“Much better than I thought it was going to be”: Telehealth delivered group-based education and exercise was perceived as acceptable among people with knee osteoarthritis

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ABSTRACT

Objective: To understand patient perceived acceptability of participating in a telehealth delivered group-based education and exercise-therapy program for knee osteoarthritis.

Design: This qualitative study involved semi-structured, one-on-one interviews with knee osteoarthritis patients who have completed the Good Living with osteoArthritis from Denmark (GLA:D®) program via telehealth or in-person. Interviews were recorded, transcribed verbatim, coded, and analysed using an inductive content analysis approach, focusing on themes related to telehealth.

Results: Nineteen participants [12 (63\%) female, mean aged 62 years, range 49–72 years] were included. Eleven (58\%) received GLA:D® via telehealth and 8 (42\%) attended in-person sessions. Two overarching themes (6 sub-themes) related to telehealth perceived acceptability were identified: 1) Perceptions of telehealth acceptability was highly influenced by exposure. Individuals who had received telehealth considered it easy, convenient, and flexible, whereas telehealth was perceived to be inferior and misunderstood by those without exposure. 2) Telehealth participants reported similar program benefits to in-person participants, including reduced fear of pain and joint damage, changed beliefs in value of exercise, and stated improvements in pain and function.

Conclusions: Telehealth delivery of group-based education and exercise-therapy for knee osteoarthritis was acceptable for people who had experienced it and provides similar benefits as in-person care for pain and beliefs about the safety and value of exercise. Wider implementation of telehealth group-based education and exercise-therapy may improve access to high value care for people with knee osteoarthritis.

1. Introduction

Osteoarthritis is a leading cause of pain and disability worldwide, affecting more than 300 million people and resulting in substantial societal and health system burdens [1]. All international guidelines recommend education and exercise-therapy as essential first line treatments for the management of knee osteoarthritis [2]. The Good Living with osteoArthritis from Denmark (GLA:D®) program is a guideline-based, physiotherapist-led, standardised but individualized, group education and supervised exercise-therapy program for people with knee and hip osteoarthritis [3]. It has been implemented globally and delivered to more than 75,000 patients, and has compelling evidence supporting real-world effectiveness related to improvements in pain intensity, functional performance and joint-related quality of life [4,5], and reducing desire for surgery [6].

In an international survey of people with knee osteoarthritis in 4 countries, only 55\% and 67\% had been given education about their joint problem or exercise-therapy, respectively [7]. Key barriers to access
include inaccurate patient beliefs about causes and treatment options, outdated funding models, and challenges related to attending in-person services due to geography, transportation requirements and other work and family commitments [8]. These challenges can be compounded by a need to attend multiple appointments for programs like GLA:D®, which involves 14 in-person sessions over an 8-week period [4]. Telehealth, involving the synchronous or asynchronous remote delivery of health-care via phone or videoconference [9], provides an opportunity to address many of these barriers.

Management of musculoskeletal conditions through one-on-one telehealth services is generally acceptable to patients [10], and found to be safe and effective in providing pain, disability, and health-related quality of life outcomes that are comparable to in-person care, including in people with osteoarthritis [11,12]. However, the effectiveness of synchronous telehealth delivered group-based education and exercise-therapy for osteoarthritis is unknown. Key barriers for patients have been reported for one-on-one telehealth services, including perceptions of impersonal care, technology challenges, and limited health literacy [13,14]. Key enablers reported include convenience (i.e. no need to travel, facilitates exercising in own home), greater access to expert care, and patient empowerment [13,14]. Patients have reported being surprised at the value of telehealth, and while it may be considered ‘second best’ to in-person care, it may have advantages as part of a hybrid model of care in future beyond the COVID-19 pandemic [14]. While many of these benefits may also exist for group-based physiotherapy via telehealth, little is known about patient perspectives on the acceptability of synchronous group-based physiotherapy programs, such as GLA:D® delivered via telehealth.

The aims of this qualitative study were to understand patient perceived acceptability of participating in a telehealth delivered group-based education and exercise-therapy program for knee osteoarthritis.

2. Methods

This is an exploratory qualitative study that uses an inductive analysis approach to develop an understanding of the acceptability of telehealth delivered group-based program based on the participants’ voice. Acceptability was considered to be a multifaceted construct that reflects the extent to which people receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced responses to the intervention [15]. This study is underpinned by an interpretive description paradigm [16]. Reporting was guided by the consolidated criterion for reporting qualitative research checklist (COREQ) [17].

Semi-structured, one-on-one interviews were conducted in-person or via videoconference with patients who had completed GLA:D® via telehealth or in-person between September 2019 and January 2020. The data reported in this paper are derived from a mixed methods study exploring the influence of GLA:D® on physical activity, and barriers and facilitators for physical activity in people with knee osteoarthritis. The in-depth semi-structured interviews provided rich data and the unique opportunity to re-examine the data through a different lens of exploring patient experiences with GLA:D® via two delivery methods [18]. Ethical approval was granted by La Trobe University’s Human Ethics Research Committee (#HEC18500).

2.1. Participants

Participants with knee osteoarthritis were recruited from within an existing ongoing clinical trial comparing GLA:D® Australia delivered via telehealth or in-person (ACTRN12619000235101). Developed based on international guidelines, GLA:D® is an evidence-based, physiotherapist-led 8 week program [3], widely implemented in Australia [6]. It includes two group education sessions that focus on understanding osteoarthritis risk factors, diagnosis, pain management, and self-management strategies, followed by 12 supervised, standardised, yet individualized to each patient, neuromuscular exercise-therapy sessions.

Participant eligibility criteria for this trial were guided by NICE guidelines for primary clinical diagnosis of knee osteoarthritis including being aged 40 years or older, having activity-related joint pain and having morning stiffness of the knee which lasts less than 30 min or no knee stiffness [19]. Additionally, participants were required to i) have sufficient English language abilities to participate in the intervention and complete the study baseline and follow up measures; and ii) live within a 10 km radius of a clinical site offering GLA:D® Australia. Participants were recruited sequentially into the current study via email, after completing 12 exercise-therapy sessions, before attending the 3-month follow up assessment for the main trial. No one who was asked to participate in the study refused or dropped out.

2.2. Data collection and analysis

Semi-structured interviews were conducted using a topic guide that was reviewed by all authors. (Appendix A). Interviews were completed by a physiotherapist (EB), a PhD candidate with previous qualitative experience and three years clinical experience. Interviews were recorded, transcribed, and de-identified before analysis. Some participants (n = 7) had a pre-established relationship with EB as a physiotherapist through her involvement in GLA:D® and were aware of her concurrent role as a research trainee. One repeat interview was conducted due to a recording failure. Field notes were not collected. Transcripts were shared with individual participants to review before analysis.

Qualitative interviews were analysed using an inductive thematic analysis approach [20], focused on themes related to telehealth. Two researchers (AE, CB) with PhDs, extensive qualitative experience, and over 15 years of ongoing clinical practise as physiotherapists treating people with knee osteoarthritis, led the analysis. They read and re-read interviews to identify units of meaning and develop initial coding framework. They had several meetings with reflective discussion to solidify interpretations and further condense codes into themes. A third researcher (EB) was later involved in reviewing data to examine themes identified and reveal potential gaps in the analysis, leading to further refinement. Remaining authors (PH, JW, JK, TR) read and gave input to finalize the themes. No feedback on final themes was sought from participants. Reflective memos were kept throughout the coding process which facilitated discussion of researcher perspectives [21]. Data was managed using NVIVO software version 1.5.

3. Results

Nineteen participants [12 (63%) female, mean aged 62 years, range 49–72 years] were interviewed face-to-face at a University setting (n = 16) or via Zoom videoconference (n = 3) following the completion of the program. Interviews varied from 11 to 40 min in duration (mean length = 24 min). GLA:D® was delivered via telehealth for 11 (58%) or in-person for 8 (42%) participants, respectively. Mean [standard deviation (SD), range] number of exercise-therapy sessions attended was 11.7 (0.6, 10 to 12) and 10.1 (2.3, 6 to 12) out of a possible 12 sessions for telehealth and face-to-face, respectively. Mean (SD, range) number of education session attended was 1.8 (0.4, 1 to 2) and 1.5 (0.8, 0 to 2) out of a possible 2 sessions for telehealth and face-to-face, respectively.

Tables 1 and 2 contain qualitative matrices with key quotes related to each theme and subtheme identified from the interviews. Two overarching themes related to telehealth perceived acceptability were identified. The first main theme was that participants perception of telehealth acceptability was highly influenced by exposure. We identified 3 subthemes, with only the first being applicable to both groups: that the experience of telehealth was perceived to be easy, convenient and flexible by the telehealth group, but inferior and misunderstood by the in-person group. This is illustrated by a participant quote from the telehealth group: “Doing it online is excellent… I had a little room set up and I just thought that was quite good and convenient” (P4). Whereas a participant in the in-person group commented: “Tele-rehab? I think that –
I mean, obviously, it probably wouldn’t flow quite as well … It’s just – at the moment, it’s too easy to find excuses not to do it at home” (P15).

The remaining 2 sub-themes were only found in the data from the telehealth group. This was that telehealth was believed to be well-supervised and quality feedback was provided, as suggested by P16: “I think it was good because the physio was aware what I was doing. I was getting feedback. I was getting encouragement.” Participants also felt that generally technology hiccups could be worked out: “Probably the online stuff, I found a little bit tricky to start with, but once you got the hang of it, that was fine. Yeah, we worked it out” (P12).

The second main theme was that telehealth and in-person participants reported similar perceived benefits of the program. Data were organized into 3 sub-themes. Firstly, a reduction in fear of pain and joint damage with exercise resulting in improved confidence to engage in physical activity; as stated by a participant from the telehealth group: “I think I was a little bit more cautious with my knee before the program. I’m more confident of what I can do with it now, without damaging it” (P7). Secondly, changed beliefs about the importance and value of exercise as explained by a participant from the in-person group who learned “you can improve the condition through exercise rather than avoiding exercise” (P17). Thirdly, a perception of improvements in self-reported pain and function such as “I can walk longer, I can walk up and down the stairs … that's just been amazing” (P4). Further quotations supporting these themes are available in Appendix B.

### 4. Discussion

Our qualitative study indicates that the experience of group-based telehealth delivery of education and exercise-therapy is perceived to be acceptable to people with knee osteoarthritis who had engaged in it. Additionally, findings indicate that participants perception was that telehealth had similar benefits related to pain, changes in beliefs about the safety and value of exercise when compared with group-based in-person care. This contrasted with the negative beliefs and misconceptions of group-based telehealth among participants who had not experienced it directly. Perceptions that telehealth is inferior to in-person care has been previously reported in qualitative research involving physiotherapists [22] and patients [14] during the COVID-19 pandemic. The more positive beliefs about telehealth among our participants receiving it compared with other research may be the result of greater exposure. All telehealth participants in this study completed at least 12 of the usual 14 sessions provided as part of GLA:D®. Comparatively, previous research has reported patients attending a median of 2 telehealth sessions [14]. This has important implications that greater public awareness and accurate conceptions of what telehealth involves requires attention, and indicates the need for high-quality, consistent delivery to ensure positive patient expectations and experiences with telehealth.

This is the first study to examine patient perceived acceptability of group-based telehealth delivery of education and exercise-therapy for people with knee osteoarthritis, and satisfaction was consistent with other physiotherapy telehealth qualitative research [10]. Specific benefits identified in this study echo those from previous research [10,13]. They include participants feeling well supervised, receiving quality feedback, and enjoying the convenience of being in their own home. Previous work found that physiotherapists perceived patients may better adhere to exercises prescribed in their own home environment via telehealth compared to learning exercises in the clinic in-person [23]. While technology literacy has been reported as a key barrier to telehealth previously [10,14], our participants suggested most technology issues could be resolved without too much hassle or difficulty. It is possible that our sample has a higher educational background or digital literacy than previous studies, or this may be related to the high number of telehealth sessions attended by our participants, providing them adequate time and experience to become more confident with technology. Previous research has reported that experience and training can increase digital self-efficacy and enables use of tablets in seniors [24]. This highlights the importance of ensuring support and encouragement from healthcare professionals and staff to address and overcome early challenges to

### Table 1

Subthemes related to Theme 1: Participant perceptions of telehealth acceptability was highly influenced by exposure.

| Subthemes | Telehealth participants (n = 11) | In-person participants (n = 8) |
|-----------|--------------------------------|-----------------------------|
| Telehealth considered easy, convenient, and flexible by telehealth group, but inferior and misunderstood by in-person group | I did find that even doing the exercises online, that was quite easy. P14 | Look, it had to be much better for me [to do in-person] because I need another person who will motivate myself even though I know I need to do it. It’s much better to know that I've got to turn up somewhere and it’s directed and I’m doing for an hour and then it’s done, so face-to-face works so much better for me. P1 |
| Telehealth was well supervised and quality feedback was provided | For me, it’s really convenient. I’m still working pretty much full-time, so busy lifestyle. So I’m not sort of retired and sitting around waiting to do exercises. I’ve gotta fit it in here and fit it in there. P2 | Tele rehab? I think that – I mean, obviously, it probably wouldn’t flow quite as well … It’s just – at the moment, it’s too easy to find excuses not to do it at home. P15 |
| Technology hiccups could be worked out | I think the fact that it allows people to do it in their own home and I had the flexibility with that because of my job and being a shift-worker. P9 | I think I’d rather be with the instructor or in centre doing it rather than the tele[health]. P10 |

P: patient; NA: not applicable.
Table 2
Subthemes related to Theme 2: Telehealth and in-person reported similar benefits of program.

| Subthemes                                      | Telehealth participants (n = 11)                                                                 | In-person participants (n = 8)                                                                 |
|------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Reductions in fear of pain and joint damage resulting in improved confidence to engage in physical activity and exercise | To know that I wasn’t going to do any more damage to my knee in doing this exercising … that was something that I really took away from it. P14 | Probably one of the most important things I think is gaining confidence, that it is okay if it hurts a little bit, but you’ll feel okay later on. P13 |
| Changed beliefs on importance and value of exercise | Made me realise I have to be more active and more specifically active, not get up and try and run around the block five times, but do things that are going to help strengthen the knee. P3 Now I attempt stairs where I never used to. I used to avoid the stairs and use the lift. P9 | How important it is to do the regular exercises and you just have to do it, even if you don’t want to do it and you think, ‘I’m a bit lazy today.’ P13 |
| Self-reported improvements in pain and function | I can walk longer, I can walk up and down the stairs … that’s just been amazing. P4 I can use stairs where I haven’t been able to use stairs properly for probably 12 months – less swelling in my knee, less pain in my knee, less pain in other joints. P9 I really like it because when I did the exercises, I felt that my knees were getting stronger. P16 | How important it is to do the regular exercises and you just have to do it, even if you don’t want to do it and you think, ‘I’m a bit lazy today.’ P13 |

P: patient.

telehealth adoption, such as technology issues to be able to fully realise telehealths advantages.

Similar perceived benefits among telehealth and in-person groups indicate that telehealth is a viable and effective medium to improve accessibility to high quality group-based care for people with knee osteoarthritis. Subsequently, the adoption of telehealth to provide intensive group-based education and exercise-therapy programs such as GLA:D® traditionally delivered in-person, can be encouraged. However, misconceptions about telehealth commonly held by the public will need to be addressed. Some behaviour change strategies have previously been suggested including increased provision of credible information to patients on the effectiveness of telehealth, advocacy to the general public about the value of telehealth, and continued financial support for telehealth by health care funders beyond the pandemic [14,22,23].

Numerous studies conducted during the COVID-19 pandemic report that physiotherapists, who typically provide education and exercise-therapy, have limited experience and confidence delivering care via telehealth. Of the over 207 Australian physiotherapists surveyed by Malliaras et al. [10], only 21% had delivered individual telehealth care and none had delivered group-based telehealth care before the pandemic. Only 15% reported prior training related to the delivery of telehealth [10]. Malliaras et al. reported only 1 in 5 allied health clinicians from a survey of 827 across international settings agreed they were adequately trained to provide telehealth care to people with musculoskeletal pain conditions [22]. Similarly, in a Canadian sample of 1220 physiotherapists, predominant barriers to telehealth delivery given in open ended responses included physiotherapists’ lack of knowledge, skills, confidence, and training [23]. Collectively these findings highlight and urgent need for further education training and support to improve the competency and safety of clinicians providing telehealth to people with osteoarthritis. Recently, an international Delphi panel published a framework identifying core capabilities for physiotherapists to deliver telehealth by videoconference [25]. Curricula and professional development initiatives guided by this framework would facilitate scale up of telehealth to expand the number of trained physiotherapists able to provide high quality small group-based telehealth to patients on an international scale. These initiatives should consider integration of education and training into entry-level physiotherapy curriculums, and development of additional resources and supports to up-skill practicing clinicians. Previous research with Australian and Canadian physiotherapists has found online toolkits as a preferred delivery method for continuing professional development by clinicians [26].

The strengths of this study include its novel contribution to the field by reporting patient perspectives about group-based telehealth education and exercise-therapy services. Additionally, interview participants were recruited from within a larger non-inferiority trial, meaning they were randomized to receive telehealth or in-person care, reducing potential selection bias for pre-existing telehealth preferences. A further strength was the high adherence to treatment demonstrated by the high attendance of participants in both telehealth and in-person groups. Our findings should also be considered in the context of some limitations. We did not collect details about participants race, education, or socioeconomic status, so we are unable to comment on potential bias related to these demographics. Additionally, our participants resided in metropolitan areas. Therefore, our data may not align with perspectives of people living in rural areas, where telehealth may be expected to offer more advantages for people not living near a clinical site. For example, greater compliance and acceptability for telehealth versus in-person.

Interviews were conducted before the COVID-19 pandemic and the increased availability and uptake of telehealth over this last 18 months may influence patient perspectives. Yet, it is likely that the increased familiarity with telehealth services has potentially improved the communities understanding of what telehealth involves and shifted perceptions of telehealth to be more acceptable than pre-pandemic times. As this is an in-depth ancillary analysis of interviews originally conducted to address a different research question, the sample size was predetermined. However, our research team is confident that data saturation with regards to telehealth perceived acceptability in the context of people with knee osteoarthritis who participated in this trial was achieved. Other populations may have different perspectives on acceptability and benefits of telehealth based on their unique experiences. Lastly, given some participants (n = 7) were known to the interviewer (EB), it is possible that they gave biased accounts of their experiences with the GLA:D® program.

5. Conclusion

The experience of group-based telehealth delivery of education and exercise-therapy is perceived to be acceptable to people with knee osteoarthritis. Participants accessing this care reported it to be easy,
convenient, and flexible. Yet, participants without telehealth exposure had misconceptions about what it involved and generally viewed telehealth as inferior compared to in-person care. Positive changes to beliefs about the safety and benefits of exercise for osteoarthritis, and improvements in pain and function, were similar between telehealth and in-person care. Our qualitative findings indicate group-based telehealth services can substantially improve access to guideline-based education and exercise-therapy programs such as GLA:D® for people with knee osteoarthritis.

Declaration of authorship

CJB, JLB, PO, JW, and TR contributed to the conception and design of the study and acquisition of the data. AE led the analysis and interpretation with CJB and EB, as well as drafted the full manuscript. All authors provided input to revising the draft and approved the final version of the manuscript.

Declaration of competing interest

CJB and JLB are program leads of GLA:D® Australia, which is a not-for-profit implementation initiative. Their institution has received payment for training GLA:D® practitioners. The remaining authors have no competing interests.

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Appendix C. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ocarto.2022.100271.

Appendix A

Themes & Questions:
Theme 1: Experiences.
   i) What did you think about the education and exercise program you were involved in?
   ii) How would you describe your experience of completing the program?
   iii) How do you think completing the program via telerehabilitation/face-to-face affected your experience compared to if it were done via telerehabilitation/face-to-face?

Theme 2: Engagement.
   i) What were your thoughts on having a physiotherapist guide you through the program? In what ways, if any, was it useful for you?
   ii) What are the main things you learnt from the program?
   iii) Which things are you still using? How are you using them?
   iv) How motivated are you to keep exercising on a scale of 0–10. Why did you choose that number?
   v) Which elements of the program did you benefit from most and why?

Theme 3: Condition education.
   i) How confident do you feel in your knowledge about how much exercise and physical activity you should be doing compared to before completing the program?
   a. In what ways has the program influenced your exercise and physical activity levels?
   b. How confident do you feel about how to do exercise for your knee pain on a scale from 0 to 10? Why did you choose that number?
   c. How does the education you received in GLA:D compare to previous advice you received from other health professionals (e.g. GP’s, physios) and from online sources (e.g. online)? Which of these methods did you benefit from most and why?

Theme 4: Benefits.
   i) Did you think the program would help you prior to participating in the program? In what ways?
   ii) Did the program help you? If yes, what benefits have you noticed from the program?
   iii) How did you feel the program influenced your understanding of your knee pain?
   iv) In what ways did you change your physical activity behaviour as a result of the program (e.g. more or less physical active)? In what ways did your participation in the program help you make these changes?
   a. (Sleep, work, relationships)
   v) What are the 3 things you liked the most about the program?

Theme 5: Physical activity and exercise.
   i) How did you feel about exercise and physical activity before starting the GLA:D program?
   ii) How physically active were you before the program and has this changed? In what ways? If you have changed how active you are, what do you think influenced this change?
   iii) What were your barriers to exercise before the program? Have these changed, in what ways?
   iv) What aspects of the GLA:D exercise program do you continue to do and why? (Are you completing exercise for knee, walking, balance, sport etc.)?
   v) Do you do any new (or previously stopped) forms of exercise or physical activity following the GLA:D program and why?
   vi) What are your biggest barriers now to physical activity and exercise?
   a. Physical health: e.g. pain, fatigue, stiffness, obesity, age, other health conditions
   b. Personal factors: e.g. beliefs about exercise
   c. Attitude: e.g. lack of motivation, feeling helpless, not prioritizing exercise, lack of confidence
   d. Emotions: e.g. mental stress and extreme unhappiness
   e. Social: e.g. health professionals, social support
   f. Physical environment: e.g. cost, weather, accessibility, safety
   vii) What would help you be more active and participate more in exercise?
   a. Physical health: motivation to improve pain, prevent TKR, maintain fitness
   b. Personal: Improved sleep, knowledge about importance of exercise,
   c. Attitude: determination, adjustments, prioritizing exercise, increased confidence
   d. Emotions: enjoyment of activity
   e. Social: support from health professionals and family
   f. Physical environment: technology, financial support/subsidized programs

Theme 6: Limitations and suggestions.
   i) What didn’t you like about the program, please give as all suggestions you have to help us improve it?


Appendix B. Additional supportive quotations related to two main themes and six sub-themes

| Themes & subthemes                                                                 | Telehealth participants (n = 11)                                                                 | In-person participants (n = 8) |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------|
| **Perceptions of telehealth acceptability influenced by exposure**                |                                                                                               |                              |
| Telehealth considered easy, convenient, and flexible by telehealth group, but inferior and misunderstood by in-person group | Really easy. Once I worked out how to use the iPad and the program, (and) the platform. P19   |                               |
|                                                                                   | Relatively easy. And also easy in the sense too that I can just continue it myself even I just do parts of it. P3 |                              |
|                                                                                   | [For telehealth] I was in my own home, comfortable, and it was good. P3                        |                              |
|                                                                                   | It probably would have taken more time out of my day [to do face-to-face] ... by the time we were completing the full course, it'd take about an hour to do, which – I work at least 45 min from home. So, for me, it would've been a big thing out of my day. P14 |                              |
|                                                                                   | I guess the ease of having a physio, supervising in your own home – that's a big positive for me, if you're time-poor. P14 |                              |
|                                                                                   | It was convenient because I can do it at home after work. P16                                  |                              |
|                                                                                   | The main thing is [telehealth] was actually easier for me. I'm in private practice, I have a family, and I was trying to get back into my usual fairly active life. So I've been on classes and all that sort of stuff. And trying to get into a clinic twice a week might've been quite a bit of difficulty. It would've added an extra burden because it's also the time travelling there and back. And I really have some quite long days at the clinic. So, to just be able to set it up at home was going to be – I mean that was demanding itself – finding two extra times in the week was demanding enough without having to do the extra travel time and all that sort of thing. So it was very convenient. P19 |                              |
|                                                                                   | I've set up like a mini gym in my lounge room because I have polished floor boards and that was the best place to do the sliders and things like that. I just set that up, did the routine, get up every morning, have brekky, straight in to exercise, it worked well. P5 |                              |
|                                                                                   | It was more convenient for me and so easier to comply, I guess. I did have to shuffle things like workaround to make the time, so I finish it earlier so that I could get home for five o'clock. It was easy to understand, it's accessible, convenient. P6 |                              |
|                                                                                   | It was quite convenient to do. P7                                                                |                              |
|                                                                                   | [Telehealth] was excellent, was really good, much better than I thought it was going to be. P19 |                              |
| Well supervised and quality feedback via telehealth                               | I think that it is good to be supervised doing the exercises ... the [online] observation of the physios, if you're not quite doing things the right way, that's really valuable. P14 | NA                           |
|                                                                                   | I liked having someone who was eyeballing me and able to give me some very specific feedback about what I was doing ... So that factor was really important and I felt I got that even though it was on iPad. P19 |                              |
|                                                                                   | I think it's excellent, actually. It was good on the computer, I could see them and they could see me ... they can correct it and tell you what to do. P4 | NA                           |
|                                                                                   | Being monitored, yeah, having the engagement with a trained healthcare professional during the sessions was important I think. P6 |                              |
|                                                                                   | I think [telehealth is] good and it didn't seem to me that you were lacking supervision. P7 |                              |
|                                                                                   | It was just like face-to-face with someone who talked me through [the exercises]. P3            |                              |
|                                                                                   | So doing the right placement of things, that was good, having been supervised during that time and that corrects all the bad faults right from the beginning. P5 |                              |
|                                                                                   | I mean it looked like [the physiotherapist] can really see what we were doing, but I wondered if you can really see the whole picture as well online as face-to-face? P12 |                              |
|                                                                                   | When I got home, I didn't have the link and that's [why I was] 15 min late. P16                |                              |
|                                                                                   | [Telehealth] was really easy. Once I worked out how to use the iPad and the program and the platform. P19 |                              |
| Technology hiccups could be worked out                                            | The way the programs were run – the platforms, there were                                      | NA                           |

(continued on next page)
Qualitative improvements in pain and function

I can see there's muscles along the knees … When I go dancing, I'm not sore, I'm more tired. I was happy because sometimes I'm usually sore for about a week. So I'm less sore. P16

I can walk like a crap … that's just been amazing. P4

Going up to those five flight of stairs. I would have struggled with that a lot more before. P10

The walking up and down the stairs [now] without my knee hurting, that is the most obvious thing. I wasn't even struggling to go to some of the other classes at the gym that I wouldn't have gone to, 'cause at the gym I go and do that, I do the circuit classes and when I saw them, I thought there's no way I'll be able to go to those because I can't squat or I can't lunge. P13

It took me more confidence to go to some of the other classes at the gym that I wouldn't have gone to, 'cause at the gym I go and do that, I do the circuit classes and when I saw them, I thought there's no way I'll be able to go to those because I can't squat or I can't lunge. P13

I'm conscious that I need to work up into it. And I think – which is a good thing. I think before, I had a tendency to be all or nothing, and if I can't run, then I can't run, but I've sort of – no well, it's given me confidence or hope that I'll be able to get back there. P15

That you can't make the [knee] any worse and the fact that the exercise actually does provide more synovial fluid which even though you haven't got cartilage which affects fluidly, that's very important. So it really is a matter of use it or lose it. P1

The program was designed to strengthen areas of your body that would – may be helpful in the pain relief in the knee by strengthening other areas of your legs and body. P10

That exercise is not bad. That is a good thing because since I've been retired, you get a bit stuck in … And hiccups we had were linking up on one occasion. But that's just been amazing. P4

What I did find was that over time, over the six weeks, the pain decreased with that lumping. I suppose it was slightly less pain [and] the steeping, that was improving. P1

I mean I've got more and more nimble as I went along. So that experience, my personal experience, with the physical side of it was really good. P8

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sometimes difficulties with the technology, but that's okay. You can work around that and we did, every single time. P2

And hiccups we had were linking up on one occasion. But that was easily fixed, and if I can fix it, all of us can fix it … We'd drop out or we'll reconnect or see them and they couldn't see me or both froze up. But apart from that, I think it was run really well. P4

Reductions in fear of pain and joint damage resulting in improved confidence to engage in physical activity and exercise

I learned a bit of pain is not gonna hurt you and just to work your way through it. P12

I don't panic if I have those pains. So it's managing the pain and managing that fear actually … facing my fears … I'm not scared of the pain. P16

I'm more confident that I'm not actually damaging the knee and a bit more patient then with it. So I'm not gonna go to catastrophic thinking. “Oh, shit, I’m breaking down my knee.” But it's more – “Okay. Well, this will pass and I'll do some exercises, different exercises.” P19

Certainly, the fear of the pain has changed. I don't have that anymore. P2

The program was extremely helpful and it's motivated me to do even more [physical activity]. P12

It's actually motivated for me to go into daily exercise again which is a good thing because since I've been retired, you get a bit busy doing other things and you don't actually do specific physical exercise … so this is good and this has encouraged me to keep going on and doing it. P5

Look, probably more confident. I was very laissez-faire about it and laidback. And I thought on certain days when I did a little bit, ‘Oh, that's enough.' I realise now, especially after doing a lot of walking when I was away, that I need a good half an hour of exercises a day. P2

So when I had my first arthroscopy, I slipped out on the gym … now I want to travel, but with my knees, I want to be able to walk and climb places that I want to see. My goal is I want to get there. And [I can] by doing the exercises or stretches. P16

I haven't been doing the exercise for a week or two … [this morning] I could feel that it wasn't feeling as free as has been. So, that's one of my motivations to go back to do it 'cause I don't wanna go back. P14

Probably the exercise program was designed to strengthen areas of your body that would – may be helpful in the pain relief in the knee by strengthening other areas of your legs and body. P10

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The walking up and down the stairs [now] without my knee hurting, that is the most obvious thing. I wasn't even struggling getting in and out of the car, when you twist around a little bit. I was having trouble with that [before]. P13

[GLAD] got rid of most of the pain … I can walk further. I'm very happy with the outcome. My knees do feel a whole heap better than it did before. P6

P14

But I did notice after a few weeks of the GLAD® program that I was getting up and moving much better, not limping so much. P14

I can use stairs where I haven't been able to use stairs properly for years. P12

And [I can] by doing the exercises or stretches. P16

So, if I went for a long walk, I'd pull up sore the next day and it was getting harder and harder to push through that pain and was really heavily relying on anti-inflammatory. [now]

I'm conscious that I need to work up into it. And I think – which is a good thing. I think before, I had a tendency to be all or nothing, and if I can't run, then I can't run, but I've sort of – no well, it's given me confidence or hope that I'll be able to get back there. P15

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