Rehabilitation Research Review™

Making Education Easy

Issue 36 – 2015

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Abbreviations used in this issue

CBT = cognitive-behavioural therapy
OA = osteoarthritis
SCI = spinal cord injury
TBI = traumatic brain injury

Welcome to issue 36 of Rehabilitation Research Review.

In October, I was fortunate to be able to attend and present at the AFRM/NZRA Rehabilitation conference and the American Congress of Rehabilitation Medicine. Both events inspired me. I met lots of dedicated clinicians, researchers and funders of care who were passionate about designing and delivering the very best rehabilitation. This ranged from researchers investigating the latest state-of-the-art technology in brain computer interface, researchers and clinicians discussing how to work in a person centred way, and talks by people developing services from the ground up in developing countries. Throughout this edition I will link to some of these talks to give you just a flavour of the excellent work going on in our field. I hope you enjoy the reading.

Kind regards,

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Development of a rehabilitation goal menu for inpatients with neurological disorders: application in a Saudi Arabian context

Authors: Al-Haidary H et al.

Summary: This investigation involved 130 inpatients with neurological injury at a rehabilitation hospital in Saudi Arabia, who participated in focus groups and semi-structured interviews that explored which rehabilitation goals are important to such patients. The information was combined with findings from a literature review, to develop a 10-item rehabilitation goal menu. When the participants' goals were ranked in order of importance, Functional Mobility/Locomotion scored the highest overall, followed by Self-Care and Religious/Life Philosophy. When the patients were asked to report level of difficulty in areas such as mobility, self-care, accessibility, productivity, and leisure, mobility was strongly associated with the ranking of Functional Mobility/Locomotion as a rehabilitation goal. However, there was little concordance between reported difficulty and priority ranking of self-care. Results of a subsequent factor analysis of detailed goal items indicated that the goal menu could be reduced from 10 to 7 items.

Comment: The authors suggest that the availability of a goal menu could support the active involvement in the goal-setting process for neurological patients, cost less time and rely less on therapists' goal negotiating skills. The goals menu derived in the study consists of 46 goals in seven domains, which has some features that are not found in American- or European-derived scales. For example, the goal wheelchair mobility loaded onto the domain Self-Care rather than Mobility. The authors suggest this may reflect the different context of Saudi Arabia where inaccessibility of most homes and public spaces impacts on the usefulness of wheelchairs to mobilise and that perhaps wheelchairs are more useful for self-care. Similarly, self-care goals were not ranked as a priority, reflecting the widespread availability of low-wage migrant labour that can provide such care. The study contrasts with much of the goal-related work carried out in New Zealand, which stresses the importance of building the skills of our therapists to engage patients in the goal setting process. The paper also highlighted for me the importance of the development of culturally appropriate tools rather than assuming tools developed elsewhere will work. This is an important issue in New Zealand, where very few locally developed tools are available.

Reference: Clin Rehabil. 2015;29(10):1002-12
Abstract

Acceptability of a mobile health exercise-based cardiac rehabilitation intervention: a randomized trial

Authors: Pfaeffli DL et al.

Summary: Outcomes are reported from a process evaluation conducted as part of the Heart Exercise And Remote Technologies trial, which examined the effectiveness of an mobile health (mHealth) intervention to increase exercise behaviour in adults with ischaemic heart disease (IHD). In this trial, 171 adults with IHD were randomised to either a 6-month mHealth intervention (consisting of a theory-based, automated package of exercise prescription and behaviour change text messages and a supporting Web site) plus usual care (n=85) or usual care alone (n=86). At 24 weeks, Web site usage statistics were available for all intervention participants and 75 of them completed feedback surveys. Seventy reported reading the text messages and 55 stated that they liked the content. Semi-structured exit interviews were held with 17 intervention participants. The programme motivated participants to exercise. There were several suggestions offered for improving the programme; 7 participants suggested further tailoring of the content and 10 asked for increased personal contact.

Comment: Over the past few years we have seen an increase in mobile health technologies, many of which have not been evaluated. It is good to see this paper by researchers from Auckland University reporting on the benefits of the mobile technology used in the intervention arm of the recently completed HEART trial. Although the trial did not have a significant treatment effect on increasing exercise capacity; there were significant improvements in leisure time physical activity, minutes walked, health-related quality of life, and task self-efficacy. The process evaluation reported in this paper revealed that most people read the text messages and many used the website. Not surprisingly, the webpages most visited were those that contained interactive graphs and those which presented the latest messages and exercise tips. The findings will be instrumental in the redesign of the website and other mobile interventions, possibly leading to better outcomes than those shown in this study.

Reference: J Cardiopulm Rehabil Prev. 2015;35(5):312-9

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.

Differences in the community built environment influence poor perceived health among persons with spinal cord injury

Authors: Botticello AL et al.

Summary: This investigation was a secondary analysis of data from 503 persons with chronic spinal cord injury (SCI) enrolled in the Spinal Cord Injury Model Systems database. All cases were residents of New Jersey, completed an interview during the years 2000 through 2012, had a complete residential address, and were community living at the time of follow-up. The study researchers used Geographic Information Systems (GIS) data to calculate objective measures of the local community. Analyses indicated that persons with SCI residing in communities with more (vs less) mixed land use and small (vs large) amounts of open space were more likely to report poor perceived health. There were no associations between perceived health and differences in the residential or destination density of the community. Adjusting for variation in demographic, impairment, quality of life, and community socioeconomic characteristics accounted for the gap in the odds of reporting poor health between persons living in areas with large versus small amounts of open space (odds ratio [OR] 0.54; 95% CI, 0.28 to 1.02). However, even after accounting for individual background differences, persons living in communities characterised by more heterogeneous land use were twice as likely to report poor health compared with persons living in less mixed areas (OR 2.14; 95% CI, 1.12 to 4.08).

Comment: Data for this study were extracted from cohort data in New Jersey, USA and GIS data. The findings showed an association between greater amount of open space in the community and better self-reported health status. However, this relationship was mitigated by differences in individual background, impairment severity, and socioeconomic status. In contrast to findings in general populations in the USA, it was shown that greater land use heterogeneity did not benefit adults with chronic mobility limitations in terms of their perceived health. The authors speculate that this finding may be a result of the condition of community infrastructure and accessibility features, which has been linked to activity limitations among other disabled populations. The study resonated with work presented at the ACRM meeting by Joy Hammel and colleagues from the University of Illinois.[1] They utilised GIS data from across the USA to successfully advocate for better access to accessible communities for disabled people. The study findings are not generalisable to New Zealand, due to our differences in the built characteristics of communities. Therefore, it would be interesting to replicate this kind of work here.

1. Hammel J, et al. Participatory action research to strategize long-term health and participation disparities with people with disabilities. Presented at the American Congress Rehabilitation Medicine 92nd Annual Conference, 28-30 October 2015. Abstract #3158.

Reference: Arch Phys Med Rehabil. 2015;96(9):1583-90

Abstract

Effectiveness of a cognitive–behavioural group intervention for knee osteoarthritis pain: a randomized controlled trial

Authors: Helminen EE et al.

Summary: This study recruited 111 primary care patients aged 35–75 years with knee osteoarthritis (OA) pain and clinical symptoms. OA radiographic severity was assessed as Kellgren/Lawrence grade 2–4. All study participants continued to receive usual GP care alone; 55 were also enrolled in a cognitive-behavioural therapy (CBT) programme for pain management that provided 6 weekly group sessions supervised by a psychologist and a physiotherapist. At 3 and 12 months' follow-up, the primary outcome was the Western Ontario and McMaster Universities (WOMAC) Osteoarthritis index pain subscale. Analyses revealed no significant between-group differences for any measures of pain or physical function. There was a significant between-group difference in the Pain Self-Efficacy Questionnaire (p=0.022) in favour of the control group and also in the RAND-36 emotional well-being subscale in favour of the intervention group (p=0.038).

Comment: In this study, the authors trialled CBT, using the model which was previously shown to be effective for people with spinal pain and who had not had many days of work. Here, none of the measured outcomes were shown to be different between the CBT intervention group and the usual care control group. The authors speculate that perhaps the intervention was not that well suited to their population, which was much older and had a different diagnosis. Given that research shows that exercise is beneficial for pain management in OA, I was left wondering also why the team had chosen to use CBT as a stand-alone intervention, rather than combining it with an exercise programme. In addition, they did not collect data on activities people engaged in during the follow-up period or the impact of pain upon their lives.

Reference: Clin Rehabil. 2015;29(9):868-81
Abstract

Rehabilitation outcomes in persons with spina bifida: a randomized controlled trial

Authors: Khan F et al.

Summary: This Australian study assessed the effectiveness of an interdisciplinary ambulatory rehabilitation programme for persons with spina bifida. Twenty-seven participants participated in a high-intensity rehabilitation programme (with CBT); an additional 27 were assigned to a control group comprising usual care. At baseline, all study participants underwent assessments with the Depression, Anxiety Stress Scale (DASS), McGill Quality of Life (MQOL), Brief COPE Scale, Generalized Self-efficacy Scale (GSE); assessments were repeated at 3 months' follow-up. Outcome measures included the Urogenital Distress Inventory (UDI-6), the Incontinence Impact Questionnaire-7 (IIQ-7), the American Urological Association (AUA) Symptom Index, Wexner-Faecal Incontinence Score (WFIS), and the Neurological Disability Scale (NDS). At 3 months' follow-up, analyses adjusted for baseline disease and demographic covariates revealed significantly greater improvements for primary and secondary outcomes, with moderate to large effect sizes: urinary/bowel dysfunction (AUA, UDI-6, IIQ-7, WFIS) (p<0.001 for all, r=0.4 to 0.7); and cognitive function (NDS "cognitive" and "mood") (p<0.01, r=0.6 for both); DASS scores ("depression", "anxiety" and "stress") (p<0.001 for all, r=0.5 to 0.7); MQOL total (p=0.013, r=0.5), "psychological symptoms" (p<0.001, r=0.8); "active coping" (p=0.035) and "self-efficacy" scores (GSE p<0.001). No between-group differences were found with other subscales.

Comment: Ten to twenty babies in New Zealand are born with spina bifida each year and those who survive experience significant disability. A sizeable proportion live into adulthood. This pragmatic trial evaluated the effectiveness of an interdisciplinary rehabilitation programme on a range of outcomes for adults with spina bifida. The primary outcomes were bladder and bowel disability, however, a wide range of secondary measures were also collected. The 6-week programme was ambulatory and consisted of individualised interdisciplinary care with intensive focus on education for self-management, continence and skin care, and a cognitive behavioural programme for an additional 4–6 weeks. The intervention group made significantly greater improvements in bladder and bowel disability as well as cognition, depression, mood, quality of life and self-efficacy. The outcomes were measured only up to 3 months upon completion of the programme and it will be interesting to know if differences between groups can be maintained.

Reference: J Rehabil Med. 2015;47(8):734-40
Abstract

Identifying an outcome measure to assess the impact of mobility dogs

Authors: Mudge S et al.

Summary: This study from the Auckland University of Technology sought to identify and implement a standardised outcome measure to assess the benefits of Mobility Dogs®, a service dog organisation that trains dogs to assist people living with physical disabilities to increase independence, confidence, self-esteem and participation. The Consolidated Framework for Implementation Research and guidance from a steering group of key stakeholders informed the development of a three-phase approach that was used to identify and assess an outcome measure. The steering group highlighted the organisation's specific needs, selected participation as the assessment domain and identified core utility requirements of the measure. Seven participation outcome measures met inclusion criteria, and were ranked according to specified needs. The three highest ranked measures were critically evaluated by the steering group as to their suitability for the organisation's needs. The Impact on Participation and Autonomy (IPA) was selected as the most appropriate outcome measure for use at Mobility Dogs®.

Comment: Researchers in this study worked closely with stakeholders, Mobility Dogs® Trust NZ, to identify the most important outcome for people with mobility dogs, i.e. participation as viewed by the person (rather than participation measured against people without disabilities). The study is an exemplar of stakeholder involvement in the selection of a key outcome measure and the authors report on decisions that were made as a result of this involvement, without which a different and potentially inappropriate measure would have been chosen. In addition, the group developed a manual of standard operating procedures for use of the outcome measure. I will be looking out for the outcomes of the Mobility Dogs® programme when the team have collected data from sufficient people.

Reference: Disabil Rehabil Assist Technol. 2015:1-11
Abstract

Feasibility and efficacy of high-speed training with a voluntary driven exoskeleton robot for gait and balance dysfunction in patients with chronic stroke: nonrandomized pilot study with concurrent control group

Authors: Yoshimoto T et al.

Summary: This pilot study included 18 patients with chronic stroke, 9 of whom were assigned to 8 once-weekly high-speed gait training sessions with an exoskeleton robot hybrid assistive limb (HAL); the remaining 9 patients underwent conventional physical therapy for gait disturbance (control group). Each HAL session lasted for 20 minutes. Outcome measures included walking speed, number of steps, and cadence during a 10 m walking test, a timed-up-and-go test, a functional reach test, and the Berg Balance Scale. Assessments were performed at baseline prior to HAL training and after the fourth and eighth training sessions. All patients in the HAL group completed the high-speed gait training without adverse events. They experienced significant improvements from baseline in walking speed (55.9% increase; p<0.001), number of steps (17.6% decrease; p<0.01), and cadence (32.8% increase; p<0.001) during the 10 m walking test. They also had significant improvements in the timed-up-and-go test, the functional reach test, and the Berg Balance Scale after HAL training (p<0.01 for all comparisons). No such improvements were observed with the control group.

Comment: Technological devices such as exoskeletons received much attention at the ACRM meeting. In one of the panel discussions,[2] I was astounded that both the company present, the payers for rehabilitation and providers were satisfied that as long as the device is safe it is OK to use in practice. Questions from the floor reflected concern that this does not provide clinicians with answers whether the devices are efficacious, what the intensity of the intervention should be, and for which patients the devices would be most useful. This paper goes some way towards the question of outcomes with an impressive improvement in gait speed in people with chronic stroke when walking at high speed using the HAL exoskeleton once a week for eight weeks. However, the study has a number of limitations such as non-randomisation, lack of detail on number of sessions provided to the control group and the control group's physiotherapy not including walking at speed without the exoskeleton. So, more research needed, but an interesting paper in this fast-developing area of technology.

[2] Ulicny G, et al. The use of technology to improve rehabilitation of persons with disabilities: how do we know this stuff works? Presented at the American Congress Rehabilitation Medicine 92nd Annual Conference, 28-30 October 2015. Abstract #2998.

Reference: Int J Rehabil Res. 2015;38(4):338-43
Abstract

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What can a body do? Movement, mobility and rethinking disability and rehabilitation. The Norington Lecture

Presenter: Associate Professor Barbara Gibson, University of Toronto, Canada

Summary/Comment: Associate Professor Barbara Gibson provided an excellent lecture at the AFRM/NZRA Combined Rehabilitation Meeting, 'Building an Enabling Society'. Using a post-critical approach, she reflected on the way we practice rehabilitation, how and what we measure, and concluded that these practices perpetuate the moral hierarchy of mobility. She argued that norms, such as crawling is only permitted in infants and adults should be walking, favour being upright and walking over other forms of body function and being. For example, the best outcome of amputee rehabilitation is considered walking with prosthesis without an aid and other modes of mobility are considered a lesser outcome. This way of viewing and working in rehabilitation can limit the technology we develop and the environments. She urged the audience to let go of these moral hierarchies and of our fixed standards in disability, and to design different spaces and technologies that are more appropriate for people with non-mainstream body function. This talk really made me stop and think about the way in which we practice, develop and research new ways of working in rehabilitation and the way in which we measure outcome. I will be looking out for her new book that is coming out next year, which is talking about these issues in more depth.

Reference: AFRM/NZRA Combined Rehabilitation Meeting, 15 October 2015

Abstract

Effectiveness of the Restore4Stroke self-management intervention "Plan Ahead!": A randomized controlled trial in stroke patients and partners

Authors: Tielemans NS et al.

Summary: This study was conducted in The Netherlands and included 113 stroke patients (mean age 57.0 years) and their partners. Main patient inclusion criteria were symptomatic stroke ($\geq$6 weeks prior to study entry) and reporting $\geq$2 restrictions on the Restriction subscale of the Utrecht Scale for Evaluation of Rehabilitation Participation. Study participants were randomised to a self-management intervention aimed at proactive coping for stroke patients and their partners, or an education intervention. Each intervention lasted 10 weeks and catered to outpatients, was stroke-specific and group-based. Measurements were performed immediately after each intervention, and at 3 and 9 months' follow-up. Primary patient and partner outcomes were proactive coping and participation restrictions. The only significant between-group effect was that partners of stroke patients in the self-management intervention reported increased proactive coping at T2, as compared with the education intervention. The self-management intervention was also associated with higher scores on partners' self-efficacy and patients' health-related quality of life, mood complaints and participation restriction.

Comment: Proactive coping strategies post-stroke were conceptualised as "*patients' and partners' efforts to anticipate potentially hampering physical, cognitive, emotional or behavioural stroke consequences during goal-setting and, if necessary, plan actions to prevent the occurrence or adjust the outcomes of these hampering consequences beforehand*". Trials such as these face significant methodological challenges. For example, should the interventions compared have the same dose intensity? In this study, the Plan Ahead intervention was much higher in intensity than the control intervention (13 versus 4 hours), thus, the lack of significant findings are not due to Plan Ahead participants receiving less input than the control group. Should therapists deliver both interventions or one intervention only? The former minimises therapist effects confounding findings; the latter minimises risk of contamination between the interventions. The latter strategy was employed and therapist effects can therefore not be ruled out. I wondered if perhaps the intervention was delivered too early post-stroke and whether it may have greater benefits in the post-rehabilitation discharge period, when people can apply the strategies learned immediately in practice. Further work is clearly needed.

Reference: J Rehabil Med. 2015 Oct 1. [Epub ahead of print]

Abstract

Training adults with brain injury how to help-seek when lost: a pilot study

Authors: Cho YS, Sohlberg MM

Summary: These researchers describe the development of a protocol, NICE (*N*oticing you have a problem, *I*dentifying the information you need for help, *C*ompensatory strategies, *E*valuating progress) to train help-seeking for adults with traumatic brain injury (TBI) when lost. The protocol adapted theoretical and treatment components from three empirically validated interventions that target social problem-solving and communication skills: the Group Interactive Structured Treatment for Social Competence (GIST), the Problem Solving Group Protocol (PSG), and Interpersonal Recall (IPR). Preliminary pilot data indicate that NICE had good efficacy in 3 adult persons with TBI.

Comment: People with TBI often experience problems with wayfinding, a skill that is considered critical for community reintegration, safety and quality of life. The rationale and content of the intervention are described in depth. Although this is a very small study without a control group, the results for the 3 participants are encouraging, with each improving on their wayfinding skills (measured with the Executive Function Route Finding Task) and steps taken to reach their destination. I noticed that all three participants scored at the top of the scale following the intervention, and this will impact on the ability to measure change over time. Further research is needed to examine if the intervention leads to better results than a dose-matched control intervention and whether or not the observed improvements are sustained over time.

Reference: Brain Impairment. 2015;16(2):90-103

Abstract

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