

Rehabilitation Research Review™

Making Education Easy

Issue 33 – 2015

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Abbreviations used in this issue

- ABI** = acquired brain injury
ICF = International Classification of Functioning, Disability and Health
LBP = low back pain
MS = multiple sclerosis
SCI = spinal cord injury
VAS = visual analogue scale



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Welcome to issue 33 of Rehabilitation Research Review.

This is my first issue of Rehabilitation Research Review. Having been invited to take this on is really exciting and I will try and follow in the footsteps of Professor Kathryn McPherson, who has been doing such a great job over so many years. Whilst preparing this issue I focused on papers published in 2015 and considering we are only a couple of months into the new year it is staggering how many excellent and interesting articles are already out there. I have tried to select a range of articles that captured my interests. I hope you enjoy the summaries and comments.

Kind regards,

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Addition of motivational interventions to exercise and traditional physiotherapy: a review and meta-analysis

Authors: McGrane N et al.

Summary: These researchers systematically reviewed the evidence for the effectiveness of adding motivational interventions to traditional physiotherapy to increase physical activity and short- and long-term adherence to exercise prescriptions. Their literature search identified 14 studies (1504 participants) as eligible for inclusion. Findings from the 6 studies (n=378) that assessed exercise attendance indicated no significant difference in exercise attendance between the control and intervention groups at follow-up time points (random effects model, standardised mean difference [SMD] 0.33; 95% CI, -0.03 to 0.68). When perceived self-efficacy results were pooled from 6 studies (n=722), a significant difference was found between the groups in favour of the interventions (fixed effects model, SMD 0.71; 95% CI, 0.55 to 0.87). Finally, pooling of the results for levels of activity limitation (n=550) revealed a significant difference between the groups in favour of the interventions (REM, SMD -0.37; 95% CI, -0.65 to -0.08).

Comment: This systematic review aimed to evaluate the evidence for the effectiveness of adding motivational interventions to traditional physiotherapy to increase physical activity and short- and long-term adherence to exercise prescriptions. As is typical with many reviews only a few (14) studies were included with a range of patient groups (i.e. chronic musculoskeletal pain, obesity, cardiac rehabilitation, cancer, and sedentary females). The title of the paper was a bit misleading, in that not all studies included actually provided an intervention by physiotherapists. Regardless, the review showed that motivational interventions can increase adherence to exercise, have a positive effect on long-term physical activity behaviour, improve self-efficacy and reduce levels of activity limitation. Because six different psychological theories were included in the various trials, with varying durations, the authors were unable to recommend a specific intervention to be added to physiotherapy. From our own work we know that physiotherapists are able to apply these kinds of approaches to their rehabilitation practice. The findings from the review are therefore really encouraging for rehabilitationists working with clients to improve physical activity.

Reference: *Physiotherapy*. 2015;101(1):1-12

[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. Her PhD, completed at the University of Southampton, explored the unmet needs of disabled people. Paula has been at AUT University since January 2011, where she is the co-director of the Centre for Person Centred Research, as well as Head of Research for the School of Clinical Sciences. Paula's research focuses on new rehabilitation approaches and measuring meaningful rehabilitation outcomes. Her research has been funded by the Accident Compensation Corporation, the Health Research Council, the UK-NHS, the Ministry of Health and a number of charitable organisations. Paula provides the commentary for Rehabilitation Research Review.



Cost-effectiveness of early interventions for non-specific low back pain: A randomized controlled study investigating medical yoga, exercise therapy and self-care advice

Authors: Aboagye E et al.

Summary: This Swedish investigation evaluated the cost-effectiveness of medical yoga as an early intervention for managing non-specific low back pain as compared with two evidence-based interventions, exercise therapy (led by a physiotherapist) and self-care advice. A total of 159 participants were randomly allocated to 6 consecutive weeks of medical yoga (n=52), exercise therapy (n=52) or self-care advice (n=55). Cost-effectiveness analysis was conducted primarily from the societal and employer perspectives. At 12 months' follow-up, medical yoga was found to be cost-effective compared with self-care advice if an employer considers the significant improvement in the health-related quality of life (HRQL) of an employee with low back pain justifies the additional cost of treatment (i.e. in this study EUR 150). From a societal perspective, medical yoga is a cost-effective treatment compared with exercise therapy and self-care advice if an additional quality adjusted life year (QALY) is worth EUR 11,500. Results of a sensitivity analysis indicated that medical yoga is more cost-effective than its alternatives.

Comment: This study attracted my attention, as it concerned employed people with significant pain and who fulfilled requirements for psychosocial risk factors (50% of those volunteering for the study), but who were not absent from work for their pain. Considering the huge economic and human costs of low back pain (LBP) this is an important group to work with at an early stage. The study showed that a 6-week standardised Kundalini-based medical yoga programme, led by an experienced yoga instructor, resulted in greater improvements in quality of life than self-care (but not exercise). The study also showed that yoga was cheaper from a societal perspective than the other two interventions and led to fewer days off work in the year following the intervention. Interestingly, benefits were greater in people who had better adherence to the programmes. Unfortunately, the study did not report on pain reduction, so whether or not these programmes were effective in reducing or managing pain remains unknown.

Reference: *J Rehabil Med.* 2015;47(2):167-73

[Abstract](#)

Systematic review of patient-reported outcome measures for functional performance in the lower limb

Authors: Ashford S et al.

Summary: This review of the literature identified 113 studies using patient-reported outcome measures relevant to 'real life' functional performance (active and passive) for application following focal rehabilitation interventions in the lower limb after stroke or brain injury. The studies reported 12 psychometrically-evaluated outcome measures, 8 of which were included in this review: the Brain Injury Community Rehabilitation Outcome, Climbing Stairs Questionnaire, Human Activity Profile, Lower Extremity Functional Scale, Nottingham Extended ADL Index, the Rivermead Mobility Index (RMI), Sickness Impact Profile, and the Stroke Impact Scale.

Comment: This paper aimed to review the evidence for patient-reported outcome measures of the lower limb for people with stroke or brain injury. The authors were interested both in measures which evaluated active function and passive function of the limb, with passive function referring to a task carried out on the affected limb by the individual using the unaffected upper limb or by a carer. Eight outcome measures were included in the review and these all examined active rather than passive function. The review showed that the RMI was the most practical and clinically applicable measure of mobility in neurologically impaired, and in particular, acquired brain injury patients. The authors reported that it has robust psychometric measurement properties; however, for those with higher function the scale suffers from a ceiling effect. As the authors didn't identify any measures suitable to evaluate passive function they recommend further work is needed to develop such a tool. Knowing the research group's interest, no doubt they will be pursuing such research in the near future.

Reference: *J Rehabil Med.* 2015;47(1):9-17

[Abstract](#)

How fatigue influences exercise participation in men with multiple sclerosis

Authors: Smith CM et al.

Summary: These University of Otago researchers sought how to better understand how multiple sclerosis (MS)-related fatigue influences exercise participation among men with MS. Eighteen men participated in interviews that explored their fatigue and exercise experiences. Analysis of transcripts using the interpretive description method revealed a single overarching theme and 3 subthemes. The men described a process of goal readjustment with regard to exercise that helped them stay engaged in meaningful physical activity despite fatigue.

Comment: It is always exciting to see research coming from NZ researchers. This study explored the impact of fatigue on exercise participation in men with MS. The men talked about the complexity of fatigue and how this affects aspects of their self-identity. Those who were able to stay engaged with exercise needed to re-adjust their exercise-related goals regularly. The authors suggest that this ability to adjust goals can be linked to self-efficacy. The findings reminded me of a trial I was involved in with colleagues in the UK, which showed that a cognitive behavioural therapy approach to managing fatigue improves both self-efficacy and fatigue. Given that more than three-quarters of people with MS experience significant levels of disabling fatigue this seems to be a good approach to take forward to support people with MS.

Reference: *Qual Health Res.* 2015;25(2):179-88

[Abstract](#)



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Relative utility of a visual analogue scale vs a six-point Likert scale in the measurement of global subject outcome in patients with low back pain receiving physiotherapy

Authors: Harland NJ et al.

Summary: These researchers sought to determine which type of measure is most appropriate to use for measuring patients' subjective impression of change following physiotherapy. They compared the construct validity and utility of two versions of a global subjective outcome scale (GSOS) in patients with back pain: a Likert GSOS and a visual analogue scale (VAS) GSOS. Two samples of patients attending physiotherapy for back pain completed a questionnaire battery at discharge from physiotherapy including either a Likert GSOS (n=187) or VAS GSOS (n=144). The questionnaires compared pre- and post-treatment changes in scores using a VAS (pain), Roland-Morris Disability Questionnaire (18-item version) and catastrophising subscale of the Coping Strategies Questionnaire 24. Both versions of the GSOS showed significant ($P < 0.01$) moderate correlations (r between 0.30 and 0.46) with changes in scores on pain and disability. The correlations between the two types of GSOS and changes in catastrophising were trivial and not significant (Likert GSOS: $r = 0.07$, $p = 0.372$; VAS GSOS: $r = 0.10$, $p = 0.267$). The Likert GSOS had fewer missing values compared with the VAS GSOS (1% vs 8%).

Comment: This paper compared the construct validity and utility of Likert scales and the VAS in patients attending physiotherapy for back pain. Likert scales typically have 5, 7 or 9 responses that are bi-polar (e.g. ranging from strongly disagree to strongly agree). Data from two different sources were used, the Likert data came from routine clinical practice, VAS data came from patients in a randomised controlled trial. Both the Likert scale and the VAS showed significant but moderate correlations with changes in pain and disability. However, there were more people who did not complete the VAS, suggesting the Likert scale may have greater utility. Although this paper was a bit limited in the analyses carried out I was interested in reading it as we have previously done some work on VAS scores, which showed that they are not very sensitive in measuring change. This is contrary to what a lot of people think.

Reference: *Physiotherapy*. 2015;101(1):50-4

[Abstract](#)

Pilates improves pain, function and quality of life in patients with chronic low back pain

Authors: Natour J et al.

Summary: This study randomised 60 patients with a diagnosis of chronic non-specific low back pain (LBP) to either an Experimental Group (EG) involving exercise sessions with the pilates method or to a Control Group, which did not provide any such intervention. Throughout the study period, both groups maintained NSAID treatment. All participants underwent evaluations at baseline (T0) and then after 45, 90, and 180 days (T45, T90 and T180) for pain (VAS), function (Roland Morris questionnaire), quality of life (SF-36), satisfaction with treatment (Likert scale), flexibility (sit and reach test) and NSAID intake. These evaluations revealed statistically significant differences favouring the EG with regard to pain, function and the quality of life domains of functional capacity, pain and vitality. Significant between-group differences were also found in regard to the use of pain medication at T45, T90 and T180 ($p < 0.010$), with a lower consumption of NSAIDs among patients in the EG.

Comment: This randomised controlled trial examined the effectiveness of pilates against a control group who did not receive exercise therapy. Both groups received the same pain medication. The pilates sessions were led by an experienced instructor and took place twice a week over 12 weeks in small groups. The supplementary file online provides details of the actual programme. An impressive 96% of patients in the pilates group completed the exercise programme. The study showed that the pilates group had significantly greater improvements in pain, function, quality of life. The authors didn't include a group undergoing routinely provided rehabilitation, so whether or not it is superior to that remains unknown. However, given there were no adverse effects, the study suggests this is a good therapeutic programme for people with LBP.

Reference: *Clin Rehabil*. 2015;29(1):59-68

[Abstract](#)

Effects of training on upper limb function after cervical spinal cord injury: a systematic review

Authors: Lu X et al.

Summary: These researchers systematically reviewed the literature in order to summarise the evidence for the effectiveness of exercise training in promoting recovery of upper extremity function after cervical spinal cord injury. Sixteen studies (involving 426 participants) were identified and included in this review. While the studies had fair to good internal validity and reporting of results, they had poor power and external validity. Interventions included exercise therapy, electrical stimulation, functional electrical stimulation, robotic training and repetitive transcranial magnetic stimulation. Most of the studies reported post-intervention improvements in muscle strength, arm and hand function, activity of daily living or quality of life.

Comment: This systematic review found only 16 studies that had investigated a range of training interventions used for improving upper limb/hand function in people with cervical spinal cord injury (cSCI). This kind of work is difficult given the small numbers of people with such injuries and it is therefore not surprising that the sample sizes in the studies were very small. Consequently, the included studies were underpowered. In addition, the authors were unable to pool data as a wide range of outcome measures were used in the studies. These caveats should be considered when interpreting the results, which seem to suggest that training of the upper limb following a cSCI can lead to improvements in muscle strength, upper limb function and activities of daily living, both in acute and chronic stages. Clearly, more work is needed.

Reference: *Clin Rehabil*. 2015;29(1):3-13

[Abstract](#)

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Coping styles of parents of children and adolescents with acquired brain injury in the chronic phase

Authors: Prihadi EJ et al.

Summary: This study aimed to identify the types of coping strategies that parents of children with acquired brain injury (ABI) use in the chronic phase after injury and the relationship between their coping styles and psychosocial functioning (i.e. family functioning, life satisfaction, caregiver strain). The study recruited 42 parents of 28 children with ABI (>6 months post-injury). Parents completed the Utrecht Coping List, Life Satisfaction Questionnaire 9, Caregiver Strain Index, and Family Assessment Device. Whereas coping strategies among fathers did not differ from those among men in the standardisation population ($t_{14} = 0.96, p=0.35$ and $t_{14} = 0.61, p=0.55$, respectively), mothers used more emotion-focused coping strategies compared with women in the standardisation population ($t_{26} = 3.27, p=0.00$). However, scores of female caregivers for problem-focused coping strategies did not differ from those in the standardisation group ($t_{26} = -1.75, p=0.09$). Parents who used emotion-focused coping styles exhibited lower family functioning, higher strain and lower quality of life, while those who used problem-focused coping styles exhibited higher strain.

Comment: This cross-sectional study investigated how parents of children with an acquired brain injury (sustained at least 6 months ago) cope. Whilst there were some limitations to this work (e.g. a small sample size including 42 parents of 28 children) it provides some interesting findings, in particular in relation to the way mothers cope. It was shown that mothers use a more passive, emotional-focused coping style than women in the general population. When using this way of coping, people deal with stressful emotions through altering the perceived meaning of the problem. Parents who used this coping style reported lower family functioning, higher strain, and lower quality of life. Although we don't know from this study what the cause-and-effect relationship between these variables is, the study suggests that parents could potentially benefit from support in developing different coping styles. Of course, as usual, more research is needed to investigate if this actually improves their family functioning and quality of life.

Reference: *J Rehabil Med.* 2014 Nov 24. [Epub ahead of print]

[Abstract](#)

Disclaimer: This publication is not intended as a replacement for regular medical education but to assist in the process. The reviews are a summarised interpretation of the published study and reflect the opinion of the writer rather than those of the research group or scientific journal. It is suggested readers review the full trial data before forming a final conclusion on its merits.

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Participation and integration from the perspective of persons with spinal cord injury from five European countries

Authors: Ruoranan K et al.

Summary: This study employed qualitative content analysis to explore transcript material from semi-structured interviews involving 54 persons with acquired spinal cord injuries and 3 with spina bifida from 5 European countries. The study researchers examined the subjective understanding of participation and integration of persons with spinal cord injuries and compared these findings with the notion of participation as conceptualised by the International Classification of Functioning, Disability and Health (ICF). Interviewees most often associated integration with social acceptance and, furthermore, with ordinary performance, equality and freedom of choice. They most often described participation as ordinary performance, with less emphasis on social acceptance and equality. However, participation and integration overlapped in people's narratives and were difficult to separate. The perception of participation and integration was largely similar across countries. In contrast to other participants, however, Finnish interviewees were more likely to associate participation with contributing to society. The study researchers found that while the ICF adequately covers participation domains and the notion of ordinary performance, it failed to cover references by interviewees to a rights (e.g. acceptance) and duties (e.g. contribution) perspective.

Comment: This study took place in five European countries and aimed to compare the subjective understanding of 'participating in society' and 'integration in society'. This article attracted my attention as in the literature these concepts are often used interchangeably. Whilst there was some overlap in the concepts, participants also considered them to be different. They suggested that participation concerns ordinary performance, freedom of choice, and contribution. By contrast, integration was described more in terms of social acceptance, ordinary performance, equality, freedom of choice, and not being excluded. One of the quotes in the study illustrates the difference well: "I now sit in the middle of the theatre, next to my friends and family or partner. And that's integration. Participation is getting into the theatre. Integration is being a normal, or as normal member of the audience." In other words "integration is the quality of your participation". Findings from this study once again remind us how important societal attitudes are. It would be interesting to explore New Zealanders' views on the issues raised by this work.

Reference: *J Rehabil Med.* 2014 Nov 14. [Epub ahead of print]

[Abstract](#)

Is the American Society of Shoulder and Elbow Therapists' rehabilitation guideline better than standard care when applied to Bankart-operated patients? A controlled study

Authors: Damkjær L et al.

Summary: Outcomes are reported from this investigation that sought to determine whether there is a difference in shoulder-related physical function and quality of life between postoperative rehabilitation patients receiving standard care and those receiving care according to the American Society of Shoulder and Elbow Therapists' rehabilitation guideline for arthroscopic anterior capsulolabral repair of the shoulder. The study enrolled 96 patients who had undergone arthroscopic Bankart operations presenting to a municipal outpatient rehabilitation centre. Fifty-two patients were allocated to standard care; the remaining 44 underwent rehabilitation according to the American Society of Shoulder and Elbow Therapists' rehabilitation guideline. Adjusted mean change scores did not differ significantly between the standard care group and the guideline group for the primary outcome variable (total Western Ontario Shoulder Instability Index = 574.85 vs 644.48) nor for the secondary outcomes (Patient-Specific Functional Scale = 4.6 vs 5.0; range of motion in forward flexion = 46.49° vs 49.58°; external rotation in adduction = 28.58° vs 34.18°; external rotation in abduction = 51.29° vs 47.55°; weeks until return to work = 5.2 vs 6.9; weeks until return to sports = 13.9 vs 13.1; costs = number of visits; 18.5 vs 15.9).

Comment: This study investigated outcomes of rehabilitation following surgery for an arthroscopic Bankart repair on a retrospective cohort of patients who had received routine rehabilitation and a prospective cohort of patients who were treated after implementing the American Society of Shoulder and Elbow Therapists' rehabilitation guideline. In this pragmatic study, both groups were offered a minimum of four individual training sessions (60 minutes) and 20 group training sessions (60 minutes). The study showed no significant differences in physical functioning or quality of life, although the follow-up period was relatively short (18 weeks). Whilst the physiotherapists were given theoretical information and practical training in implementing the guideline it is not known if this affected their practice. Research we have done in stroke has shown that therapists do not always follow the guidelines, for a range of reasons. This will be an important piece of further work for this post-surgical population.

Reference: *Clin Rehabil.* 2015;29(2):154-64

[Abstract](#)



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