European Journal of Oncology Nursing 41 (2019) 135–142

Contents lists available at ScienceDirect

European Journal of Oncology Nursing

journal homepage: www.elsevier.com/locate/ejon

Identifying the exercise-based support needs and exercise programme preferences among men with prostate cancer during active surveillance: A qualitative study

Megan McIntosh[a,b,*], Melissa Opozda[a,b], Daniel A. Galvão[c], Suzanne K. Chambers[c,d,e,f], Camille E. Short[a,b,g]

[a] Freemasons Foundation Centre for Men's Health, Faculty of Health and Medical Sciences, University of Adelaide, Adelaide, Australia
[b] South Australian Health and Medical Research Institute, Adelaide, Australia
[c] Exercise Medicine Research Institute, Edith Cowan University, Perth, Western Australia, Australia
[d] Australia University of Technology, Sydney, New South Wales, Australia
[e] Menzies Health Institute, Griffith University, Gold Coast, Queensland, Australia
[f] Institute for Resilient Regions, University of Southern Queensland, Springfield, Queensland, Australia
[g] Faculty of Medicine, Dentistry, and Health Sciences, The University of Melbourne, Melbourne, Australia

ARTICLE INFO

Keywords:
Prostate cancer
Active surveillance
Exercise
Supportive care
Qualitative research

ABSTRACT

Purpose: This study aims to investigate the attitudes and preferences men on active surveillance for prostate cancer have regarding exercise and exercise-based support. Exercise outcomes align with traditionally masculine values, can improve mental and physical health, and may even slow early stage prostate cancer progression. However, attitudes and preferences towards exercise and exercise support are unexplored in men on active surveillance.

Methods: Semi-structured qualitative interviews were conducted with participants (13 males with a history of active surveillance for prostate cancer; 5 female partners). Interviews were conducted either by telephone or in person and audiotaped, transcribed verbatim, and thematically analysed.

Results: Several key themes were identified relating to the two research aims: 'Attitudes and Preferences towards Exercise, and 'Attitudes and Preferences towards Exercise Support'. Despite all men engaging in exercise, the majority did not meet the recommended guidelines for cancer survivors. The majority of men either were interested in receiving exercise support or had previously received it, often recommending this for all men on active surveillance. There were varied preferences regarding delivery modality (i.e., online or face to face), the inclusion of partners, and group versus individual formats.

Conclusions: This study provides a novel insight into the attitudes and preferences of men on active surveillance regarding exercise and support. This research will help the development of acceptable and accessible person-centred support for men on active surveillance. However, further research is needed to evaluate the efficacy of different delivery modalities in this population.

1. Introduction

Active surveillance (AS) involves the close monitoring of biological markers, allowing men with low risk, localised prostate cancer the option to have active treatment (e.g. prostatectomy) if the cancer shows significant clinical progression (Chen et al., 2016). Despite research showing it is a safe treatment option, the majority of men with low to intermediate risk prostate cancer opt for radical treatments that may have no improvement on lifespan and reduce quality of life due to common adverse side effects (Cooperberg et al., 2010; Ruseckaite et al., 2016). Even amongst those who do choose AS, approximately 12% will opt out before clinical progression is identified (Simpkin et al., 2015; Van Hemelrijck et al., 2019). Research suggests some men on AS experience anxiety, uncertainty, and fear of cancer progression, which may prompt them to prematurely seek radical treatments (Ruane-Mcateer et al., 2017; Taylor et al., 2018). Interventions that address men's psychological wellbeing may be needed to encourage adherence, reduce attrition, and improve patient experiences.

* Corresponding author. Level 7, South Australian Health and Medical Research Institute, North Terrace, Adelaide, South Australia, 5005, Australia.
E-mail address: megan.mcintosh@adelaide.edu.au (M. McIntosh).

https://doi.org/10.1016/j.ejon.2019.06.006
Received 5 December 2018; Received in revised form 5 May 2019; Accepted 13 June 2019
1462-3889/ © 2019 Elsevier Ltd. All rights reserved.

Whilst supportive care interventions have been developed for men undergoing radical prostate cancer treatments, few have addressed the needs of men on AS. One intervention type that may hold promise is exercise support (Cormie et al., 2015; Galvao et al., 2016). Exercise is a form of physical activity that is planned and structured, and performed with the goal of improving fitness and strength (Chodzko-Zajko et al., 2009). It has been shown to improve psychological wellbeing and is known to facilitate a sense of control and empowerment among cancer survivors (Chodzko-Zajko et al., 2009; Cormie et al., 2015). In addition, exercise improves muscle strength and physical function (Chodzko-Zajko et al., 2009), and may slow prostate cancer progression in those with early-stage disease (Chipperfield et al., 2013; Galvao et al., 2016). However, most men with prostate cancer are not sufficiently active to obtain these health benefits (Galvão et al., 2015; Hayes et al., 2009). As the outcomes of exercise align with traditional masculine values (such as strength and self-reliance), exercise programmes may be more acceptable to men than traditional psychological support (Galvão et al., 2010), which has had poor uptake among men on AS (Kazer et al., 2011; Victorson et al., 2017).

In line with best-practice, such programmes should be person-centred to encourage uptake and adherence (Yardley et al., 2015). This requires consideration of the perspectives of the intended recipient, in this case, men's key motivators and barriers for exercise participation and support, and their intervention preferences (Yardley et al., 2015). Previous research among prostate cancer survivors who have received treatment has identified a number of motivations (e.g., physical fitness, social interaction) and barriers (e.g., treatment-related symptoms, time) (Caperchione et al., 2012; Craike et al., 2011). Whether similar barriers and motivations exist for men on AS, given their different circumstances, is unknown.

The modality in which support is best delivered and received by men must also be considered. Some researchers advocate for face-to-face delivery, as these interventions can be tailored to the patient, managed and supervised by a professional, which may increase efficacy and adherence (Buffart et al., 2017; Cormie et al., 2015; Sweegers et al., 2018). Whilst supervision may be warranted for prostate cancer survivors experiencing treatment toxicities, men on AS may not require it given they have not received any treatments. Alternative interventions and delivery methods such as online interventions may be suitable for men on AS, and may even be required for persons in regional areas or those without access to exercise services (Martin et al., 2016). Given the variety of options, all of which have their strengths, understandings men's preferences may help to inform the design of exercise programmes. To inform the development of exercise programmes targeting men on AS, this study aims to investigate men's attitudes, barriers and preferences regarding exercise and support options. Qualitative research, an essential first step in the development of person-centred support, is considered the best methodology for examining these factors in greater depth (Yardley et al., 2015).

2. Method

2.1. Participants and recruitment

Participants were recruited using a convenience sample approach via a number of intermediaries, which comprised of: the Freemason's Foundation Centre for Men's Health mensHealth Register (https://www.adelaide.edu.au/menshealth/register/), urologists known to the research team, social media, and flyers distributed to community groups and prostate cancer support groups. In addition, men with prostate cancer on AS attending the Vario Health Clinic within the Exercise Medicine Research Institute (EMRI) at Edith Cowan University were also invited to participate in our study if deemed eligible. A recruitment flow chart is presented in Fig. 1. To be eligible for the study, men must have been diagnosed with non-metastatic prostate cancer, currently or previously on AS for at least 3 months, and not receiving palliative care. We therefore allowed men who were still on AS and those who had since had treatment. Additionally, they must have been living in Australia and fluent in English. Partners located in Australia who were fluent in English were also invited via their male partner to participate, in order to facilitate the consideration of their views and opinions. Information packs containing a description of the study and a consent form was provided to the intermediaries to distribute. Alternatively, contacts provided by the research team were invited to participate in the study by MM, and were provided with an information pack. This recruitment process resulted in 18 participants (13 men and 5 partners); all who were interviewed for the study.

2.2. Interview procedures

This project was approved by the University of Adelaide School of Psychology Human Research Ethics subcommittee (HREC-17-57). Each participant provided informed consent before their interview, all of which were conducted via telephone (n = 16) or in person (n = 2) from May to August 2017. Men and their partners (if applicable) were interviewed separately, and all interviews utilised a semi-structured approach and followed an interview guide (see Table 1). Additional prompts were sometimes used to encourage participants to expand or focus on the topic of discussion. The interview guides were pilot tested through mock interviews among the research team, and if appropriate, were reviewed or adjusted to ensure clarity and relevance. Basic demographic information was collected at the end of each interview. The interviews explored two key topics: (1) the experiences of men and partners on AS and facilitators for adherence to AS, and (2) men's attitudes, motives and preferences towards exercise and exercise support for men on AS. This manuscript focuses on topic two (interview questions related to topic 1 are not provided here). Partners who participated were asked to discuss their perception/view of their male partner's attitudes towards exercise and support. Given the exploratory and optional nature of the partner interviews, saturation was not reached. Data saturation was reached after eleven men's interviews and was confirmed by interviewing two additional men. As no new themes emerged, recruitment ceased.

2.3. Data analysis

Interviews were audio recorded and transcribed verbatim after the completion of each interview. Due to time constraints, transcribed interviews were not returned to participants before analysis. Interviews lasted an average of 40 min. Transcribed interviews were analysed according to the research questions using Thematic Analysis (Braun and Clarke, 2013). This involved an initial close reading of the text, the identification of initial codes and patterns, and the collation of patterns into themes. Overlapping or un-coded data were reanalysed to ensure all information was considered. One researcher (MM) developed thematic maps to illustrate key themes relating to each research question, and two researchers (CS, MO) reviewed these themes. This ensured the data was continually revised, refined, and reviewed. Once an agreement was reached, the themes were formally defined, summarised and supported by extracts. Prostate cancer patients' data was triangulated with their partner's data, which allowed for a more detailed and balanced account (Braun and Clarke, 2013).

3. Results

3.1. Participants

Eighteen participants were interviewed for this study; thirteen men and five of their partners (all female). Not all men had partners or chose to invite their partner to participate in the study, which therefore minimised our partner sample. Male participants were on average 69.5 years old, and partners were 61.6 years on average. Two men had

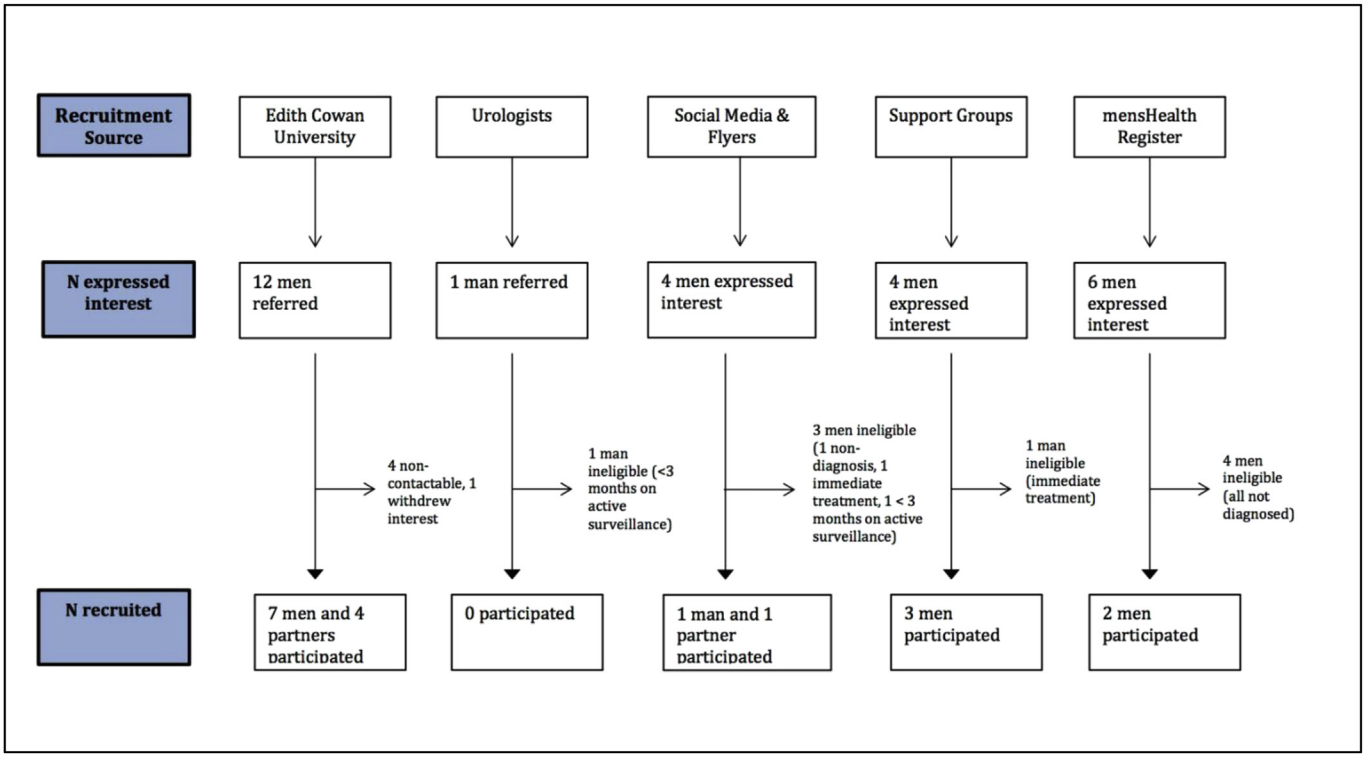

Fig. 1. Recruitment flow chart.

Table 1
Interview guide.

	Men's Interview Questions:
1	Are you engaging in much physical activity at the moment?
2	Why do you engage/not engage in physical activity?
3	Do you think getting cancer has influenced how you feel and think about physical activity?
4	What else would you say influences how active you are?
5	Can you tell me what you know about the physical activity recommendations for cancer survivors? (After answering, the guidelines were subsequently explained*)
6	Given the recommendations we just discussed, can you tell me about your experience in meeting these guidelines, now and in the past?
7	Would you be interested in having support to help you meet the guidelines we discussed?
8	Exercise support and programs can come in all shapes and sizes, have different focuses, and be tailored to different needs. For example, they could be group based, one on one, sports based, include your partner, or be tailored just for men on active surveillance or those who have had prostate cancer. What would you prefer in a support program that focused on exercise?
9	There have been suggestions that delivering physical activity support through online platforms would be beneficial for cancer patients. What is your opinion of this?
10	We've talked about strength and aerobic training as a way to increase fitness and overall health. Are there any other topics about your health that you would be interested in learning more about? What have we missed?
11	Do you think a program like the one we have been discussing would benefit men on active surveillance?
	Partner's Interview Questions:
1	Do you think your partner exercises enough? What motivates them to exercise?
2	Did your partners' attitude towards physical activity change whilst on AS?
3	Do you think your partner would like or benefit from support to exercise more?
4	Do you think your partner would have benefitted from participating in a physical activity based support program for men specifically on active surveillance?
5	There have been suggestions that delivering physical activity support online could be beneficial. What is your opinion?

*Hayes SC, Spence RR, Galvão DA, Newton RU. Australian Association for Exercise and Sport Science position stand: optimising cancer outcomes through exercise. J Sci Med Sport [Internet]. 2009; 12(4):428. Available from: https://www.jsams.org/article/S1440-2440(09)00056-5/fulltext.

ceased AS and received active treatment due to disease progression, and five men had previously participated in an exercise programme at the Vario Health Clinic, Exercise Medicine Research Institute (EMRI) at Edith Cowan University. See Table 2 for a summary of participant demographics.

3.2. Summary of themes

Data were categorised into two broad themes which reflected the research questions: (1) Attitudes and Preferences towards Exercise, and (2) Attitudes and Preferences towards Exercise Support. Each theme contains several subthemes. As discussed, partners were asked to discuss their view of their spouse's attitudes and behaviours towards physical activity and support, as well as their own views. Relevant data from partners are discussed where applicable.

3.3. Theme 1: Attitudes and preferences towards exercise

Men's attitudes and preferences towards exercise were broad. In general, men participated in a range of exercise activities, such as

Table 2
Participant demographics.

	Men with PCa	Partners (all female)
N	13	5
Age M (SD)	69.46 (9.32)	63.40 (9.09)
Occupation (N)		
Working	8	3
Retired	5	2
Location (N)		
Urban	11	4
Rural	2	1
Treatment (N)		
Currently on active surveillance	11	
Have received radical treatment	2	
Time since diagnosis M (SD)	5.15 years (5.45)	
Time on active surveillance M (SD)	4.35 years (4.67)	

walking, sports, and resistance training at a gym. Men were motivated by both psychological and health factors, and the most common barrier was a lack of enjoyment and/or time. Men's attitudes towards exercise often changed after diagnoses, with some increasing their physical activity. These issues are further discussed in the four sub-themes; 'Exercise Activity & Preferences ', 'Attitudes Towards Exercise', 'Motivation for Exercise', and 'Barriers Towards Exercise'.

3.3.1. Exercise Activity & Preferences

Men engaged in a variety of exercise activities, including walking, cycling, swimming, sports (golf, soccer, lawn bowls), and strength and/or cardio training at a gym. Often more than one activity was preferred;

> *"I play golf twice a week, I go to the gym twice a week, I try to do some stretches … I walk every day" (Man #11, 64 years).*

Men who had previously participated in a structured supervised exercise programme ($n = 5$) tended to continue their programme at their local gym and were more likely to be meeting the exercise oncology guidelines (Hayes et al., 2009). It was also very common for men to engage in other activities commonly associated with traditionally masculine roles, such as labour work, wood chopping, and gardening;

> *"Look I'm reasonably active, I'm mobile, I've got quite a large ah, garden. I do a lot of gardening … I go fishing ah quite regularly … bit of woodworking in the shed, and so forth." (Man #13, 71 years).*

3.3.2. Attitudes towards exercise

Despite most not meeting exercise oncology recommendations (Hayes et al., 2009), men often stated they were doing enough exercise for their age;

> *"I'm well aware I've got to keep myself fit, and I suspect for a nearly 71 year old I'm more than, I'd be in the upper levels when it comes to fitness" (Man #26, 70 years).*

Many acknowledged increasing or continuing to exercise after being diagnosed with prostate cancer, often due to a recommendation by their urologist or involvement in a structured supervised exercise programme;

> *"If there hadn't been any physical activity involved, if [urologist] said look uh, just carry on normally and we can rely on it with occasional PSA tests, then I wouldn't have even thought about increasing my exercise levels … so it was because of the recommendation of the gym program that caused me to be aware of increasing exercise" (Man #2, 72 years).*

Two partners of men (who were not recruited from EMRI) noticed a change in their partner's exercise behaviour after diagnosis, although they did not believe the cancer diagnosis was the 'sole motivating factor';

> *"It happened in conjunction with going onto active surveillance, and I suppose it made it more important. But it wasn't, wasn't the sole motivating factor" (Partner #13, 71 years).*

3.3.3. Motivation for Exercise

A variety of motivations for participating in exercise were mentioned. Maintaining health, enjoyment, and mood management were the most common motivating factors. Some men were motivated to exercise to avoid weight gain. Psychological benefits of exercise, including improved mood and self-esteem, decreased stress, and an increased sense of achievement, were also acknowledged. For instance, men regularly stated that exercising helped them to '*feel good*', as illustrated in the following;

> *"When I finish the gym work I have a hot shower, I'm re-invigorated, invigorated, I feel good … you can jump under the shower and feel you've accomplished something." (Man #6, 74 years).*

> *"I think it's all about the benefits of exercise. I think you start to feel better within yourself, when you achieve it, once you've done it." (Man #11, 64 years).*

Competition and social interaction were also acknowledged as motivating, especially concerning sports. When asked to reflect on exercise while on AS, many stated that it assisted in improving their mood and perhaps provided them with a sense of control over their health. One man saw engaging in exercise as his responsibility to both his wife and himself, and another felt it better prepared him for any future treatment:

> *"I feel I've got an obligation to myself and my wife that if I do this, at least I can look back and say well, I did try. If it doesn't work at the end of the day and something goes wrong, I can't … lay in bed and say well, if I had done this or done that, that maybe it would have been different?" (Man #6, 74 years).*

> *"I'm ah always in the mind that I'm, obviously someday down the track I could face an operation … so I started a bit of fitness" (Man #13, 71 years).*

The partner of the first man felt that exercising assisted her partner in playing a more active role in his treatment;

> *"I think the exercise, uh, kind of stimulated him into thinking, 'look, I can do more than this' … I think he thought it was going to help him, that it was in his interests to, to pursue it" (Partner #6, 75 years).*

3.3.4. Barriers to exercise

Whilst all the men in the study did engage in some form of physical activity (e.g., gardening, walking, golf), several barriers to participation in exercise were mentioned. This was especially the case for those who were insufficiently active. It may be important to note that men did not discuss AS or prostate cancer as a barrier or reason to discontinue physical activity/exercise. Barriers included a lack of access to support (social or formal) or equipment (such as weights) and a lack of time (often due to work schedules);

> *"Sometimes I work 10 or 12 hours a day … not much time for anything else"(Man #5, 69 years).*

Several men also mentioned finding it difficult to find the motivation to exercise due to decreased enjoyment of particular activities, especially weight training ("*I've never enjoyed weights … I find it boring*" Man #10, 56 years). Age was also considered a barrier, and men often reflected on activities they could no longer do due to age-related health issues (such as sore joints) or comorbidities. For instance, one man explained;

> *"I've always run … but as I said that's a bit too hard on the body when you get a bit older" (Man #15, 58 years).*

3.4. Theme 2: Attitudes and preferences toward exercise support

Many participants were accepting and supportive of the concept of exercise support for men on AS, and a range of experienced and potential benefits were discussed. Preferences towards delivery modality (i.e., face to face or online delivery of support/information), the inclusion of other men or partners, and the desire for other information (such as diet) were varied. These issues have been categorised into the following sub-themes: "Attitudes Towards Exercise Support", "Benefits of Exercise Support", and "Exercise Support Preferences".

3.4.1. Attitudes Towards Exercise Support

Many participants welcomed the concept of exercise support while on AS and when asked directly, believed it would be beneficial. This was especially true for men who had previously participated in a supervised exercise programme. Participants felt support may increase motivation to exercise and overcome other barriers associated with beginning and maintaining an exercise programme;

"I think that would be the way to do it, would it, I think. Because then obviously, you're more willing to do it, you have motive to do it. So yeah … yeah that'd definitely be the best way rather than sort of set yourself up, and then you'll just go the first few months and gradually stop" (Man #15, 58 years).

Yet several men did not desire exercise support. Often, this was due to already having adequate support (now or in the past), feeling they met the guidelines sufficiently, or not having time to attend a programme due to work or other commitments. A desire to be self-reliant was also evident;

"I think I have enough, as I say it's my sort of working knowledge and background and I feel as though I'm sufficiently armed and have enough information to, to enable me to make some good choices" (Man #11, 64 years).

"No I don't think I'd be interested in ah doing anything like that … I think I'd be able to find plenty of support if I wanted to" (Man #17, 82 years).

3.4.2. Benefits of Exercise Support

Men discussed the potential or experienced benefits of receiving exercise support whilst on AS. Primarily these focussed on the physical and psychological effects it would have on their overall health and wellbeing. For instance, men believed it could increase their fitness and agility, reduce uncertainty or feelings of helplessness, provide a sense of control, and increase overall positive emotions

"I would be certain I would exercise more often to start, um so that would be the number one benefit, that I would be getting closer to the ah recommended levels of um, exercise and that's what I need to do" (Man #26, 70 years).

"The exercise program I was in, did not lead to a reduction let's say in cancer or its spread, but it did make me feel better while I was waiting to find out" (Man #2, 72 years).

Additionally, some partners felt that involvement in a previous supervised exercise programme had provided their partners with a greater "*sense of control*" (Partner #1, 52 years) over their health, as they could be an active participant in their treatment. For instance;

"Cancer can be quite, um, can make you feel quite helpless I would think. So having some control personally, by doing the exercise and eating healthy, is his way where he can have some control on the situation" (Partner #1, 52 years).

Further, due to the nature of committing to a supervised or group activity, some men felt support could increase their adherence and motivation to exercise, as well as increase exercise knowledge and ability;

"I liked the 6 month program in the sense that they pointed me in the right direction; how to use the equipment, the apparatus the right way, and, and gave me a program that I could follow." (Man #6, 74 years).

Men who participated in a previous supervised exercise programme discussed the physical and support specific benefits of that programme, which included increased activity and exercise-related knowledge, as well as improved physical ability and confidence. One man who had undergone a prostatectomy after being on AS felt his earlier exercise programme had prepared him physically and psychologically for his surgery;

"There are two reasons why the gym exercise in particular was useful. One is as I said, it did give you a resource if you need it …. The other reason for my approval of the gym program is that … if you get a bit fitter and lose weight, especially around the abdomen, then ah, whoever's carrying out the operation has less difficulty getting into you. So there's a strong physical benefit too" (Man #2, 72 years).

3.4.3. Exercise Support Preferences

Men's preferences for the delivery of exercise support were diverse. To narrow their focus, participants were asked their opinions regarding structural preferences, their topic interests and needs, and their attitudes towards online support.

Some men desired one-on-one support, as they believed it could provide more specific and personal attention. In contrast, several participants felt group formats could be more motivating, by providing an element of competition, and by holding them accountable to participate regularly. Psychological benefits, such as working alongside others in a similar health situation, were also discussed;

"I know that ah for me personally having something group based is likely to be much more successful than me doing it myself, that's me" (Man #26, 70 years).

"With me, I'm much happier as a … one on one … I think there will be other guys that will be similar to me that will, would prefer themselves to do it at their, uh, by themselves without, without having to be a part of a group" (Man #6, 74 years).

One partner felt that "*group based is good to start with because people don't feel alone*" (Partner #1, 52 years). It was also common for men to compare group formats to sporting teams, wherein the group's success relies on commitment and regular involvement. Professional support was viewed as essential by some to ensure men were motivated and understood the benefits of being active while on AS. For instance

"Whoever is doing the ah, the supervising of gym training, should not only know what to do, and ah what it's doing for you, but also link it to your cancer … if you work on this, it's going to make this a little easier from the point of view of X or Y, that way it is aimed at the disease as well as the man" (Man #2, 72 years).

Preferences were also varied regarding the inclusion of partners. Some men acknowledged partner involvement could improve motivation and allow the partner to be more informed and involved, while others did not feel it would be beneficial or necessary

"Ah, probably separately … there might be some guys that need to have their hand held, but I'm not one of them" (Man #6, 74 years).

Participants were asked if other health-related topics should be included in an exercise support programme. Although most felt they already had access to adequate information and resources, some suggested information on diet could be useful. In addition, a catalogue of recent literature relating to prostate cancer, AS, and physical activity was desired by some.

Both men and their partners were asked about their views on exercise support being delivered online. Many participants were

comfortable using the Internet and some men were open to online exercise support. Its primary perceived benefit was ease of access. For instance, one man described online support as "*a more accessible way of getting things out there. It's an easy way of making sure they're informed*" (Man #10, 56 years). Other perceived advantages included eliminating the need to attend regular meetings, the ability to access support at any time, the potential for self-direction, and anonymous interaction

> *"If you've got something online and you're recommending exercise, you're giving information as to ah what the current treatments are, ah you know any changes in treatment … I think that'd definitely be helpful" (Man #13, 71 years).*

One partner felt it could be particularly beneficial if integrated with existing support

> *"When it's in addition to knowing that people have got access to someone to answer their questions separately, I don't think there's any disadvantages really. I think it's um, its better. You can access it when you want and you're not relying on like, people needing to get together or finding enough people to form a group, or all those other limitations" (Partner #13, 54 years).*

Partners also emphasised the importance of a doctor's recommendation for online programmes, as they felt they would not be accessed or considered by men if they were not

> *"I think if it's recommended by a specialist, a doctor, a specialist nurse … it would be more likely that somebody would do it" (Partner #2, 71 years).*

Whilst online support was generally accepted, several participants discussed its potential limitations. Some questioned the reliability of seeking information online. Other reasons for an unsupportive attitude towards online support included aversions to Internet use, a preference for face-to-face interaction, or inability to access a computer

> *"I have to sit down a while before I can do anything on the computer … I don't think there would be much value in having it online at all, because not enough of the ah men would be able to ah, to get it, to get in contact with it … I think the best way is to ah, provide pamphlets and paperwork" (Man #15, 58 years).*

It was also acknowledged that online support required the individual to be self-reliant and motivated, which was seen as potentially disadvantageous. One man (recruited via the mensHealth Register) questioned whether it could be ensured that exercise was conducted safely without the supervision of a health professional.

> *"Not everybody has got a computer, and not everybody could follow the instructions properly … without somebody guiding you personally you can still get it wrong and move the wrong way or twist a muscle or something you shouldn't do. Ah, I think personally that wouldn't be the way" (Man #22, 75 years).*

4. Discussion

In this study, men's attitudes and preferences towards exercise and exercise support were explored to help inform the development of person-centred exercise support for men on AS. In general, men were interested in exercise and were open to receiving exercise support, primarily to increase their existing abilities or knowledge, receive expert and/or tailored advice, meet other men in similar circumstances, and to be more actively involved in their health and treatment. Most men participated in some regular exercise, and their activity preferences were quite varied, which is reflective of previous research in Australian men and prostate cancer survivors (Blanchard et al., 2008; Burton et al., 2008). Despite not all meeting the exercise oncology guidelines for cancer survivors (Hayes et al., 2009), many believed they were sufficiently active. These results may have a number of implications for the development of acceptable exercise based person-centred support for men on AS.

Understanding men's preferences, motivations and barriers related to engaging in exercise is necessary to successfully encourage them to participate and meet recommended guidelines (Sherwood and Jeffery, 2000; Yardley et al., 2015). This is essential given that less than 13% of men with prostate cancer are meeting the guidelines (Galvão et al., 2015), and initial epidemiological data indicate that men who engage in 3 or more hours of vigorous activity per week have significant reductions in all-cause mortality and prostate cancer-specific mortality compared to less active men (Kenfield et al., 2011). Men in the present study discussed a variety of motivations and barriers to exercise. Motivations included physical and mental health benefits, social engagement, enjoyment, and increasing control. Barriers included a lack of time, interest, and support. These results mimic those found in previous research on post-treatment prostate cancer survivors and men in the general population (Caperchione et al., 2012; Craike et al., 2011). Similar to other research in prostate cancer survivors (Cormie et al., 2015), participants in the present study recognised that exercise support could assist in overcoming perceived barriers by holding them accountable and providing an incentive to participate. Furthermore, men who had participated in the EMRI programme described more cancer-related motivations and reported fewer barriers to exercise. This perhaps suggests that involvement in a supervised, individualised and structured programme helps to improve men's commitment and motivation to be physically active, and therefore facilitating this should be considered when designing exercise interventions for this population.

Additional structural considerations include who the programmes should be designed for and include. Researchers suggest supervised exercise can promote communication, camaraderie, allow for unprompted cancer-related discussion, and encourage men to take an active role in their treatment (Cormie et al., 2015; Galdas et al., 2014). Many participants in this study were open to group-based exercise programmes, although some preferred one-on-one support or self-directed programmes. Despite the fact that AS is becoming a more popular option in Australia, this sub-group of Australian prostate cancer survivors is still low in comparison to post-treatment patients, which may limit the ability to target men specifically on AS. This is further exacerbated when we consider the number of men in rural and regional areas of Australia, who are already disadvantaged in regards to accessing supportive care resources (Butow et al., 2012; Corboy et al., 2014; Gunn et al., 2013). Therefore, it may be necessary to combine men on AS with those post-treatment when delivering group-based exercise interventions, although this may also have disadvantages. For instance, whether or not men on AS would feel comfortable interacting with men post-treatment, many of whom may be suffering from significant treatment side effects (such as incontinence), should be considered. Research suggests men on AS disliked attending prostate cancer support groups, as they often felt outnumbered by those who chose treatment (Chapple et al., 2002). Further research is therefore required to determine whether such feelings would extend into participating in exercise support.

One potential solution may be eHealth support. Many participants in the present study were supportive of online exercise support. Whilst potential limitations were acknowledged (e.g., relies on self-motivation), many participants felt it was likely to be beneficial due to its ease of access, ability to be self-directed, and its potential to integrate with existing support. Online support may also allow men to transcend masculine expectations of avoiding health-seeking behaviours and provide a non-confrontational environment (Broom, 2005). While it is well established that online support can successfully encourage the adoption of and increase exercise behaviours (Vandelanotte et al., 2016), limited research exists regarding its potential for men on AS. Although, given participants did not always view online support as an acceptable approach, it may be beneficial for person-centred support to incorporate both face-to-face and eHealth options. This would broaden

the accessibility of support both financially and geographically, as well as potentially increase commitment and adherence. For instance, online programmes targeting Australian men could promote the use of Chronic Disease Management plans, which allow patients with a chronic illness to access up to five allied health sessions per calendar year under referral from a general practitioner (Australian Government Department of Health, 2014). Men could, therefore, utilise the services of exercise physiologists, who can both supervise and tailor exercise programmes, which is an underutilised service even in Australia (Barnes et al., 2019). Similar opportunities may be possible in other countries, and may depend on the patient's level of insurance. Interventions which combine face-to-face and eHealth options have been shown to be feasible and effective for treating other health conditions (e.g., common mental health disorders); however, randomised controlled trials are needed to assess their efficacy and cost-effectiveness, and the acceptability of this approach to men on AS remains to be determined (Erbe et al., 2017).

Finally, previous research has suggested a physician's recommendation to exercise strongly predicts future exercise in cancer survivors (Denmark-Wahnefried et al., 2005). The involvement of experts may promote commitment and reassurance, as well as a more tailored and appropriate exercise prescription, a notion that was advocated for by participants and in earlier research (Cormie et al., 2015; Newton et al., 2018). However, research suggests doctors recommend exercise to patients less than 20% of the time, and rarely refer patients to exercise physiologists (Spellman et al., 2014). While this may be due to a lack of awareness of the benefits of exercise, a lack of time in appointments, or a lack of referral resources or support options, these barriers may be able to be overcome by educating doctors and developing and promoting accessible, appropriate resources for clinicians to recommend to their patients.

The limitations of this research should be considered when interpreting the results. Firstly, transference of our results to other contexts may be limited as we did not collect information on cultural background, socio-economic status, or education, which are identified correlates of physical activity (Trost et al., 2002). In addition, this study specifically explored the experiences and preferences of Australian men living in urban areas, and therefore these experiences and recommendations may not be relevant in other contexts. Over one-third of cancer patients reside in rural/regional areas of Australia (Australia Institute of Health and Welfare, 2017), and research suggests they experience poorer health outcomes and are less likely to engage in exercise (Corboy et al., 2011). Additionally, mortality and survival rates are poorer for men with prostate cancer who live in rural areas, and fewer men in rural areas access diagnostic and treatment services compared to those living in urban areas (Baade et al., 2011). It is therefore important for future research to focus on the support needs and preferences of rural men on AS. A deeper exploration of partner's needs and experiences may also be beneficial, as research suggests partners play a vital role encouraging men's health-seeking behaviour (Hale et al., 2007), and they may also experience uncertainty and anxiety (O'Callaghan et al., 2014). Whilst our sample of parterns was small and saturation was not reached, their views were beneficial in providing a deeper insight into men's attitudes, behaviours, and experiences.

It is also important to consider that five men in the study had participated in a supervised exercise programme. This had both advantages and disadvantages; these men had preconceived ideas of exercise support that may have influenced their attitudes, preferences, and needs. For instance, many men who participated in the EMRI programme no longer felt a need for exercise support and were more likely to prefer face-to-face support. However, the exercise programme was highly regarded by participants, and many were supportive of the notion of similar programmes being available for all men on AS due to the benefits they had personally experienced. Therefore, whilst the attitudes and preferences of these men may have been influenced by their previous engagement in supervised exercise training, their experiences and views may have important implications for the development of person-centred support.

The results of this study suggest that whilst some men on AS are not currently meeting the exercise guidelines, they may be interested in receiving exercise support in both group and one-on-one settings. For some men, providing information and support regarding prostate cancer and exercise through eHealth initiatives was acceptable, and may be enhanced with face-to-face options. By promoting and facilitating physical activity in this population, men on AS may experience improvements in their physical and mental health, reduce prostate cancer progression, feel more in control of their health and treatment, and may encourage adherence to AS and its protocols. However, larger research studies are required to develop and test such programmes in this population, in order to assess its impact on men's overall physical and mental health. Nevertheless, our study suggests that strategies to increase exercise participation should include targeting awareness of the exercise guidelines as well as the physical and psychological benefits of exercise.

Conflict of interest

The authors declare that they have no conflict of interest.

Acknowledgements

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. MM, CES and MO were supported by the Freemasons Foundation Centre for Men's Health. CES is also supported by an Early Career Fellowship (ID 1090517) from the National Health and Medical Research Council of Australia. DG and SC are supported by the National Health and Medical Research Council Centre for Research Excellence in Prostate Cancer Survivorship. The authors would like to thank the Freemasons Foundation Centre for Men's Health, the Edith Cowan University, and the various Men's Sheds and Support Groups who assisted in recruiting participants for this research. Further, we would like to thank the participants who generously volunteered to be interviewed for this study.

References

Corboy, D., McDonald, J., McLaren, S., 2011. Barriers to accessing psychosocial support services among men with cancer living in rural Australia: perceptions of men and health professionals. Int. J. Men's Health 10 (2), 163–183. https://doi.org/10.3149/jmh.1002.163.

Australia Institute of Health and Welfare, 2017. Australian Cancer Incidence and Mortality Books: Prostate Cancer. AIHW, Canberra Retrieved from. http://www.aihw.gov.au/acim-books/.

Australian Government Department of Health, 2014. Chronic Disease Management - Individual Allied Health Services under Medicare - Provider Information. Retrieved from. http://www.health.gov.au/internet/main/publishing.nsf/content/health-medicare-health_pro-gp-pdf-allied-cnt.htm.

Baade, P.D., Youlden, D.R., Coory, M.D., Gardiner, R.A., Chambers, S.K., 2011. Urban-rural differences in prostate cancer outcomes in Australia: what has changed?(Report). Med. J. Aust. 194 (6), 293–296.

Barnes, K., Ball, L., Galvão, D.A., Newton, R.U., Chambers, S.K., Harrison, C., 2019. Physical activity counselling and referrals by general practitioners for prostate cancer survivors in Australia. Aust. J. Prim. Health 25, 152–156. https://doi.org/10.1071/PY18131.

Blanchard, C.M., Courneya, K.S., Stein, K., 2008. Cancer survivors' adherence to lifestyle behavior recommendations and associations with health-related quality of life: results from the American cancer society's SCS-II. J. Clin. Oncol. 26 (13), 2198–2204.

Braun, V., Clarke, V., 2013. Successful Qualitative Research : a Practical Guide for Beginnners. SAGE Publications Ltd, London.

Broom, A., 2005. The eMale: prostate cancer, masculinity and online support as a challenge to medical expertise. J. Sociol. 41 (1), 87–104.

Buffart, L.M., Kalter, J., Sweegers, M.G., Courneya, K.S., Newton, R.U., Aaronson, N.K., et al., 2017. Effects and moderators of exercise on quality of life and physical function in patients with cancer : an individual patient data meta- analysis of 34 RCTs. Cancer Treat Rev. 52, 91–104. Retrieved from. https://www.cancertreatmentreviews.com/article/S0305-7372(16)30135-9/pdf.

Burton, N.W., Walsh, A., Brown, W.J., 2008. It just doesn't speak to me: mid- aged men's reactions to “10,000 steps a day. Health Promot. J. Aust.: Off. J. Austr. Assoc. Health

Prom. Prof. 19 (1), 52–59. Retrieved from. https://onlinelibrary.wiley.com/doi/abs/10.1071/HE08052.
Butow, P., 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 Canc. 20 (1), 1–22. https://doi.org/10.1007/s00520-011-1270-1.
Caperchione, C.M., Vandelanotte, C., Kolt, G.S., Duncan, M., Ellison, M., George, E., Mummery, W.K., 2012. What a man wants: understanding the challenges and motivations to physical activity participation and healthy eating in middle- aged Australian men. Am. J. Men's Health 6 (6), 453–461. https://doi.org/10.1177/1557988312444718.
Chapple, A., Ziebland, S., Herxheimer, A., McPherson, A., Shepperd, S., Miller, R., 2002. Is ' watchful waiting' a real choice for men with prostate cancer? A qualitative study. BJU Int. 90 (3), 257–264. https://doi.org/10.1046/j.1464-410X.2002.02846.x.
Chen, R.C., Rumble, R.B., Loblaw, D.A., Finelli, A., Ehdaie, B., Cooperberg, M.R., et al., 2016. Active Surveillance for the Management of Localized Prostate Cancer (Cancer Care Ontario Guideline). American Society of Clinical Oncology Clinical Practice Guideline Endorsement.
Chipperfield, K., Fletcher, J., Millar, J., Brooker, J., Smith, R., Frydenberg, M., et al., 2013. Factors associated with adherence to physical activity guidelines in patients with prostate cancer. Psycho Oncol. 22 (11), 2478–2486. https://doi.org/10.1002/pon.3310.
Chodzko-Zajko, W.J., Proctor, D.N., Fiatarone Singh, M.A., Minson, C.T., Nigg, C.R., Salem, G.J., Skinner, J.S., 2009. American College of Sports Medicine position stand. Exercise and physical activity for older adults. Med. Sci. Sport. Exerc. 41 (7), 1510. https://doi.org/10.1249/MSS.0b013e3181a0c95c.
Cooperberg, M.R., Broering, J.M., Carroll, P.R., 2010. Time trends and local variation in primary treatment of localized prostate cancer. J. Clin. Oncol. 28 (7), 1117–1123. https://doi.org/10.1200/JCO.2009.26.0133.
Corboy, D., McLaren, S., Jenkins, M., McDonald, J., 2014. The relationship between geographic remoteness and intentions to use a telephone support service among Australian men following radical prostatectomy. Psycho Oncol. 23 (11), 1259–1266. https://doi.org/10.1002/pon.3559.
Cormie, P., Oliffe, J.L., Wootten, A.C., Galvao, D.A., Newton, R.U., Chambers, S.K., et al., 2015. Improving psychosocial health in men with prostate cancer through an intervention that reinforces masculine values – exercise. Psycho Oncol. 25 (2), 232–235. https://doi.org/10.1002/pon.3867.
Craike, M., Livingston, P., Botti, M., 2011. An exploratory study of the factors that influence physical activity for prostate cancer survivors. Support. Care Canc. 19 (7), 1019–1028. https://doi.org/10.1007/s00520-010-0929-3.
Denmark-Wahnefried, W., Rowland, A.N.M., Pinto, B.M., 2005. Riding the crest of the teachable moment: promoting long-term health after the diagnosis of cancer. J. Clin. Oncol. 23 (24), 5814–5830.
Erbe, D., Eichert, H.-C., Riper, H., Ebert, D.D., 2017. Blending face-to- face and internet-based interventions for the treatment of mental disorders in adults: systematic review. J. Med. Internet Res. 19 (9), e306. https://doi.org/10.2196/jmir.6588.
Galdas, P., Darwin, Z., Kidd, L., Blickem, C., McPherson, K., Hunt, K., et al., 2014. The accessibility and acceptability of self-management support interventions for men with long term conditions: a systematic review and meta-synthesis of qualitative studies. BMC Public Health 14 (1). https://doi.org/10.1186/1471-2458-14-1230.
Galvão, D.A., Taaffe, D.R., Spry, N., D.,J, Newton, R.U., 2010. Combined resistance and aerobic exercise program reverses muscle loss in men undergoing androgen suppression therapy for prostate cancer without bone metastases: a randomized controlled trial. J. Clin. Oncol. 28 (2), 340–347. https://doi.org/10.1200/JCO.2009.23.2488.
Galvão, D.A., Newton, R.U., Gardiner, R.A., Girgis, A., Lepore, S.J., Stiller, A., et al., 2015. Compliance to exercise-oncology guidelines in prostate cancer survivors and associations with psychological distress, unmet supportive care needs, and quality of life. Psycho Oncol. 24 (10), 1241–1249. https://doi.org/10.1002/pon.3882.
Galvao, D.A., Taaffe, D.R., Spry, N., Gardiner, R.A., Taylor, R., Risbridger, G.P., et al., 2016. Enhancing active surveillance of prostate cancer: the potential of exercise medicine. Nat. Rev. Urol. 12, 258–265.
Gunn, K., Turnbull, D., McWha, J.L., Davies, M., Olver, I., 2013. Psychosocial service use: a qualitative exploration from the perspective of rural Australian cancer patients. Support. Care Canc 21 (9), 2547–2555. https://doi.org/10.1007/s00520-013-1812-9.
Hale, S., Grogan, S., Willott, S., 2007. Patterns of self-referral in men with symptoms of prostate disease. Br. J. Health Psychol. 12 (3), 403–419. https://doi.org/10.1348/135910706X118413.
Hayes, S.C., Spence, R.R., Galvão, D.A., Newton, R.U., 2009. Australian Association for Exercise and Sport Science position stand: optimising cancer outcomes through exercise. J. Sci. Med. Sport 12 (4), 428. https://doi.org/10.1016/j.jsams.2009.03.002.
Kazer, M.W., Bailey, D.E., Sanda, M., Colberg, J., Kelly, W.K., 2011. An internet intervention for management of uncertainty during active surveillance for prostate cancer. Oncol. Nurs. Forum 38 (5), 561–568. Retrieved from. https://onf.ons.org/file/5057/download.
Kenfield, S., Stampfer, M.J., Giovannucci, E., Chan, J., 2011. Physical activity and survival after prostate cancer diagnosis in the health professionals follow-up study. J. Clin. Oncol. 29 (6), 726–732. https://doi.org/10.1200/JCO.2010.31.5226.
Martin, E.C., Basen-Engquist, K., Cox, M.G., Lyons, E.J., Carmack, C.L., Blalock, J.A., Denmark-Wahnefried, W., 2016. Interest in health behavior intervention delivery modalities among cancer survivors: a cross-sectional study. JMIR Cancer 2 (1), e1. https://doi.org/10.2196/cancer.5247.
Newton, R., Taaffe, D.R., Chambers, S.K., Spry, N., Galvão, D., 2018. Effective exercise interventions for patients and survivors of cancer should be supervised, targeted, and prescribed with referrals from oncologists and general physicians. J. Clin. Oncol. 36 (9), 927–928. https://doi.org/10.1200/JCO.2017.76.7400.
O'Callaghan, C., Dryden, T., Hyatt, A., Brooker, J., Burney, S., Wootten, A.C., et al., 2014. "What is this active surveillance thing?" Men's and partners' reactions to treatment decision making for prostate cancer when active surveillance is the recommended treatment option. Psycho Oncol. 23 (12), 1391–1398. https://doi.org/10.1002/pon.3576.
Ruane-Mcateer, E., Porter, S., Sullivan, J.M., Santin, O., Prue, G., Ruane-Mcateer, E., et al., 2017. Active surveillance for favourable-risk prostate cancer: is there a greater psychological impact than previously thought? A systematic, mixed studies literature review. Psycho Oncol. 26 (10), 1411–1421. https://doi.org/10.1002/pon.4311.
Ruseckaite, R., Beckmann, K., Callaghan, M., Roder, D., Moretti, K., Millar, J., Evans, S., 2016. A retrospective analysis of Victorian and South Australian clinical registries for prostate cancer: trends in clinical presentation and management of the disease. BMC Canc. 16 (1), 607. https://doi.org/10.1186/s12885-016-2655-9.
Sherwood, N.E., Jeffery, R.W., 2000. The behavioral determinants of exercise: implications for physical activity interventions. Annu. Rev. Nutr. 20, 21–24.
Simpkin, A.J., Tilling, K., Martin, R.M., Lane, J.A., Hamdy, F.C., Holmberg, L., et al., 2015. Systematic review and meta-analysis of factors determining change to radical treatment in active surveillance for localized prostate cancer. Eur. Urol. 67 (6), 993–1005. https://doi.org/10.1016/j.eururo.2015.01.004.
Spellman, C., Craike, M., Livingston, P.M., 2014. Knowledge, attitudes and practices of clinicians in promoting physical activity to prostate cancer survivors. Health Educ. J. 73 (5), 566–575. https://doi.org/10.1177/0017896913508395.
Sweegers, M.G., Altenburg, T.M., Chinapaw, M.J., Kalter, J., Verdonck-de Leeuw, I.M., Courneya, K.S., et al., 2018. 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. Br. J. Sports Med. 52, 505–513. https://doi.org/10.1136/bjsports-2017-097891.
Taylor, K.L., Luta, G., Hoffman, R.M., Davis, K.M., Lobo, T., Zhou, Y., et al., 2018. Quality of life among men with low-risk prostate cancer during the first year following diagnosis: the PREPARE prospective cohort study. Transl. Behav. Med. 8 (2), 156–165. https://doi.org/10.1093/tbm/ibx005.
Trost, S.G., Owen, N., Bauman, A.E., Sallis, J.F., Brown, W., 2002. Correlates of adults' participation in physical activity: review and update. Med. Sci. Sport. Exerc. 34 (12), 1996–2001. https://doi.org/10.1249/01.MSS.0000038974.76900.92.
Van Hemelrijck, M., Ji, X., Helleman, J., Roobol, M.J., van der Linden, W., Nieboer, D., et al., Movember Foundation's Global Action Plan Prostate Cancer Active Surveillance, C., 2019. Reasons for discontinuing active surveillance: assessment of 21 centres in 12 countries in the movember GAP3 consortium. Eur. Urol. 75, 523–531. https://doi.org/10.1016/j.eururo.2018.10.025.
Vandelanotte, C., Müller, A.M., Short, C.E., Hingle, M., Nathan, N., Williams, S.L., et al., 2016. Past, present, and future of eHealth and mHealth research to improve physical activity and dietary behaviors. J. Nutr. Educ. Behav. 48 (3), 219–228. https://doi.org/10.1016/j.jneb.2015.12.006.
Victorson, D., Hankin, V., Burns, J., Weiland, R., Maletich, C., Sufrin, N., et al., 2017. Feasibility, acceptability and preliminary psychological benefits of mindfulness meditation training in a sample of men diagnosed with prostate cancer on active surveillance: results from a randomized controlled pilot trial: mindfulness and active surveillance: results from a randomized controlled pilot trial. Psycho Oncol. 26, 1155–1163. https://doi.org/10.1002/pon.4135.
Yardley, L., Morrison, L., Bradbury, K., Muller, I., 2015. The person-based approach to intervention development: application to digital health-related behavior change interventions. J. Med. Internet Res. 17 (1), e30. https://doi.org/10.2196/jmir.4055.