



“It’s put a routine and regimen in my life” – Participant experiences with a programme of community walking and home-based circuit training for intermittent claudication



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Introduction: The WALKSTRONG trial includes a programme of community walking and home-based circuit training which has been developed for people with intermittent claudication (IC). The aim of the present study was to determine the acceptability of the programme for those who took part, by gleaning their opinions and experiences.

Methods: All participants eligible for the WALKSTRONG trial were approached regarding completing a semi-structured interview, selected from three groups: A) programme completers, B) programme withdrawers and C) programme decliners. Interviewers were interested in participants' views on the programme structure, willingness to participate, and the experiences of those who did take part. Interviews were audio recorded, transcribed verbatim and thematic analysis was undertaken.

Results: Five of the 14 participants in the intervention group and four of the 20 programme decliners agreed to an interview. The one who withdrew from the exercise programme did not consent to be interviewed. The three themes that emerged from the interviews were: 1) 'overall positive experiences with the programme, 2) 'importance of guidance and pain management', and 3) 'barriers are both similar to supervised exercise and unique to home-based programmes'. The programme was well received by programme completers, with some aspects preferred over others. Some participants reported improvements in both physical activity behaviour and IC symptoms, and would recommend the programme to others.

Conclusion: The home-based circuit programme received several recommendations for further improvement. Along with the feasibility findings, a fully powered, randomised controlled trial of this intervention is warranted.

Trial registration: NCT05059899.

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Introduction

Peripheral artery disease (PAD) is the third most common manifestation of atherosclerosis, after coronary artery disease and stroke, where the arteries of the lower limbs are progressively occluded.¹ Globally, over 230 million people are currently estimated to be living with PAD.² The classical symptomatic presentation of PAD, termed intermittent claudication (IC), is exertional lower limb cramp/pain that is relieved with rest.³

Supervised exercise is standard care for people with IC,⁴ yet both provision and utilisation of these services are poor.^{5,6} A common barrier cited by people with IC is the travel requirements of attending a health centre or hospital multiple times per week.⁷ Home-based exercise programmes, which do not require people to travel, are therefore a potential alternative. Despite many with IC preferring a home-based exercise programme,^{8,9} there is conflicting evidence for the efficacy and effectiveness of these programmes.^{10,11}

We have designed a novel home-based exercise programme, incorporating community-based walking and home-based circuit training for those with IC, which has been shown to be feasible.¹²

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The focus of this manuscript is to present the findings associated with acceptability of the home-based circuit programme, to identify any barriers, and to refine the protocol based on feedback from participants, improving engagement and potentially effectiveness. The aim of the present study was therefore to assess the acceptability of a programme of community walking and home-based circuit training for people with IC.

Methods

This qualitative research study was undertaken as part of the ‘community walking and home-based circuit training in people living with intermittent claudication (WALKSTRONG)’ trial. The WALKSTRONG study was an assessor blind, prospective, randomised controlled feasibility trial of a home-based circuit programme compared to a non-exercise control. The study protocol, which has been published in full,¹³ was prospectively registered on ClinicalTrials.gov (NCT05059899), and received ethical approval from Coventry University (P123339) and the local NHS research ethics committee (Coventry & Warwickshire REC: 21/WM/0208). The following study is reported in accordance with the COREQ checklist¹⁴ (see supplementary material).

The protocol is described in full elsewhere.¹³ Briefly, participants were randomised into either a home-based circuit programme or non-exercise control (given the aim was to refine the home-based intervention and not evaluate clinical effectiveness against supervised exercise). Those in the exercise group were given a Fitbit Charge 4© and a personalised daily step goal based on baseline activity. Circuit exercises were additionally performed at home, twice per week, involving six bouts of walking to induce severe claudication pain interspersed with bouts of resistance exercises while pain subsided. Participants were contacted via telephone by a member of the research team every two weeks to discuss progress and adjust intensity accordingly. The programme lasted 12 weeks in total.

Semi-structured interviews were conducted with a convenience subsample of participants from three groups:

- Group A: Those who successfully completed the 12-week programme, and both baseline and follow-up data collection (‘completers’).
- Group B: Those who consented to participate but withdrew after starting (‘withdrawers’).
- Group C: Those who declined participation (‘decliners’).

The interviewers sought to determine the acceptability of the WALKSTRONG study, including information on the structure of the programme and experiences while taking part.

All participants who were eligible for the WALKSTRONG study were eligible to be interviewed. Those who participated had the option to opt in or out to an interview when initially consenting to the study, and were approached face-to-face at reassessment, following programme completion. Interviews then took place one week following reassessment. Those who declined were approached via telephone and provided interview specific consent verbally, which was audio recorded.

One-time interviews were undertaken using a topic guide (see supplementary material). The questions were flexible to allow for follow-up exploration of participant responses with numerous prompts. Interviews were audio recorded using a Dictaphone (Olympus DM-770) and transcribed verbatim. No field notes were made, and transcripts were not returned to participants for member checking. While member checking is viewed by many to enhance rigour, other authors argue that given power dynamics and participant personal interests, member checking alone is an inef-

fective marker of the rigor or quality of qualitative data.¹⁵ All ‘completer’ interviews were undertaken in person, in a private clinic room at a health centre, where participants had previously attended the physical assessments for the main trial. ‘Decliners’ remained in their homes for their interviews, being contacted by a researcher via telephone. All interviews were conducted by the principal investigator (AW), a male PhD student/exercise physiologist, who had experience working with those with PAD. AW had attended similar interviews as part of another study, and was supervised by AH, a female researcher with significant qualitative research experience. Study ‘completers’ had regular contact with AW throughout the programme, and were aware the findings would contribute to a PhD thesis. Despite having established rapport with AW during the programme of research, participants were told to give their honest responses and that constructive criticism was essential to improve the exercise programme. No other researchers were present during the interviews.

A predefined sample size was not set prior to data collection, however, a target of at least five participants per group was set as a minimum to reach thematic saturation, given the focussed topic of the interviews.¹⁶ Data were analysed using inductive thematic analysis, whereby themes were gleaned from the data, and collection and analysis occurred simultaneously.¹⁷ This consisted of reading and re-reading transcripts, developing initial codes, organising these codes into sub-themes based on similar concepts, and then grouping these into larger main themes using a coding matrix. The main themes were agreed upon by AW and AH via a ‘critical friend’ approach, whereby coding choices were discussed, with the acknowledgment that multiple truths can exist.¹⁵ All data was managed and analysed using the qualitative software package NVIVO (v1.5).

Results

All participants who consented to participate in the exercise programme opted into an interview when providing informed consent. At re-assessment, all participants were approached for an interview until five had agreed to take part. Ten of the 15 participants who completed the parent study were invited in order to recruit five for an interview. Twenty patients who declined to participate were approached for an interview, of which four agreed. One participant withdrew from the exercise programme, but did not consent to an interview, resulting in a total of nine interviews (five ‘completers’: C1–C5, four ‘decliners’: D1–D4).

Of the nine interviewees, six were male (67%) and mean age was 68.0 ± 10.2 years, ranging from 50 to 80 years (table 1). Interviews were between two and 17 minutes in duration. Three major themes were agreed following analysis of the interviews, with several subthemes in each (table 2).

Table 1
Participant characteristics.

	Completers n=5	Decliners n=4
Age (years)	66.6 ± 12.2	69.8 ± 8.4
Male sex (%)	3 (60)	3 (75)
Prior SET experience (%)	4 (80)	2 (50)
Comorbidities (%)		
Cardiovascular disease	4 (80)	2 (50)
Hypercholesterolemia	3 (60)	0 (0)
COPD	2 (40)	0 (0)
Stroke/TIA	1 (20)	1 (25)
Kidney disease	1 (20)	0 (0)
Diabetes	1 (20)	1 (25)

Data presented as mean ± SD or n (%). SET, Supervised Exercise Therapy; COPD, Chronic Obstructive Pulmonary Disease; TIA, Transient Ischaemic Attack.

Table 2
Themes & subthemes identified in ‘completers’ & ‘decliners’ of a home-based exercise programme for intermittent claudication.

Initial code	Subtheme	Theme
Enjoyment Difficulty Sense of achievement Fit in with daily life Recommend to others	Challenging, yet enjoyable and convenient	Overall positive personal experiences with the programme
Negative watch experiences Positive watch experiences	Varied experiences with programme equipment	
Increased activity due to programme Improvements in symptoms Maintenance after the programme	Beneficial perceptions following the programme	
Circuit exercises Steps vs circuits Home-based vs supervised exercise Recommendations for improvement Lack of education/initial guidance	Preference of physical activity targets More guidance may be required	Importance of guidance and pain management
Technological barriers Travel barriers Lack of space Poor fitness	Physical barriers	Barriers are both similar to supervised exercise, and unique to home-based programmes
Social barriers Mental barriers Lack of social interaction	Psychological and social barriers	
Prior exercise experience Overcoming travel barriers Awareness of need to exercise Guidance from researcher Intrinsic motivation and discipline	Facilitators	
Already exercising Don't enjoy exercise Pain avoidance Retirement Lack of motivation Work related activity Comorbidities	Reasons for declining	

Overall positive personal experiences with the programme

Challenging, yet enjoyable and convenient

The programme was viewed as positive by those in the ‘completer’ group, which was largely due to enjoyment of the main mode of exercise – the inclusion of walking targets throughout the day: “I mean I've always enjoyed walking” (C3) and “I was really enjoying the walking because I feel the benefits” (C5). The enjoyment was also mediated by participants having a sense of achievement, such as “I did enjoy taking part, but the enjoyment was the fact I felt I was doing myself a lot of good” (C1), and “It was good because it made me feel good, the fact I had done it, you know the sense of achievement” (C2). Step goals were also cited as fitting well within participant’s schedules: “Well I had to anyway just when walking the dog” (C3) and “It fit in well with my kind of lifestyle” (C4). However, some participants also reported having negative experiences with certain aspects of the programme. This mainly stemmed from the difficulty of circuit exercises, given they were designed to elicit claudication pain such as: “The circuit for example, it was hard so it's hard to say it was enjoyable” (C1), “It was painful” (C2) and “I found it difficult to do the exercises” (C3). Overall, most participants would recommend the programme to others with IC: “Yes in that it might get them moving, and the more moving you do the more you can tolerate the pain” (C3) and “Oh yes, definitely because it has worked for me” (C4).

Varied experiences with programme equipment

The addition of an activity monitor further contributed to participants’ enjoyment, allowing them to visualise their progress and

keep them motivated: “I enjoy looking at the steps that I've done” (C1) and “It's really good to keep you motivated and so yea it's been life changing for me” (C5). Despite most participants enjoying the inclusion of an activity monitor, and engaging with this aspect of the programme, some participants had issues with it, for example: “Just my problem was synchronising, remembering to synchronise and stuff like that” (C4) and “I did find that it didn't track some of the exercises I did” (C2).

Beneficial perceptions following the programme

As a result of the programme, participants reported that they had been walking more: “I'd gone from a five-minute walk to 20-minutes sometimes” (C5) and “I did do more walking, I did occasional walking without the dog” (C3). Some had also begun to add in their own exercises not included in the programme: “I also did a few that weren't on the sheet actually” (C3) and “I now do yoga three times a week, the circuit exercises for me have led into bigger things really” (C5). Participants also mentioned a desire to continue with their increased activity: “It has carried on, I haven't done it as religiously as I was doing it before, but it's really helped me” (C5), “I'll still hit my steps so I'm happy with that so I've found quite a good balance” (C3) and “I really do want to continue doing the programme” (C1). These changes to physical activity behaviour may have also led some participants to notice improvements in their claudication symptoms: “I've got a lot more, you know I can walk better now, I feel better in myself, I'm more confident” (C5), “Without this programme I wouldn't be this far” (C1) and “Climbing stairs is my bugbear, but I can do them better than before” (C4).

Importance of guidance and pain management

Preference of physical activity targets

The exercise programme consisted of two main components, a daily step target with the use of an activity monitor and a home-based circuit. Participants were generally happy with the structure of the programme: *“I think it was quite balanced personally”* (C2), yet some found the step goals to be preferable to the circuits, mainly due to the difficulty/pain associated with the circuit: *“The steps were easier, the circuits were obviously much more physical, and from time to time it was painful too”* (C1).

The circuits consisted of six bouts of walking to severe claudication pain and six resistance exercises of both the upper and lower body. Participants found the individual exercises to be suitable: *“I didn’t have any issues with the exercises at all”* (C2), and the material provided as guides for the circuits were well understood: *“They weren’t difficult to understand how to do it”* (C5).

Everyone thought that the fortnightly telephone calls were helpful, and that the frequency was appropriate: *“I sometimes think you can get too much support, you know if you phone up every week”* (C5) and *“I feel the way you did it every two weeks, by the time you phone up you’re ready to take the next challenge on”* (C3).

More guidance may be required

Some participants felt that while the exercises were well explained in regard to execution, the rationale for exercise selection was not made clear. Some were confused as to why whole-body exercises were included, and that they were not confined to just the legs: *“Initially I wasn’t sure why I was doing exercises for my upper body when the problem was in my legs”* (C1). Additionally, some would have preferred to complete an initial circuit session in-person in order to familiarise themselves: *“it would’ve been nice to actually come in and have done a session with that maybe before you started”* (C5), while others would have wanted the same but in order to meet others with the same issues: *“I would like to meet more people and talk to more people doing the same thing”* (C2). Decliners stated that they could not think of any modifications to the programme that would have changed their mind regarding participation: *“No to be honest, I think it’s up to the individual isn’t it”* (D2) and *“I don’t think I could give you an answer”* (D4).

Barriers are both similar to supervised exercise, and unique to home-based programmes

Facilitators

Both ‘completers’ and ‘decliners’ brought up the importance of intrinsic motivation required to engage in an unsupervised exercise programme. Some mentioned that this discipline would be a prerequisite to taking part in such a programme: *“I think it’s up to the individual isn’t it”* (D2), *“I think a lot of it is very individual if that’s what you’re looking for is that motivation”* (C5) and *“Motivation I think if you get me. It’s my mentality”* (D4), while others believed the programme provided them with this motivation: *“It’s put a routine and regimen in my life that wouldn’t have been possible to do myself”* (C1) and *“Having this and a guideline really motivated me into doing it”* (C3). Extrinsic motivation was also a factor for some, having guidance from a member of the research team, contacting them to check on progress: *“I knew you were calling, but if you weren’t I might have cheated”* (C1), *“I wouldn’t have got this far because I wouldn’t have done it on my own”* (C4) and *“It was very motivational to have, not being checked up on but sort of coached how I saw it the fortnightly calls”* (C5).

Some participants had previously taken part in treadmill-based supervised exercise therapy for their symptoms, which involved intermittent walking to severe claudication pain, and access to resis-

tance exercises. Those who had previously taken part stated this prior experience may have eased their participation in the programme: *“It may have helped that I did those exercises when I was here before, I pretty much knew what it was”* (C5), and *“because I’d done those I understood how to do them and I’d been doing them on and off anyway”* (C3). Additionally, having the programme be home-based was an advantage to some, as they would have had difficulty travelling into a health centre or hospital: *“It’s a bit of a bite coming in, which was the problem I found”* (C3).

Physical Barriers

Having participants come in for physical assessments reinforced the barrier of travel for some: *“I don’t like travelling by bus to be honest”* (D2). While most participants were happy with the activity monitor, some in the decline group stated the technology would have been a challenge: *“I struggle with the phone I’ve got”* (D2). For one participant, circuits were challenging given a lack of space at home: *“I wouldn’t have had the room to do it, it would have been difficult”* (C3).

Psychological and social barriers

Despite the activity monitor fitting well into daily life, the circuits were often missed due to social activities: *“The social part of my life interfered from time to time”* (C1) and *“A sort of busy life, scheduling time for that is not easy”* (C3). Although many said the programme provided them with motivation to participate, others reported mental barriers to engagement: *“I did slow down at times because I was low”* (C2), which was also due to the lack of social interaction seen with supervised exercise groups: *“Because I’m not going out and seeing people”* (C2).

Reasons for declining

Reasons for declining were largely psychological related phenomena, including a lack of motivation or a desire to relax in retirement: *“I can’t be bothered anymore, I know it’s a bad thing to say but it is what it is I’m afraid to say”* (D2) and *“I think, now I’ve retired I just want to chill out and not do any of that”* (D3). This desire to relax in retirement may have been due to most of the ‘decliners’ having worked in physically demanding occupations: *“When I was at work, I was walking all over the place”* (D2) and *“I did it a lot when I was working see, I used to get loads of exercise, physical work you see”* (D4). However, occupations of those in the ‘completer’ group were not brought up, limiting discussion on this topic.

Physical reasons for declining were mainly due to difficulties as a result of people’s co-morbidities: *“I’ve not long had a stroke”* (D1) and *“I’ve had a heart attack, I’ve had a bust appendix, I’ve had cancer, and I’ve had a split liver and that’s just in the last few years”* (D2). Those who declined also tended to claim to not enjoy exercise: *“I found it very sort of repetitive and it wasn’t my sort of thing”* (D4), or wanted to avoid physical pain: *“I’ve had enough of pain if you understand where I’m coming from”* (D2). This was despite all ‘decliners’ being aware of the need to exercise for their claudication symptoms: *“Yes they said the idea is to walk, doesn’t matter if it hurts or not just carry on walking”* (D1).

Discussion

The aim of this study was to determine the acceptability of the WALKSTRONG training programme for people with IC. The programme was generally well received by ‘completers’, fitting well into their daily life, and resulting in a sense of achievement. Some participants reported improvements in both physical activity behaviour and IC symptoms and would recommend the programme to others. A few minor changes were recommended, and difficulty with the circuit exercises led to a preference of the step goal aspect

of the programme. Overall, these findings support the acceptability of the programme.

The most common suggestion that emerged from the interviews were that the daily steps were more enjoyable than the home-based circuit, primarily down to the circuit being more difficult – requiring walking to the point of claudication pain. Furthermore, pain avoidance was a frequently reported reason for people declining the programme. While a systematic review of exercise programmes for IC showed no difference in changes to walking ability with either pain-free or moderate intensity exercise,¹⁸ NICE guidelines are that those with IC walk to the point of maximal claudication pain.⁴ Furthermore, the LITE trial demonstrated that for home-based programmes, high intensity was superior to pain-free walking.¹⁹ The current evidence base would therefore suggest walking with claudication pain is necessary for improvement, indicating the home-based circuits should not be removed. This additionally reinforces the importance of education on why pain avoidance should be discouraged.

Another suggestion was the inclusion of a familiarisation session to reinforce correct execution of the circuit. Similar approaches were taken with the GOALS and HONOR trials, having participants initially attend in-person sessions to undertake walking in a supervised setting.^{20,21} However, given home-based exercise programmes gained interest due to their potential to overcome travel barriers, having periodic onsite visits may be counterintuitive. Some participants stated travelling in for physical assessment in the current study was still a barrier. While some clinical trials experimented with remote assessments during the COVID pandemic,²² conditions in participants home will vary, making it impossible to reliably conduct assessments such as a six-minute walk test, where a flat, indoor, 30m long space is required. While physical assessments may still require onsite visits, additional occasions requiring travel should be minimised to maximise the availability/acceptability of such a programme.

A factor that was brought up by both ‘completers’ and ‘decliners’ was that of intrinsic motivation. Given home-based exercise is unsupervised, there is an inherent degree of intrinsic motivation required from participants. The American Heart Association therefore recommends home-based exercise programmes include behavioural change techniques to ensure adherence.²³ However, existing programmes tend to have face-to-face behavioural coaching at the beginning of a trial, followed by remote telephone contact throughout a programme,^{20,21,24} which again introduces potential travel barriers. These remote calls appear to be essential to a programme’s success, given the HONOR trial had them progressively phase out and did not result in any improvements to walking performance.²¹ There is, therefore, potential to improve the programme by having online, rather than face-to-face, group behavioural coaching sessions along with the bimonthly telephone calls, which would both facilitate participant motivation and overcome the lack of social interaction not present with many home-based exercise programmes.

Strengths and limitations

Interviewing patients who declined participation has allowed us to gain an understanding of any remaining barriers of supervised exercise that were not overcome, as well as barriers unique to home-based exercise programmes. Getting feedback from those completing the programme will allow us to further refine future iterations of the programme. However, the one participant who withdrew from the exercise programme was not interviewed, meaning this group was not represented. The ‘decliner’ interviews were also undertaken over the phone due to participant preference. While there is limited evidence to suggest telephone inter-

views are inferior to face-to-face ones,²⁵ some of the interviews in this group were very short, which may have been due to them being undertaken remotely. For example, the one interview that lasted only two minutes had poor telephone connection, limiting the opportunity for follow-up questions regarding their responses.

Conclusion

The aim of the present study was to investigate the acceptability of the WALKSTRONG trial, a home-based exercise programme for people with IC. Overall, the programme was enjoyed by participants, and fit well into their daily lives. Participants reported improvements in physical activity behaviour and IC symptoms, and would recommend it to others. Suggestions were made regarding the implementation of the programme, which may improve adherence and acceptability further. For example, including an online group behaviour change programme alongside the telephone check-ins to facilitate motivation and social interaction. Those who are willing to travel may also benefit from initial familiarisation sessions. Given these findings, the WALKSTRONG programme should be explored further as part of a fully powered randomised controlled trial.

Funding source

This work was supported as part of a fully funded PhD for AW by Coventry University.

Declaration of competing interest

None.

CRedit authorship contribution statement

Alexander Waddell: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft. **Francesca Denton:** Conceptualization, Investigation, Writing – review & editing. **Richard Powell:** Conceptualization, Investigation, Writing – review & editing. **Gordon McGregor:** Conceptualization, Supervision, Writing – review & editing.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jvn.2024.09.003](https://doi.org/10.1016/j.jvn.2024.09.003).

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