

Rehabilitation RESEARCH REVIEW™

Making Education Easy

Issue 54 – 2021

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Abbreviations used in this issue

HRQoL = health-related quality of life

TBI = traumatic brain injury

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Welcome to issue 54 of Rehabilitation Research Review.

A US study has revealed that approximately three-quarters of people return to driving following a moderate-to-severe TBI, but that return to driving is heavily influenced by employment status, race and family income. In NZ, we are likely to see similar patterns. In the UK, researchers have investigated the feasibility of an online platform delivery for pulmonary rehabilitation for patients with chronic pulmonary disease and have demonstrated encouraging findings. Other topics covered in this issue include specialised rehabilitation after mild TBI, patient perspectives on vocational rehabilitation after traumatic injury, older adults' community participation during hospital-to-home transition, and healthcare providers' experiences in managing shoulder pain.

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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Return to driving following moderate-to-severe traumatic brain injury

Authors: Novack TA et al.

Summary: This survey of 618 participants and 88 caregivers in the US TBI Model System programme described return to driving outcomes after moderate-to-severe TBI. Overall, 78% of respondents reported a return to driving, although 14% did not maintain driving. Among those who returned to driving, 42% did so <6 months after TBI and 90% did so <24 months after injury. Multivariate logistic regression suggested the strongest associations between driving status and demographic variables were current employment, family income, race, seizures and injury severity. Return to driving was associated with more community participation, improved functional outcomes, greater satisfaction, and fewer symptoms of depression.

Comment: Return to driving is often an outcome of importance to people following brain injury. It can also become a point of tension between clients and their health professionals when the time to return to driving is longer than one hopes or expects. The data from this study highlights that while most people (78% in this US-based cohort) returned to driving following moderate-to-severe TBI, some people do not and even if they do there is wide variability in how long it takes. Of interest, injury severity had a significant but modest impact on return to driving, while other variables such as family income and ethnicity had greater impact. In fact, those in the highest income bracket were over four times more likely to return to driving than those in the lowest income bracket, and African Americans were half as likely to return to driving than white participants. It is hugely concerning to learn that return to driving is more likely to be impacted by social and demographic factors than injury severity. While this is a US-based cohort, given what we already know about inequities in access and outcome experienced by Māori, Pacific people, and people with low socio-economic status in NZ, it is likely we would see similar patterns in a NZ cohort. Given this, we need to critically consider what might contribute to this inequity and address that. If we were to critically review current funding models, referral patterns, service delivery, etc., relevant to return to driving activities with an equity-oriented lens, what might that make visible about existing structures, processes, and practices which may perpetuate the inequities experienced? I urge everyone to look at the part they, and their organisation, play in this process and at a minimum actively address inequities access, experience, and outcome within their scope.

Reference: *Arch Phys Med Rehabil.* 2021;Mar 7 [Epub ahead of print]

[Abstract](#)

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Feasibility of an online platform delivery of pulmonary rehabilitation for individuals with chronic respiratory disease

Authors: Lewis A et al.

Summary: This UK service evaluation study examined a telehealth rapid pulmonary rehabilitation service, remodelled using an eLearn Moodle platform during the COVID-19 pandemic, using a mixed-methods approach with quantitative baseline demographic and pulmonary rehabilitation outcome data and semi-structured interviews with staff and 14 patients with chronic respiratory disease. Online pulmonary rehabilitation improved 1 minute sit-to-stand, Generalised Anxiety Disorder score, Primary Health Questionnaire-9 score, and Chronic Respiratory Questionnaire dyspnoea, fatigue, emotion and mastery measures. Patient inclusion was possible with digital support and a pulmonary rehabilitation introduction session improved patient engagement and safety. Incremental exercise progression was perceived as more successful online versus face-to-face; however, education sessions were less successful and online pulmonary rehabilitation required significant staff time.

Comment: There is strong evidence for pulmonary rehabilitation, but optimising access and uptake to in-person programmes has long been problematic. There is a growing body of evidence demonstrating that online delivery of pulmonary rehabilitation can be at least as effective as in-person programmes. However, while we have a growing sense of evidence for outcome, we have much less understanding of the nuances of process and implementation and how that is experienced and perceived by health professionals and clients. As such, the need to shift to online delivery in response to COVID-19 restrictions has provided the opportunity to explore this in the context of routine service delivery. This is only a small study, but the findings highlight some key areas that would benefit from further development and consideration if online delivery is made available in a more sustained way. For example: a) further development to enhance delivery for the education component; b) embedding opportunities for more interactive engagement; and c) giving clients the choice to engage online or via in-person pulmonary rehabilitation to optimise access and uptake.

Reference: *BMJ Open Respir Res.* 2021;8(1):e000880

[Abstract](#)

In-clinic versus web-based multidisciplinary exercise-based rehabilitation for treatment of low back pain: prospective clinical trial in an integrated practice unit model

Authors: Raiszadeh K et al.

Summary: This study examined clinic-based multidisciplinary therapy in an integrated practice unit model (high-intensity machine-based core muscle resistance training program; n = 102) versus online integrated multidisciplinary therapy (therapist-directed, web-based, home core strengthening exercises; n = 988) in patients receiving conservative care for low back pain. Overall, 1014 (93.03%) participants completed the program, with integrated practice unit participants reporting greater pain relief (p < 0.001) and reductions in disability (p = 0.002) than the online integrated multidisciplinary recipients, who reported greater improvements in goal achievement (p < 0.001). Both programs reduced opioid use. 19.0% of practice unit participants and 21.5% of online integrated multidisciplinary therapy recipients reporting cessation of opioid use; only 5.59% reported opioid use at the end of treatment.

Comment: This research was unique due to the: a) focus on testing online integrated multidisciplinary therapy for low back pain (current evidence predominantly focuses on physiotherapy-specific programmes); and b) participants were not randomised, but rather self-selected to participate in an online or clinic-based programme. As you can see from the summary, many more people selected to take part in the clinic-based programme (n = 988) compared to online delivery (n = 102). However, I was disappointed to find that they did not ask participants to provide any reasoning behind their selection which feels like a missed opportunity! They did however support their hypothesis that people opting for the clinic-based programme would report higher levels of pain and low back pain-related disability than online participants. Interestingly, those taking part in the in-clinic programme appeared to respond marginally better on key outcomes than participants in the online version although this was not considered to be clinically significant. This finding contrasts with most research I have seen which has tended to find online programmes to be at least as effective as in-person programmes. I think we need to unpack this finding in more detail to better understand it. It is possible that it has something to do with the multidisciplinary nature of the programme in which case we have some work to do to augment online delivery of multidisciplinary programmes (compared to discipline-specific therapies).

Reference: *J Med Internet Res.* 2021;23(3):e22548

[Abstract](#)

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Effectiveness of specialized rehabilitation after mild traumatic brain injury: A systematic review and meta-analysis

Authors: Möller MC et al.

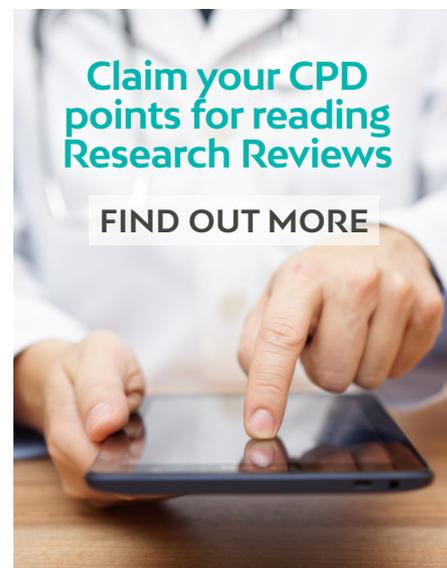
Summary: This meta-analysis assessed the effectiveness of specialised rehabilitation for prolonged symptoms, or risk of prolonged symptoms, after mild TBI based on 9 studies. Compared with usual care, problem-solving therapy and cognitive behavioural therapy were found to reduce residual symptoms and depression and improve psychological function, increase activity and participation and improve quality of life. It was also suggested that specialised interdisciplinary rehabilitation reduced residual symptoms.

Comment: It is increasingly clear that a significant proportion of people with mild TBI experience persistent symptoms. While there is a growing body of research available which seeks to understand factors predictive of outcome, there is much less focused on developing and testing therapeutic approaches to improve outcomes for this population. This meta-analysis confirms this finding only limited evidence to underpin rehabilitation for people with mild TBI. Further, what does exist is hard to interpret due to the level of heterogeneity, particularly with respect to defining the population. That said, findings from this review would suggest that cognitive behaviour therapy, problem-solving therapy and specialised interdisciplinary rehabilitation all show promise.

Reference: *J Rehabil Med.* 2021;53(2):jrm00149

[Abstract](#)

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Patient perspectives on key outcomes for vocational rehabilitation interventions following traumatic injury

Authors: Bridger K et al.

Summary: This study used in-depth semi-structured interviews and focus groups to explore outcomes important to 17 trauma survivors in recovery and return to work. Thematic analysis identified several outcomes that were important and facilitated a successful and sustainable return to work including; physical and psychological recovery, purposeful life engagement, managing expectations about recovery and return to work, and employers' expectations. A multifaceted and biopsychosocial understanding of recovery and outcomes need to be engaged in vocational rehabilitation interventions.

Comment: The findings presented in this paper do not necessarily contribute novel findings. After all, it is not the first paper to highlight the complexity of return to work from the perspective of trauma survivors. However, I selected to provide commentary on this paper for two reasons. Firstly, it is a useful reminder that return to work following severe trauma can be a complex balancing act – being physically ready to return to work, but not mentally ready; managing to successfully re-engage in work, but at the cost of other meaningful roles and activities; a desire to return to work, but needing to manage the risk of premature return to work, and so on. Secondly, the authors highlight these complexities to promote critical reflection on what constitutes a good return to work outcome. They question a focus on return to work alone as an outcome indicator and argue instead for a more nuanced matrix of process and outcomes measures to truly determine the effectiveness of vocational rehabilitation strategies.

Reference: *Environ Res Public Health*. 2021;18(4):2035

[Abstract](#)

Integrating community participation in the transition of older adults from hospital to home: A scoping review

Authors: Gough C et al.

Summary: This scoping review examined the benefits of community participation and physical activity among older adults during the transition from hospital to home, based on 19 studies on patients with conditions including stroke, hip replacement and fracture. The studies used a number of community participation measures, with “low” and “reduced” community participation identified in 10 studies, while measures of physical activity, HRQoL, sleep quality and loneliness were variable. Only 5 studies reported interventions and 4 identified improved community participation components. A number of barriers to community participation were identified and some recommendations were provided for future transition care services.

Comment: The purpose of a scoping review is to summarise the existing evidence on a topic. So, the goal is not necessarily to synthesise and interpret the evidence, but rather to provide an overview regarding the current state of evidence. In this case the substantive focus is on community participation following transition from hospital to home for older adults. Scoping reviews can offer useful insights that can help us to understand transferability of findings to current practice. For example, I found it interesting to note that the measures used to capture community participation in the papers included in this review rarely focus on community participation alone. Rather, they tend to incorporate a range of subscales and have a more dominant focus on function and activities of daily living, versus community participation per se. They also focus on impact on pre-determined aspects of participation rather than capturing the extent to which people are participating in activities and in ways that are important to them. This is not something the authors of this paper noted in their discussion. However, getting to know the measures being used in research can help you to make sense of the conclusions being drawn. In this case, understanding how “community participation” has been operationalised might be important to how you consider the relevance of current evidence for your practice. Regardless, this scoping review provides a useful overview of existing evidence on this topic. It highlights some important gaps in evidence that need to be addressed, while also providing recommendations for current practice. So, worth a read.

Reference: *Disabil Rehabil*. 2021;Apr 28 [Epub ahead of print]

[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.



Co-constructing engagement in pediatric rehabilitation: A multiple case study approach

Authors: King G et al.

Summary: This dyadic case analysis in three youth (aged 8-15 years) with disabilities, and their service providers, examined engagement principles and contextual conditions in high-engagement therapy sessions focusing on speech articulation, transition goals, and physical mobility. Four service provider engagement principles were identified: Individual Variation - clients differ in what engages them and how they display engagement; Personalising - there are multiple ways to engage; Relationship - engagement is cultivated through relationships; Monitoring - monitor and be attuned to the level of engagement over a session. The service providers' use of these engagement strategies varied with contextual conditions, including therapy type and youths' interests and preferences.

Comment: This is an excellent paper. Although the focus is on paediatric rehabilitation, I would argue that anyone working in rehabilitation can learn something from this paper. The findings are consistent with work my own research group have undertaken exploring engagement in adult rehabilitation populations. More importantly, the findings are written in a clear, compelling, digestible, and usable way. While engagement is inherently complex, the four principles proposed offer useful guidance on how to work with these complexities and create the personal, contextual, and environmental conditions for engagement. The authors provide tangible examples of how these principles were applied in the cases they analysed. For example, the *Personalising Principle* can include ensuring the relevance of goals and activities, ensuring enjoyment, providing explanation, providing choice, ensuring success or progress, and/or ensuring the appropriateness of the physical context. These are all tangible, doable and can be immediately integrated into routine practice. Arguably, however, the key centralising finding is the *Individual Variation Principle* – recognising that engagement, how that is displayed, and what works best to support engagement, is unique and specific to individuals – highlighting that, as the authors beautifully articulate, “engagement is an art involving relational thinking and a focus on the world of the client”.

Reference: *Disabil Rehabil*. 2021;Apr 18 [Epub ahead of print]

[Abstract](#)



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Factors associated with leisure-time physical activity participation among individuals with spinal cord injury who ambulate

Authors: Lawrason SVC and Martin Ginis KA

Summary: This cross-sectional study used the Theoretical Domains Framework (TDF) to identify factors influencing behaviour change related to leisure-time physical activity in 43 spinal cord injury (SCI) ambulators. Factors identified as barriers to leisure-time physical activity included lack of knowledge, weak beliefs about capabilities, lack of coping planning, and high goal conflict. Time spent per day on leisure-time physical activity was 71.8 mins/day and activities included aerobic and resistance training activities. Variance in time spent on leisure-time physical activity was explained by coping planning, action planning, goal conflict and skills (adjusted $r^2 = 0.259$; $p < 0.01$); action planning uniquely predicted leisure-time physical activity.

Comment: I found it interesting to learn that SCI ambulators have been found to have lower levels of leisure-time physical activity than wheelchair users. Although not the purpose of this research, it is useful to reflect on findings like this as they have potential to challenge taken-for-granted assumptions that independent mobility is somehow better than being dependent on mobility aids. In this study, the researchers drew on the TDF to determine which domains are associated with leisure-time physical activity to inform future intervention development. If you are not familiar with TDF, I recommend exploring it. It is a useful framework that essentially synthesises numerous constructs and theories of behaviour into one framework. So, rather than having to get your head around the numerous available theories, you only need to get your head around one! Action coping, which was found to uniquely predict leisure-time physical activity for SCI ambulators, is part of the broader domain of *behavioural regulation*, which is one of 14 domains specified in the TDF.

Reference: *Disabil Rehabil.* 2021;Apr 8 [Epub ahead of print]

[Abstract](#)

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Forging Alliances, New Horizons

Managing shoulder pain: A meta-ethnography exploring healthcare providers' experiences

Authors: Maxwell C et al.

Summary: This meta-ethnographic analysis using Noblit and Hares' seven-stage process reviewed and synthesised 10 studies exploring the experiences of healthcare providers of managing shoulder pain. Healthcare providers found it difficult to resolve conflicts between evidence-based recommendations, clinical experience, their own shoulder pain beliefs and patient expectations and preferences. Three themes were identified: Lack of consensus - we all have different approaches; Challenges to Changing Practice - it's hard to change and switch to a different approach; Getting "Buy in" to Treatment - you have to really sell it early.

Comment: A meta-ethnography is a synthesis of qualitative research that goes beyond descriptive synthesis to analyse and re-interpret included papers as a synthesised whole. I found the findings of this paper interesting and formative. The *Lack of consensus* theme makes visible the diversity of perspectives health professionals hold regarding the management of shoulder pain. There was a lack of consensus on when and for what purpose to image, what should be the first line of treatment, and when and how to respond when the first line of treatment is not effective. There was a clear difference in perspectives between GPs and physiotherapists, but also within professions. This variation highlights the complexity of the problem, but also the complexities associated with multidisciplinary working where team members may depart on some of the fundamentals of care. The *Challenges to changing practice* theme shows that both long-held assumptions about one's treatment approach and the practice context can hinder implementation of new approaches, or in some cases even best evidence practice. *Getting 'buy-in' to treatment* highlighted that trust, therapeutic relationship, shared decision-making, and experiencing progress that can be attributed to treatment are important for engagement. The experiences synthesised in this review make visible a range of tensions and complexities that may hinder optimal inter-professional management of shoulder pain. It is important to consider the extent to which these experiences are transferable to and should be actively addressed in the NZ context.

Reference: *Disabil Rehabil.* 2021;Apr 13 [Epub ahead of print]

[Abstract](#)

Our child's TBI: A rehabilitation engineer's personal experience, technological approach, and lessons learned

Authors: Sulzer J and Karfeld-Sulzer LS

Summary: This is a report from the US by parents of a 4-year-old girl who experienced a TBI in May 2020. The report describes the current state of paediatric neurorehabilitation from technologically-adept parents' first-person perspectives with a goal of informing and motivating rehabilitation engineering researchers. The girl's father is a faculty member at The University of Texas at Austin and has a primary research focus on rehabilitation engineering. The report describes the medical and personal challenges faced during the aftermath of the accident, the technological approaches to their daughter's recovery and the lessons learned regarding the state of rehabilitation research and the clinical uptake of rehabilitation technologies. A set of questions for designers is presented for consideration as they create and evaluate new technologies for paediatric rehabilitation.

Comment: It is hard to provide comment on this paper as it speaks for itself and there is nothing I could say that could possibly replace reading this paper for yourself. I selected to include the paper in this issue as I think it provides such a rich and in-depth perspective of a family's experience of navigating rehabilitation following their daughters severe TBI, that we should all take time to read it. While this family are based in the US, and while the paper is written primarily for engineers involved in the development of rehabilitation technologies, there is much we can learn from this first-person account.

Reference: *J Neuroeng Rehabil.* 2021;18(1):59

[Abstract](#)

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