

Rehabilitation Research Review™

Making Education Easy

Issue 34 – 2015

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Abbreviations used in this issue

- FMS** = fibromyalgia syndrome
MS = multiple sclerosis
SCI = spinal cord injury
TBI = traumatic brain injury



Welcome to issue 34 of Rehabilitation Research Review.

A number of commentaries in this edition concern research by New Zealand investigators. It's really exciting to see the outcomes of our research in international journals. I have tried selecting a mix of rehabilitation studies, ranging from a review of outcomes after earthquakes (very topical right now), benefits from a virtual reality intervention and interventions with clinicians. I hope you find these papers useful to you and I look forward to your comments and feedback.

Kind regards,

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Participation and quality of life outcomes among individuals with earthquake-related physical disability: a systematic review

Authors: Nunnerley J et al.

Summary: This systematic review of the literature identified 8 studies that measured quality of life and/or participation outcomes among individuals with earthquake-related physical injury. All studies were conducted in developing countries. The analyses found that injured earthquake survivors experience diminished participation and reduced quality of life. The study authors note that generalisability of the findings is limited by the small sample sizes and lack of uniformity in outcome measurement.

Comment: In New Zealand, many people are still living with the consequences of the 2011 Christchurch earthquake and a few weeks ago the Nepal earthquakes resulted in over 8,000 deaths and many people with serious injuries. I therefore chose this very timely review, which aimed to review the evidence for quality of life and participation outcomes for adults with earthquake-related physical injuries. Seven papers were included in the review, reporting on findings from India, China, Pakistan, Indonesia and Haiti. Although the papers had methodological limitations, results showed that both participation and quality of life are affected for those injured. For example, in China less than a quarter of study participants were living in fully adapted accommodation; return to work rates reported in six of the studies ranged between 15–51%, and in Pakistan families of women with paraplegia were more likely to abandon them than when men were injured. Findings cannot be generalised to the New Zealand context and clearly some work is needed to explore outcomes for those injured here.

Reference: *J Rehabil Med.* 2015;47(5):385-93

[Abstract](#)

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Effect of a self-determination theory-based communication skills training program on physiotherapists' psychological support for their patients with chronic low back pain

Authors: Murray A et al.

Summary: Outcomes are reported from this investigation into the effects of communication skills training on physiotherapists' supportive behaviour during clinical practice. The study was conducted in hospital outpatient physiotherapy clinics and recruited 24 physiotherapists as well as 24 patients with chronic low back pain. In the intervention arm, 12 physiotherapists received 8 hours of communication skills training focused on supporting patients' psychological needs. The remaining physiotherapists formed a waitlist control arm. Verbal communication between each physiotherapist and a patient was recorded on an audiotape. Independent, blinded ratings using the Health Care Climate Questionnaire to assess physiotherapists' needs-supportive behaviour favoured the intervention arm over the waitlist control (Cohen's $d=2.27$; $p<0.01$).

Comment: Many studies intervene with patients, but increasingly, we see an emphasis on intervening with clinicians to support them to better engage with patients. The training for the therapists in this trial consisted of two 4-hour sessions, including video recordings, role-play, group discussion and development of goals for strategy implementation by the therapist. Independent raters scored their interactions with patients with chronic low back pain to be significantly more supportive of patients' needs in a one-off session. These findings are encouraging, however, more research is needed to a) examine if this would be sustained over time, and b) if it makes a difference to patient outcomes.

Reference: *Arch Phys Med Rehabil.* 2015;96(5):809-16
[Abstract](#)



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“Don't think paralysis takes away your womanhood”: sexual intimacy after spinal cord injury

Authors: Fritz HA et al.

Summary: Female sexuality after spinal cord injury (SCI) remains understudied across the disability and rehabilitation literature. These researchers used in-depth semistructured interviews to explore the sexual and reproductive health experiences of 20 women (average age 46 years) with SCI in the USA. The findings demonstrate that sexuality remains important after SCI and highlights the widely divergent and evolving sexual education and support needs of women after injury. The findings also suggest that additional areas of enquiry need to be explored further to better address sexual concerns across the lifespan, consider the variable effects of SCI on sexual intimacy in relation to a person's developmental trajectory, the appropriate timing of sexual education, the need to expand conceptualisations of sexual intimacy, and the ways SCI may affect sexuality in later life.

Comment: Understanding of women's sexuality after a spinal cord injury remains largely under-researched. The women in this study talked about sexual intimacy as a general state of well-being in the context of stable sexual relationships, whereas others focused more on physical behaviours. Worryingly, many were dissatisfied with their sexual relationships and reported physical barriers, such as bladder and bowel control, fatigue and sensory loss. Some also talked of being seen as asexual beings. These findings echoed those from work carried out by colleagues at AUT. Studies such as this one call for better support of sexuality needs for women following a spinal cord injury.

Reference: *Am J Occup Ther.* 2015;69(2):1-10
[Abstract](#)

Daytime napping associated with increased symptom severity in fibromyalgia syndrome

Authors: Theadom A et al.

Summary: This study explored the frequency and type of daytime napping used by people with fibromyalgia syndrome (FMS) and sought to determine any associations between daytime napping and symptoms of the condition. An online questionnaire was completed by a community-based sample of 1044 adults (aged 18–88 years) who had been diagnosed with FMS by a clinician. Daytime napping was associated with greater symptom severity, including increased pain, depression, anxiety, fatigue, memory difficulties and sleep problems. Sleep problems and levels of fatigue contributed most to the prediction of engaging in daytime naps ($p<0.010$). Participants who napped for >30 minutes on a daily basis had higher memory difficulties ($t=-3.45$) and levels of depression ($t=-2.50$) than those who napped for shorter periods (<30mins) ($p<0.010$).

Comment: FMS is a common musculoskeletal condition, leading to widespread muscle and joint pain and fatigue, as well as other symptoms. The researchers in this study were interested in examining the association between daytime napping and fibromyalgia symptom severity. Findings from this large-scale survey showed that 39% took daily naps to deal with tiredness, feeling unwell, catch up on sleep, headache and pain. As the above summary shows, daytime napping was associated with more severe symptoms. Interestingly, 23% of participants reported having been recommended to take a daytime nap by a health professional, despite this not being a recommendation for pain conditions. As this study was a cross-sectional survey it is impossible to conclude that daytime napping caused the increase in symptoms. Therefore, more research is needed to assess if people should nap less to improve FMS symptoms or whether in fact napping is needed for those with more severe symptoms.

Reference: *BMC Musculoskeletal Disorders.* 2015;16:13
[Abstract](#)

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A prospective interrupted time series study of interventions to improve the quality, rating, framing and structure of goal-setting in community-based brain injury rehabilitation

Authors: Hassett L et al.

Summary: This Australian group of researchers explored the effects of an electronic goals system followed by staff training on the quality, rating, framing and structure of goals written by a community-based brain injury rehabilitation team. Two interventions were introduced 6 months apart. The first intervention introduced an electronic goals system and the second intervention hosted a staff goal training workshop. In an audit evaluation of the goals, a random selection of 745 goal statements from the 12 months prior to the interventions (Time 1 baseline; 242 goals) was compared with all goal statements written after the introduction of the electronic goals system (Time 2; 283 goals) and staff training (Time 3; 220 goals). Compared with baseline, the introduction of the electronic goals system alone significantly increased goal rating, framing and structure (χ^2 tests 144.7, 18.9, 48.1, respectively; $p < 0.001$). With the addition of staff training, the improvement in goal quality, which was only a trend at Time 2, was statistically significant at Time 3 (χ^2 15.0; $p \leq 0.01$). The training also resulted in a further significant increase in the framing and structuring of goals over the electronic goals system (χ^2 11.5, 12.5, respectively; $p \leq 0.001$).

Comment: It was interesting to see that the quality of goals improved after each intervention in this study, e.g. more goals being specific and measurable. However, the total number of goals that met the measurable criteria remained rather low (e.g. 38% after the second intervention). Further, the number of goals that related to actions for the clinician dropped over time. Improvements were greater following the second intervention than after the first intervention, suggesting that provision of a recording structure alone is less effective than provision of additional training. One of the limitations of the study is that the audit period included some patients who were also included in the previous audit. It would be interesting to see if patient outcomes also improved as a result of changes in goal setting; one would hope so.

Reference: *Clin Rehabil.* 2015;29(4):327-38

[Abstract](#)

Environmental barriers and supports to everyday participation: a qualitative insider perspective from people with disabilities

Authors: Hammel J et al.

Summary: Findings are presented from this qualitative investigation into what environmental factors influence participation of people with disabilities within home, community, work, and social participation settings. The investigation pooled transcript data from 36 focus groups across 5 research projects involving a total of 201 community-dwelling people with diverse disabilities (primarily SCI, traumatic brain injury, and stroke) in the USA. These study researchers developed a conceptual framework to describe how environmental factors influence the participation of people with disabilities, highlighting 8 domains of environmental facilitators and barriers (built, natural, assistive technology, transportation, information and technology access, social support and attitudes, systems and policies, economics) and a transactional model showing the influence of environmental factors on participation at the micro (individual), mesa (community), and macro (societal) levels. Focus group data validated some *International Classification of Functioning, Disability and Health* environmental categories and also highlighted unique factors (e.g., information and technology access, economic quality of life). These data informed the construction of items intended to enable people with disabilities to use their unique experience to assess the impact of environmental factors on everyday participation.

Comment: This study drew on data from five previous qualitative studies, which all broadly used similar approaches and included people with a range of disabilities. The strength of this approach is the ability to pool data from many more people than an individual qualitative study would allow and include people from across the country (in this case the USA). The paper is accompanied by a podcast, in which one of the authors is interviewed by A/Professor Duncan Babbage about the findings from the paper. The eight domains identified as part of the conceptual framework impact at the micro, mesa and macro levels. The findings from the study are being used to develop a new tool to measure the impact of environment factors on participation. Given that what we do in rehabilitation is often influenced by what is being measured, it is important to include the mesa and macro factors in measurement tools. I will be looking out with interest for what these measures will look like and whether they lead to a changing emphasis in rehabilitation practice in the long-term.

Reference: *Arch Phys Med Rehabil.* 2015;96(4):578-88

[Abstract](#)

Independent commentary by Professor Paula Kersten

Paula Kersten is Professor of Rehabilitation at the School of Clinical Sciences, AUT University in Auckland. She trained as a physiotherapist in the Netherlands and has been working in rehabilitation research since embarking on her MSc in 1992. **For full bio [CLICK HERE](#).**



Improvement in balance using a virtual reality-based stepping exercise: a randomized controlled trial involving individuals with chronic stroke

Authors: Lloréns R et al.

Summary: These researchers compared the clinical effectiveness and the usability of a virtual reality-based intervention with that of conventional physical therapy in the balance recovery of individuals with chronic stroke. The study recruited 20 patients with chronic stroke presenting to an outpatient neurorehabilitation unit. All patients participated in 20 one-hour sessions, 5 sessions per week. The experimental group combined 30 minutes with the virtual reality-based intervention with 30 minutes of conventional training, whereas the control group underwent 1 hour of conventional therapy. At the end of the trial, there was a significant group-by-time interaction in balance performance as assessed by Berg Balance Scale scores ($p < 0.05$) and also in results from the 10 metre Walking Test ($p < 0.05$). Post-hoc analyses revealed a greater mean improvement in the experimental group: 3.8 vs 1.8 in the Berg Balance Scale, -1.9 seconds vs 0.0 seconds in the 10 metre Walking Test, and the experimental group also had a greater number of participants whose levels of ability improved when measured with the Brunel Balance Assessment (χ^2 2.5; $p < 0.01$).

Comment: This paper by itself didn't provide sufficient information of the virtual reality-based intervention, but the supplementary online file provided the detailed description I wanted to see. Essentially, in the virtual reality intervention participants were immersed in a 3D virtual environment as an avatar with their feet being represented by two shoes that mimicked their movements in the real world. They were asked to reach items arranged in a circle with one foot and the other foot remaining in the circle. The therapists were able to customise these sessions for each participant. Whilst both groups improved over time on balance and walking speed, the virtual reality group improved significantly more than the conventional physiotherapy group. In addition, participants found the virtual reality highly motivating. We don't know if the differences between groups would be maintained in the longer term, but it seems an interesting intervention to explore further.

Reference: *Clin Rehabil.* 2015;29(3):261-8

[Abstract](#)



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A scoping review of rehabilitation interventions that reduce fatigue among adults with multiple sclerosis

Authors: Asano M et al.

Summary: This systematic review of the literature identified 38 studies published up to July 2013 that evaluated rehabilitation interventions for multiple sclerosis (MS) fatigue management. All studies were included in the review. A variety of exercise and behaviour change interventions were prescribed for MS fatigue management. The two most common interventions were progressive resistive training and fatigue management programmes. Three exercise intervention studies and nine behaviour change intervention studies with quantitative data presented significant effect sizes. Four studies with qualitative data supported the positive impact of certain exercise and behaviour change interventions.

Comment: MS fatigue has been reported to affect a huge proportion of people with MS (70–90%) and often leads to early retirement. The authors included 17 exercises intervention studies in their review, however, only two of these screened for the presence of fatigue at baseline. Similarly, they included 21 behaviour change intervention studies, of which only seven used the presence of fatigue as an inclusion criterion. Thus, if these programmes did not impact upon fatigue this could have been due to this symptom not being a problem for participants. Although this review has only just been published it is already out of date; one of the problems with the time lag between articles being submitted and final publication. For example, one UK-based study has shown that a group-based fatigue management programme reduces fatigue and that benefits are maintained one year later (Thomas PW et al. *BMC Neurol.* 2014;14:109). Training that will allow rehabilitation practitioners to run this programme is now available in the UK.

Reference: *Disabil Rehabil.* 2015;37(9):729-38
[Abstract](#)

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Parent management of the school reintegration needs of children and youth following moderate or severe traumatic brain injury

Authors: Roscigno CI et al.

Summary: This qualitative investigation explored how parents of children with a moderate-to-severe traumatic brain injury (TBI) perceive the ways in which school reintegration experiences impact upon the family. The investigation involved 42 parents from 37 families across the USA, who participated in two 90-min interviews. Descriptive phenomenology was used to describe parents' experiences over the first 5 years after their child's TBI. Content analysis revealed themes around unique and common factors affecting the family. Parents' school negotiation themes included the following: (1) legal versus moral basis for helping the child; (2) inappropriate state and local services that did not consider needs specific to TBI; and (3) involvement in planning, implementing and evaluating the child's education plan. Parents perceived that coordinated and collaboration leadership with school personnel lessened families' workload. Families who home-schooled had unique challenges.

Comment: This is an interesting paper, which really made me stop and think when our rehabilitation endeavours should end. Families in the study reported they had to negotiate a social environment that was guided by misinformed attitudes and beliefs about the child post-TBI. The words from the parents in this study are a powerful reminder that such attitudes, beliefs and behaviours influence the child's self-concept. Clearly, families need ongoing support to enable successful participation in education for children who have had a brain injury. It would be interesting to know if experiences of families in New Zealand are the same or different.

Reference: *Disabil Rehabil.* 2015;37(6):523-33
[Abstract](#)

Increasing patient engagement in rehabilitation exercises using computer-based citizen science

Authors: J Laut et al.

Summary: This study tested the hypothesis that citizen science provides a motivational incentive for performing rehabilitation exercises. Patients used a low-cost haptic joystick interfaced with a laptop computer to navigate a two-dimensional virtual representation of the polluted Gowanus Canal. They performed two distinct tasks: one included a citizen science component requiring participants to classify images from the canal; the other task did not include this citizen science component. Both conditions were tested on a group of young patients undergoing rehabilitation treatments (mean age 12.1 years; n=30) and a group of healthy individuals (mean age 10.3 years; n=30). A survey administered to all participants after the completion of both tasks indicated a robust preference for the scientific task and respondents were more likely to choose to repeat it, even at the cost of increasing the time of their rehabilitation exercise. The data gathered from the low-cost haptic device permits an individual's trajectory to be quantified in terms of a set of performance metrics. When the performance indices were compared between patients and healthy subjects, there were significant differences in the trajectories created in each group, with healthy subjects generally scoring better. These findings suggest that this low-cost device can be used in a rehabilitation setting for evaluating a patient's level of recovery, where the performance metrics of patients are expected to approach those of healthy subjects as they recover.

Comment: The citizen science task trialled here was inspired by the knowledge that it enhances motivation more than other web-based activities because citizen scientists contribute to an actual scientific project. Brooklyn Atlantis (www.BrooklynAtlantis.org), an environmental monitoring project focused on the Gowanus Canal in Brooklyn, was used in this study. The fact that participants in this study preferred the citizen science task and would choose to do it again, even though it takes longer, holds promise that this may be a useful tool for enhancing engagement in rehabilitation. Of course there remain many unanswered questions, for example if this leads to better outcomes or whether these findings would be the same in adults. I expect we will see more of these types of interventions in the not-so-near future.

Reference: *PLoS One.* 2015;10(3):e0117013
[Abstract](#)



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