

Perceptions of a 12-week mini-trampoline exercise intervention for postmenopausal women

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ABSTRACT

The aim of this study was to examine the views and attitudes of postmenopausal women who participated in a mini-trampoline exercise intervention to improve female specific health risk factors. Twenty-nine postmenopausal healthy women aged 59.34 ± 5.82 years completed an open-ended and anonymous questionnaire consisting of 13 questions about their current activity levels, their perceptions of the mini-trampoline exercise intervention, and their future exercise plans. Principles of thematic analysis were utilized to analyse survey responses whereby each response was coded and categorized into a higher order theme. Adherence to the mini-trampoline exercise intervention was high (89.3%) and general attitudes were positive. Most responses (89%) suggested it was easy to participate. The most salient barriers to participation included work (24%) and personal commitments (20%). Women's responses (43%) suggested they would participate in a similar exercise intervention if it were offered at a gym. The highest-responding frequency and duration of the programme was reported to be 3 times per week (59%) and 40 minutes per session (31%). Local gyms could consider implementing a flexible scheduled, group-based mini-trampoline exercise programme that occurs at least three times per week for 40 minutes as these programme characteristics appear to be key for increased adherence to exercise in postmenopausal women.

1. Introduction

Older women are more likely than older men to develop conditions such as osteoporosis and urinary incontinence, which can decrease overall activities of daily living (MacLean et al., 2008; McGarry & Kiel, 2000). Regular exercise has long been recommended to reduce postmenopausal symptoms and increase physical functioning as well as quality of life (Shangold, Sherman, & DiNubile, 1998; Tolar, Teitelbaum, & Orchard, 2004). Yet older women have lower physical activity levels than men; just 27% of women over the age of 65 years meet daily recommended activity goals (Findorff, Wyman, & Gross, 2009). Older women and men alike have difficulties adhering to exercise programmes (Moore et al., 2020; Tak, van Uffelen, Paw, van Mechelen, &

Hopman-Rock, 2012) such that 10 – 15% of older adults who start a structured exercise programme are known to drop out during the first six months (Tak, van Hespén, van Dommelen, & Hopman-Rock, 2012). Future exercise programmes that target older women should focus on known facilitators (e.g., enjoyment, duration, setting, level of self-efficacy, programme tailoring) (White, Randsdell, Vener, & Flohr, 2005) and strategies that allow women to overcome barriers (e.g., lack of time, money, social support, transportation, exercise experience) and increase their adherence to exercise (Forkan et al., 2006; Moore et al., 2020; Tak, van Uffelen, et al., 2012).

Mini-trampolines solve many of the challenges that prevent women from exercising. They are relatively inexpensive, small, portable, and offer all the benefits of a low impact exercise, while being performed in small, confined spaces, including at home

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(Weston, 2001). The level of effort exerted by an individual on a mini-trampoline exercises is easily self-adjustable, thus allowing for an effective workout for different women with different fitness levels (Aragão et al., 2011). Mini trampoline exercise programmes can improve physical fitness and also female-specific health risk factors, such as osteoporosis (Aragão et al., 2011; Bunyaratavej et al., 2015; Cunha et al., 2016). However, most research-based exercise interventions measure success solely on improved physical outcomes; no published research has examined the views and attitudes of women who participated in a mini-trampoline exercise intervention. Yet, it is important to consider participant perceptions of an exercise programme to examine its acceptability and sustainability as well as its effectiveness, particularly in older women who have specific motivators and barriers to exercise. Therefore, the purpose of this study was to examine the current views and attitudes of the programme from participants who completed a mini-trampoline exercise intervention study.

2. Methods

Participants were involved in a larger mini-trampoline exercise intervention (Fricke et al., 2021) to improve functional fitness and female-specific health risk factors in older women. The 12-week exercise intervention comprised of three 40-minute sessions held each week for 12 weeks, with pre- and post-tests as well as a 3-month follow-up. The research gained ethical approval from the Massey University Ethics Committee (Southern A 18/52). All women who participated in the intervention group of the exercise intervention study were contacted via email after completing the intervention and follow-up assessment. Each e-mail included a link to an online, anonymous questionnaire developed by two authors (AF, SS) within Google Forms. Survey questions asked participants to discuss their current physical activity levels, their perceptions of various components of the mini-trampoline, exercise intervention, and their future physical activity plans. All 13 questions were open-ended, and participants were able to provide more than one answer for each question. One hundred percent of participants (n = 29) who completed the intervention also completed the questionnaire.

Participants' open-ended responses were managed in Excel (Microsoft, Version 2002) and analysed using principles of thematic analysis (Green & Thorogood, 2005). Answers for each question were independently coded by the first author and a second researcher (ER) into higher order themes using a thematic framework. The two coders discussed the thematic coding for every individual response to each question until 100% agreement was achieved. Each question resulted in a varying number of themes. To determine the percentage in which a theme emerged, the following calculation was used:

$$\frac{N_{\text{theme}}}{N_{\text{responses}}} \times 100$$

where N_{theme} is the number of times a particular theme was mentioned and $N_{\text{responses}}$ is the total number of responses for that question. $N_{\text{responses}}$ varied between questions depending on the number of total responses provided.

3. Results

The completion rate for this intervention was 97% (n = 29; age = 59.34 ± 5.82 years; BMI = 27.62 ± 7.85 kg/m²). The average attendance rate of women in this study was 89% (range: 80.5% – 100%). All (n = 29) participants who completed the exercise intervention completed the questionnaire; 97% (n = 28) reported to have participated in regular exercise prior to participating in the mini-trampoline intervention. Prior to this exercise intervention, 24% of total participants (n = 7) reported that nothing has ever stopped them from exercising. In contrast 28% (n = 8) reported that injury has previously stopped them from participating in exercise, 14% (n = 4) reported other health issues, another 14% (n = 4) mentioned a lack of motivation, while 10% (n = 3) reported pain or soreness throughout the body as a barrier to previously participating in exercise.

A detailed description of the five most salient higher order themes along with illustrative quotes for all survey questions can be found in the Supplementary material. Three questions focused on motivation to participate in a mini-trampoline exercise programme (Supplementary Table 1). Participants reported that social interaction was the most enjoyable programme characteristic and contribution to research was a primary motivator to participate. Similarly, three questions focused on barriers to participating in the programme. Participants (60%) found the exercises easy to complete and most commonly reported nothing unenjoyable about the programme. Work commitments were cited as being the primary barrier to participating in the programme.

Individual programme tailoring is a known facilitator for women's adherence to exercise (White et al., 2005). Participants provided feedback on optimal mini-trampoline exercise prescription (Figure 1). Most participants reported that no changes needed to be made to the format of the programme, and many agreed that the programme should include three 30-minute sessions per week.

4. Discussion

This study examined the current views and attitudes from older women who participated in a mini-trampoline exercise intervention to improve female specific health risk factors. The most enjoyable characteristics of this mini trampoline intervention were the social aspects of exercising in a group, the short duration bursts of exercise as well the instructor. Conversely, the most common barriers to participation included work, personal commitments, and transportation to sessions. Our mini-trampoline exercise programme aimed to address some of these barriers by providing the exercises for free, offering different locations and times and allowing women to participate in a different exercise session if they were unable to attend their usual session.

According to Pisters et al. (2010) an adherence level of at least 80% – 85% is recommended if the results of an intervention are to be satisfactory and if the intervention is to have therapeutic value. The higher adherence rate (89%) in this study is likely reflected in the overall positive views of participants about the mini-trampoline intervention. Research has shown that exercise interventions that involve socialization, support, and a sense of

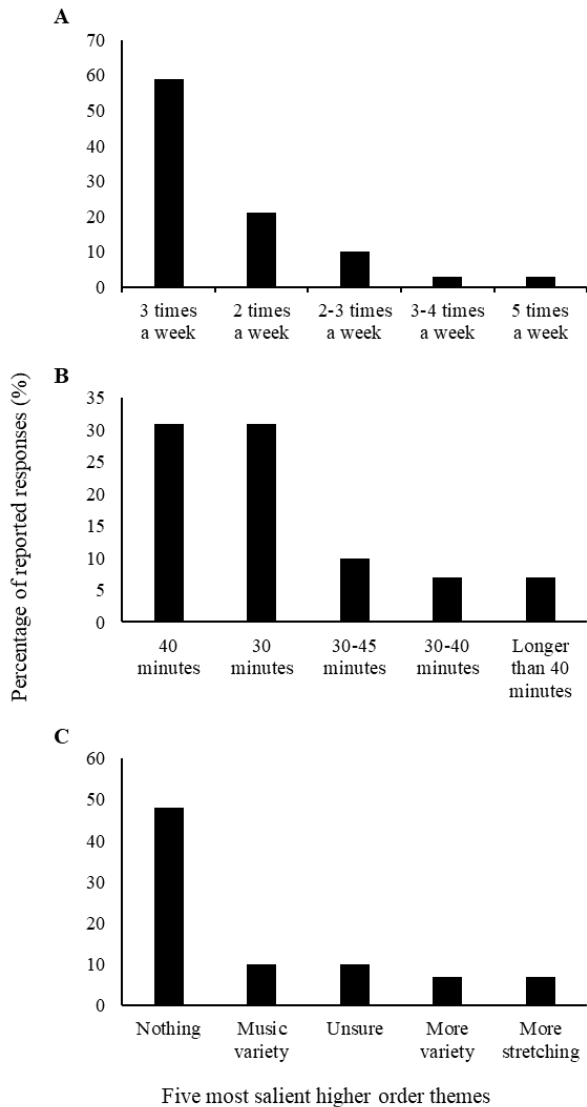


Figure 1: Salient higher order themes for preferred programme; (A) frequency, (B) duration, and (C) formatting.

group cohesion promote adherence to the programme (Caserta & Gillett, 1998). This mini-trampoline intervention only included women who were of similar age and postmenopausal. The similarities shared between participants potentially enhanced the opportunities for participants to bond and feel more confident about participating in the programme (White et al., 2005). Older women prefer to follow supervised exercise programmes (Jordan et al., 2010; Picorelli et al., 2014) and adherence to exercise programmes can be improved by having a knowledgeable instructor who can provide feedback and be seen as a peer (Caserta & Gillett, 1998). The preference for supervised exercise was supported by the current results, as participants mentioned the instructor as one of the most enjoyable characteristics in this intervention. Previous research has shown that women had higher adherence rates to exercise interventions that were scheduled, as is typical for supervised exercise sessions, and women might not make time for exercise unless they have a specific class to go to

(Caserta & Gillett, 1998). The duration of exercise sessions in an exercise programme is also an important determinant for improving adherence (White et al., 2005). The short duration of each exercise session and the scheduled exercise times (with flexibility to shift times and days when needed) were important characteristics of this intervention's effectiveness.

The majority of women in our intervention (89%) said it was easy to participate; however, there were some barriers for participants to overcome. The most common barriers reported for participation included work, personal commitments, and transportation to sessions. Participants enjoyed being able to make up for missed sessions by joining one of the other classes that were offered. Thus, to increase adherence for an exercise programme tailored to older women, a mixture of supervised scheduled sessions and home-based sessions might be ideal, as it includes some structure but still offers flexibility by exercising at home anytime as well. Furthermore, offering a mixture of supervised scheduled sessions and home-based sessions would reduce barriers around transportation and other commitments since an at home workout can be completed at any time.

Responses regarding the difficulty of mini-trampoline exercises varied slightly, although most women considered the exercises to be easy and did not feel any fatigue. Evidence from other research suggests that adherence to an exercise programme is increased at lower perceived intensity levels (White et al., 2005). Exercise intensities that are perceived to be low may increase adherence as women will not sweat, have to change clothes, or anticipate soreness that comes with higher perceived intensities (White et al., 2005). Furthermore, studies have reported significantly higher injury and drop-out rates for higher intensity exercises compared to moderate or lower intensity exercises (Cox et al., 2003; Perri et al., 2002). Lower intensity exercises may also lead to greater adherence rates due to increased self-efficacy (Woodgate, Brawley, & Weston, 2005).

The majority of women reported interest in purchasing a mini-trampoline and/or would participate in a similar programme if offered at the gym, depending on the cost. Optimal exercise prescription included three 30-minute sessions per week with revised formatting that included a larger variety of music and exercises, as well as more stretching exercises at the end of a session. Although the exercise was well-received, the intervention was only three months long. Attendance rates of exercise programmes tend to be higher at the start of the programme, but can decrease quickly and significantly after six months (Caserta & Gillett, 1998; White et al., 2005) Further research is needed to determine if post-menopausal women can maintain adherence to a mini-trampoline exercise intervention after the 6-month threshold.

Conflict of Interest

The authors declare no conflict of interests.

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Supplementary material

Supplementary Table 1: Full description of top 5 salient themes for all survey questions.

Theme	Theme in response n (%)	Example quotation
Question 1: List three things you like about this programme.		
Social interaction	22 (24)	“Doing exercise with other likeminded and same age group. Doing exercise that was achievable in short burst. Doing exercise with women only.”
Duration of session	9 (10)	“Music, socialisation, duration, intense but shortish”
Instructor	9 (10)	“Fabulous teacher, great social event, fitness level increased”
Music	6 (7)	“Music, social support, leadership”
Fun/enjoyment	6 (7)	“Trainer, I saw fast results, fun”
Question 2: List three things you didn’t like about the programme.		
There was nothing that was unenjoyable	14 (41)	“None”
Travel to sessions	6 (18)	“Travel to and from class”
Missing sessions	2 (6)	“Having to miss sessions, jumping with the ball between your legs”
Specific movement of exercises	2 (6)	“Just that one exercise (2 kg weights while running and arms to front!)”
Music	2 (6)	“Distance travelled, some of the music”
Question 3: Why did you take part in this intervention?		
Contribute to research	12 (23)	“Thought it was a really interesting research programme”
Potential health benefits	11 (21)	“Good for me and needed improve health and fitness. Commitment to attend easier knowing it was helping research. Timing workable for me”
Novel exercise	5 (10)	“Its’s a novel form of exercise”
Fun exercise	5 (10)	“Sounded like fun”
Free exercise	4 (8) ^a	“No cost to me. Regular, healthy exercise. To help out.”
Question 4: What barriers did you need to overcome to participate in this exercise intervention?		
Work commitments	6 (24)	“It was a bit tricky balancing it with work”
Personal commitments	5 (20)	“It was easy except missing once for other commitments/appointments”
Transportation to sessions	4 (16)	“Just a long way to travel”
Poor weather	3 (12)	“Cold, rain, winter”
Organisation	2 (8)	“Organising my time to make it every week”
Question 5: How hard did you find the mini-trampoline sessions?		
Easy	9 (36)	“Not hard at all. I looked forward to each session”
Easier as programme progressed	6 (24)	“After a few weeks it was easy even though we 'knew' the sessions were increasingly more energetic and longer”
Required reasonable effort	5 (20)	“Had to push myself. I felt tired afterwards, especially for the first month”
Somewhat hard	1 (4)	“It was tiring but achievable”
Certain exercises were hard	1 (4) ^b	“The weights were the toughest – when we started using them a lot. My arms would ache for a few days”

Question 6: Were you fatigued for days after?		
No fatigue	9 (56)	“No issues with fatigue”
Fatigue that dissipated	2 (13)	“Didn’t find them hard. Tried to keep up reasonable pace so good workout. First week or two tiring”
Experienced some soreness	1 (6)	“Not till the last couple of weeks, not so fatigued but very sore and stiff”
It was fatiguing	1 (6)	“It was exhausting and tiring but I knew it was good for me so I just did the best I could”
Experienced some fatigue	1 (6) ^c	“First session was really hard and I was sore afterwards but then got better. Exhausting and tiring but knew it was good”
Question 7: If the same programme was run at a gym/community centre, would you take part?		
Yes	13 (43)	“Yes, most definitely”
Yes, depending on affordability	5 (17)	“Yes, provided it was not too expensive”
Maybe	4 (13)	“Quite possibly”
No	3 (10)	“No”
Yes, depending on location	2 (7)	“Yes, I think so. Dependent on closeness of venue”
Question 8: How do you view sport and exercise now?		
No changes in attitude towards exercise	5 (16)	“No different than before as I already exercise regularly. I look forward to exercise”
Enjoys group exercise	4 (13)	“It is a chore mostly but it has made me think of the group class style being easier rather than individual.”
Enjoys exercise	4 (13)	“I enjoy exercise, I'm going to find something else to fill the gap.”
Enjoys exercise but lack of time to do it	2 (6)	“I have never minded exercise, but the time to do is not always available”
Motivation for exercise can be hard	2 (6)	“I never look forward to exercise but I know I have to do it so that I don’t cease up later in life.”
Question 9: What would you like to see added to this programme?		
Nothing	14 (48)	“Nothing”
More variety in music	3 (10)	“More variation in steps and music to maintain interest.”
Don’t know	3 (10)	“Don’t know”
More variety	2 (7)	“Perhaps more variation but not sure what that would consist of”
More stretching	2 (7)	“More stretching afterwards”
Question 10: How many times a week do you think this programme should take place?		
3 times a week	17 (59)	“3 times a week was good. 12 times a month.”
2 times a week	6 (21)	“Twice a week”
2-3 times a week	3 (10)	“2 – 3 times a week”
3-4 times a week	1 (3)	“3 – 4 times a week”
5 times a week	1 (3) ^d	“5 times a week”
Question 11: How long should each session last?		
40 minutes	9 (31)	“40 minutes was good for me.”
30 minutes	9 (31)	“30 minutes is great”
30-45 minutes	3 (10)	“30-45 minutes”
30-40 minutes	2 (7)	“30-40 minutes is good”
Longer than 40 minutes	2 (7)	“I found the exercise sessions were a little short especially as I gained fitness and expertise”

Question 12: Do you have activity plans for the future?		
Back to original activities	10 (34)	“Back to yoga and beginning swimming”
Continue trampoline exercises at home	6 (21)	“I hope to keep jumping at home”
Yes	3 (10)	“Yes”
Back to original activities and looking for something new	2 (7)	“I will continue to walk, participate in zumba and stretch. I am looking at arthritis exercises for seniors.”
Back to original activities and continue trampoline at home	2 (7) ^e	“I will continue with pilates, Mt Kaukau walks and commuter cycling and get back into my garden, but I also hope to continue using the mini tramp 3 times per week.”
Question 13: Are you considering buying a mini-trampoline or have already bought one?		
Yes, considering buying one	10 (34)	“Yes, I am considering it”
Yes, already bought one	4 (14)	“I have bought one. I'm enjoying it.”
Was given a trampoline from the intervention	3 (10)	“I was lucky enough to win one”
Had one prior the intervention	2 (7)	“Already had one which is also why I was keen to participate”
Yes, planning to buy one	2 (7)	“I was hoping to win one but I didn't! I now have it on a watchlist on trademe”.

Note: ^a equal number of responses with “regular exercise”; ^b equal number of responses with “easy if sessions were not missed”, “coordination was difficult but exercise easy”, “difficulty level was progressive”; ^c equal number of responses with “experienced soreness towards end of the programme” and “experienced tired muscles but not fatigued”; ^d equal number of responses with “3 times a week with a weekend option”; ^e equal number of responses with “Nothing planned but need to make plans”