

The experiences of participants in an innovative online resource designed to increase regular walking among rural cancer survivors: a qualitative pilot feasibility study

Lauren J. Frensham · Dorota M. Zarnowiecki ·
Gaynor Parfitt · Sharron King · James Dollman

Received: 24 November 2013 / Accepted: 17 February 2014 / Published online: 27 February 2014
© Springer-Verlag Berlin Heidelberg 2014

Abstract

Purpose Physical activity has been associated with improved outcomes for cancer survivors. Compared to their urban counterparts, rural Australians experience a health disadvantage, including poorer survival rates after diagnosis of cancer. The aim of this pilot feasibility study was to gain insight into the experiences of rural cancer survivors engaging in an online resource designed to increase regular walking.

Methods A 6-week online lifestyle intervention was implemented among eight cancer survivors living in three rural regions of South Australia. Participants used a pedometer to monitor daily steps taken, reported daily steps using a specially designed website and were provided with daily step goals based on their affective state. Participants took part in semi-structured face-to-face interviews to gauge their impressions of the program. Data were analysed using qualitative description and content analysis to derive major themes from the interviews.

Results The program motivated participants to increase their walking and resulted in improvements in several self-reported physical and quality of life outcomes. The resource was clear and easy to navigate. The three-tiered step goal system reduced feelings of guilt if participants were unable to reach a goal. The step log and graph allowed participants to self-monitor their progress. The forum fostered social support; however, more interaction with intervention personnel was suggested.

Conclusions This online pedometer-based walking intervention is feasible and effectively increases motivation for walking and enhances health-related quality of life in South Australian rural cancer survivors. A randomized controlled trial of this intervention is warranted.

Keywords Cancer · Physical activity · Rural health · Survivorship · Online intervention · Qualitative research · Affective state

Abbreviations

STRIDE Steps TowARd Improving Diet and Exercise
RPE Rating of perceived exertion

Introduction

The number of cancer survivors in Australia is increasing due to population ageing, growing incidence of some cancers and improvements in early detection and treatment [4]. However, survival rates for the 31 % of Australians with cancer living in rural and remote areas are much poorer compared to those in major cities [2–4]. This may be due to unique features of the rural environment such as geographic diversity, social isolation, lower socioeconomic status, limited access to services and facilities, and the burden of travel distances [12]. There is therefore a need to develop and implement innovative ways of delivering health promotion services to rural residents.

Cancer and its treatments are often associated with adverse physical and psychological effects that can persist for months or years after treatment. Such after-effects include fatigue, functional impairment, weight gain, sleeping difficulties and

L. J. Frensham (✉) · G. Parfitt · S. King · J. Dollman
Sansom Institute for Health Research,
School of Health Sciences, University of South Australia,
GPO Box 2471, Adelaide, SA 5001, Australia
e-mail: lauren.frensham@mymail.unisa.edu.au

D. M. Zarnowiecki
School of Population Health, University of South Australia,
GPO Box 241, Adelaide, SA 5001, Australia

reduction in quality of life [14, 15, 39, 40]. Increasing physical activity provides a non-pharmacologic intervention for the prevention and/or alleviation of many of these effects. Evidence has consistently indicated that physical activity has a positive impact on physical outcomes (e.g. cardiovascular fitness, physical functioning, immune function, muscle strength, body composition, nausea and fatigue) and psychological well-being (e.g. mood, self-esteem, anxiety, depression) following a cancer diagnosis [19, 20, 36, 38].

Cancer survivors are advised to aim for at least 30 minutes of moderate intensity physical activity daily, such as brisk walking [13]. Walking is the preferred method of exercise by a range of different cancer survivors [25, 26, 34, 44]. This may be because walking is accessible, practical and suitable for people with varying levels of fitness and physical limitations that restrict other forms of exercise. An appropriate translation of public health recommendations for walking steps per day among cancer survivors is currently unavailable. A value of 10,000 steps per day for healthy adults is often reported in the media as an appropriate goal, but this may not be achievable for people who have had a cancer diagnosis. Setting step goals for cancer survivors may be difficult due to characteristics and experiences unique to each type and stage of cancer as well as treatment approach. Thus, it has been recommended that future research develop more individualised, incremental step goals relative to the individual's baseline values [43].

Goal setting is a strategy that is frequently used to improve adoption and maintenance of healthy lifestyle behaviours. Goal setting theory predicts that the use of goals is more successful when they are specific in outcome, proximal in regards to attainment and realistic in terms of the individual's capacity [6, 28]. In addition, goal acceptability and attainment may be influenced by personal self-efficacy [6]. The stronger an individual's sense of self-efficacy regarding their actions and goals, the stronger their commitment to pursuing and achieving their goals [6, 27].

Research has shown that affective state (feeling good/bad) influences exercise behaviour and motivation [10]. Given that cancer survivors may experience wide variability in affective state, this should be taken into consideration when setting individualised daily step goals. On a 'bad day', an individual is unlikely to accept (or perceive as achievable) an exercise goal linked to when they were feeling 'good'. Personalised step targets should also incorporate individuals' ratings of perceived exertion (RPE). RPE is determined using the 'Borg 6–20 RPE' scale which numerically quantifies the effort, strain, discomfort and/or fatigue experienced during physical activity [9]. RPE has been used to create target exercise intensities in a range of populations including healthy adults [31, 37], cardiac patients [8] and patients with chronic obstructive pulmonary disease [24].

Despite the benefits of physical activity for decreasing negative effects of cancer, many Australian cancer survivors

are insufficiently active [22]. Cancer survivors living in rural areas are at further risk of being physically inactive and experiencing negative effects after treatment compared to their urban counterparts [11, 45]. The aim of this study was to determine whether an online intervention designed to increase walking based on perceptual regulation and daily affective state was acceptable and feasible among rural cancer survivors using in-depth one-on-one interviews.

Methods

The current study delivered a 6-week online walking intervention (Steps Toward Improving Diet and Exercise—STRIDE) that used an online step log where participants logged their steps, RPE during exercise and how they were feeling daily (affect). These data were used to determine individualised weekly step goals to increase walking. Ethics approval was granted by the University of South Australia's Human Research Ethics Committee.

Recruitment and participants

Participants were recruited via cancer support groups, newspaper advertisements and allied health personnel in three rural regions of South Australia: the Riverland, Port Pirie and the Copper Coast. To be eligible for the study, participants had to (a) have had a cancer diagnosis (excluding skin cancer); (b) not be currently receiving active treatment such as surgery, chemotherapy or radiotherapy; (c) be insufficiently active defined as engaging in less than 20 sessions of exercise over the past month (one session is 30 min duration) [29]; (d) not be pregnant or planning to become pregnant during the study; (e) have no physical/psychiatric conditions impairing their ability to participate; (f) not have any known contraindications for exercise as assessed by stage 1 of the Adult Pre-Exercise Screening Tool (APPS) [32]; (g) have access to a computer with the internet and (h) be able to obtain medical clearance.

Nine cancer survivors (seven females, two males) with a range of primary cancer sites participated in this study. One participant dropped out in the third week of the program for reasons unrelated to the study. Eight participants (six females, two males) completed the study and all were interviewed.

Procedure

Participants received an information session on active lifestyles and were provided with a Yamax Digi-Walker SW 200 pedometer to monitor their steps. Participants were familiarised with Borg's 6–20 RPE scale [9] and were asked to walk at a moderate intensity (RPE of 11–13), the 'bandwidth' within which people have the most positive response to exercise [17, 18, 33].

During the program, participants used the pedometer to monitor their steps by recording their daily step counts onto the step log on the website. The step log page included a graph of average weekly steps which provided feedback on progress throughout the program. Participants were asked to rate their RPE after walking and their daily affect (how they were feeling at the beginning of each day) on a Likert scale ranging from 5 (feeling ‘very good’) to –5 (feeling ‘very bad’) [21]. This information was used to create personalised target steps/day for each participant, which were emailed to them weekly. Step goals were different for each participant depending on their baseline steps and affective state. Three-tiered step goals were provided to participants using the affect scale—a goal for when the participant was feeling ‘bad’ (i.e. minus on the affect scale), ‘neutral’ and ‘good’. This method was employed as there was considerable day-to-day variation in reported affect (as expected among cancer survivors). The step goals were determined from the daily steps and affect reported in the previous week; if participants did not meet the step goals set on most days of the previous week, the goals for the following week were not changed. If goals were met, then step goals for ‘neutral’ and ‘good’ were increased by 5–10 %.

The website also included other components designed to encourage physical activity, including a forum to share experiences and provided peer support. Social support has been consistently reported as a predictor of maintained behaviour change in lifestyle promotion [7, 16, 23]. Thus, the use of the forum served to address the barriers of isolation experienced by many rural residents. A virtual noticeboard provided space for community service providers to promote community activities as well as provide evidence-based guidance on lifestyle behaviours. This feature was designed to reduce environmental barriers by increasing access to safe, supervised and socially focused activities for cancer survivors and family members. Information on healthy eating based on the Cancer Council Australia’s nutrition guidelines that support the recommendations in The Australian Guide to Healthy Eating [30] were also provided.

At the conclusion of the 6-week program, semi-structured face-to-face interviews were conducted by two trained research staff to assess the feasibility of the online resource. The interviewers explained the purpose of the interview and obtained the participant’s consent to record the interview. Questions are related to the acceptability and usefulness of the program, change in walking patterns, barriers faced, step goals, visual appeal and functionality of the website, and the participant’s perspective on aspects of the program designed to increase daily steps. Sample questions from the interview include the following: ‘What did you like most/least about the STRIDE program?’, ‘How difficult/easy was it for you to reach your step goals?’ and ‘What did you think of the visual appeal of the website?’ Probing questions were used when responses were dichotomous (i.e. yes/no) and more in-depth

information was required. Interviews each lasted approximately 45 min. Participants were offered a \$30 gift voucher in appreciation of their time.

Coding and analysis

A qualitative descriptive design was used. Interviews were transcribed verbatim. The first author (LF) coded all interviews thematically using NVivo10 qualitative analysis software. All data were analysed using qualitative content analysis. Most thematic categories were labelled using descriptive terms within the narratives, while some were driven by questions in the interview guide. The first level of coding identified the broad substantive content, for example, motivation to increase physical activity. Subsequent levels of coding involved re-examining the content of these codes to identify commonalities and differences. Categories describing comparable experiences were grouped together under a higher order concept, as recommended by Strauss and Corbin [42]. A second researcher (DZ) reviewed and commented on the coding categories. Any discrepancies were resolved between the first and second authors. Finally, the codes were grouped into categories and sub-categories and reviewed to identify overarching themes.

Results

Participant characteristics

The mean age of participants was 67.0 (SD 11.4) years with an age range of 43–78 years. All participants were Caucasian. Participants had been diagnosed with breast cancer ($n=5$), prostate cancer ($n=1$), non-Hodgkin’s lymphoma ($n=1$) or bowel cancer ($n=1$). Education level ranged from ‘completed primary school’ to ‘completed high school’. Six of the participants were married, one lived with a partner and one was widowed. All were retired except one who worked part-time. The length of time using the Internet ranged from ‘first time’ to ‘seven or more years’. Participant compliance for logging steps was near perfect for the 6 weeks, with a total of 12 days of steps not logged across eight participants. The average number of website log-ins across the 6-week period was 41. The least frequent user logged in 8 times and the most frequent 73 times. On average participants increased their daily step counts by 16 % from week 2 to week 6 of the program. Similar themes emerged in the interviews for each participant after taking into account differing participant characteristics. No new major themes emerged after conducting these eight interviews.

Qualitative findings

Five key themes emerged from the qualitative data that shed light on the perceived feasibility and usefulness of the STRIDE program:

STRIDE program as a motivator

The most salient theme from the interviews was motivation to increase daily walking:

Because I was on this study I thought ‘look I have to give it my best shot’, I made an effort to walk every day. [Female, 76 years old, breast cancer]

I wasn’t doing what I should do and you sort of were the motivation that got me up and going. [Female, 78 years old, breast cancer]

Especially when you have had cancer because it is so easy to just sit in a chair and read a book and this made me go out. [Female, 71 years old, breast cancer]

A recurrent theme was the notion of ‘topping up’ steps. If participants had not reached their step goal towards the end of the day, they tried to ‘top up’ steps by consciously being active throughout the rest of the day or going on another walk. This indicates that the participants found the step goals motivating. One participant commented:

I’d look in the evening and if it was still a bit down off I’d go for another little stroll. [Female, 70 years old, breast cancer]

Another participant commented:

If it got dark and I hadn’t had my number of steps I would make the effort to top-up. [Male, 75 years old, prostate cancer]

Identified improvements

All participants reported feeling better and more confident about themselves and their health. Participants described changes in their physical health including improved cardiovascular fitness, increased energy levels and ability to walk longer without tiring. Several participants mentioned that increasing walking helped them overcome fatigue experienced after treatment and regain their energy levels, an outcome they valued. One participant commented:

I’m playing good bowls now because I’m feeling more energetic. [Female, 70 years old, breast cancer]

Several participants commented on weight loss during the program as a positive outcome. One participant commented:

Well, I know I’ve got to lose a bit of weight. And I have lost... three kilograms in the 6-weeks. I know I have because my clothes fit a little bit better. I want to get down a little bit more. [Female, 78 years old, breast cancer]

Another participant stated.

I found that I was just putting on far too much weight. I thought ‘oh well, let’s burn up some of the fat I’ve got on me and, and before we start putting more on’. And I’ve found that it [the walking] is working pretty well. [Male, 75 years old, prostate cancer]

Most participants identified improvements in psychological health and mood as important benefits. Participants described experiencing a sense of achievement when they reached their step goal or ‘put in a decent walk’ which resulted in improved self-esteem and mood. One participant described how the program improved her mental outlook and increased her confidence to be active:

[The STRIDE study was] good for my mental health because I was very frightened about compromising my [breast] reconstruction. [Female, 43 years old, breast cancer]

Tailored/individualised step goals

Step goals ranged widely among the participants; however, all participants reported that the step goals were appropriately challenging and achievable. Most participants were confident they could choose which goal to aim for based on how they were feeling (their affective state). Some participants said they often aimed for the ‘neutral’ goal while others always chose the feeling ‘good’ goal. One participant commented:

Some days it worked out that I actually had to do a little bit more and I guess I didn’t have to do that, but I felt like because I never ever felt like I wasn’t fit enough because you always gave me the three levels to do. [Female, 66 years old, bowel cancer]

Many participants liked the three different goals as this reduced feelings of guilt if step counts were lower on some days when they did not feel so good. As one participant stated:

[The three different goals] was good because it didn’t make me feel quite as bad if I had a really bad day... And I thought well at least they understand there are days when you are not feeling the best even though you have gone through treatment, you know there are still days when you don’t feel the best. [Female, 71 years old, breast cancer]

Perceptions of the STRIDE website

Ease of use

Participants reported the STRIDE website to be clear, well organised and easy to navigate. Several participants described themselves as ‘computer illiterate’ yet they found the website easy to use. One participant commented:

It was quite easy really . . . seeing it all was, I was a new student . . . I’m only a one finger job! [Female, 78 years old, breast cancer]

Developing self-awareness

The step log and graph were powerful self-monitoring tools. Participants mentioned that they were aware that they were sedentary, but most had never quantified their physical activity before. Entering their steps onto the step log each day developed their self-awareness of their activity level. Some participants said that entering their step counts onto the website motivated them to walk more. This is because, as one participant said, it made them ‘accountable’ [male, 75 years old, prostate cancer]. Many participants mentioned the graph was useful for monitoring progress:

That was quick and easy way to see what you’d done . . . that was helpful to compare what was going on and I had some real peaks and troughs but that’s the way it goes. [Male, 60 years old, non-Hodgkin’s lymphoma]

Social support and sharing experiences

Overall participants thought the forum was effective for sharing experiences with other participants:

I enjoyed going onto the blog and reading the other ladies comments . . . it was interesting to read of other people’s experiences. [Female, 71 years old, breast cancer]

However, only three participants posted comments on the forum. Others said it did not interest them:

I didn’t blog or anything like that because I’m not a blogger or Facebook or Twitter or anything like that, I’m an old goat. [Male, 60 years old, non-Hodgkin’s lymphoma]

Several of those who did not comment on the forum mentioned that they did check it regularly to read others’ comments: ‘I read all the blogs but I didn’t put any on’ [female, 70 years old, breast cancer].

Only one participant engaged in events listed on the community events page:

‘Yes the walking group. I actually introduced myself to one of the ladies’.

Other participants mentioned that the community events were a good idea but that the events did not suit their preferences:

I looked at them all once and when I saw them I thought to myself ‘I’m not going to waste my time looking at those’. But I’m sure there are a lot of people that they would be good for . . . I think it’s a good feature but it didn’t suit me. [Female, 76 years old, breast cancer]

I didn’t know that stuff was going on but no I didn’t [engage in the events], I suppose it’s just a bit . . . hard with kids. [Female, 43 years old, breast cancer]

Participants’ suggestions for improving the program

Overall, participants were satisfied with the program and would recommend it to others, and only a few offered suggestions for improvements. The most salient suggestion was a way to inform STRIDE researchers of reasons why step counts may have been particularly high or low on a given day. One participant commented: ‘I felt some days I needed to explain why I was so short’ [male, 75 years old, prostate cancer]. All participants agreed that a comment box alongside the step log would be an effective way to communicate this.

Another recurrent suggestion was more input from the STRIDE team on the forum. One participant found it ‘impersonal’ and would have liked the STRIDE team to interact more: ‘Would have been nice I think if you perhaps could have responded to some of the comments’ [female, 76 years old, breast cancer].

Discussion

Participants in this study identified numerous improvements that they attributed to the program. These included reduced fatigue and improved confidence, improved physical outcomes and mental outlook. These benefits are similar to those described in other exercise interventions among cancer survivors using qualitative analyses [1, 41].

The most notable theme was the usefulness of the program to increase awareness of physical activity and to provide motivation to increase walking. The combination of wearing the pedometer, recording steps on the step log and tracking progress on the graph allowed participants to self-monitor their behaviour. Self-monitoring is a well-known cognitive behavioural technique described by Bandura [5] for increasing

awareness about behaviour and changing behaviour. Previous pedometer-based studies have indicated that self-monitoring activities, such as keeping journals or logs, are motivators to increase walking [35].

A unique feature of the intervention was the three-tiered step goal approach, which took affective state into account. This approach was well received by participants as it promoted a sense of achievement each day. This relates directly to goal setting theory; the goals were perceived proximal in regard to attainment and realistic in terms of the individual's capacity and thus the participants increased their effort and energy to achieve their daily step goals [27, 28].

Limitations

There are limitations in this study that must be noted. The study was conducted with a small number of participants from one rural South Australian community and findings cannot be generalized to the broader rural population. The sample was relatively homogenous (mostly middle-late aged Caucasians) and included only breast, prostate, non-Hodgkin's lymphoma and bowel cancer survivors. Their views, therefore, may not be representative of all cancer survivors living in rural areas. Further, this study may include self-selection bias due to volunteer enrolment; participants may have been a more motivated group than those who did not participate. Finally, participants may have been enthusiastic to be part of an innovative study and the STRIDE program may influence short-term behaviour. Thus, there is a need for this program to be evaluated over a longer period.

Conclusion

The adoption of physical activity has been associated with improved outcomes for cancer survivors. Given the health disadvantage of rural Australians, including the poorer survival rate after cancer diagnosis, there is an urgent need for remote-delivered model that can improve health and well-being outcomes for cancer survivors living in these areas. The online pedometer-based intervention was designed to address many of the challenges facing rural cancer survivors and was accordingly well received by participants. These findings suggest positive health benefits for this vulnerable population, particularly in relation to the co-morbidities often associated with cancer and its treatment. This program could be offered as an effective and accessible option for larger populations of cancer survivors to increase and maintain physical activity after having had a cancer diagnosis. A randomized controlled trial of this program is warranted.

Acknowledgments This research was supported by Country Health SA and Cancer Australia. Ms Frensham is supported by an Australian Post-graduate Award Scholarship.

Conflict of interest The authors declare that they have no conflict of interest.

References

- Anderson AS, Caswell S, Wells M, Steele RJ, Macaskill S (2010) 'It makes you feel so full of life' LiveWell, a feasibility study of personalised lifestyle programme for colorectal cancer survivors. *Support Care Cancer* 18:409–415
- Australian Bureau of Statistics (2011) 102.0—Australian social trends, Mar 2011: health outside major cities. Commonwealth of Australia, Canberra.
- Australian Institute of Health and Welfare (2007) Rural, regional and remote health: a study on mortality, 2nd edn. AIHW, Canberra
- Australian Institute of Health and Welfare, Australasian Association of Cancer Registries (2012) Cancer in Australia: an overview 2012. AIHW, Canberra
- Bandura A (1986) Social foundations of thought and action: a social cognitive theory. Prentice-Hall, Englewood Cliffs, NJ
- Bandura A (1997) Self-efficacy: the exercise of control. W.H Freeman, New York
- Bandura A (2004) Health promotion by social cognitive means. *Health Educ Behav* 31:143–164
- Borg G (1970) Perceived exertion as an indicator of somatic stress. *Scand J Rehabil Med* 2:92–98
- Borg G (1988) Borg's perceived exertion and pain scales. Human Kinetics, Champaign, IL
- Bryan A, Hutchison KE, Seals DR, Allen DL (2007) A transdisciplinary model integrating genetic, physiological, and psychological correlates of voluntary exercise. *Health Psychol* 26:30–39
- Burris JLAM (2010) Disparities in mental health between rural and nonrural cancer survivors: a preliminary study. *Psychooncology* 19: 637–645
- Butow PN, Phillips F, Schweder J, White K, Underhill C, Goldstein D (2012) Psychosocial well-being and supportive care needs of cancer patients living in urban and rural/regional areas: a systematic review. *Support Care Cancer* 20:1–22
- Cancer Council (2013) Nutrition and physical activity for cancer survivors. Cancer Council NSW, Sydney
- Chirikos TN, Russell-Jacobs A, Jacobsen PB (2002) Functional impairment and the economic consequences of female breast cancer. *Women Health* 36:1–20
- Davidson JR, MacLean AW, Brundage MD, Schulze K (2002) Sleep disturbance in cancer patients. *Soc Sci Med* 54:1309–1321
- Dennis C (2003) Peer support within a health care context: a concept analysis. *Int J Nurs Stud* 40:321–332
- Ekkekakis P (2009) Let them roam free. *Sports Med* 39:857–888
- Ekkekakis P, Parfitt G, Petruzzello SJ (2011) The pleasure and displeasure people feel when they exercise at different intensities: decennial update and progress towards a tripartite rationale for exercise intensity prescription. *Sports Med* 41:641–671
- Ferrer R, Huedo-Medina T, Johnson B, Ryan S, Pescatello L (2011) Exercise interventions for cancer survivors: a meta-analysis of quality of life outcomes. *Ann Behav Med* 41:32–47
- Fong DYT, Ho JWC, Hui BPH, Lee AM, Macfarlane DJ, Leung SSK, Cerin E, Chan WYY, Leung IPF, Lam SHS, Taylor AJ, K-k C (2012) Physical activity for cancer survivors: meta-analysis of randomised controlled trials. *BMJ* 344

21. Hardy CJ, Rejeski WJ (1989) Not what, but how one feels: the measurement of affect during exercise. *J Sport Exerc Psychol* 11:304–317
22. Hawkes A, Lynch B, Youlden D, Owen N, Aitken J (2008) Health behaviors of Australian colorectal cancer survivors, compared with noncancer population controls. *Support Care Cancer* 16:1097–1104
23. Hogan BE, Linden W, Najarian B (2002) Social support interventions: do they work? *Clin Psychol Rev* 22:381–440
24. Horowitz MB, Mahler DA (1988) Dyspnea ratings for prescription of cross-modal exercise in patients with COPD. *Chest* 113:60–64
25. Jones L, Courneya K (2002) Exercise counselling and programming preferences of cancer survivors. *Cancer Pract* 10:208–215
26. Karvinen KH (2007) Exercise prevalence, associations with quality of life, determinants and preferences in endometrial and bladder cancer survivors. UMI Dissertations Publishing, ProQuest
27. Locke EA, Frederick E, Lee C, Bobko P (1984) Effect of self-efficacy, goals, and task strategies on task performance. *J Appl Psychol* 69:241–251
28. Locke EA, Shaw KN, Saari LM, Lantham GP (1981) Goal setting and task performance: 1969–1980. *Psychol Bull* 90:125–152
29. Milton K, Bull FC, Bauman A (2011) Reliability and validity testing of a single-item physical activity measure. *Br J Sports Med* 45:203–208
30. National Health Medical Research Council (2013) Australian dietary guidelines: providing the scientific evidence for healthier Australian diets. National Health and Medical Research Council, Canberra
31. Noble BJ (1982) Clinical applications of perceived exertion. *Med Sci Sports Exerc* 14:406–411
32. Norton K, Sports Medicine Australia (2005) Sports Medicine Australia (SMA) Pre-Exercise Screening System 2005. Sports Medicine Australia, Canberra
33. Parfitt G, Evans H, Eston R (2012) Perceptually regulated training at RPE13 is pleasant and improves physical health. *Med Sci Sports Exerc* 44:1613–1618
34. Rogers L, Markwell S, Verhulst S, McAuley E, Courneya K (2009) Rural breast cancer survivors: exercise preferences and their determinants. *Psychooncology* 18:412–421
35. Rooney B, Smalley K, Larson J, Havens S (2003) Is knowing enough? Increasing physical activity by wearing a pedometer. *Wis Med J* 102:31–36
36. Sabiston CM, Brunet J (2012) Reviewing the benefits of physical activity during cancer survivorship. *Am J Lifestyle Med* 6:167–177
37. Scherer S, Cassady SL (1999) Rating of Perceived exertion: development and clinical applications for physical therapy exercise testing and prescription. *J Cardiopulm Phys Ther* 10:143–147
38. Schmitz KH, Holtzman J, Courneya KS, Mâsse LC, Duval S, Kane R (2005) Controlled physical activity trials in cancer survivors: a systematic review and meta-analysis. *Cancer Epidemiol Biomarkers Prev* 14:1588–1595
39. Schwartz ALPFPNF (2009) Fatigue in long-term cancer survivors. *Oncology* 23:27–34
40. Stein KD, Syrjala KL, Andrykowski MA (2008) Physical and psychological long-term and late effects of cancer. *Cancer* 112:2577–2592
41. Stevinson C, Fox KR (2006) Feasibility of an exercise programme for cancer patients. *Eur J Cancer Care (English Language Edition)* 15:386–396
42. Strauss AL, Corbin JM (1998) Basics of qualitative research: techniques and procedures for developing grounded theory. Sage, Thousand Oaks, CA
43. Tudor-Locke C, Craig CL, Aoyagi Y, Bell R, Croteau KA, De Bourdeaudhuij I, Ewald B, Gardner AW, Hatano Y, Lutes LD, Matsudo SM, Ramirez-Marrero FA, Rogers LQ, Rowe DA, Schmidt MD, Tully MA, Blair SN (2011) How many steps/day are enough? For older adults and special populations. *Biomed Central* 8: 1–19
44. Vallance J, Courneya K, Jones L, Reiman T (2006) Exercise preferences among a population-based sample of non-Hodgkin's lymphoma survivors. *Eur J Cancer Care (Engl)* 15:34–43
45. Weaver KE, Geiger AM, Lu L, Case LD (2013) Rural–urban disparities in health status among US cancer survivors. *Cancer* 119:1050–1057