

Rehabilitation Research Review

Making Education Easy

Issue 2 - 2008

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Welcome to the second edition of Rehabilitation Research Review, a unique New Zealand publication bringing you some of the most important research from around the world every month.

Rehabilitation Research Review has been established to make life easier for the rehabilitation community in New Zealand.

In this issue we focus on physical activity and wellbeing as well as some other interesting topics.

The creation of this publication would not be possible without support from our sponsor, ACC and to them we give thanks. If you have friends or colleagues within New Zealand who would like to receive our publication, send us their contact email and we will include them for the next issue.

We hope you find this edition stimulating reading and welcome your comments and feedback.

Kind regards,

Kath McPherson

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Physical activity for youth with disabilities: a critical need in an underserved population

Authors: Rimmer JA and Rowland JL

Summary: Youth with disabilities are significantly less active and more overweight than their able-bodied peers and generally do not meet the recommended exercise target of 1 hour per day. The health risks associated with physical inactivity and obesity are of serious concern in disabled youth but their participation in community-based physical activities is often restricted by lack of transportation, lack of knowledgeable staff and the difficulty in adapting a programme or facility to an individual's need. Finding a way around these barriers is a huge challenge for paediatric rehabilitation. Current use of information technology (IT) to customise physical activity programmes for youth with disabilities may assist in overcoming some of these obstacles.

Comment: Despite strong emphasis on enhancing activity in the general population, there is very little public health attention focused on how message delivery and/or programmes may need to be developed to promote access and participation for disabled people. Our team is working in this area with adults with neurological illness/injury as they too have very low levels of activity and thus are at high risk of all the secondary consequences we know well and are highlighted by this paper. Disabled children are clearly at risk as Rimmer and Rowland highlight steps we could/should consider if we want to change things for the better.

<http://dx.doi.org/10.1080/17518420701688649>

Reference: *J Developmental Neurorehabilitation* 2008; 11(2):141-148



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Long-term outcomes and survival of patients with BTTA after rehabilitation

Authors: Mac Neill HL et al

Summary: This study investigated long-term outcomes and survival of patients after rehabilitation for bilateral transtibial amputation (BTTA). 82 consecutive patients with diabetic or vascular BTTA who were admitted to the Amputee Rehabilitation Service in Toronto between 1998 and 2003 were retrospectively investigated. 34 patients were interviewed a mean 3.7 years after amputation (32 patients had died). Life expectancy of BTTA patients after rehabilitation discharge was 4.2 years. When interviewed by telephone, the mean modified Houghton score for prosthetic use (maximum score 9) was 6.3, which was a significant improvement from that at the time of rehabilitation discharge ($p = 0.001$). Furthermore, 85% of patients were still regularly wearing their prosthetic device and walking. It was concluded that patients undergoing rehabilitation for BTTA should strongly be considered for prosthetic fitting because they continue to do well at long-term follow-up.

Comment: Trying to predict who will benefit from rehabilitation is not easy. This paper highlights that even in a group with a very high five-year mortality rate, the majority who survive are using their prostheses and remaining active. Helping people with disability stay active is crucial for enhancing well-being and these high rates of activity at follow-up are encouraging. However, pain and fatigue remain very real potential barriers with a recent US survey reporting that around 95% of those with limb loss have persistent pain (Archives of Physical Medicine and Rehabilitation 86(10) 2005 pgs 1910-1919). Clearly prosthetic fitting is an important part of amputee rehabilitation, but to help people stay active, long-term (or intermittent) assistance with managing pain and fatigue is also key.

<http://www.amjphysmedrehab.com/pt/re/ajpmr/abstract.00002060-200803000-00004.htm;jsessionid=HgBThZJccpr6QDxyDDc wTORJ5cWd9p2HKWkW5VKsrKLjTKWvS-n5Tl-1013551081!181195628!8091!-1>

Reference: *Am J of Phys Med & Rehab.* 87(3):189-196, March 2008

The International Classification of Functioning, Disability and Health-orientated OTA: a Rasch analysis of its domains

Authors: Wirtz, Markus A et al

Summary: This study examined the psychometric properties of the Occupational Therapy Assessment (OTA). 785 consecutive patients who were participating in occupational therapy for functional, neurological, psychiatric or multiple impairments at 44 different institutions were included in the study. For each patient, therapists rated 50 items relating to 5 OTA domains (activities for self-care, activities for independent living, consequences of psychosocial functions in everyday life, consequences of neuropsychological functions in everyday life and consequences of sensory-motor functions in everyday life). A Rasch analysis of the domains found that psychometric properties were satisfactory in all but psychiatric patients. It was concluded that the psychometric component of the OTA provides a well-developed and well-tested basis for diagnosis and evaluation in occupational therapy.

Comment: With the growing emphasis on outcome measures, it is becoming more important to get to grips with modern ways of evaluating just how good any one measure of the many available is. The approach described here, Rasch Analysis, tests whether adding item scores together actually makes any sense (*apple + oranges = ? situation*). Clearly it is crucial to know whether overall scores are meaningful because, people tend to believe numbers, just because they are numbers and bad measurement is dangerous. So here is one measure relating to occupational engagement and activity that appears to have some rigorous testing and might be worth a look.

<http://www.intjrehabilres.com/pt/re/intjrr/abstract.00004356-200803000-00004.htm;jsessionid=HgKPCftYYpwHKMfSOp234p0p0wy1P1jSJTg3n4FyvjhmxQvx463s!-1013551081!181195628!8091!-1>

Reference: *Int J of Rehab Research.* 31(1):23-32, March 2008

Aquatic and land-based exercise in patients with knee osteoarthritis

Authors: Hans Lund et al

Summary: This study compared the efficacy of an aquatic exercise programme with a land-based exercise programme in patients with knee osteoarthritis. 79 patients aged 40–89 years were evenly randomised to a control group or to undergo aquatic exercise or land-based exercise for 8 weeks. No benefits were reported in either exercise group after 8 weeks. After 3 months, only patients in the land-based exercise group reported a significant reduction in pain compared with controls, and neither exercise group showed an improvement in the Knee Injury Osteoarthritis Outcome Score (KOOS). Eleven patients reported discomfort during land-based exercise compared with 3 patients during aquatic exercise. It was concluded that only land-based exercise improved pain and muscle strength in patients with knee osteoarthritis, but aquatic exercise was less painful.

Comment: There are now a number of studies proposing the benefits of activity for managing pain and enhancing strength, function and QoL in osteoarthritis. Although water based activity did not seem to yield the same pain reduction as land based exercise here, other studies indicate people find it helpful (eg *Annals of the Rheumatic Diseases* 2003;62:1162-1167). A recent review (*Physical Therapy* 2007;87:1716.) suggests more evidence is needed – of course that comment being applicable for many rehabilitation interventions. Even if not as effective, the acceptability of water based therapy suggests it has a very real place in facilitating engagement in activity, particularly for those who find land based activities off-putting or painful.

<http://dx.doi.org/10.2340/16501977-0134>

Reference: *Int J of Rehab Research.* 40 (2):137-144 Feb 2008



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Relationship between cardiopulmonary fitness and depressive symptoms in patients with CAD entering rehabilitation

Authors: Swardfager W et al

Summary: This study identified predictors of depression in a cohort of 366 patients with coronary artery disease (CAD) entering cardiac rehabilitation. 22.3% of patients were found to have at least mild depressive symptoms and 10.4% were found to have significant depressive symptoms according to the Center for Epidemiological Studies Depression (CES-D) scale. In addition, 6.3% of patients were taking antidepressants. Reduced cardiovascular fitness, younger age, female sex and ischaemic CAD were all found to be significant independent predictors of CES-D score. In conclusion, patients with CAD who have reduced cardiovascular fitness, are younger, are female or have ischaemic CAD when entering cardiac rehabilitation are more likely to have symptoms of depression.

Comment: It probably should come as no surprise that so many people with coronary artery disease experience troublesome depressive symptoms. It is important to note that this was only at one time point so the lifetime prevalence of depression for this population is probably even higher. Indeed, difficulty with low mood and/or depression is something that many people with chronic illness or longer-term effects of injury will experience (e.g. the last issue talked about the high rates of depression after TBI). Low mood makes it tough to take part in, and make the most, of rehabilitation. This paper is a good reminder that 'physical' rehabilitation services for just about any population need to consider whether mood disturbance is at the root of a seemingly 'unmotivated' client, motivation and mood being closely related.

<http://dx.doi.org/10.2340/16501977-0151>

Reference: *Int J of Rehab Research*. 40(3):213-218 March 2008

Sleep problems in children with neurological disorders

Authors: Dorris L et al

Summary: This review discusses sleep problems associated with specific neurological disorders and/or intellectual disabilities in children and discusses age-appropriate assessments and interventions (both behavioural and pharmacological). For the purposes of this review, intellectual disability encompasses conditions present from birth as well as traumatic brain injuries occurring later in development. Neurological disorders such as epilepsy, narcolepsy and neurorespiratory disorders can affect sleep function in a variety of ways. Discussion of these neurological disorders provides useful insight into how their effects on sleep patterns can have detrimental consequences for cognitive development and behaviour. The extensive clinical experience of the authors combined with available literature provided the information for this review.

Comment: This paper provides a useful review of how sleep (or the lack of it) can impact on the functional abilities of children with neurological or intellectual disability. Perhaps it is not coincidental that the paper described earlier about the importance of activity for disabled children is in the same issue of the journal as this paper. The relationship between 'activity' and 'sleep' is complex and managing this complexity fundamental for disabled children (and their parents!) with this paper pointing out more reasons why proactive management of sleep disorder is warranted.

<http://dx.doi.org/10.1080/17518420701860149>

Reference: *J Developmental Neurorehabilitation* 2008; 11(2); 95-114

Impact of diabetes on physical function in older people

Authors: Sinclair A et al

Summary: This population-based case-control study examined the nature of functional impairment in older patients with diabetes. 403 men and women with diabetes (cases) were matched with 403 healthy men and women (controls); median age was 75 years. Compared with controls, patients with diabetes had more comorbidities (mean 2.5 vs 1.9; $p < 0.0001$), more severe functional impairment (4% vs 1% had a Barthel score < 5 ; $p < 0.001$) and poorer physical function ($p < 0.0001$). Even after adjustment for age, hypertension, cerebrovascular disease, cancer, osteoarthritis and dementia, patients with diabetes had at least double the likelihood of mobility limitation than controls ($p < 0.001$). In conclusion, older diabetic patients have considerable functional impairment and are likely to benefit from full geriatric assessment and individualised management.

Comment: Diabetes is a very real problem for New Zealanders, particularly Māori and Pacifica people, with very high rates of the disease (and its consequences). Whilst it is common to hear people refer to the consequences of diabetes in terms of secondary health conditions, this study highlights that functional activities are also compromised. Do people with diabetes get sufficient access to rehabilitation? Well – given our two tiered funding system for those with injury versus illness, we might suspect the answer is no. If we are dedicated to enhancing 'disability free years' for older people then the answer increasingly should be yes.

<http://dx.doi.org/10.2337/dc07-1784>

Reference: *Diabetes Care* 31:233-235, 2008

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Independent commentary by Professor Kath McPherson, Professor of Rehabilitation (Laura Fergusson Chair) at the Health and Rehabilitation Research Centre, AUT University in Auckland.

Kath has been at AUT since 2004 and has been building a research, teaching and consultancy programme focused on improving interventions and outcomes for people experiencing disability.

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Comparison of 2 Frailty Indexes for prediction of adverse outcomes in older women

Authors: Ensrud KE et al

Summary: This study investigated the validity of a simple frailty index (the SOF index) in predicting adverse outcomes in older women. It assessed weight loss, inability to rise from a chair 5 times without using arms and reduced energy level and classified the women as robust, intermediate or frail. The predictive validity of the SOF index was compared with that of the complex CHS frailty index. The indexes were tested in 6701 women aged ≥69 years and both predicted increased risk of adverse outcomes with increasing frailty. Frail women had a significantly higher age-adjusted risk of recurrent falls, disability, non-spine fracture, hip fracture and death. There were no differences between the CHS index and the SOF index in discriminating falls, disability, non-spine fracture, hip fracture or death. In conclusion, the simple SOF index predicted adverse outcomes in older women equally as well as the more complex CHS index and may provide a useful definition of frailty in clinical practice.

Comment: With ever increasing encouragement to standardise assessments and measure outcome, it is encouraging that these authors found a relatively brief index (the SOF) to be as good at predicting outcome as the widely used but more complex measure (CHS). Ease of use should arguably lead to more widespread use of such tools and that may well lead to better injury prevention for older people. <http://archinte.ama-assn.org/cgi/content/abstract/168/4/382>

Reference: *Arch Intern Med.* 2008; 168(4):382-389

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.

Best evidence on the course and prognostic factors for neck pain

Authors: Carroll LJ et al

Summary: The Neck Pain Task Force reviewed literature published between 1980 and 2006 to assess the course and prognosis of neck pain in the general population. Of 226 articles found, 70 (31%) met criteria for scientific validity and were included in a best evidence synthesis. Analysis of the studies showed that between 50 and 75% of patients with current neck pain would report neck pain again within 1 to 5 years. Younger age predicted better outcome. Outcome was not affected by exercise in general although regular bicycling was related to poor outcome in 1 study. Psychosocial factors were the strongest prognostic factors. In conclusion, the Neck Pain Task Force found that general exercise was not prognostic of outcome in patients with neck pain but several psychosocial factors were.

Comment: Despite our focus on the importance of activity in a number of the papers in this issue of Research Review, this study reminds us that psychosocial factors are powerful predictors of outcome for people with neck pain. Indeed, in this study general exercise was not linked to a better outcome at all. Having screened out the majority of studies considered in this review due to methodological weaknesses, there is a clear argument that the impact of some of these powerful risk factors could be reduced by how we work with patients. It is true that more research needs to be done on how to do it best, but helping reduce psychological distress and facilitating psychological well-being warrants consideration if these patients are to have a better chance of a good outcome.

<http://www.spinejournal.com/pt/re/spine/abstract.00007632-200802151-00012.htm;jsessionid=LHLCpWDLsBG9nQvZyRY2ySzn1kPVQvWgPwgC65M3QLNWhLcJvP1Xl-1990489359!181195628!8091!-1>

Reference: *Spine* 2008; 33(4S): S75-S82

Self-rated competency in activities predicts functioning and participation 1 year after traumatic brain injury

Authors: Sveen U

Summary: This study investigated whether self-rated competency in activities at 3 months post-injury predicted functioning and participation at 1 year in patients with traumatic brain injury. 70 patients with mild to severe traumatic brain injury completed the Patient Competency Rating Scale (PCRS) 3 months after a brain injury, and were evaluated at 12 months using the Community Integration Questionnaire, the Glasgow Outcome Scale Extended, and return to work/study. Two domains of the PCRS (activities demanding cognition and interpersonal/emotional skills) significantly predicted return to work/study and community integration. Interpersonal/emotional competency also predicted global functioning at 1 year. Based on these findings, rehabilitation of patients after traumatic brain injury needs to focus on cognitive and interpersonal competency in order to improve participation, integration and functioning.

Comment: George Prigitano and colleagues developed the Patient Competency Rating Scale in order to assess a person's 'awareness' of their functional ability rather than their actual ability. This study is interesting in a number of ways, including that it contributes to the growing evidence that awareness is linked not only to adapting to residual difficulties as originally postulated, but also to managing one's behaviour/activities. Whilst it has also been shown that becoming more aware of one's deficits can be difficult and indeed even depressing, this study suggests it may be beneficial to help clients actively manage that process. <http://dx.doi.org/10.1177/0269215507080768>

Reference: *Clinical Rehabilitation* 2008; 22 (1): 45-55

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