Received: 21 May 2024 | Accepted: 3 June 2024

DOI: 10.1002/msc.1907

RESEARCH ARTICLE

WILEY

An online training resource for clinicians to optimise exercise prescription for persistent low back pain: Design, development and usability testing

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Funding information

Orthopaedic Research UK; National Institute for Health and Care Research (NIHR) Exeter Biomedical Research Centre (BRC)

Abstract

Background: Low back pain (LBP) is the leading cause of disability worldwide. A recent realist review identified the behavioural mechanisms of trust, motivation, and confidence as key to optimising exercise prescription for persistent LBP.

Objectives: Our objectives were to (1) design and develop an online training programme, and (2) gain end-user feedback on the useability, usefulness, informativeness and confidence in using the online training programme using a mixed-methods, pre-post study design.

Participants and Intervention: The online training programme was designed and developed using the results from a realist review, and input from a multi-disciplinary stakeholder group. A five-module online training programme was piloted by the first 10 respondents who provided feedback on the course. Further modifications were made prior to additional piloting. The satisfaction, usefulness, ease of use, and confidence of clinicians in applying the learned principles were assessed on completion.

Results: The online programme was advertised to clinicians using social media. Forty-four respondents expressed initial interest, of which 22 enrolled and 18 completed the course. Of the participants, most were physiotherapists (n = 16/18, 88.9%), aged between 30 and 49 (n = 11/18, 61.1%). All participants were satisfied with the course content, rated the course platform as easy to use and useful, and reported that they were very confident to apply the learning. Most (n = 10/14, 71.4%) reported that their manner of prescribing exercise had changed after completion of the course.

Conclusions: An online training programme to optimise exercise prescription for persistent LBP appears to be easy to use, informative and improves confidence to apply the learning.

KEYWORDS

exercise, low back pain, online training programme, web learning

1 | INTRODUCTION

Low back pain (LBP) is the leading cause of disability worldwide (James et al., 2018), costing more than 26 billion GBP per year (James et al., 2018) Exercise is the most widely recommended treatment for LBP (Hayden et al., 2021; NICE & Royal College of Physicians, 2021). Exercise is a complex intervention with many potential treatment targets (Wood, 2020, 2021) (or proposed mechanisms (Wun et al., 2021)), which are poorly specified in trials for LBP. Furthermore, the most frequently used treatment targets (for example strengthening, flexibility) are not associated with changes in pain and physical function (Mannion et al., 2012; Steiger et al., 2012).

Our team undertook a realist review to answer the question: 'How does therapeutic exercise prescription create change in outcomes of importance for patients with persistent LBP?'(Wood et al., 2024). We found that engagement, adherence to and outcomes following therapeutic exercise prescription are optimised when the mechanisms of trust, motivation and confidence are utilised. The therapeutic alliance and development of rapport are foundations to the development of trust, and facilitate holistic assessment, and identification of individual needs and beliefs. When exercise is prescribed in such a way that it is tailored to the individual's goals, with personalised advice and education to reassure and build confidence, this increases motivation to adhere to exercise. Timely follow-up and the perception of benefit and support from peers and supervision can further facilitate motivation to continue to adhere to exercise prescriptions, and these can positively impact clinical outcomes. In speaking with clinicians and people with LBP who have been prescribed exercise, many physiotherapists and other exercise prescribers do not incorporate these principles into their clinical consultations. There is a need for an easily accessible training programme to share the learning gained from this realist review with clinicians.

Online training programs have been recommended by NHS England to support NHS staff training (NHS England, 2019). Online training programs have been shown to reduce barriers associated with geographical location, cost and travel (Eng et al., 2014; Liyanagunawardena & Williams, 2014). They can include multimodal forms of education, including videos, written text, animations, assessments and feedback (Eng et al., 2014; C. S. Srikesavan et al., 2017). Although existing online training programs do exist, they are mainly from previous randomised controlled trials of interventions for LBP. For example, the BeST skills training programme is a cognitive behavioural approach to LBP management (Lamb et al., 2007), and ESCAPE pain is a group rehabilitation programme using principles of self-management (Critchley, 2007; M. V. Hurley et al., 2007). However, none encompasses the breadth of the programme theory developed within our realist review. There is a demonstrable need for educational programs to support the delivery of best practice in LBP management (Fourré et al., 2022).

Online training programs have increased in popularity; however, there are few evaluations of their implementation or adoption in clinical practice (Christou et al., 2019; D. A. Hurley et al., 2019; C. S. Srikesavan et al., 2017). The development, evaluation and implementation of this online training programme is based on the analysis, design, development, implementation, and evaluation (ADDIE) model (Almomen et al., 2016; Cheung, 2016). The ADDIE model is an instructional design model commonly used for developing online programs and has been used successfully for the development of health education in other conditions (C. S. Srikesavan et al., 2017). In the ADDIE model, the analysis stage defines the problem, identifies target knowledge users, and seeks solutions to bridge the knowledge-action gap. In the context of this project, the knowledge-action gap is the realist review results (current knowledge) and its application into practice (action). The targeted users are the clinicians who routinely prescribe exercise for persistent LBP. We proposed to meet this knowledge-action gap by educating and training clinicians involved in the management of persistent LBP using a knowledge dissemination tool. The design stage consisted of finding ways to organise and present the content, identifying modes of delivery, and developing an evaluation plan of the online programme. This stage involved conceptualising and adapting the realist review results to fit the online training programme. The development stage involved building the online programme, evaluating its usability, and refining the online programme to develop the final version. The implementation stage involved making the online programme available to NHS and global clinicians. The evaluation stage included evaluation of learning outcomes such as knowledge, attitudes, beliefs, intention to implement and user satisfaction with the online programme. Here we describe the first two stages of the ADDIE model (design and development).

It is important that researchers and clinicians understand the active components of exercise treatments to ensure that these components are included in exercise programs, delivered in clinical practice with people with LBP, and measured in future trials of exercise for LBP. The aim of this project was to design, develop and refine an online training programme, and gain end-user feedback on the satisfaction, usefulness, ease of use, and confidence in using the online training programme.

2 | METHODS

This was a mixed-methods, single group, pre-post study.

2.1 | Phase 1: Design and development of online training programme

The objectives of this phase were to design an online training programme using the realist review results as a framework, and gain feedback on the proposed online programme from a multidisciplinary group including clinicians, patients with LBP, and experts within the field of LBP research. The specific components reviewed were the content, language, delivery methods, navigation, layout, and visual appeal features.

The lead author and information technology team from the [blinded] platform mapped the key results from the realist review into a two-hour online training programme for clinicians. The lead author met individually with members of the patient and public

involvement group, clinicians, information technology experts, and LBP experts to review and refine the online training programme.

Think Aloud procedures were used with clinicians and patient partners in viewing the initial design of the online training programme. This was facilitated by the lead author. Participants were taken through the online training programme by the lead author, starting from the home page. They were asked to talk about what they felt, saw, or thought while reviewing the pages. The facilitator observed and took notes as the participants verbalised their thoughts. All think-aloud sessions were audio-recorded on Microsoft Teams.

2.2 | Phase 2: External review and further development of the online training programme

The specific objectives of this phase were to 1) gain end user feedback on the satisfaction, usefulness, ease of use, and confidence in using the online training programme, and 2) rectify any identified usability issues and further refine the online training programme prior to its implementation. The research protocol to inform this phase was reviewed and approved by the [blinded] Research Ethics Committee on the 30 November 2023(ID 4602969).

Clinicians currently practicing and prescribing exercise for people with persistent LBP were eligible. We recruited participants using online advertisements via social media platforms (Twitter, Facebook) over a period of one week. Respondents were directed to an online link to confirm eligibility, and once eligibility criteria were confirmed, an email link to the participant information sheet, online informed consent document, and additional questions regarding their current use of exercise prescription was sent. In addition, one physiotherapist requested permission to share the invitation with her team of junior rotational physiotherapists, who were invited to participate in the second cohort. Once participants had consented to take part, personalised invitations were sent to their email account inviting them to create a profile on the online platform. Participants had two weeks to activate the invitation, after which their access expired. Once enrolled, participants were sent weekly email reminders to engage with the five modules by the lead author. There was no time limit for each participant to complete the five modules. A certificate of completion was available for participants to download once all feedback on all modules had been completed.

It is proposed that 80% of usability issues can be identified when testing platforms with five participants, and 95% of usability issues can be identified with nine participants (C. Srikesavan et al., 2020; Virzi, 1992). We therefore planned to use two rounds of 10 participants to identify issues with the first cohort, prior to final review in a second cohort.

2.3 | Initial screening questionnaire

Respondents were asked for demographic information (such as age range, gender, profession, years qualified, country of work, employment type (full-time/part-time), work setting [for example, public sector, private sector, other (e.g. teaching)], number of people treated with LBP per month, frequency of exercise prescription, personal exercise use). Once eligibility was confirmed, participants were asked to complete an additional questionnaire providing informed consent to participate in the study and explore why they typically prescribed exercise for people with persistent LBP, what they thought the primary mechanism that exercise creates change in their patient group, whether they provided accompanying education to patients alongside exercise prescription, types of exercise prescribed to patients, and methods used to encourage adherence.

2.4 | Outcome measures

At the completion of each module, we asked participants to rate how informative the content was, whether they had learned anything new, whether the platform was easy to use, and provide any additional free text comments. In a final follow-up questionnaire, we asked them to evaluate their overall user satisfaction and ease of use on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). We measured usefulness on a 5-point Likert scale (1 = not useful at all, 2 = slightly useful, 3 = moderately useful, 4 = very useful, 5 = extremely useful). We measured overall ease of use on a 5-point Likert scale (1 = very difficult, 2 = somewhat difficult, 3 = neither difficult nor easy, 4 = somewhat easy, 5 = very easy). We measured confidence in using the online training programme course principles on a 5-point Likert scale (1 = not at all confident, 2 = somewhat confident, 3 = not sure, 4 = confident, 5 = very confident) (C. S. Srikesavan et al., 2017). All participants provided information regarding their prescription of exercise treatment targets prior to and on completion of the five modules. Finally, we asked participants whether their practice of exercise prescription had changed after course completion (yes, no, or unsure).

2.5 | Interviews

Using a semi-structured interview guide, we invited those that completed the course within the first cohort to share their experiences of participation and learning in online interviews. We discussed with participants their experience of using the online training programme, the content and navigating through the platform. We invited participants on completion and aimed to recruit 50% of participants from the first cohort.

2.6 | Data analysis

2.6.1 | Quantitative data

Sample characteristics were analysed using descriptive statistics, reporting means, and standard deviations (SDs) for all respondents,

and then sub-grouped into completers, consenters (consented to participate but did not complete the course) and non-responders (consented to participate, but did not enrol on the course). Data from the online training programme modules and usability and satisfaction questionnaires were analysed using descriptive statistics reporting median and interquartile ranges (IQR).

2.6.2 | Qualitative data

The interviews were audio recorded and transcribed using Microsoft Teams. Thematic analysis was used to identify and group the themes that transpired through the interviews. Responses were grouped and feedback was used to improve the online training programme where necessary. Free text responses to module feedback and on email were also included in this analysis.

2.6.3 | Deviations from the protocol

We did not collect participant's responses to the Pain Attitudes and Beliefs questionnaire as planned. We did not assess completer's case reports on completion of the module.

3 | RESULTS

3.1 | Phase 1: Design and development of online training programme

3.1.1 | Online training programme

The online training programme was built on the [blinded] platform by the [blinded] information technology team. We used an interactive presentation platform that allows users to engage at their own pace with written, video and audio content. The content of each module was co-designed according to learning outcomes. We used input from the [blinded] design team to ensure that the programme theory identified within the realist review (Wood et al., 2024) was presented in an optimal format and met the quality assurance framework for learners needs.

3.1.2 | Training content

The online training programme contained five different modules, wherein the user was required to complete each module in sequence. Briefly, the landing page provides an overview of the course, intended learning outcomes, terms and conditions, introduction to the author team, and a forum and questionnaire to introduce themselves and their demographics (age range, geographic location, and professional background). Each module starts with the intended learning outcomes, and finishes with a summary of learning, reflection, or assessment and a module feedback questionnaire.

Module 1 (see Figure 1) provides an overview of the scale of the problem of LBP, recommended treatments for persistent LBP, potential mechanisms of exercise intervention, and considerations for exercise adherence. Module 2 focusses on communication skills, contextual factors, holistic assessment, and building rapport with a focus on how these contribute to the development of trust in a therapeutic relationship. Module 3 considers how to facilitate and maintain motivation through harnessing previous experiences, maximising support strategies, considering behaviour change strategies, goal setting, individualised education, and exercise prescription. Module four explores methods to build confidence both as a clinician as well as to build the patient's confidence in performing the exercises, considering theories to improve adherence, and supporting strategies to enhance confidence. Finally, Module 5 provides a summary overview of the course content with a final reflection activity and assessment. Throughout the course, there are unmoderated discussion boards that allow participants to share strategies and clinical examples. Each module includes a mixture of text, videos with captions and transcripts from the author team and patients with lived experience of persistent LBP.

3.1.3 | Modifications

The lead author met with patient partners ($n = 2$), clinicians ($n = 3$), LBP research experts ($n = 3$), funding partner ($n = 1$), and information technology experts ($n = 3$) to review the initial design of the online training programme.

Modifications suggested by the patient partner and clinician stakeholders included: (1) using patient experiences of good and bad encounters with clinicians to demonstrate the effect of different theory components; (2) incorporating case studies to facilitate real life learning; (3) reducing the use of text and long sentences; (4) incorporating links to references for easy access; (5) including more videos and pictures to demonstrate text content; (6) reviewing the

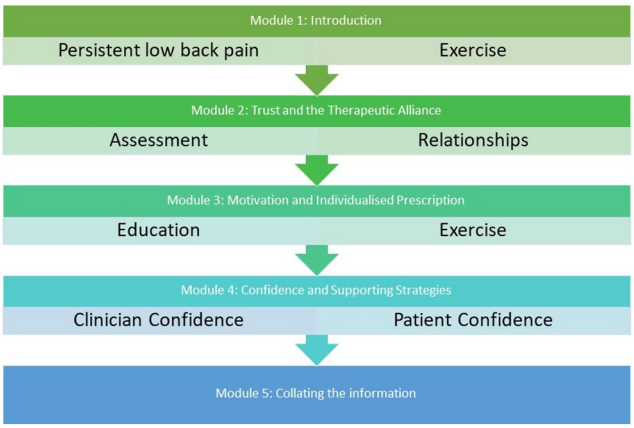

FIGURE 1 Overview of course modules.

images used to ensure they were of diverse populations and ethnicities. The home page of the online training programme platform is shown in Figure 2.

3.2 | Phase 2: External review and development of online training programme

3.2.1 | Baseline demographics

A total of 44 people completed the screening questionnaire (see Table 1 and Figure 3). Twenty-eight participants (63.6%) consented to take part in the study, of which 22 (78.6%) enrolled in the online programme. Of these, a total of 18 (64.3%) participants completed the online programme (see Figure 4). These completers were more likely to be male (n = 14/18, 77.8%); between the ages of 30–39 (n = 7/18, 38.9%); physiotherapist (n = 16/18, 88.9%); with 2–5 years' experience (n = 8/18, 44.4%). Most were living in the UK (n = 7/18, 38.9%), full-time employed (n = 15, 83.3%), and working in the public sector (n = 10/18, 55.6%). Most saw more than 15 patients a month with back pain (n = 9/18, 50.0%) and almost all prescribed exercise 'very often' (n = 16/18, 88.9%). All personally exercised, and most exercised more than 120 min a week (n = 11/18, 61.1%).

Respondents reported that they used review appointments (n = 24, 41%), exercise sheets (n = 23, 39%), exercise diaries (n = 7, 12%), and telephone reminders (n = 3, 5%) to support exercise adherence. Most participants reported that they prescribed

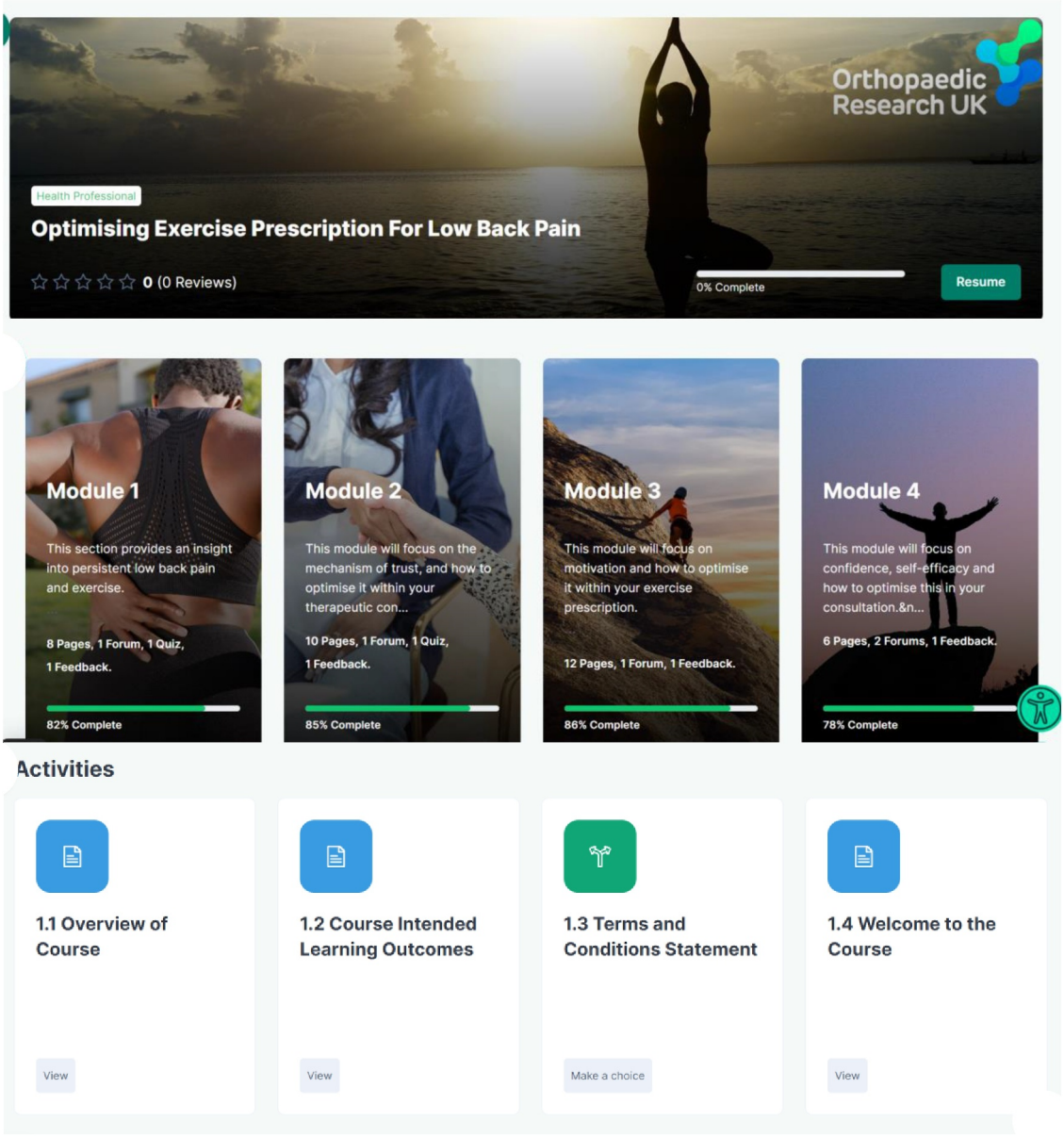

FIGURE 2 Example of the online training programme home page and module access.

TABLE 1 Table summarising the screening questionnaire respondents' demographics.

Baseline data	Screened	Of those screened	
Age group	All screened (n = 44)	Consent provided (n = 32)	Completers (n = 18)
21–29	11 (25%)	10 (36%)	6 (33%)
30–39	14 (32%)	8 (29%)	7 (39%)
40–49	11 (25%)	7 (25%)	4 (22%)
50–59	6 (14%)	2 (7%)	1 (6%)
>60	2 (5%)	1 (4%)	0 (0%)
Gender			
Male	31 (71%)	18 (64%)	14 (78%)
Profession			
Physiotherapist	40 (91%)	24 (86%)	16 (89%)
Osteopath	2 (5%)	2 (7%)	1 (6%)
Rehabilitation Physician	2 (5%)	2 (7%)	1 (6%)
Years qualified			
<1 year	2 (5%)	1 (4%)	1 (6%)
2–5 years	13 (30%)	12 (43%)	8 (44%)
6–10 years	3 (7%)	2 (7%)	2 (11%)
>10 years	26 (59%)	13 (46%)	7 (39%)
Country			
UK	23 (52%)	14 (50%)	7 (39%)
USA	4 (9%)	2 (6%)	2 (11%)
Egypt	2 (5%)	1 (3%)	1 (6%)
India	2 (5%)	2 (6%)	0 (0)
Australia	1 (2%)	1 (3%)	1 (6%)
Austria	1 (2%)	1 (3%)	1 (6%)
Bahrain	1 (2%)	0 (0)	1 (6%)
Canada	1 (2%)	1 (3%)	1 (6%)
Chile	1 (2%)	1 (3%)	1 (6%)
France	1 (2%)	1 (3%)	1 (6%)
Ireland	1 (2%)	0 (0)	0 (0)
Pakistan	1 (2%)	1 (3%)	0
Singapore	1 (2%)	0	0 (0)
South Africa	1 (2%)	1 (3%)	1 (6%)
Spain	1 (2%)	0	0 (0)
Taiwan	1 (2%)	1 (3%)	1 (6%)
UAE	1 (2%)	1 (3%)	1 (6%)
Employment type			
Full-time	37 (84%)	24 (86%)	15 (83%)
Part-time	7 (16%)	4 (14%)	3 (17%)
Sector of work			
Public sector	59%	16 (57%)	10 (56%)
Private	41%	12 (43%)	8 (44%)

TABLE 1 (Continued)

Baseline data	Screened	Of those screened	
Number of people with LBP treated every month			
>15	25 (57%)	3 (56%)	9 (50%)
10–14	8 (18%)	5 (16%)	3 (17%)
5–9	8 (18%)	6 (19%)	5 (28%)
<4	3 (7%)	3 (9%)	1 (6%)
Do you regularly prescribe exercise for people with LBP?			
Very often	41 (93%)	30 (94%)	16 (89%)
Often	3 (7%)	2 (6%)	2 (11%)
Personal exercise			
Yes	42 (96%)	30 (100%)	18 (100%)
How often do you exercise?			
<30 min	4 (9%)	3 (9%)	0 (0%)
30–120 min a week	13 (30%)	10 (31%)	7 (39%)
>120 min a week	27 (61%)	19 (59%)	11 (61%)

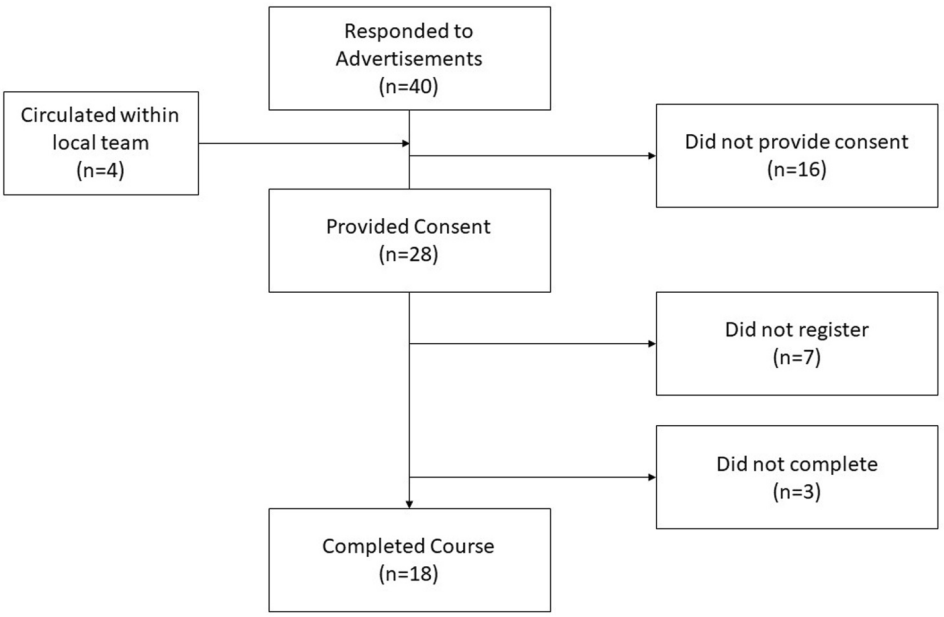

FIGURE 3 Flow chart to demonstrate the flow of participants into the study.

strengthening exercises (n = 20, 24.7%) followed by range of motion exercises (n = 18, 22.2%) (see Figure 4).

3.2.2 | Differences between non-responders and completers

Non-responders were more likely to be aged between 30 and 39 (n = 6/16, 38%), male (n = 13/16, 81%) and a physiotherapist (n = 16, 100%) qualified for more than 10 years (n = 13/16, 81%). Of the clinicians that enrolled in the course, only 4 of 22 (18%) did not complete the course, suggesting that the course was manageable, acceptable, and appropriate for clinicians.

3.3 | Course feedback

3.3.1 | Quantitative feedback

Each module has individual course feedback sections, for which the overall feedback was positive. The first five participants highlighted issues within the online platform such as embedded videos not

playing, difficulty accessing the course, a duplication video, and a request to have more examples of holistic assessment and clinical application. These individual components were added and modified. Overall, course feedback was very positive with high rates of satisfaction, ease of use, and usefulness reported (see Table 2). All felt confident (n = 12/18, 66.7% very confident, n = 6/18, 33.3% mostly confident) to apply the learning principles of the course in practice. Most reported a change in their exercise prescription (n = 11/14, 73%). Most participants(n = 17/18, 94.4%) reported that the content was somewhat or entirely new to them, and the content was 'very interesting' to them (n = 16/18, 88.9%) (see Figures 5,6 and 7). Responses ranged across modules as not all participants completed all modules (22 participants started the course, but only 18 completed). In addition, participants appeared to favour biopsychosocial

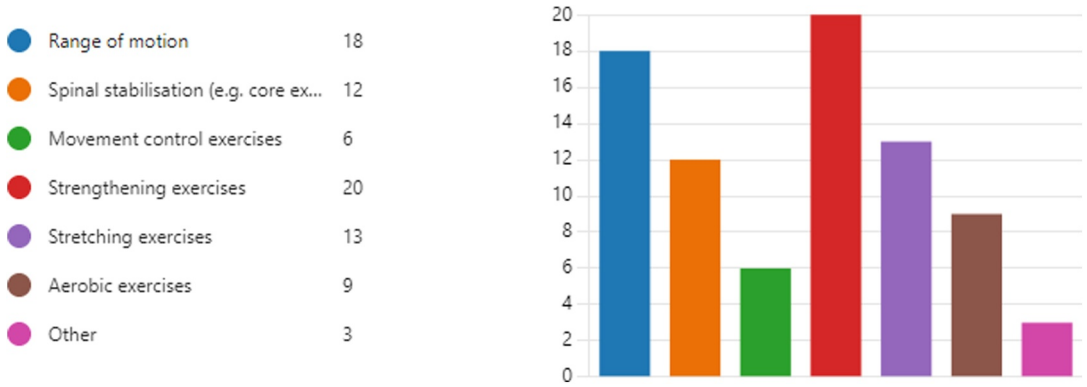

FIGURE 4 Exercises most often prescribed for people with persistent low back pain.

Question (scale)	Median (IQR)
How satisfied were you with this course? (1–7)	7.0 (25th 6.0)
Was the online interface easy to use? (1–7)	7.0 (25th 7.0)
How useful was the course? (1–5)	5.0 (25th 4.0)
Overall, how easy was the course to use? (1–5)	5.0 (25th 5.0)
How confident are you to apply the learning principles of the course in practice? (1–5)	5.0 (25th 4.0)
Yes I have changed how I prescribe exercise to my patient group since doing this course (only n = 15 asked)	11 (73.0%)

TABLE 2 Usability, usefulness, ease of use and confidence in applying course content responses (n = 18).

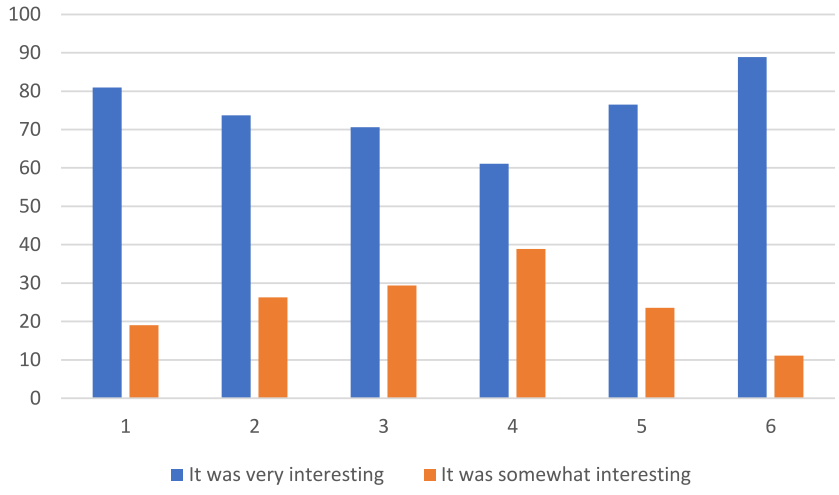

FIGURE 5 Bar chart to demonstrate how informative the content in the module and course were in % reported (n = 18–22). Numbers represent modules completed for modules 1-5, number 6 evaluated the course overall.

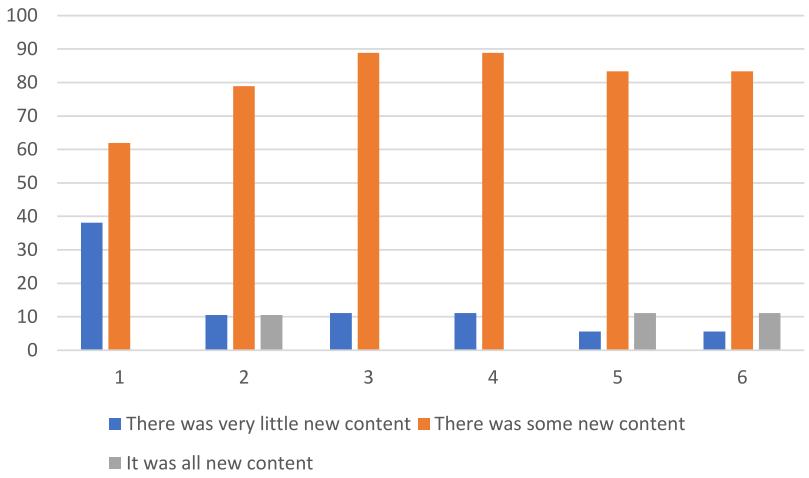

FIGURE 6 Bar chart to demonstrate whether participants learned anything new on the module and course in % reported (n = 18–22). Numbers represent modules completed for modules 1-5, number 6 evaluated the course overall.

FIGURE 7 Bar chart to demonstrate the ease of use of the modules and course in % reported (n = 18–22). Numbers represent modules completed for modules 1-5, number 6 evaluated the course overall.

treatment targets of exercise more after the course than prior to it with increased frequency of choice of patient specific needs (n = 3 pre-course, n = 5 post-course), function (n = 4 pre-course, n = 8 post course), confidence in movement or self-efficacy (n = 4 pre-course, n = 6 post-course) and fear of movement (n = 9 pre-course, n = 11 post-course) (see Figure 8).

Free text responses to the module feedback forms included:

> I really enjoyed the course's diversity of teaching styles and I already used so much of what I've learnt!

> This has made me reflect much more on the importance of bringing the threads of motivation, confidence and trust together throughout the patient journey, adding to previous knowledge and experience, to maximise how I prescribe exercise for persistent LBP.

> It was a great course which very much broadened my view on the importance of HOW to prescribe exercises. It also made me worry less about which exercises I select but made me think about how I can identify the "limiters" each person has.

3.3.2 | Qualitative feedback

Seven participants were interviewed to discuss their experience of the online module in more detail. They had a range of experience, from 1.5 years qualified to over 10 years (with five of seven qualified less than 5 years). They were all physiotherapists apart from one, and based across the world in the UK, Canada, South Africa, France, Austria, the USA, and Ireland. Most worked with a caseload of predominantly LBP and had heard about the course through the social media platform *X* (formerly Twitter).

3.3.3 | Course content

They all reported that they had enjoyed the course, and one participant reported that 'they would recommend the course to

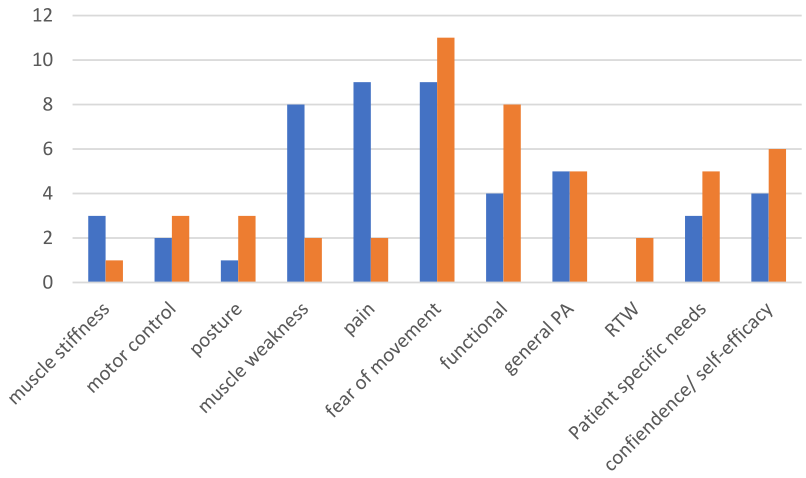

FIGURE 8 Bar chart to demonstrate the change in selected treatment targets for exercise before and after the course (n = 18). Where blue represents pre-course selection and orange represents post-course selection; PA is physical activity and RTW is return to work.

anyone prescribing exercise for musculoskeletal conditions'. All participants reported that it had influenced the way that they prescribed exercise with their patients, although one participant reported that it was 'tricky to implement in practice' as he was working in a private practice with only 20 min per patient. One participant reported that the course 'has changed the way I treat all my patients'. When asked about what content may be missing from the course, two participants felt that there was not sufficient information on how to use the RADAR graph in practice (Walton & Elliott, 2018) or how/what the best assessment tools may be to use in clinical practice. They suggested that more information, such as a working example of a RADAR graph for a patient, may be helpful to understand the clinical utility. There was also a suggestion of a more detailed example to support the case study reflections in module 3, which encouraged participants to consider how they would use motivation and individualised exercise prescription in different clinical consultations. Three participants felt the course was comprehensive as it currently was, whereas one further participant would have liked a section on types of exercise that have the most evidence for use for those with persistent LBP. Most reported the course was a good length and was 'perfect for busy clinicians', however some found that time remained a challenge to engage with the content despite enjoying the course. Participants reported that the content varied appropriately, and they enjoyed the mix between video and text content. They found this easy to refer to and practical to implement learning outcomes in the clinical setting. They reported that the content was 'practical and easy to implement in clinical practice the next day'.

3.3.4 | System platform

The average time spent on the course was 3 h 17 min. All participants reported that the system was easy to use and access. One participant reported that as a non-English native speaker, he found the course had good readability and was easy to follow.

3.4 | Changes and reflections

Most participants mentioned the discord between the title of the course and their expectations of learning about one specific exercise that would be the panacea for LBP. They mentioned that the objectives clearly dispelled this expectation. Participants appeared to enjoy the opportunities to reflect on their practice throughout the course and reported that the reflection pieces at the end of each module were useful "to stop and reflect on [their] own practice". One participant reported "the most helpful thing about the course was the case reports and reflections", whereas another participant reported within the module feedback that the course in itself was not sufficient to change their practice as he felt he needed 'more clinical guidance and case studies'. In contrast, one participant reported that the reflection pieces were 'frustrating when I was short of time, but they were helpful to process what I've learnt or read'. The course also incorporated unmoderated discussion boards which some participants mentioned, reflecting that they enjoyed these as 'they allowed a validation of my understanding by an international community'.

4 | DISCUSSION

This paper describes the design, development, and initial evaluation of an online training programme for clinicians prior to implementation.

Despite the increasing recognition of the importance of contextual factors and the biopsychosocial model for managing persistent LBP (Sherriff, 2022; Testa & Rossettini, 2016), most participants completing the course reported that the content of this online course provided some new information. This suggests that there is a need for freely available courses to provide evidence based education for clinicians. Other treatments, such as cognitive functional therapy, have shown effectiveness when compared to usual care (Kent et al., 2023). Cognitive functional therapy includes

an individualised approach to target pain-related cognitions, behaviours, and emotions that may impact a patient's experience of pain and function. However, these often involve intensive training regimes that may be impractical given the time off work (or outside of working hours), travel and financial cost incurred by clinicians (Kent et al., 2023).

The online training programme was accessed by a global audience. Almost one third of the initial respondents and one quarter of participants completing the course were from low- and middle income countries, providing positive feedback and engagement. This suggests that the online training tool is currently suitable for diverse audiences, such as the patients seen in low- and middle income countries, however patient facing documentation may require additional evaluation.

4.1 | Strengths and limitations

The strengths of this study are its focus on online design, development, and evaluation prior to implementation. The online training programme was developed and underpinned by a comprehensive realist review and programme theory, with a clear rationale for the content included within the course. The evaluation explored the usability, ease of use, satisfaction, and confidence to implement the learning gained from the modules, which will support implementation across a range of disciplines and healthcare settings. Furthermore, the mixed-method evaluation provides a comprehensive assessment of the feasibility and acceptability of implementation of this online learning programme and allows early identification of adaptations required to increase acceptability. Further, the wide reach of the study sample from a global populace strengthens its applicability in practice. This study was limited by the pragmatic timeframes to assess longer term changes in practice and clinicians' decision making. Further, the results of this study are limited by the small sample size of the completers. Future review of auto-generated feedback from the course will provide more evidence to support the useability and confidence to apply the principles and change in clinicians' beliefs.

4.2 | Clinical implications

The online training programme will be freely available for clinicians prescribing exercise for persistent LBP. Further assessment will be undertaken to explore the utility and acceptability of the online training programme for people in low- and middle income countries and other languages. We did not design the study to be powered to determine differences in clinicians' attitudes and beliefs to managing LBP before and after the course, and this could be explored in further evaluation. Future research should explore whether a short online training programme is sufficient to change clinicians' attitudes and beliefs regarding the management of persistent LBP, and whether this changes their practice, and ultimately improves patient outcomes.

5 | CONCLUSION

This paper describes the design, development, and initial evaluation of an online training programme to optimise exercise prescription for people with persistent LBP. Future research is required to explore the applicability of the online training programme in other settings and its effectiveness in changing clinicians' beliefs and behaviour change.

AUTHOR CONTRIBUTIONS

Lianne Wood: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; roles/writing – original draft. **Sarah Dean**: Conceptualization; methodology; supervision; writing – review & editing. **Vicky Booth**: Methodology; supervision; writing – review & editing. **Jill A. Hayden**: Conceptualization; methodology; supervision; writing – review & editing. **Nadine E. Foster**: Conceptualization; methodology; supervision; writing – review & editing.

ACKNOWLEDGEMENTS

The authors would like to thank the patients and clinicians who shared their stories and contributed to the development of the online training program. The lead author was funded by the Orthopaedic Research UK charity to undertake this work. The funder approved the online training program but had no influence over the content or development of this work. NEF is funded through an Australian National Health and Medical Research Council Investigator Grant (ID: 2018182). SD's time is partly supported by the National Institute for Health and Care Research (NIHR) Applied Research Collaboration South West Peninsula. The views expressed in this publication are those of the author(s) and not necessarily those of the NHIR or the Department of Health and Social Care. LW's time is partly supported by the National Institute for Health and Care Research (NIHR) Exeter Biomedical Research Centre (BRC). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

On reasonable request to the corresponding author, the anonymised dataset can be shared.

ETHICS STATEMENT

Not Applicable.

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How to cite this article: Wood, L., Dean, S., Booth, V., Hayden, J. A., & Foster, N. E. (2024). An online training resource for clinicians to optimise exercise prescription for persistent low back pain: Design, development and usability testing. *Musculoskeletal Care*, e1907. https://doi.org/10.1002/msc.1907