

Rehabilitation Research Review™

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Issue 38 – 2016

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Abbreviations used in this issue

COPD = chronic obstructive pulmonary disease
HR = hazard ratio
LBP = low back pain
QOL = quality of life



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Welcome to issue 38 of Rehabilitation Research Review.

An interesting study from Japan reports that a multidisciplinary in-hospital team of health professionals can effectively reduce the incidence of pneumonia in acute stroke patients, by improving the quality of professional oral care for dysphagia and swallowing evaluations in these patients. The multidisciplinary team included doctors, dentists, nurses, physical therapists, occupational therapists, speech therapists, managerial dietitians, dental hygienists, and pharmacists.

Qualitative research from New Zealand reports on factors influencing the uptake and completion of pulmonary rehabilitation by Māori with chronic obstructive pulmonary disease in this country. The findings highlight the importance of addressing cultural experiences of pulmonary rehabilitation, if we are to see an improvement in uptake of these programmes.

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

Kind regards,

Dr Chris Tofield

Medical Advisor, Research Review

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The multidisciplinary swallowing team approach decreases pneumonia onset in acute stroke patients

Authors: Aoki S et al.

Summary: Outcomes are reported from a single Japanese hospital, which set up a multidisciplinary team of health professionals in April 2011 to improve the management of dysphagia and reduce the rates of aspiration pneumonia in acute stroke patients. Data were analysed for all acute stroke patients admitted to this hospital between April 2009 and March 2014. Rates of pneumonia were compared prior to and following the organisation of the multidisciplinary team; 132 patients were included in the 'prior period' and 173 in the 'post period'. Pneumonia onset was significantly less frequent in the post period compared with the prior period (6.9% vs 15.9%; $p=0.01$). Multivariate Cox proportional hazards model analysis revealed that a swallowing team approach effectively reduces the onset of pneumonia, independently of the National Institutes of Health Stroke Scale score on admission (adjusted HR 0.41; 95% CI, 0.19 to 0.84; $p=0.02$).

Comment: In this study from Japan, a multidisciplinary approach to management of swallowing was found to reduce onset of pneumonia in acute stroke patients. In effect, the numbers of cases of pneumonia were reduced by approximately nine in every hundred stroke admissions following the introduction of a new team approach to swallow management. Interestingly, the 'team' in this case included dentists as well as the usual multidisciplinary members we would expect to see in a stroke unit in New Zealand. In addition to increased swallowing evaluations, increased attention to body positioning during meals, and increased team communication regarding swallowing impairments, the new swallow service also included increased access to professional oral care for all stroke patients (with rates of dentist evaluation for acute stroke patients rising from 12.9% to 51.7%). However, the cost of this extended swallowing service was not reported in this study so it is difficult to judge the resourcing needed to duplicate the effects found here.

Reference: *PLoS One*. 2016;11(5):e0154608

[Abstract](#)

The National Association of Stroke and Applied Neuroscience (NISAN), based at AUT University launched the validated Stroke Riskometer mobile app to promote stroke awareness amongst the general population. The app has been endorsed by the World Stroke Organisation, the World Federation of Neurology and various regional health organisations. While the app has been well received with over 60,000 downloads to date, we would like insight from users to further improve the Stroke Riskometer in the future.

Below are the links to download the Stroke Riskometer Lite

Apple/ios: <https://itunes.apple.com/nz/app/stroke-riskometer/id725335272?mt=8>

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Survey link: https://aut.au1.qualtrics.com/SE/?SID=SV_b0bmdUmy2jhcq4R



Therapeutic alliances in stroke rehabilitation: A meta-ethnography

Authors: Lawton HM et al.

Summary: This paper details findings from 17 qualitative peer-reviewed articles exploring patients' and professionals' perspectives and/or experiences of developing and maintaining therapeutic alliances in stroke rehabilitation. The meta-ethnography strategy was used to synthesise the data. Four overarching themes emerged from the process of reciprocal translation: (1) the professional-patient relationship: degree of connectedness; (2) asymmetrical contributions; (3) the process of collaboration: finding the middle ground; and, (4) system drivers.

Comment: This review is an impressive attempt at synthesising the qualitative research on experiences of building therapeutic alliances between patients and healthcare providers in stroke rehabilitation. The review methods were sufficiently comprehensive as to reassure the reader that significant efforts were made to incorporate all relevant research into this meta-ethnography. The results touch on familiar issues related to the tension inherent in trying to deliver individualised, person-centred care within the context of large organisations (such as hospitals) that require attention to costs at a population-level as well as some standardisation of service delivery. There are some inherent assumptions underpinning any discussion like this that niggle when trying to interpret these findings. For instance, it seems assumed that increasing therapeutic alliance increases the efforts patients make during therapeutic activities and improves clinical outcomes as a result. While these assumptions seems intuitively correct, further work is required to demonstrate a causal relationship and before a call can really be made for substantially more investment of time and resources into relationship-building during rehabilitation.

Reference: *Arch Phys Med Rehabil.* 2016 Apr 29. [Epub ahead of print] [Abstract](#)

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Pain syndromes in hemiplegic patients and their effects on rehabilitation results

Authors: Caglar NS et al.

Summary: These researchers retrospectively examined the frequency, type, and location of pain in 156 patients (mean age 64.3 years; mean disease duration, 11.1 months; 48% males, 52% females) who had been diagnosed with stroke and admitted to a single inpatient clinic in Turkey to participate in a rehabilitation programme. Forty-six patients complained of pain, which was classified as nociceptive in 40 patients and neuropathic in the remaining 6. No statistically significant differences were found between patients with or without pain in terms of age, gender, hemiplegic side, spasticity, or Functional Independent Measure (FIM) scores. In the nociceptive pain cohort, the most frequent location was in the shoulder joint (n=38), followed by the knee joint (n=15). Mean scores on the Likert Pain Scale were significantly improved from 1.75 at baseline to 0.81 after treatment. There was also a statistically significant improvement from baseline following therapy within the groups with or without pain as determined by the pre- and post-rehabilitation Brunnstrom motor evaluation scores ($p < 0.01$); the between-group differences were not significant.

Comment: Given the importance of attending to functional problems after stroke (washing, dressing, walking, talking, toileting, etc.) it is easy for pain conditions to sometimes take a bit of a backseat – until that is they impact on therapy outcomes. This study of 156 stroke patients in a Turkish hospital found that almost 30% experienced pain symptoms during their admission, with the vast majority of this pain being shoulder-related. This is a similar pattern to that which will be observed in many hospitals, with pain syndrome problems (and particularly shoulder pain) continuing long after discharge for some people. This paper is another reminder of the importance of taking preventative measures during inpatient admissions to prevent shoulder problems becoming long-term pain conditions.

Reference: *J Phys Ther Sci.* 2016;28(3):731-7 [Abstract](#)



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An enriched environmental programme during inpatient neuro-rehabilitation: A randomized controlled trial

Authors: Khan F et al.

Summary: This study recruited 103 inpatients (mean age, 62.5 years; 63% males) with stroke or other neurological conditions in the rehabilitation unit at the Royal Melbourne Hospital, Victoria, Australia, and randomly assigned them to either an enriched environmental activities programme (intervention group; n=52) or to usual ward activities (control group; n=51). The mean duration of the enriched programme was 14 days. Upon discharge from the ward, scores on the Depression, Anxiety Stress Scale (DASS) "total", "depression" and "anxiety" subscales were improved from baseline by a significantly greater amount in the intervention group compared with controls ($p < 0.05$ for all, with small effect sizes [$\eta^2 = 0.04-0.05$]). Likewise, compared with controls, the intervention group showed significant improvement in cognitive function, as determined by Montreal Cognitive Assessment scores ($p = 0.048$, $\eta^2 = 0.04$) and Functional Independence Measure motor total, "self-care" and "mobility" subscales ($p < 0.05$ for all, with moderate effect sizes, $\eta^2 = 0.0-0.08$). At the 3-month follow-up, significant differences were maintained in most secondary outcomes in the intervention group. Cognitive function and activities improved most in participants with stroke.

Comment: These researchers thought to test whether patient emotional well-being and function outcomes could be improved if they received greater access to enriched, stimulating environments during their stay. In the context of this study, the enriched environment included a separate therapeutic space where patients could interact with peers, play kinetic video games (such as Able-X or Nintendo Wii), play board games or chess, participate in painting, woodwork or other hobbies and activities. While the reported effect sizes of this intervention were small, the researchers were able to demonstrate a statistically significant improvement in mood, self-care, and mobility with the addition of their new therapeutic space. Of note: this was a well-conducted randomised controlled trial. The study methods, including the planned analyses and selection of a primary outcome measure, were registered before the study took place. This minimises the risk of 'p-hacking', i.e. dredging study data to find apparently significant finding by chance, and increases the confidence we can have that the reported results might represent a true effect.

Reference: *J Rehabil Med.* 2016;48(5):417-25

[Abstract](#)

The psychological effects of cardiac rehabilitation after coronary revascularization

Authors: Pourafkari L et al.

Summary: Outcomes are reported from 120 patients (mean age, 60.0 years) who underwent either coronary artery bypass grafting (CABG; n=38) or percutaneous coronary intervention (PCI; n=82) following an acute coronary syndrome or to treat a stable coronary occlusive disorder and were enrolled in an 8-week cardiac rehabilitation programme. They all participated in a brief mood survey prior to the programme and again at 1 week after completing the rehabilitation programme. Prior to rehabilitation, 28.3% of patients had significant depressive symptoms, 21.7% had significant anxiety, 16.7% demonstrated panic symptoms, and 30.0% reported difficulty in adaptation. Upon completion of the programme, the proportion of patients with depressive symptoms decreased to 10.8% ($p = 0.002$), those with anxiety fell to 9.1% ($p = 0.012$), patients with panic symptoms decreased to 5.8% ($p = 0.014$), while those reporting difficulty in adaptation decreased to 10.9% ($p = 0.0002$). Changes in state of depression were not predicted by medical, social, or physical factors, while changes in anxiety were negatively affected by smoking. Psychological changes after rehabilitation were not influenced by presence of acute myocardial infarction before revascularisation.

Comment: Although this research question was interesting, on reading the method section of this paper it quickly became apparent the limitations of this study make it difficult to draw clear conclusions. As an observation study, it was always going to be difficult to demonstrate a causal relationship between the intervention in question (cardiac rehabilitation) and the outcome of interest (mental well-being). It is possible that patients are simply anxious and depressed in the early days after major cardiac surgery, and that this anxiety and depression improves with time. Without a control group, this study would not be able to tell us whether or not this was the case. Furthermore, the main outcome measures in this study involved categorical scales which were then treated in the analysis as if they were interval measures, meaning that the wrong type of statistical test may well have been conducted. While the paper poses an important research question, other studies are needed to provide the answers.

Reference: *Turk Kardiyol Dem Ars.* 2016;44(3):228-36

[Abstract](#)

Independent commentary by Dr William Levack

Dr William Levack is the Associate Dean of Research for the Wellington campus of the University of Otago, and a Senior Lecturer with the Rehabilitation Teaching and Research Unit – a specialist provider of distance-taught postgraduate qualifications in rehabilitation for health professionals run by the Department of Medicine, University of Otago Wellington. **FOR FULL BIO [CLICK HERE](#)**



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Anne Brinkman
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Exercise training characteristics in cardiac rehabilitation programmes: a cross-sectional survey of Australian practice

Authors: Abell B et al.

Summary: These researchers explored the current status of exercise-based cardiac rehabilitation services across Australia. They identified 297 Australian sites offering such services and invited them by email to participate in an online survey questionnaire that investigated the demographics and format of individual programmes, as well as specific exercise training characteristics. A total of 251 (82%) sites responded. The cardiac rehabilitation programmes were distributed across metropolitan (n=89), regional (n=62) and rural (n=100) areas, with the majority in operation for >10 years. Cardiac rehabilitation was most often delivered in a comprehensive format covering all core components (180 sites), although the level of exercise intervention varied greatly among programmes. Most frequently, exercise was prescribed 1–2 times per week (60 minutes per session) over 7 weeks. Fifty-three sites (22%) reported having a sole practitioner supervising exercise, usually a nurse, exercise physiologist or physiotherapist; the majority of sites used a nurse/physiotherapist combination. Low-to-moderate exercise intensities were used in 60% of programmes; however, higher intensity prescriptions were not uncommon. Few sites (<6%) made use of technology or novel delivery methods, and generally only to provide education rather than deliver or support exercise training.

Comment: The high response rate reported for this survey (82% of eligible programmes) suggests that the results are likely to be generalisable to Australia nationally. Overall, the study indicates that there is a high degree of consistency in the way cardiac rehabilitation programmes are offered across Australia. The authors are correct, however, in calling for greater flexibility in the way cardiac rehabilitation is offered. With over 80% of programmes being run in hospital (presumably during standard work hours), access to cardiac rehabilitation will often be limited to those who have the means and time to travel to hospital to attend. Consideration also ought to be given to whether access to rehabilitation is greatest for the patients in most need. Given that indigenous Australians are around twice as likely to suffer from heart disease as other Australians, it is perhaps concerning that only 14% of programmes were reported to have a 'cultural health worker' on the team.

Reference: *Open Heart.* 2016;3(1):e000374

[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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Motor control exercise for non-specific low back pain: A Cochrane Review

Authors: Saragiotto BT et al.

Summary: This evaluation of the effectiveness of motor control exercise in patients with non-specific low back pain (LBP) included 32 randomised controlled trials comparing motor control exercise with no treatment, another treatment or as a supplement to other interventions in a total of 2628 patients with non-specific LBP. The evidence revealed no clinically important differences between motor control exercise and spinal manipulative therapy or other forms of exercise, or manual therapy, for acute and chronic LBP. For recurrence at one year, very low quality evidence suggests that motor control exercise and medical management decrease the risk of recurrence. Very low to low quality evidence suggests that motor control exercise is clinically more effective than exercise and electrophysical agents or telerehabilitation for pain and disability.

Comment: Motor control exercise for LBP focuses on training people to gain better awareness and control of their trunk musculature (specifically transverse abdominus and multifidus) during isolated exercise then later during functional tasks. During the 1990s, training the 'deep muscles of the core' was an increasingly popular treatment approach for LBP. Since then, the evidence supporting this approach has been a little underwhelming, however. This review provides some evidence that motor control exercise is better than doing nothing (i.e. minimal intervention) in the management of chronic LBP, but that motor control exercise does not seem superior to other methods of therapy of LBP. These kinds of results do not really support a strong argument in favour of 'muscle imbalance' being a major cause of pain-related disability for the majority of people with LBP, as the evidence in favour of targeted treatment of core muscle imbalance in comparison to other treatment approaches appears patchwork at best.

Reference: *Spine (Phila Pa 1976)*. 2016 Apr 26. [Epub ahead of print]

[Abstract](#)



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Whakawhanaungatanga: the importance of culturally-meaningful connections to improve uptake of pulmonary rehabilitation by Māori with COPD – a qualitative study

Authors: Levack WM et al.

Summary: This study examined factors influencing the uptake and completion of pulmonary rehabilitation by Māori with chronic obstructive pulmonary disease (COPD) in New Zealand. Grounded theory nested within kaupapa Māori methodology was used to analyse transcripts from interviews and focus groups with 15 Māori and 10 New Zealand non-Māori invited to attend pulmonary rehabilitation for COPD. Māori participants had either attended a mainstream hospital-based programme, a community-based programme designed "by Māori, for Māori", or had experienced both. A number of factors influencing the uptake of pulmonary rehabilitation were common to all participants, regardless of ethnicity or background: 1) participants' past experiences (e.g. of exercise; of health care systems), 2) attitudes and expectations, 3) access issues (e.g. time, transport, and conflicting responsibilities), and 4) initial programme experiences. These factors were moderated by the involvement of family or whānau and peers, interactions with health professionals, the way information on programmes was presented, and the experience of new illness events. For Māori participants, however, several additional factors were also identified relating to cultural experiences of pulmonary rehabilitation. In particular, many (but not all) Māori participants placed high value on whakawhanaungatanga within their pulmonary rehabilitation programmes: they sought regular opportunities to make culturally meaningful connections with the other people involved. If they perceived such opportunities as being absent in pulmonary rehabilitation programmes, these Māori participants felt dissatisfied, were less inclined to join, or felt disinclined to attend pulmonary rehabilitation. Only the more holistic services offered a programme in which they felt culturally safe and to which they were willing to return for ongoing rehabilitation.

Comment: This is one of my studies, driven by a desire to improve uptake of pulmonary rehabilitation in New Zealand. Pulmonary rehabilitation is a well-established intervention of known effectiveness: it improves exercise capacity and quality of life in people with chronic obstructive pulmonary disease (COPD) and substantially reduces rehospitalisation and mortality rates in people with exacerbations of the condition. Getting people with COPD to pulmonary rehabilitation is therefore immensely important. This study explores cultural factors that potentially influence the uptake of pulmonary rehabilitation in New Zealand, comparing Māori and non-Māori experience of getting to programmes run in hospitals or on a marae. As a qualitative investigation, this study was never intended to be generalisable in the statistical sense. However, it does illustrate the potential importance of cultural safety in the uptake of important healthcare interventions.

Reference: *Int J Chron Obstruct Pulmon Dis*. 2016;11:489-501

[Abstract](#)

Tai Chi for chronic obstructive pulmonary disease (COPD)

Authors: Ngai SP et al.

Summary: This Cochrane Review explored whether Tai Chi is beneficial for reducing dyspnoea and improving exercise capacity and physiological and psychosocial well-being among people with COPD. The analysis examined outcomes from 12 studies including a total of 811 participants. The duration of the Tai Chi programmes lasted between 6 weeks and 1 year. The studies adopted different styles and forms of Tai Chi; the most commonly reported was the simplified 24-form Yang-style Tai Chi.

Comment: Another COPD study: This one examining the effectiveness of Tai Chi as a rehabilitation alternative. Given the potential importance of culturally meaningful activity in pulmonary rehabilitation (see the previous paper!), such a review is of interest. The findings from this review suggest that the effect size of Tai Chi is similar to that of mainstream pulmonary rehabilitation in terms of improvements in exercise capacity, albeit a little lower. However, the lack of evidence regarding similar effects on health-related quality of life gives pause for thought. The benefit of Tai Chi in terms of better pulmonary function reported in the abstract for this review is a trifle misleading: these benefits were found on a meta-analysis of data on forced expiratory volume in one second (FEV₁). However, the authors also conducted meta-analyses of outcomes in terms of predicted FEV₁ (which takes into account height, age, and sex) and the ratio of FEV₁ to forced vital capacity (i.e. FEV₁/FVC) and found no evidence of effect. This suggests some selection of positive outcomes in the reporting of lung function results in the summary of the review.

Reference: *Cochrane Database Syst Rev*. 2016 June 7;(6):CD009953

[Abstract](#)