

# Rehabilitation RESEARCH REVIEW™

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Issue 56 – 2021

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### Abbreviations used in this issue

**ACL** = anterior cruciate ligament  
**AI** = artificial intelligence  
**CI** = confidence interval  
**MS** = multiple sclerosis  
**OA** = osteoarthritis  
**OR** = odds ratio  
**RCT** = randomised controlled trial

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## Welcome to issue 56 of Rehabilitation Research Review.

A self-management support app for lower back pain disability has proved promising in a group of adults with lower back pain, but requires further evaluation to prove its true worth. A systematic review has investigated the perceptions of people with chronic musculoskeletal pain engaging in telehealth interventions with some interesting findings regarding enablers and barriers to such interventions. Other topics covered in this issue include resistance training for return to sport following ACL repair, mindfulness training for stroke survivors, daily activities and occupations after surgery for distal radius fracture, and behaviour change techniques in multiple sclerosis physical activity interventions.

I hope that you find the information in this issue useful in your practice and I welcome your comments and feedback.

Kind regards,

**Professor Nicola Kayes**

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## Effectiveness of app-delivered, tailored self-management support for adults with lower back pain-related disability: A SelfBACK randomized clinical trial

**Authors:** Sandal LF et al.

**Summary:** The Scandinavian SelfBACK RCT examined the use of an individually tailored self-management support system supported through a smartphone app as an adjunct to usual care in 461 adults (mean age 47.5 years; 55% women) with lower back pain-related disability. Among the 399 (87%) participants who completed 3-month follow-up, the adjusted mean difference in Roland-Morris Disability Questionnaire (RMDQ) score was 0.79 (95% CI 0.06-1.51;  $p = 0.03$ ), favouring SelfBACK. A score improvement of  $\geq 4$  points on the RMDQ was reported in 52% of SelfBACK recipients versus 39% of controls (adjusted OR 1.76; 95% CI 1.15-2.70;  $p = 0.01$ ).

**Comment:** The SelfBACK intervention is one of few interventions which appears to be entirely self-directed. In summary, it includes a smartphone app which connects to a commercially available step-detecting wristband. The app comprises tailored recommendations for three primary components including a) physical activity, b) strength and flexibility exercise, c) daily education messages. Users also have access to a range of other tools to support goal planning, mindfulness, etc. Weekly recommendations are produced through AI case-based reasoning. In the current study, the app was implemented as an adjunct to usual care and participants were encouraged to follow any advice from their clinician. However, the app could conceivably be used without clinician input. It is important to note that the overall mean difference between groups (0.79), is not considered to be within the range of a clinically meaningful change on the RMDQ (which the authors note to be between 2 to 4 points). Another key thing to keep in mind when interpreting the results of this trial is that the control group did not receive an equivalent sham intervention. It is possible therefore that differences between the control and intervention groups can be attributed to the intervention group receiving something more than usual care, rather than being particular to the SelfBACK intervention. However, the authors provide a balanced view regarding the strengths and limitations of their design and the finding that significantly more SelfBACK recipients reported a score improvement of  $\geq 4$  points is promising. I am interested to know what people think about the place of self-directed interventions which draw on AI to guide treatment. I hope this paper prompts some healthy debate and discussion about this amongst your colleagues!

**Reference:** *JAMA Intern Med.* 2021;181(10):1288-1296

[Abstract](#)

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## At my own pace, space, and place: A systematic review of qualitative studies of enablers and barriers to telehealth interventions for people with chronic pain

**Authors:** Fernandes LG et al.

**Summary:** This systematic review assessed perceptions of people with chronic musculoskeletal pain (knee or hip osteoarthritis, chronic low back pain, chronic joint pain or nonspecific chronic musculoskeletal pain, rheumatoid arthritis, functional fatigue syndrome) engaging in telehealth interventions (web, videoconference, telephone, video, smartphone app) based on 21 studies including 429 patients. The main enabler identified for telehealth interventions was “at my own pace, space, and place” and empowered the patient. Barriers included: impersonal, technological challenges, irrelevant content, and limited digital (health) literacy.

**Comment:** Overall this is a relatively robust synthesis of qualitative evidence which gives a good sense of the barriers and enablers to telehealth for people with chronic pain. It is worth noting that this review used a broad definition of telehealth, including any professional and patient interaction (synchronous or asynchronous, individual or group) provided at a distance. My only gripe with the synthesis is the artificial division of barriers and enablers. The reality is that it is rarely this black and white. There are a lot of nuances within each theme and the theme title does not always do justice to the range of ideas, so I recommend reading the full paper for a more comprehensive perspective. For example – “At my own pace, space and place” includes the digital space being viewed as a safe zone free from clinician judgement, being able to tailor interventions to pace, space and time, the ability to track progress and receive feedback, and so on. In contrast, a diminished sense of rapport with clinicians due to distance and inflexible interventions that were not able to be tailored to individual needs and preferences (in terms of mode, context, content, and culture) were barriers to engagement in telehealth.

**Reference:** *Pain* 2021;Jun 14 [Epub ahead of print]

[Abstract](#)

## Is resistance training intensity adequately prescribed to meet the demands of returning to sport following anterior cruciate ligament repair? A systematic review

**Authors:** Nichols ZW et al.

**Summary:** In this systematic review, research evaluating the use of resistance training on return to sport outcome measures for people following ACL repair was assessed based on 11 studies (quality ranged from poor to excellent). Resistance training intensity varied substantially (5% to >80% of one repetition maximum) and only one study examined the effect of low- versus high-intensity resistance training. Most studies reported outcomes that would not meet common return to sport criteria.

**Comment:** I didn't register that this was a paper published by colleagues of mine at AUT when I selected to review for this issue, but it is always a pleasure to engage with colleagues' work and learn more about their research and thinking! The introduction of this paper sets the context well highlighting the tensions and uncertainties in evidence and practice regarding resistance training protocols, return to sport criteria and injury risk following ACL repair. When interpreting the review findings, it is important to keep in mind that the quality of included studies was variable, and there was significant variability in training protocols across papers – together, this makes it difficult to draw substantive conclusions from the existing evidence base. However, the authors have done an excellent job of discussing the findings and provide useful reflections on resistance training protocols relevant to intensity, progression, and power in the absence of more definitive findings. If you are a clinician routinely involved in rehabilitation following ACL repair with a particular focus on return to sport outcomes, I highly recommend you read the paper in full.

**Reference:** *BMJ Open Sport Exerc Med.* 2021;7(3):e001144

[Abstract](#)

### Independent commentary by Professor Nicola Kayes

Professor Nicola Kayes is Director of the Centre for Person Centred Research at Auckland University of Technology. Nicola has a background in health psychology and as such her research predominantly explores the intersection between health psychology and rehabilitation. She is interested in exploring the role of the rehabilitation practitioner and their way of working as an influencing factor in rehabilitation and whether shifting practice and the way we work with people can optimise rehabilitation outcomes. Nicola actively contributes to undergraduate and postgraduate teaching in rehabilitation at the School of Clinical Sciences at Auckland University of Technology.



## Stroke survivors' expectations and post-intervention perceptions of mindfulness training: A qualitative study

**Authors:** Wrapson W et al.

**Summary:** This study assessed the use of a 6-week, one-on-one mindfulness training (MT) course in 17 stroke survivors (median age 71 years, 10 male) to reduce anxiety and depression. A single theme, 'seizing rehabilitation opportunities', was identified in relation to expectations and four themes were identified related to participants' perceptions of the course: 'calming the mind', 'reduced reactivity', 'remediating physical symptoms', and 'not quite there yet'. Most participants had little knowledge about mindfulness prior to the training and had no specific goals in mind.

**Comment:** It seems I have been a bit biased in my selections for this issue! I was privileged to be part of the research team for the study reported in this paper and am a co-author. So, that is probably a good steer as to what I think of this paper. Mindfulness is increasingly called on as a rehabilitation tool in a range of populations and contexts. There has however been some reticence about its potential as a tool when working with people with cognitive impairment, countered by a growing body of research supporting its use. The paper I am providing comment on here focused on expectations and the perceived impact of MT for stroke survivors experiencing low mood. It is important to note that while it is common for mindfulness programmes to be delivered in a group setting, in this study MT was delivered in a one-to-one format in the participant's home. This was primarily so that the sessions could be tailored to individual needs and capabilities. Participants took up the opportunity to take part in MT for a range of reasons. However, they primarily appeared driven to take whatever opportunities were available to them to improve life post-stroke. Participants reported a range of perceived benefits. While further research is needed to assess the effectiveness of MT more definitively, these findings are encouraging. I would add, however, that we had a very skilled and experienced MT facilitator delivering the intervention in this case. As such, future implementation would need to consider what training and experience would be necessary to achieve the benefits described in the current study. If you are interested in reading more about this research, there is also a companion paper which reports the main findings of the feasibility study available by open access – available [here](#).

**Reference:** *Neuropsychol Rehabil.* 2021;1-23

[Abstract](#)

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## Effects of a self-directed web-based strengthening exercise and physical activity program supported by automated text messages for people with knee osteoarthritis: A randomized clinical trial

**Authors:** Nelligan RK et al.

**Summary:** This Australian, 24-week, two-group, double-blinded, RCT examined the effects of a control website providing information about osteoarthritis and the value of exercise/physical activity; or an experimental website containing the same information plus guidance about increasing physical activity and prescription of a self-directed strengthening regimen supported by automated behaviour change texts to encourage exercise adherence in 206 individuals with knee osteoarthritis. In total, 180 (87%) participants completed 24-weeks, with greater improvements in overall knee pain (mean difference 1.6; 95% CI 0.9-2.2;  $p < 0.001$ ) and physical function (mean difference 5.2; 95% CI 1.9-8.5;  $p = 0.002$ ) among experimental versus control participants exceeding minimal clinically important pain and function improvement levels.

**Comment:** Similar to the SelfBACK intervention also reviewed in this issue of Rehabilitation Research Review, this intervention was entirely self-directed without health professional contact. There is clearly a growing body of research in this space. I know there are diverse perspectives on the safety, role and effectiveness of entirely self-directed interventions. However, there is certainly a place for them given we know there are many barriers to people routinely accessing rehabilitation and/or sustaining engagement in rehabilitation activities following discharge from formal services. It is worth noting in the current study that participants were recruited via online adverts and through an existing volunteer database and so it is possible those who expressed an interest in taking part were drawn to this kind of intervention. This may have a bearing on the findings. The great thing about this paper is that there is a lot of key information available about the intervention if you want to learn more. You can go to the website <https://mykneeexercise.org.au/> and there are a range of supplementary files available online linked to this paper. For example, details of the automated text messages are available and may be of interest if you are looking to use text messaging in your practice. The text messages used in this intervention included text messages for the purpose of monitoring, reinforcement, barrier identification, suggesting tailored behaviour change techniques to address barriers, support and encouragement, and reminders. Often the finer details of interventions are missing from papers which can make it hard to replicate in everyday practice. So, it is a refreshing change to have such a wide range of resources available to dig into.

**Reference:** *JAMA Intern Med.* 2021;181(6):776-785

[Abstract](#)

## Facilitators and barriers to employment for persons with chronic spinal cord injury or disorder: A qualitative study framed by the person-environment-occupation model

**Authors:** Dorstyn DS et al.

**Summary:** This South Australian study examined stakeholder perspectives and experiences among eight people living with a spinal cord injury (SCI) or disorder and four rehabilitation professionals during the job search process in order to identify service gaps and return-to-work solutions. Person-centred themes identified focused on incentives and motivation for employment and individual expectations and attitudes, particularly job readiness. Environmental facilitators included positive attitudes of employers', although workplace discrimination was a concern. Occupation-based barriers identified included difficulties in SCI or disorder self-management, need for timely functional assessments, and opportunities for education, upskilling and retraining.

**Comment:** As implied by the title, this research drew on the person-environment-occupation (PEO) model to explore experience and perspectives of people with SCI seeking and gaining employment. In brief, the authors note the PEO model assumes a reciprocal relationship between a) A *person's* identity, b) their broader socio-cultural *environment*, and c) the *occupations* they perform within that context. They argue that congruence between these things is important for occupational performance, job satisfaction, and so on. I am not sure this paper necessarily adds anything novel to what we already know about this topic. However, making sense of experiences through the PEO model is potentially helpful in identifying where vocational supports could be targeted. It is clear there are a range of complexities relevant to a matrix of person and environmental factors that need to be addressed to optimise vocational outcomes following SCI.

**Reference:** *J Spinal Cord Med.* 2021;1-10

[Abstract](#)

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## Physical therapists' opinion of e-health treatment of chronic low back pain

**Authors:** Martínez de la Cal J et al.

**Summary:** This qualitative study explored 19 physical therapists' opinions of a web-based telerehabilitation programme for treating chronic low back pain. The analysis suggested that physical therapists believe that telerehabilitation is successful only when patients are actively involved in treatment; however, low back pain exercise programmes are rarely adapted to patient preferences. Participants reported new technologies allow follow-up and remote contact with patients, but long-term adherence to treatment stems from patient knowledge of the exercises and the correct techniques.

**Comment:** The title and abstract of this paper promised a lot, but I was left more disappointed after a full reading. The analysis and interpretation are a little superficial (in my opinion). There is a lack of coherence between the research question and the themes as presented. For example – the first theme 'Patients as active partners in their treatment' refers to the need for health education and for patients to take responsibility and acknowledges the emotional aspects of care. However, it is not clear how these ideas may be formative (or not) to the potential of web-based programmes for treating chronic low back pain. This leaves the reader to read between the lines to make meaning of the findings for themselves. Given this – I recommend reading the paper in full rather than relying on the authors own conclusions if this is a topic of interest to you.

**Reference:** *Int J Environ Res Public Health* 2021;18(4):1889

[Abstract](#)

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## “The more I do, the more I can do”: Perspectives on how performing daily activities and occupations influences recovery after surgical repair of a distal radius fracture

**Authors:** Collis JM et al.

**Summary:** This study used an online activity and exercise log and a semi-structured interview to explore perceptions and experiences of daily activities and occupations and their influence on recovery over 8 weeks after surgical treatment of a distal radius fracture (n = 21). Participants considered daily activities and occupations highly influential in facilitating recovery of movement and function and identified 5 themes on how occupation promoted recovery; (1) primary driver of rehabilitation providing an impetus for recovery, (2) provided challenges for opportunistic, automatic movement, (3) intentional use of the wrist, (4) habituated movement through repetition and confidence-building, and (5) used psychosocial resources that enabled reengagement with life activities and roles.

**Comment:** This was a well-designed New Zealand-based qualitative study. The findings offer insights into the role that engagement in occupation and daily activities play in recovery following surgery for distal radius fracture. The findings suggest that engagement in daily activities has the potential to positively impact functional recovery through providing opportunistic challenges, intentional use, habituated movement, etc. Importantly, the findings also showed how engagement in daily activities could be a driver for recovery, an important marker of progress, build confidence, and provide opportunities for people to harness their existing psychosocial resources for recovery. The authors suggest that occupation as therapy may be underutilised as a therapeutic strategy and argue for the synergistic value of interventions which combine exercise and occupation. I may be a bit biased having recently had the opportunity to work with the lead author, Julie Collis, but I think this research makes an important contribution to knowledge and practice. Julie is in the end stages of her doctoral research. She has also published two systematic reviews (available [here](#) and [here](#)) in this space and is working on future related publications. As such, I encourage you to engage with her broader work if this is a topic of interest to you.

**Reference:** *Disabil Rehabil.* 2021;1-10

[Abstract](#)

## Disentangling interventions to reduce fear of falling in community-dwelling older people: A systematic review and meta-analysis of intervention components

**Authors:** Kruisbrink M et al.

**Summary:** This Dutch systematic review and meta-analysis examined 66 RCTs in older community-dwelling people to identify components that may help in the optimisation of treatments for fear of falling. Meta-analysis identified few components associated with intervention effects, but interventions using meditation, holistic exercise (Tai Chi or Pilates) or body awareness were more effective than other interventions. Self-monitoring, balance exercises, or tailored component interventions were less effective than those without these components.

**Comment:** This was an interesting review. I particularly liked the focus on trying to unpack the effectiveness of individual intervention components, rather than a more general focus on intervention effectiveness. The findings offer useful guidance for clinicians seeking to address fear of falling in practice (i.e., that incorporating meditation, holistic exercise and body awareness may be a useful starting point). The finding that self-monitoring was a less effective intervention component was surprising given self-monitoring is a self-regulatory technique that has been found to be effective for supporting behaviour change in several populations. It is important to note however that fear of falling is not in itself a behavioural factor. Rather, it is a way of thinking (I don't have confidence in my ability to prevent a fall) and feeling (I am scared of falling and am worried about the consequences of falling) which can influence one's behaviour. In that sense, it is conceivable that self-monitoring could exacerbate those thoughts and feelings and therefore be less effective when the outcome of interest is fear of falling. The review authors astutely note that it is likely that intervention components most effective at reducing fear of falling, may be different from intervention components targeting falls risk. A tip for those of you wanting to read this review in full – I recommend making sure you also download the supplementary files as they provide important explanatory information that can support interpretation of the review findings.

**Reference:** *Disabil Rehabil.* 2021;1-11

[Abstract](#)

## Behavior change techniques in physical activity interventions for multiple sclerosis

**Authors:** Silveira SL et al.

**Summary:** This systematic analysis aimed to identify behaviour change techniques (BCTs) used in behaviour change interventions for promoting physical activity in multiple sclerosis patients based on 54 studies. Overall, 38 unique BCTs and 53 BCTs were utilised across the studies. A mean of 15 BCTs were used per study, and studies and effect sizes ranged from 0.04-1.49.

**Comment:** This was a comprehensive review. It provides a useful synthesis of existing interventions seeking to impact physical activity behaviour in people living with Multiple Sclerosis, with a particular focus on the BCTs used. I was a little disappointed that the findings were relatively descriptive. That is, the primary focus was on identifying what and how many BCTs were used, rather than seeking to understand which, or which mix, of BCTs were most effective. I am a firm believer that a more tailored approach to the use BCTs – that is, selecting BCTs to address the unique and particular behavioural issues a person presents with – is more likely to be effective than a less targeted approach. As such, there remains an urgent need for evidence which examines the unique contribution of individual or clusters of BCTs to guide the use of more tailored approaches in practice. It is important to also note that this paper does not report on the sample characteristics of included papers. It is common for physical activity research in Multiple Sclerosis to be limited to those who remain ambulatory (with or without the use of an assistive device). As such, it is likely that the findings of this review are less transferable to those living with more advanced disease.

**Reference:** *Arch Phys Med Rehabil.* 2021;102(9):1788-1800

[Abstract](#)



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