances, being more than one coach in a group was an advantage because it created a feeling of security and provided opportunities to discuss problems and share the responsibility.

Coach 1: As a coach you have to handle that everyone in the group is in a different phase, and in a different phase of the protocol. Different things have to be done and then I have to keep an eye on everything and not miss a single thing, and I think that can be a bit stressful when I am on my own.

## **Discussion**

The results indicated that supervising exercise for persons undergoing oncological treatment was perceived as meaningful and challenging. Coaches became a link between oncology care and health promotion, bringing their clinical knowledge into the healthy environment of a public gym and making a difference in people's lives. They grew more confident in their coaching role and were convinced that exercising during treatment was feasible. Challenges included handling barriers to exercise, such as side effects of treatment and contradictory information from oncology care staff advising patients not to exercise.

The results from this study indicated that persons undergoing oncological treatment do not consistently get support to engage in physical activity from nurses, physicians and physical therapists. Contradictory information to patients may cause an uncertainty regarding the safety of exercise and lead to reluctance to participate in exercise. Therefore, efforts to increase knowledge and

encourage oncology nurses, oncologists and physical therapists to endorse physical activity and exercise are needed in the implementation of exercise in cancer rehabilitation. In addition to regular information updates to oncology care staff, individualized care plans including information (Sturgeon et al., 2018), goal-setting, planning and follow-up may be useful to support physical activity during treatment (Robertson, Richards, Egan, and Szymlek-Gay, 2013).

Adapting to a new role may be challenging. In the case of the coaches, they had to handle their own initial concerns regarding exercise during cancer treatment up until the point when they realized it was feasible. Also, it could be a challenge to assess participants' side effects and differentiate them from normal feelings of physical exertion during exercise. It seemed that practical experience was necessary in order to feel confident when supervising exercise for cancer survivors. This is in line with a study of physical therapists using BCTs within a PA intervention for patients with rheumatoid arthritis, which reported that education and support were important in helping the physical therapists transition into the coach role (Nessen, Opava, Martin, and Demmelmaier, 2014). Another important aspect to address is helping coaches develop coping strategies to handle the emotional challenges that may occur, especially for coaches who are new to working with persons with cancer. For instance, talking to colleagues about difficult situations, such as when a participant has a relapse of cancer, may be a way to cope and reduce emotional stress (Guveli et al., 2015).

Previous research has reported that exercising with peers could help cancer survivors gain a sense of normality, as well as providing them with a place where they can meet others in the same situation (Browall, Mijwel, Rundqvist, and Wengström, 2018; Lavallée, Abdin, Faulkner, and Husted, 2019). The present study supported these findings and found that the coaches benefited as well, as they gained skills in supervising exercise, organizing exercise sessions and talking to groups. Thus, supervised group exercise can be meaningful for both cancer survivors and coaches, and probably a cost-effective way to promote PA. In line with the coaches' experience in the present study, previous research has identified side effects and uncertainty regarding the benefits and safety of exercise as barriers (Lavallée, Abdin, Faulkner, and Husted, 2019). Persons with severe side effects may need more support and help in adapting exercise, which would be easier to provide in a non-study setting.

Furthermore, our findings suggest that having regular contact over a long period helped the coaches get to know the participants and thus become more able to

adapt the support to each participant's needs. This finding may shed additional light on why supervised exercise is more effective than unsupervised (Sweegers et al., 2017). However, it may not be feasible from a financial perspective to offer such extensive support within the health (oncology) care system (Dalzell et al., 2017). Cooperation between different actors within and outside the health care system to create PA programs for cancer survivors may be a more suitable solution. For instance, oncology nurses and physicians could refer persons undergoing oncological treatment to various exercise programs or further assessment by a physical therapist based on a patient's specific support needs (Schmitz et al., 2019).

Barriers like lack of time and not prioritizing exercise were difficult for the coaches to address. Difficulties in prioritizing exercise have previously been reported among women treated for breast cancer (Lavallée, Abdin, Faulkner, and Husted, 2019), and merely providing advice may not be sufficient. Communication strategies inspired by motivational interviewing could be useful (Spencer and Wheeler, 2016). Such an approach takes its starting point in a patient's preferences and previous experiences, guiding in the choice of suitable activities and formulating inspiring exercise goals. It also takes into account the patient's readiness to make a change and how measures can be adjusted accordingly. If a patient is not ready to make a change in exercise habits, it could be appropriate to ask for permission to provide some information on PA and allow the patient time to consider this. If a patient is ambivalent, it may be helpful to perform a decisional balance exercise, where the pros and cons of a change are listed (Prochaska and Velicer, 1997). Training in using such tools is already incorporated in several physical therapy educational programs, but may require further implementation.

### **Methodological considerations**

Some of the authors were involved in the exercise supervision and/or the study-specific course for the coaches. This involvement may have led to misinterpretations of the coaches' statements. However, two authors were not involved in the exercise or education of the coaches, and thus the analytic process included both perspectives. It should also be acknowledged that having a group of authors with a larger variation in clinical and research backgrounds than in the present study, could have contributed to a more multi-faceted analysis.

A weakness of this study was that several researchers conducted interviews, for logistical reasons. Although an interview guide was used that enabled coverage of



the research question, the use of several interviewers could affect dependability negatively because different interviewers may focus on different aspects and have different skill levels in conducting interviews (Polit and Beck, 2008).

Due to the small number of coaches, it is difficult to know if saturation was reached, even if the information provided by the coaches was rich, repetitive and sometimes redundant (Polit and Beck, 2008). We performed interviews with 11 out of 13 coaches and it may be that the two who did not participate would have contributed with new, additional information. However, the results demonstrated variation and the interviews yielded detailed examples and quotations, thereby contributing with valuable knowledge. Furthermore, coaches were included from three different study sites, had different backgrounds, varied previous experience of supervising exercise for persons with cancer and varied experience of supervising group exercise. This could be considered a strength, as it increased the probability of capturing different aspects. However, all the coaches had high outcome expectations of exercise and self-efficacy (Table 1) regarding supervising exercise. Therefore, it may be that they do not represent physical therapists and personal trainers in general. The high level of self-efficacy may be due to the fact that all had undergone a study-specific course about exercise during cancer treatment and that only coaches who had supervised exercise for at least six months in the Phys-Can study were included.

Furthermore, the present study was performed within an intervention and some of the results may not be transferable to non-study settings. For instance, the coaches had access to nurses and physicians for consultation if any medical concerns arose, which may not always be the case in community-based settings. Finding alternative ways for communication between oncology care and those who supervise exercise is therefore important.

If high intensity exercise proves to be most effective in reducing side effects like cancer-related fatigue, then experiences of and skills in supervising high intensity exercise will be of clinical importance. Due to the small number of participants (only two) with a background as personal trainers in a public gym, the results may have limited transferability to this category of exercise professionals. This is an important group for future implementation of exercise; therefore, efforts should be made to further explore their experiences of supervising exercise for persons undergoing oncological treatment.

Lastly, the characteristics of the persons who agreed to participate in the intervention study may have had an effect on the coaches' experiences of supervising them, as they were likely to be more motivated to exercise than patients are in general (van Waart et al., 2016).

## Implications and future research

The results from this study have at least three possible implications. Firstly, it is important to recognize that knowledge about the safety and benefits of exercise may vary between oncology care staff (including physical therapists). It may be necessary to address this issue with improved routines and communication to avoid giving patients contradictory information. Secondly, skills training in supervising exercise for patients undergoing oncological treatment should be included in undergraduate, graduate or further education of physical therapists. Thirdly, if exercise during oncological treatment is to be performed in community-based settings, personal trainers (or other exercise specialists) who are not experienced with oncology care will need relevant education in cancer and oncological treatment. Furthermore, a formalized cooperation with oncology care will be essential (Schmitz et al., 2019). Future research on the implementation of PA programs should focus on how to improve collaboration between oncology care and health promotion and how to ensure that nurses and physicians working in oncology care promote PA for persons undergoing oncology treatment (Mewes et al., 2017; Schmitz et al., 2019; Segal et al., 2017).

## Conclusion

Supervising exercise for persons undergoing oncological treatment in a community-based setting may be highly rewarding for professionals who deliver exercise programs like physical therapists and personal trainers, which is promising for implementation. However, contradictory information about exercise is sometimes given by oncology care staff to patients and may prevent PA. Also, supervising exercise for persons undergoing oncological treatment requires skills training, which is suggested to be included in education for physical therapist and personal trainers. This study was performed within a randomized trial and included mostly physical therapists and only a few personal trainers, which may affect the transferability of the findings. Future research should focus on implementation strategies to develop and evaluate cooperation between oncology care and health promotion.

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## References

- Beidas RS, Paciotti B, Barg F, Branas AR, Brown JC, Glanz K, DeMichele A, DiGiovanni L, Salvatore D, Schmitz KH **2014** A hybrid effectiveness-implementation trial of an evidence-based exercise intervention for breast cancer survivors. *Journal of the National Cancer Institute Monographs* 14 (50): 338–345.
- Berntsen S, Aaronson NK, Buffart L, Börjeson S, Demmelmaier I, Hellbom M, Hojman P, Igelström H, Johansson B, Pingel R, et al. **2017** Design of a randomized controlled trial of physical training and cancer (Phys-Can) - The impact of exercise intensity on cancer related fatigue, quality of life and disease outcome. *BMC Cancer* 17: 218.
- Braun V, Clarke V **2006** Using thematic analysis in psychology. *Qualitative Research in Psychology* 3: 77–101.
- Browall M, Mijwel S, Rundqvist H, Wengström Y **2018** Physical activity during and after adjuvant treatment for breast cancer: An integrative review of women's experiences. *Integrative Cancer Therapies* 17: 16–30.
- Buffart LM, Galvão DA, Brug J, Chinapaw MJ, Newton RU **2014** Evidence-based physical activity guidelines for cancer survivors: Current guidelines, knowledge gaps and future research directions. *Cancer Treatment Reviews* 40: 327–340.
- Catt S, Sheward J, Sheward E, Harder H **2018** Cancer survivors' experiences of a community-based cancer-specific exercise programme: Results of an exploratory survey. *Supportive Care in Cancer* 26: 3209–3216.
- Clarke V, Braun V **2017** Thematic analysis. *Journal of Positive Psychology* 12: 297–298.
- Clifford BK, Mizrahi D, Sandler CX, Barry BK, Simar D, Wakefield CE, Goldstein D **2018** Barriers and facilitators of exercise experienced by cancer survivors: A mixed methods systematic review. *Supportive Care in Cancer* 26: 685–700.
- Crandall K, Maguire R, Campbell A, Kearney N **2018** A qualitative study exploring the views, attitudes and beliefs of patients and health professionals towards exercise intervention for people who are surgically treated for lung cancer. *European Journal of Cancer Care* 27: e12828.
- Dalzell MA, Smirnow N, Sateren W, Sintharaphone A, Ibrahim M, Mastroianni L, Vales Zambrano LD, O'Brien S **2017** Rehabilitation and exercise oncology program: Translating research into a model of care. *Current Oncology* 24: e191–e198.
- Fong AJ, Faulkner G, Jones JM, Sabiston CM **2018** A qualitative analysis of oncology clinicians' perceptions and barriers for physical activity counseling in breast cancer survivors. *Supportive Care in Cancer* 26: 3117–3126.
- Guveli H, Anuk D, Oflaz S, Guveli ME, Yildirim NK, Ozkan M, Ozkan S **2015** Oncology staff: Burnout, job satisfaction and coping with stress: Burnout of the oncology employees. *Psycho-Oncology* 24: 926–931.
- Huy C, Schmidt ME, Vrieling A, Chang-Claude J, Steindorf K **2012** Physical activity in a German breast cancer patient cohort: One-year trends and characteristics associated with change in activity level. *European Journal of Cancer* 48: 297–304.
- Kwan ML, Sternfeld B, Ergas IJ, Timperi AW, Roh JM, Hong CC, Quesenberry CP, Kushi LH **2012** Change in physical activity during active treatment in a prospective study of breast cancer survivors. *Breast Cancer Research and Treatment* 131: 679–690.
- Lahart IM, Metsios GS, Nevill AM, Carmichael AR **2018** Physical activity for women with breast cancer after adjuvant therapy. *Cochrane Database of Systematic Reviews* 1: CD011292.
- Lavallée JF, Abidin S, Faulkner J, Husted M **2019** Barriers and facilitators to participating in physical activity for adults with breast cancer receiving adjuvant treatment: A qualitative metasynthesis. *Psycho-Oncology* 28: 468–476.
- Littman AJ, Tang MT, Rossing MA **2010** Longitudinal study of recreational physical activity in breast cancer survivors. *Journal of Cancer Survivorship* 4: 119–127.
- Mewes JC, Steuten LM, Ijsbrandy C, IJzerman MJ, van Harten WH **2017** Value of implementation of strategies to increase the adherence of health professionals and cancer survivors to guideline-based physical exercise. *Value in Health* 20: 1336–1344.
- Mustian KM, Alfano CM, Heckler C, Kleckner AS, Kleckner IR, Leach CR, Mohr D, Palesh OG, Peppone LJ, Piper BF, et al. **2017** Comparison of pharmaceutical, psychological, and exercise treatments for cancer-related fatigue: A meta-analysis. *JAMA Oncology* 3: 961–968.
- Nadler M, Bainbridge D, Tomasone J, Cheifetz O, Juergens RA, Sussman J **2017** Oncology care provider perspectives on exercise promotion in people with cancer: An examination of knowledge, practices, barriers, and facilitators. *Supportive Care in Cancer* 25: 2297–2304.
- Nessen T, Opava CH, Martin C, Demmelmaier I **2014** From clinical expert to guide: Experiences from coaching people with rheumatoid arthritis to increased physical activity. *Physical Therapy* 94: 644–653.
- O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA **2014** Standards for reporting qualitative research: A synthesis of recommendations. *Academic Medicine* 89: 1245–1251.
- Patel AV, Friedenreich CM, Moore SC, Hayes SC, Silver JK, Campbell KL, Winters-Stone K, Gerber LH, Fulton CD, Denlinger C, et al. **2019** American college of sports medicine roundtable report on physical activity, sedentary behavior, and cancer prevention and control. *Medicine and Science in Sports and Exercise* 51: 2391–2402.
- Polit DF, Beck CT **2008** *Nursing research: Generating and assessing evidence for nursing practice* (8<sup>th</sup> ed). Philadelphia: Wolters Kluwer Health/lippincott Williams and Wilkins.
- Prochaska JO, Velicer WF **1997** The transtheoretical model of health behavior change. *American Journal of Health Promotion* 12: 38–48.
- Robertson L, Richards R, Egan R, Szymlek-Gay EA **2013** Promotion and support of physical activity among cancer survivors: A service provider perspective: Physical activity among cancer survivors: A provider perspective. *Psycho-Oncology* 22: 441–446.

- Santa Mina D, Petrella A, Currie KL, Bietola K, Alibhai SM, Trachtenberg J, Ritvo P, Matthew AG 2015 Enablers and barriers in delivery of a cancer exercise program: The Canadian experience. *Current Oncology* 22: 374–384.
- Schmitz KH, Campbell AM, Stuiver MM, Pinto BM, Schwartz AL, Morris GS, Ligibel JA, Chevillat A, Galvão DA, Alfano CA, et al. 2019 Exercise is medicine in oncology: Engaging clinicians to help patients move through cancer. *CA: a Cancer Journal for Clinicians* 69: 468–484.
- Segal R, Zwaal C, Green E, Tomasone JR, Loblaw A, Petrella T 2017 Exercise for people with cancer guideline development group 2017 exercise for people with cancer: A systematic review. *Current Oncology* 24: 40–46.
- Spencer JC, Wheeler SB 2016 A systematic review of motivational interviewing interventions in cancer patients and survivors. *Patient Education and Counseling* 99: 1099–1105.
- Sturgeon KM, Fisher C, McShea G, Sullivan SK, Sataloff D, Schmitz KH 2018 Patient preference and timing for exercise in breast cancer care. *Supportive Care in Cancer* 26: 507–514.
- Sweegers MG, Altenburg TM, Chinapaw MJ, Kalter J, Verdonck-de Leeuw IM, Courneya KS, Newton RU, Aaronson NK, Jacobsen PB, Brug J, et al. 2017 Which exercise prescriptions improve quality of life and physical function in patients with cancer during and following treatment? A systematic review and meta-analysis of randomised controlled trials. *British Journal of Sports Medicine* 52: 505–513.
- van Waart H, van Harten WH, Buffart LM, Sonke GS, Stuiver MM, Aaronson NK 2016 Why do patients choose (not) to participate in an exercise trial during adjuvant chemotherapy for breast cancer? (Non-)participation in an exercise trial during chemotherapy. *Psycho-Oncology* 25: 964–970.
- World Health Organization 2010 Global recommendations on physical activity for health. In WHO Guidelines Approved by the Guidelines Review Committee. <http://www.ncbi.nlm.nih.gov/books/NBK305057/>.