


Physical Activity During and After Adjuvant Treatment for Breast Cancer: An Integrative Review of Women's Experiences

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Maria Browall, RN, PhD^{1,2}, Sara Mijwel, MSc³, Helen Rundqvist, PhD³,
and Yvonne Wengström, OCN, PhD^{1,4}

Abstract

Background: In oncology, physical activity (PA) is recognized to improve psychological and physiological functions. Motivating women with breast cancer to sustain a physically active lifestyle is important for promoting positive health after diagnosis. To review and synthesize what is known about how women with breast cancer experience supervised and unsupervised PA during and after adjuvant treatment. PubMed, PsycINFO, and CINAHL were searched, yielding 994 citations. The final review included 17 articles published between 2004 and 2014 in English. The CASP (Critical Appraisal Skills Programme) instrument was used to appraise quality. **Results:** Exercise is experienced as a positive element with multiple benefits. However, maintaining a physically active lifestyle during and after chemotherapy is sometimes challenging. Reported benefits of PA include feeling empowered, and improving and reclaiming health. Facilitators to PA comprised exercising with peers and skilled instructors. Barriers included social factors and lack of information. **Conclusions:** Findings highlight the importance of incorporating PA programs from a patient experience perspective as routine treatment. Health care professionals play a crucial “gateway” role in providing information on implementation and benefits of PA. Providing support and educated advice about how to safely start or continue regular PA to minimize symptoms, reduce morbidity, and increase well-being during or after treatment is vital for women with breast cancer. **Implications for Practice:** Health care professionals need increased knowledge of the breast cancer patients’ perspectives on facilitators and barriers to PA during and after treatment, in order to provide sufficient support for women to stay physically active during a breast cancer illness.

Keywords

breast cancer, physical exercise, physical activities, qualitative research, supervised exercise, nonsupervised exercise

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Introduction

In Europe, approximately 500 000 women are diagnosed with breast cancer every year, approximately 8000 of whom are diagnosed in Sweden. Breast cancer accounts for 30% of all cancer diagnoses in women, with approximately 14% of the total incidence of cancer yearly.¹ After a cancer diagnosis and during treatment, there is a distinct deterioration of the individual’s physical capacity, and it is well known that patients affected by cancer generally lower their activity levels after diagnosis.² Many are also forced to adapt their daily activities.^{3,4}

Individuals who are going through treatment for cancer are often affected by side effects and symptoms that severely

affect their quality of life (QoL). Previous research shows that QoL is a prognostic factor for patients with breast cancer that correlates not only with survival but also how well patients respond to treatment.⁵ The most common symptom during treatment for breast cancer is fatigue, where 70% to

¹Karolinska Institute, Huddinge, Sweden

²University of Skövde, Skövde, Sweden

³Karolinska Institutet, Stockholm, Sweden

⁴Karolinska University Hospital, Stockholm, Sweden

Corresponding Author:

Maria Browall, School of Health and Education, University of Skövde, Box 408, 54128 Skövde, Sweden.

Email: maria.browall@his.se



100% of patients are affected by and/or report experiencing extensive fatigue.^{5,6} Other common symptoms during treatment for cancer are weight gain, nausea, and anxiety.⁷

Between 70% and 80% of patients with breast cancer have tumors in which estrogen receptors are overexpressed. Undergoing hormone therapy for at least 5 years reduces the risk of recurrence by approximately 50%. The most commonly used medications are tamoxifen and aromatase inhibitors (anastrozole, letrozole, and exemestane). In the clinical setting, it is noted that the symptom and side effect profiles differ greatly between the 2 medications, for example, treatment with aromatase inhibitors often results in severe musculoskeletal symptoms.⁸ This will affect adherence to the 5-year treatment, which is detrimental to the outcome of recurrence of breast cancer.⁹ In a recent study by Irwin et al,¹⁰ women taking part in a 1-year exercise program with combined aerobic and strength training had significantly reduced joint pain scores compared to women who received lifestyle advice.

Impaired muscle function as well as reduced aerobic fitness occur in response to both the disease and its treatments, and this is further compromised by inadequate diet and inactivity.¹¹ These factors are of significant relevance since poor physical function is associated with fatigue, poor health-related QoL, working ability, and decreased survival.^{4,11-14}

In oncology, the impact of physical activity (PA) has recently been recognized,¹⁵ and for patients affected by cancer, PA has shown to improve both psychological as well as physiological functions; reduced fatigue, depression, anxiety; improved self-esteem, health-related QoL, muscle strength, flexibility, cardiorespiratory fitness, and bone density.^{7,16-20} There is also increasing evidence of the benefits of PA on prevention of treatment side effects and overall survival in breast cancer patients.²⁰ As a result of being physically active, a 37% reduction was seen in risk of cancer-specific mortality, comparing the most versus the least active patients (pooled relative risk = 0.63; 95% confidence interval = 0.54-0.73).²¹ To date, knowledge around dosage of PA for patients with cancer is unclear and recommendations are in line with the World Health Organization recommendations for adults: 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.²²

Therefore, motivating women affected by breast cancer to initiate and maintain a physically active lifestyle is important for promoting positive health outcomes after a diagnosis of breast cancer. This is to avoid both the reduction in PA levels during treatment and the failure to regain prediagnosis activity levels posttreatment.¹¹

Existing randomized controlled trials on PA during and after treatment comprise home-based, telephone-supported, as well as supervised and unsupervised interventions.

Previous studies have shown that supervised exercise tailored to the specific needs of women during cancer treatment made the women feel safe and secure,²³ and it has also been shown that supervised training seems to have a better effect on adherence.²⁴ Little is known about how women experience getting engaged in physical activity during and after diagnosis and treatment for breast cancer. The aim of this integrative review was to explore the nature of evidence available to identify how women affected by breast cancer experience supervised and unsupervised PA during and after adjuvant treatment.

Materials and Methods

Type of Review

In this literature review of qualitative data, 17 empirical studies were included. While the systematic review of randomized controlled trials is considered to be the gold standard in research synthesis, this integrative review synthesizes findings from a diverse range of primary experimental and nonexperimental research methods to provide breadth of perspectives and a more comprehensive understanding of a complex health care problem.²⁵ The inclusion criteria for the selected articles included in the review were the following: qualitative studies, experiences of women with breast cancer, PA during or after adjuvant treatment, and unsupervised or supervised PA.

Search Strategy and Results of Search

Literature search included the databases CINAHL, PubMed, and PsycINFO. Qualitative studies and mixed methods studies with qualitative components from which results could be extracted and synthesized were considered. Searches included articles published between 2004 and 2014 and written in English (Table 1). The review was conducted using the process for PRISMA standards for reporting systematic reviews (Box 1).²⁶

The search yielded a total of 994 unique citations. An initial 756 articles were excluded based on their titles in relation to the aim and inclusion criteria of the study. A further 103 articles were excluded after reading the abstracts. The remaining 135 articles were read in full, resulting in the exclusion of 118 articles. The final inclusion comprised 17 articles with a qualitative approach, as presented in Table 2.

Data Extraction

The authors assessed each of the full texts independently after which an assessment was completed in pairs. Where differences of opinion occurred, these were resolved by consensus discussions. When possible, the following

Table 1. Search History.

Database	Date of Search	Search Terms	Unique Citations	Excluded From Title	Excluded From Abstract	Excluded From Reading the Whole Article	Included Articles
CINAHL	October 21, 2014	breast* AND (neoplasm* OR carc* OR cancer* OR tumor*) AND ("motor activity" OR "physical activity" OR exercise*) AND (therap* OR treatment*) AND (experience* OR phenomeno* OR attit* OR feel* OR emotion*) AND (PT (research OR review) OR PY 2014-2015)	170	136	6	20	8
CINAHL	October 21, 2014	((neoplasm* OR carc* OR cancer* OR tumor*) AND ("motor activity" OR "physical activity" OR exercise*) AND (therap* OR treatment*) AND (experience* OR phenomeno* OR attit* OR feel* OR emotion*) AND (PT (research OR review) OR PY 2014-2015))) NOT breast*	233	166	33	32	2
PsycINFO	October 21, 2014	(breast* ADJ2 (neoplasm* OR carc* OR cancer* OR tumor*) AND ("motor activity" OR "physical activity" OR exercise*) AND nurs*)	41	24	13	3	1
PubMed	October 21, 2014	(neoplasm* OR arcinoma* OR cancer OR tumour* OR tumors OR tumor) AND ("Motor Activity"[Mesh] OR "motor activity" OR "physical activity" OR exercise*) AND (experience* OR phenomeno* OR attit* OR feel* OR emotion*) AND (therapy or therapu* OR treatment*) AND nurs*	271	215	21	30	5
PubMed	October 21, 2014	((neoplasm* OR arcinoma* OR cancer OR tumour* OR tumors OR tumor) AND ("Motor Activity"[Mesh] OR "motor activity" OR "physical activity" OR exercise*) AND (experience* OR phenomeno* OR attit* OR feel* OR emotion*) AND (therapy or therapu* OR treatment*) AND nurs*) NOT breast*	171	132	24	15	0
PubMed	October 21, 2014	breast* AND (neoplasm* OR arcinoma* OR cancer OR tumour* OR tumors OR tumor) AND ("Motor Activity"[Mesh] OR "motor activity" OR "physical activity" OR exercise*) AND (experience* OR phenomeno* OR attit* OR feel* OR emotion*) AND (therapy or therapu* OR treatment*) AND nurs*	100	75	6	18	1
Hand search	October 21, 2014		8	8	0	0	0

Box 1. Methods of the Integrative Review.

- Aims for the review are identified
- Criteria for including studies were identified
- Literature was identified according to an explicit and robust search strategy that was subject to ongoing refinement
- Studies were summarized using an agreed format and key messages were extracted
- Data extraction was undertaken by 2 reviewers in pairs
- We present a summary and synthesis of relevant studies
- Thematic analysis was an ongoing and iterative process involving all team members

information was obtained for each article: (1) authors, year, country; (2) aim, design, population, intervention/explorative, time points; and (3) results and quality appraisal assessment.

Quality Appraisal

The appraisal of the quality of the articles was conducted using the CASP (Critical Appraisal Skills Programme) criteria for the assessment of qualitative studies²⁷ (Table 3). A numerical score was generated based on the number of “yes” answers in the instrument. The maximum score is 10 (= 100%). If a study scored 70% or more “yes” responses, it was assessed as having a high methodological quality, a score of 40% to 60% was judged as having an average methodological quality, and a score of less than 30% a low methodological quality. The 17 included articles were assessed using the initial 2 screening questions in CASP (Questions 1 and 2). The screening questions covered whether the study had a clear research question and if the qualitative methodology was appropriate; that is, that the intervention and patient outcomes had to be addressed. All authors completed this step independently. If the answer to both questions was “yes,” the reviewer continued to apply the more detailed questions. In the next step, the included 17 articles were screened independently in pairs of 2 authors with the remaining 8 questions in the CASP. Each pair of reviewers independently assigned a quality rating score to each study. To ensure that the authors assessed the quality in the same way, results were compared and differences were discussed until agreement was obtained. Fourteen studies were considered to have high methodological quality, 1 study was considered to have average, and 2 studies to have low methodological quality. The included 17 studies were found to have a methodological quality ranging between 30% and 90%.

Analysis of the Articles

Thematic analysis was used to analyze the data.²⁸ Text relating to results that concerned the experiences around PA during and after treatment was extracted and explored. Both

the quotations of the respondents that were presented in the publications as well as the wording of the authors in the Results sections were included as data for this review. The identified sections were first independently coded in pairs of the authors using an open coding method. Next, the codes assigned by the author pairs were discussed. Finally, all codes were grouped into topics. These were then grouped into themes that were explored in greater depth: Benefits from PA during treatment; Benefits from PA after treatment; Social support through PA; Facilitators for participating in PA; and Barriers to participate in PA.

Results

The review includes the experiences of women conducting self-motivated activities as well as those enrolled in supervised PA interventions and home-based programs. Supervised PA interventions included group-based sessions and individually tailored exercise programs, ranging from mindfulness movement to intense aerobic and resistance training. For the individuals not engaged in a supervised PA intervention, wide ranges of leisure/recreational physical activities were reported. The most popular were swimming, walking, gardening, and lifestyle-related activities. The frequency of the activities was similar to that before the illness; however, the general trend was for the activity levels to be reduced.²⁹⁻³¹

Benefits From PA During Treatment

Feelings of Empowerment. Regardless of the PA context, one of the most important benefits of PA was increased well-being and restored energy levels,²⁹ even during the treatment regime.^{32,33} PA was described as “empowering,” a personal achievement, for having completed something, positive and proactive for the benefit of oneself.³³⁻³⁵ A way of thinking such as “challenging myself” or “pushing myself” was a factor that helped the women.³⁶

Gains in strength and aerobic fitness gave confidence to reengage in activities that had been carried out prior to the cancer diagnosis. For those with no PA experience before the diagnosis, the program helped define them as “athletic,” thus having gained the confidence to incorporate exercise as a daily routine and set new goals for themselves.^{33,34}

The desire to change ones identity from being a breast cancer patient to being a healthy woman again was important,^{29,37-39} and the participation in a supervised PA group helped regain normality because they were not treated as a patient. Peer support was important for gaining a sense of normality as a contrast to the treatment. Hence, participating in a group activity was seen as a chance to forget the illness for a while and at the same time they appreciated being able to talk honestly and openly about cancer with others in the same situation. The

Table 2. Qualitative Studies Investigating How Women With Breast Cancer Perceive PA During and After Adjuvant Treatment.

Reference	Author, Year, Country	Aim of the Research	Research Design	Population	Intervention/Explorative Time Point	Results	PA During or After CT	Supervised/Unsupervised PA	CASP
30	Whitehead and Lavelle, 2009, UK	Exploration of physical activity preferences of older breast cancer survivors to inform development of future interventions.	Focus group interviews (n = 10) and individual interviews (n = 19). Thematic analysis.	29 women	Explorative, women invited 1-5 years postdiagnosis. Structured interview guide focusing on current and previous physical activity motivators and facilitators, barriers, and preference for a physical activity program targeted for older breast cancer survivors.	Main influencing factors for physical activity were body image, weight issues, vitality, mood, and desire to carry on as normal as possible. Preference for tailored gentle exercise taking in to account cancer-related ability, including holistic approach using instructor with knowledge about older age and breast cancer.	After treatment	No intervention. "Self-identified" physical activity patterns	60%
31	Trevino et al, 2012, USA	To gain perspectives 2 groups (Puerto Rican and Mexican-American) on relevant factors surrounding cancer survivorship and exercise.	6 Focus groups at 2 different time points. 4 months after the initial interview. Thematic analyses.	31 women	Participants were asked 6 questions around exercise and their diagnosis. After 4 months the groups were reconvened. Participants were given a summary of the initial group session's results and asked an open-ended question: "Did we miss anything?" Responses were included and analyzed.	NO INTERVENTION Both groups had similar descriptions of exercise and barriers to exercise; they lacked information regarding their exercise capability. Cultural differences were found.	After treatment	Unsupervised	30%
32	Brunet et al, 2013, Canada	Explore breast cancer survivors' perceptions of the factors influencing their ability to maintain a self-directed physical activity program.	Semistructured in-depth interviews. Thematic analyses.	9 women	Explorative: Self-identified as "physically active." 78% had completed treatment within 5 years of the study, range 2-31 years.	NO INTERVENTION Physical perceived barriers included cancer-related symptoms, lack of energy, fatigue, and pain. Organizational: bad weather, lack of equipment, lack of knowledge, time constraint. Psychosocial: lack of motivation, low social support, low confidence/skill. Physical perceived motivators: weight management, health improvements, increased energy. Organizational: group activities. Psychosocial: improved body image, experience enjoyment, social support, positive emotions. The barriers and motivators identified in the study represent key variables for further investigation.	After treatment	No intervention. "Self-identified" physical activity	70%

(continued)

Table 2. (continued)

Reference	Author, Year, Country	Aim of the Research	Research Design	Population	Intervention/Explorative Time Point	Results	PA During or After CT	Supervised/ Unsupervised PA	CASP
33	Andersen et al. 2014, Denmark	To explore muscle and joint pain experienced by breast cancer patients participating in an exercise intervention during adjuvant chemotherapy.	Individual semistructured interviews.	15 women	Explorative: patients selected from a population included in training intervention involving a multimodal exercise group. The interviews were conducted before and after the intervention (6 weeks).	The patients experienced a stabbing pain with a feeling of restlessness, which peaked 2-9 days after chemotherapy, which was perceived by the patients to be associated with the treatment itself and not aggravated by training. The adherence rate to the training intervention was high despite pain due to the patients' willpower and the fact that exercise was not thought to cause the pain.	During treatment	Supervised	90%
34	Husebø et al. 2015, Norway	To explore how exercise is perceived by BC patients during chemotherapy.	Focus group interviews.	27 women	Explorative: audio-recorded interviews in a focus group consisting of 5 participants following a home-based exercise intervention with combined strength and endurance exercise (19 weeks). Explorative: Recruited from an integrated personal trainers and medical professionals program, during or after treatment. Data collected through interviews or e-mail journals. At least one interview/woman and additional bimonthly interviews performed.	Exercise shapes feelings of psychological, physical, and social well-being, with psychological health gains being the most valued among the participants.	During treatment	Unsupervised home based	70%
35	Bulmer et al. 2012, USA	To provide an in-depth description of women's experiences with exercising during or after their breast cancer treatment.	In-depth interviews. Thematic analyses.	45 women	Explorative: 8-9 weeks after completion of the intervention, focus groups held with 3 experimental group cohorts. Interviews were recorded, transcribed verbatim, and analyzed for recurring themes. Explorative: After home-based exercise intervention 4 times/week consisting of strength and endurance exercise with progressive increases in resistance.	Women described benefits, psychological, physical, and social, depending on when they exercised.	During and after treatment	Supervised (unlimited access to health club, total of 12 hours personal training)	80%
36	Crane-Okada et al. 2012, USA	To examine older women's perceptions of a mindful movement program intervention on QoL.	Focus group interviews.	29 women	Explorative: 8-9 weeks after completion of the intervention, focus groups held with 3 experimental group cohorts. Interviews were recorded, transcribed verbatim, and analyzed for recurring themes. Explorative: After home-based exercise intervention 4 times/week consisting of strength and endurance exercise with progressive increases in resistance.	Preliminary results suggest that older breast cancer survivors benefit from this mindful movement program, and that it was appreciated by the participants.	After treatment	Supervised	70%
37	Ingram et al. 2010, Canada	To describe women's perceptions of a home-based exercise intervention during adjuvant treatment for BC.	Weekly exercise logs, telephone interviews, and open-ended feasibility and accessibility questionnaire.	8 women	Explorative: After home-based exercise intervention 4 times/week consisting of strength and endurance exercise with progressive increases in resistance.	The exercise program was highly valued. The most common challenges to exercise were side effects of chemo (fatigue and pain), but were overcome through motivation, adapting the routine, and external support.	During treatment	Unsupervised home-based	70%

(continued)

Table 2. (continued)

Reference	Author, Year, Country	Aim of the Research	Research Design	Population	Intervention/Explorative Time Point	Results	PA During or After CT	Supervised/ Unsupervised PA	CASP
38	Larsson et al, 2008, Sweden	To describe how women treated for breast cancer experience physical activity after surgery.	Individual semistructured interviews with a phenomenographic approach.	12 women	Explorative, women strategically selected 6-12 months after surgery, interview focusing on physical activity after surgery, influence of cancer treatment on physical activity level, influence of information from health care providers on activity.	Incentive to return to a normal physical condition driver for physical activity after surgery for breast cancer. Experience of physical activity related to compliance to instructions need for support, struggle to get back to normal fear of side effects, wish to stay normal, not allow limitations and getting in control of the situation.	After treatment	No intervention. "Self-reported" experience of PA during treatment	70%
39	Emslie et al, 2007, UK	To explore the experiences of women undergoing treatment for BC who had taken part in a supervised group exercise trial.	Focus groups, tape recorded.	36 women	Explorative: focus groups at the end of the intervention and 6 months after.	NO INTERVENTION In this study, it was found that women challenge the expectations of conventional femininity by, for example, removing their wigs when exercising or reprioritizing domestic responsibilities in order to exercise. This study suggests that women's barriers to physical activity can be overcome through using a gender-sensitive approach and a supportive group environment.	During treatment	Supervised	80%
40	Husebø et al, 2015, Norway	To explore factors influencing exercise adherence among women with BC while following an exercise program.	Focus group interviews.	27 women	Explorative: audio-recorded interviews in a focus group consisting of 5 participants following a home-based exercise intervention with combined strength and endurance exercise 19 weeks.	Five main themes were identified: side effects of BC treatment barrier to exercise, restoring and maintaining normality in daily life is a motivation to exercise, activities compete with exercise, constructive support enhances exercise, and positive beliefs about efficacy and outcomes motivate women to exercise.	During treatment	Unsupervised home-based	80%
41	Balneaves et al, 2014, Canada	Qualitatively describe experiences of breast cancer survivors of lifestyle intervention.	Focus group or telephone interviews.	9 women	Explorative: 9 women who completed the lifestyle intervention (reduced calorie diet, 150 minutes of moderate to vigorous aerobic exercise) took part in either a focus group or telephone interview 8 weeks following the intervention.	The women appreciated the group activities and supported them in reframing lifestyle such as exercise habits and dietary patterns. They felt they gained more strength and energy after the intervention.	After treatment	Supervised	70%

(continued)

Table 2. (continued)

Reference	Author, Year, Country	Aim of the Research	Research Design	Population	Intervention/Explorative Time Point	Results	PA During or After CT	Supervised/ Unsupervised PA	CASP
42	Sander et al, 2012, USA	To investigate factors that affect decisions about physical activity and exercise in breast cancer survivors.	Grounded theory approach using focus groups and semistructured interviews, triangulated with 2 quantitative scales assessing beliefs about exercise.	34 women	Most participants were months to years after treatment, focus group data and the questionnaire RAPA were used to assess physical activity levels before and after diagnosis. The Decision Balance Scale was used to assess attitudes toward exercise.	Participants held a general belief that exercise was beneficial, physical activity levels decreased during treatment but increased beyond prediagnosis levels after treatment was completed. Themes emerging about behaviors were lack of accurate information about safe exercise, facilitators, barriers and beliefs were equal to general population except that women expressed a belief that exercise would prevent recurrence of cancer.	During or after treatment	Unsupervised	70%
43	Loh et al, 2010, Malaysia	Explore the perception of women with breast cancer on myths, barriers, and facilitators of exercise in order to understand their ideas about physical activity.	Focus groups, semistructured questions, thematic analysis. Two groups, (n = 6) completed treatment and (n = 8) active treatment.	14 women	Purposive sampling to recruit women. Their perceptions on physical activity and breast cancer, barriers and facilitators to exercise.	NO INTERVENTION Barriers to exercise, facilitator/motivator toward exercise, and myths around exercise. More myths and reservations about physical activity in the undergoing group. Facilitators included positive experience from physical activity engagement, easy access to facility, and good social support.	During and after treatment	Unsupervised	80%
44	Hefferon et al, 2013, UK	To study the perceived barriers to exercise implementation 5 years post-BC diagnosis.	One-to-one semistructured interviews.	83 women	Explorative: 5 years following the patients' participation in a group-based training intervention. Intervention group (n = 40) and control group (n = 41).	NO INTERVENTION The main perceived barriers include psychological (lack of motivation, fears, not being the sporty type), physical (age, physical comorbidities), and contextual and environmental barriers (employment, seasonal weather, traditional female caregiving roles).	After treatment	Supervised	90%

(continued)

Table 2. (continued)

Reference	Author, Year, Country	Aim of the Research	Research Design	Population	Intervention/Explorative Time Point	Results	PA During or After CT	Supervised/ Unsupervised PA	CASP
45	Rogers et al, 2004, Canada	Explore physical activity, knowledge, attitudes, and behaviors among breast cancer patients during adjuvant therapy.	1-3 focus group sessions.	12 women	The focus group questions included physical activity behavior (prior to and during treatment). There were also questions around social cognitive theory constructs for health promotion interventions. Mean time from treatment was 16 months.	They felt confident in their ability to exercise during treatment if fatigue, time management, and social networking were addressed, they had not been given information on exercise before treatment, exercise felt more beneficial than harmful during treatment, reduced fatigue and potential for improved survival. They wanted more education and knowledge from staff on exercise, walking was most acceptable modality.	During treatment	Supervised and unsupervised	30%
46	Luoma et al, 2014, Finland	To investigate how a tailored exercise intervention is experienced by cancer survivors.	Focus group discussions with women recently treated with systemic treatment and shortly after participating in an exercise intervention.	25 women	Explorative: women invited to participate 4 months posttreatment in an RCT PE- intervention lasting for 12 months. Interview guide focused on course of illness, experience of exercise intervention, personal meaning of tailored exercise program, reasons to continue, barriers to exercise, and personally meaningful outcomes of exercise.	Participating in an intervention with focus on physical rehabilitation was highly appreciated, women experienced improved physical fitness and improved coping. Due to impact of treatment, tailored exercise reduced barriers to adherence. Peer support from group was valued, sharing experiences and gaining a sense of normality. A sense of mastery of the illness through participation and better psychological functioning, improved mood was perceived as a consequence of better physical functioning.	After treatment	Supervised	80%

Abbreviations: PA, physical activity; CT, conditioned training; CASP, Critical Appraisal Skills Programme; BC, breast cancer; QoL, quality of life; RAPA, Rapid Assessment of Physical Activity; RCT, randomized controlled trial; PE, physical exercise.

Table 3. CASP Criteria^a.

1. Was there a clear statement of the aims of the research?
2. Is the qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?
4. Was the recruitment strategy appropriate to the aims of the research?
5. Was the data collected in a way that addressed the research issue?
6. Has the relationship between researcher and participants been adequately considered?
7. Have ethical considerations been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research?

^aCritical Appraisal Skills Programme (CASP) Qualitative Research Checklist 31.05.13.

PA became a platform for the women to talk about things that they could not talk about with their families and friends.^{3,38,39}

A sense of mastery over the disease through participation in the PA was also fulfilled by promoting better psychological functioning, physical fitness, improved mood, and by meeting other patients.^{34,37,38,40}

Improving Experience of Health. PA was highly valued for improving QoL including psychological, physiological, and social health.^{34,35,39}

It was important to listen to your own body and to set limits for how much PA one should perform.⁴¹ PA was also described as a struggle that included the balancing of its benefits with the fear of negative side effects of the treatment.⁴¹

Issues around the relationship between weight loss and a better self-image was discussed as being positive and losing weight and changing dietary habits to feel better about oneself, and that the addition of PA could help with this.⁴⁰

There was a general belief and increased awareness through the information and support obtained from the health care profession during treatment that PA can reduce the risk of developing comorbidities and increase the immune response to fight the disease, thereby possibly delaying recurrence of cancer.^{37,39,41-43}

Benefits From PA After Treatment

It is well known that physical activity and fitness levels are reduced after treatment, especially after chemotherapy. The fact that the rehabilitation was slow and that they still experienced fatigue even after completing treatment was perceived as surprising, even though they slowly began to feel stronger and stronger during the PA period. As physical fitness got better and feelings of fatigue decreased, motivation

increased to engage in PA.^{33,37,39,44,45} Improved mental attitude, decreased stress, increased sense of control, and increased confidence was also experienced.^{33-35,38,44} The feeling of being unattractive with hair loss and skin problems caused by chemotherapy was compensated for by gaining leaner muscle mass and reducing total body fat.^{34,43} PA after the treatment period was described as a way to “move forward” into the next phase of life.³⁵

Social Support Through Engaging in PA. The relationship between the women and the instructors was an important support function for participating, and staying committed and motivated.^{34,35} The fellow members in the PA group became the support that started during treatment but remained after finishing treatment when no contact with the hospital was offered.^{35,42} PA was also connected with the feeling of fighting the aging process, such as keeping fit to have the strength to look after their grandchildren, or getting out of the house to see other people.^{40,43} The PA group was described as a type of informal counselling and support group that was viewed as enjoyable and fun,³⁸ and it made the women feel like they could diverge from the otherwise constant thought and worry of having a disease, and could instead associate with wellness and health.³³

Facilitators for Participating in PA

Support With Recovery and Prevention. Physical motivators included health: that being physically active “does you good” and that it can help to fight the aging process, control medical conditions, facilitate weight management, and may reduce the side effects of treatments; and psychosocial motivators: having a sense of improved body image, experience enjoyment, and a feeling of empowerment and well-being.³¹

A positive belief in PA regarding outcomes’ efficacy kept the women motivated to adhere to their program.³⁹ Home-based programs described multiple strategies to maintain the PA programs, including making it a daily routine, altering between walking, swimming, bicycling, and jogging, and varying the timing of the PA during the day to avoid it getting boring or to adjust to physical and logistical challenges.³⁶

Skilled Instructors. The instructors gently pushed the women between what was manageable and what was intense. To receive guidance and education from knowledgeable staff who understood the issues regarding recovery after a breast cancer diagnosis and treatment as instrumental.^{34,38,40,44,45} The women felt safe to exercise with an instructor at the hospital, because they could trust that the movements they were asked to do were suitable for them and that the workload could be adjusted to match their maximal capacity on that specific day.^{37,39} The environment for PA was also mentioned as being important, such as the instructor having the

ability to lead and to create an accepting environment, a comfortable temperature, cleanliness, and privacy of the training location.³⁵

Company With Peers. PA together with people in the same situation was described as being easier, for example, not having to wear a wig during PA and feeling comfortable having a shower afterwards, as there was no need to explain their appearance and marked bodies. One valued the fact that everyone were all about the same age, and that the group was small in size.^{38,45}

Barriers to Participating in PA

Social Factors. One barrier was when women perceived having too much pressure from friends and family with their encouragement to rest and not to be active.³⁰ This act of concern prevented the women from doing regular household chores and made them more inactive.^{38,41} Lack of support from health care professionals who discouraged women from performing PA were disappointing and led women to question the health care professionals' knowledge and consideration of PA for patients with breast cancer during the treatment period for health promotion purposes.³⁹

Lack of time^{30,44} and prioritizing PA over the traditional caring roles of women, such as taking care of children,^{38,43} was problematic.^{30,39,42} Having access to a car and economic and work responsibilities were also mentioned as being environmental barriers for PA.⁴⁵

Lack of motivation immediately after the completion of treatment, a period of posttreatment depression, resulted in reduced levels of PA.^{29,42} Having cancer and growing older with other complications were also barriers.⁴³

Health-Related and Physical Factors. Specific cancer- and treatment-related barriers described were fatigue, neuropathy, joint pain, musculoskeletal pain, and lymphedema, as well as chills and fever, irregular pulse, and dizziness,^{31,36} getting lymphedema and soreness from chemotherapy, radiation therapy burns, different side effects from medications and other illness, and having less muscle tissue following reconstructive surgery.⁴⁵ These issues affected decision to engage in PA in a negative way.^{30,32,36,39-41,43,44} Some key barriers identified during treatment were the need to conserve energy, fear of infection, and possible injury.⁴²⁻⁴⁴ For women who had completed treatment, structural factors, such as limited facilities and inconvenient location of gym, was prevalent.^{30,40,42}

The fear of lymphedema and injury contributed to self-imposed barriers and modification of PA,⁴¹ but expert advice from a physician, nurse, or physiotherapist supported adaptation of routines and to overcome this specific barrier.²⁴ Another treatment-related barrier, "chemo brain,"

posed a challenge for some and made it difficult to stay focused during the PA.⁴⁰

Physical barriers as changed appearance from alopecia due to the treatment was a barrier to joining PA at a regular gym.^{38,45} Further barriers to joining PA or a gym included feeling uncomfortable due to the loss of part or of the whole breast. In this case, swimming was reported to be a particularly difficult issue due to the visibility of the figure in tight clothing.³⁸

Another self-conscious barrier was the perception of not being the "sporty type," and some women identified their age as the main reason why it was too late to take up sports.⁴³

Lack of Information. Not getting information and/or recommendations from health care professionals concerning breast cancer and PA during and after treatment, which led to a fear of overdoing the PA postillness, was a barrier.^{30,44} Women also found conflicting information around exercise and lymphedema from health care professionals, on the Internet, and from stories that other patients told them, which contributed to a great deal of fear. Guidelines regarding weight lifting, when given, were experienced as inconsistent and left the participants with a fear of doing too much or not enough.⁴¹ Myths, misconceptions, and the perceived overall lack of knowledge about PA and breast cancer was worrying and a barrier to performing PA.⁴²⁻⁴⁴

Discussion

Despite profound knowledge of the benefits of PA after breast cancer diagnosis, maintaining a physically active lifestyle during and after chemotherapy is challenging. By synthesizing the experiences of PA for this patient group, the goal is to provide health care professionals with important tools to motivate patients with breast cancer into adopting an active lifestyle during and after treatment.

One of the major facilitators for PA is the perceived ability to engage in exercise training and acquiring necessary tools to feel competent and confident in performing exercise. There are several ways on how to encourage and achieve the feeling of competence and confidence for the women. One way is to increase the knowledge among the health care professionals of the physical and psychological impact that PA has on health, both during and after cancer treatment. With an increased knowledge among the staff the information and support to the patients will increase. In a recent study, the importance of the combination of both medical and physiological knowledge from a nurse and a physiotherapist as instructors was shown to be of great importance for the women to continue their exercise. The women appreciated that they could ask questions and get advice from both professions, and they felt safe and secure during their PA.²⁴

Interestingly, women from both supervised and unsupervised PA interventions reported the lack of information/knowledge about how to stay physically active during treatment as a major barrier. This finding emphasizes the importance of giving the women access to relevant information on the type, frequency, and intensity of an exercise regime that is both safe and beneficial to perform.

Exercise instructors played an important role by sharing knowledge regarding exercise that was safe to perform and at the same time motivated the women to exercise more intensely, and this made them feel as though they were being treated the same way as a healthy population.³⁶ In healthy subjects, it has been reported that instructors' support was critical in order to acquire new skills resulting in a feeling of achievement.⁴⁶ Moreover, healthy people experiencing barriers to exercise have reported a greater need to be appreciated for their capacity for physical activity than those not experiencing PA barriers. This instructor support may induce greater exercise-specific self-confidence in some individuals.⁴⁶

Various studies have demonstrated that exercise self-efficacy is a crucial determinant of physical activity adherence in healthy people.⁴⁷ People with higher self-efficacy perceive less effort during PA, have a strong belief in being able to carry out the activity, and feel more revitalized during and after PA.⁴⁸ Among elderly, barriers to PA are thought to be mainly psychological, and Lee et al⁴⁸ suggest using self-efficacy-based, supervised exercise programs in this population. To encourage self-efficacy, exercise instructors can provide verbal encouragement, set individual achievable goals, encourage participants to see others' achievements, and correct negative physical and psychological conceptions perceived by the participants. It can be postulated that women with breast cancer also may benefit from such an approach considering the vast psychological barriers being reported. In general, the women enrolled in exercise programs expressed that despite experiencing fatigue and reduced physical functioning, they were able to perform the prescribed exercises, while at the same time, stressing the importance of adjusting the exercise to their current physical status. The women felt content and empowered when their physical fitness increased, and it helped them feel less anxious and enforced a sense of being in charge of their lives and the disease.²⁴

A central vision of PA—even in women who expressed unwillingness to exercise—was that PA was viewed as a means to “get back to normal.” Several aspects of the normalization process were linked to physical activity, ranging from physical functioning, weight loss, and improved self-image to the value of focusing on the actualities of the exercise rather than the disease in a social context. The review highlights that the way women perceive their bodily changes during cancer treatment will influence their exercise behavior and that is not dependent on type or timing of the

intervention. Gaining weight or worrying about weight gain is generally a motivator for PA during chemotherapy treatment.^{29,33,38-40} A general experience of psychological and physiological well-being including experiencing joy, rebuilding their personal identity, and feeling empowered is reported. This was mainly found in the supervised exercise interventions where women also reported a sense of feeling “normal” when engaging and felt as if they had gained control over the cancer.

When comparing reported barriers from supervised and unsupervised studies, both groups reported treatment-related barriers, such as neuropathy, fatigue, joint and muscular pain, nausea, infections, and so on, as one of the most difficult to overcome. A study carried out by Courneya et al⁴⁹ supports this claim, finding that more than 50% of all exercise sessions missed by breast cancer patients during chemotherapy treatment was in fact due to treatment-related side effects. It is, for example, well known that taxanes cause neuropathies with prevalence rates of up to 33% in breast cancer survivors,³³ so most likely, the adherence rate also depends on the type of treatment received.

Changes in appearance, such as hair loss and loss of part or the whole of the breast, were reported as being major barriers to exercise. Many of the women who had previously engaged in physical activities in regular exercise classes hesitated to continue with their exercise routine during chemotherapy treatment, partly due to hair loss and breast cancer surgery,³⁸ perhaps because it is an aspect of appearance tightly linked to gender identity. In contrast, taking part in an exercise program with other women in the same situation was reported to help them overcome appearance-related anxieties.

Women in unsupervised exercise programs, even though they enjoyed performing the home-based exercises, expressed a desire to perform exercise in a gym that was tailored for the needs of breast cancer patients/survivors^{33,41} where social interaction was also enhanced.⁴² This finding emphasizes the importance of incorporating exercise programs as a standard routine in the health care setting to make it possible for women to exercise in a comfortable zone without feeling self-conscious.

In both home-based and in supervised exercise interventions, the traditional caring roles of women and lack of time were commonly reported barriers for performing physical activity. Therefore, the idea that home-based interventions may be the solution in order to overcome these barriers, as previously suggested by Courneya et al⁴⁹ and Lakoski et al,⁵⁰ does not correspond with our findings. On the contrary, supervised interventions or group activities may facilitate the habit of exercising on a regular basis. Women in the study by Husebø et al³³ participating in a home-based intervention reported a “lack of discipline,” stating that home-based exercise programs are often static and lack progression.

Lack of support from friends and family was commonly reported in a number of the synthesized articles in this

review, both in home-based and supervised interventions. This lack of support may be a result of a common misconception that carrying out exercise during chemotherapy treatment is harmful. A suggestion for overcoming this barrier was made by women in the study by Balneaves et al,⁴⁰ which implied inviting the partners and families of the women to a few exercise sessions in order to give them a better understanding of the importance of the training program. Health care specialists who the women come into contact with on a regular basis during their treatment may also play a crucial role in providing the patient with evidence of feasibility, safety, and benefits of PA participation.

Both during and after treatment, women are generally believed to cope through mutual support and sharing of experiences, unlike men who are believed to prefer a problem-focused coping strategy, which is why women tend to attend traditional support groups.⁵¹ However, our findings suggest that women taking part in an exercise intervention seem to prefer this mode of social support to avoid focusing on the illness, which was perceived as depressing, and instead associated exercise with wellness through interacting with other women who were in the same situation which they found enjoyable and fun.^{29,34,36,38} According to Emslie et al,³⁸ these findings are consistent with findings from a study by Adamsen et al⁵² showing that men with prostate cancer also appreciated the fact that engaging in physical activity together with others became a way of coping through the use of humor and focusing on exercise rather than on discussions. It could also be that women who choose to be part of an exercise intervention are different from women choosing to engage in traditional support groups.

Freedom of PA choice has been determined as an important factor for engaging in long-term exercise.⁵³ In some of the studies, older women generally tended to prefer activities inclining toward the more gentle side such as swimming, walking, or mindfulness exercise.^{29,35} Personal experiences, capacities, and life circumstances can also affect motivation; therefore, it is important to maintain an individualized approach to standardized exercise interventions.

Conclusion

For women affected by breast cancer, support in the form of knowledge provided by different health care professionals about how to safely start or continue to uphold regular PA to minimize symptoms, increase well-being, and reduce morbidity during or after treatment is of vital importance. Women affected by breast cancer perceive similar barriers as the general population to uphold PA. Increased knowledge of these and facilitators toward physical exercise during or after treatment for breast cancer is important for health care professionals to use as a tool in order to design PA programs and to support women to stay physically active during and after breast cancer treatment. The findings indicate that women

seem to prefer supervised PA since this format also involves mutual support and sharing of experiences.

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