
Proceedings of SRR

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Cognitive rehabilitation of spatial neglect: a meta-analysis

A Bowen

University of Manchester

NB Lincoln and **ME Dewey**

University of Nottingham

Background: Unilateral spatial neglect is a cognitive disorder that disrupts many activities of daily living following stroke. This meta-analysis investigated: (1) whether beneficial effects of cognitive rehabilitation are seen on measures of functional disability as well as on standard paper-and-pencil assessments; (2) whether any beneficial effects persist at follow-up assessment.

Methods: We searched the Cochrane Stroke Group Trials Register, databases and reference lists for controlled trials of cognitive rehabilitation for neglect. Studies with mixed aetiology groups were excluded unless more than 75% of their sample were stroke patients or separate stroke data were available. Reviewers contacted some investigators for further details of trials. Outcomes were analysed as the standardized mean difference and 95% confidence intervals (random effects model).

Results: Thirteen studies with 354 participants were included. Many obtained a low methodological rating. Cognitive rehabilitation improved immediate performance on several paper-and-pencil assessments of neglect. Only five studies included a measure of functional disability and the evidence of an immediate improvement in measures of functional disability was not significant 0.199 (-0.648,1.046). Three studies (74 par-

ticipants) investigated persisting effects. These limited data suggested lasting improvements on several paper-and-pencil and one ADL measure.

Discussion: There is evidence of a beneficial effect of cognitive rehabilitation on some, but not all, of the many measures used in controlled trials to date. This review is ongoing. Further methodologically sound trials that include functional outcome measures are required before firm conclusions can be drawn about the efficacy of cognitive rehabilitation.

Does more intensive physiotherapy produce greater improvement in gross motor function if given for longer periods of time in children with bilateral cerebral palsy?

E Bower, D Michell, M Burnett, MJ Campbell
and **DL McLellan**

University of Southampton Rehabilitation Research Unit

Background: In our earlier 2-week randomized controlled trial¹ we found that there was a difference of 4.2 percentage points in the mean total score on the Gross Motor Function Measure (GMFM)² in favour of children undertaking intensive physiotherapy ($n = 22$), an hour a day Monday to Friday, in the dimensions of the GMFM in which aims and goals had been set when compared with children undertaking routine amounts of physiotherapy ($n = 22$) in similar dimensions of the GMFM. This difference showed a trend towards statistical significance ($p = 0.055$)

using analysis of covariance.

We have now undertaken a longer randomized controlled trial comparing the effect of intensive amounts of physiotherapy with routine amounts on similar children.

Participants: A convenience sample of 56 children with bilateral cerebral palsy at level 3 or below on the Gross Motor Function Classification System³ aged between 3 and 12 years and living in the community.

Method: A 2×2 factorial design was used with prestratified randomization to compare routine amounts of physiotherapy with intensive amounts and to compare the use of generalized aims of treatment with specific, measurable goals negotiated with each child, carer and teacher over a six-month period.

Measures and results: Changes in motor function were assessed by a masked assessor using the GMFM at three-monthly intervals. After the six-month period there was a difference of 3.4 percentage points in favour of intensive physiotherapy ($n = 28$) in mean total score in the dimensions of the GMFM in which aims and goals had been set compared with routine amounts of physiotherapy ($n = 27$) in similar dimensions.

Analysis of covariance showed no statistically significant difference between these two factors taking the level of significance as $p < 0.05$.

Conclusion: We would suggest that the stimulus of providing a change in treatment may be accompanied by a change in the region of 2–4 GMFM percentage points and that this does not indicate an increase in the underlying motor skills of the children.

Acknowledgement

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References

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Detailed analysis of occupational therapy provided in an RCT

PA Logan, JRF Gladman, AER Drummond and KA Radford

on behalf of the Total Study Group

Introduction: A multicentre randomized control trial (RCT) comparing (ADL) therapy, leisure therapy and no intervention for community stroke patients showed no significant effect on its main outcome measures. We wished to know if a detailed analysis of both the treatment and the outcomes would yield evidence of effective or ineffective occupational therapy (OT) practices.

Methods: Treatments listed in the records of the ADL and Leisure groups were classified and compared between groups. Those activities more frequently undertaken in one group than the other were identified. Relevant items in the trial outcome questionnaires at six months were found. The outcomes of the leisure and ADL groups on these specific items were compared.

Results: Mobility, transfers, cleaning, dressing, cooking and bathing treatments were used significantly more in the ADL group. Sport, creative activities, games, hobbies, gardening, entertainment and shopping were used significantly more in the leisure group (chi-square, $p < 0.05$).

Eight items from the Barthel and Extended Activities of Daily Living Scale relevant to the more frequently undertaken ADL activities were identified. Seven items from the Nottingham Leisure Questionnaire relevant to the significant leisure activities were identified. There were no statistically significant differences in outcome between the ADL and leisure groups using any of these outcome items (chi-square, $p > 0.05$).

Summary: ADL and leisure treatments differed, as expected, but there was no evidence that specific ADL or leisure interventions led to improvements in specific relevant outcomes.

An analysis of reliability and validity data for the Sensory Modality Assessment and Rehabilitation Technique (SMART)

Helen Gill-Thwaites, Ros Munday

Department of Occupational Therapy, Royal Hospital for Neurodisability, London and JM Bland

St Georges Hospital, London

Background: A study of 30 patients¹ indicated the Sensory Modality Assessment and Rehabilitation Technique (SMART) as a useful tool in discriminating awareness in patients diagnosed as in vegetative state (VS). The Rancho level ratings derived from the SMART were significantly different to those from the Western Neuro Sensory Stimulation Profile (WNSSP)² and referring physicians ($p < 0.01$), with the SMART rating the patient at a higher level of cognitive functioning. Andrews *et al.*³ reported that of 40 patients admitted with a diagnosis of VS, 43% were found to have been misdiagnosed following re-assessment with SMART, indicating the need to conduct a specifically designed validation study.

Methods: The study compared the Rancho level ratings derived from referring physicians and scores from the SMART and WNSSP for 60 subjects on admission and at two-monthly intervals.

Results: The intra-observer intraclass correlation coefficient (ICC) was 0.97 and the inter-observer ICC 0.96 respectively, indicating that the SMART score total is very informative about the patient and that there is high agreement between the two assessors. A Pearson correlation (0.7) of the SMART and WNSSP total indicate that there is a reasonably high correlation.

Discussion: The Royal College of Physicians⁴ published recommendations which stated that physicians should use their 'own assessment' to establish diagnosis of VS patients under consideration for withdrawal of feed. The results establish the SMART as a more reliable and informative assessment tool which will add accuracy to the diagnosis and ensure more appropriate management for the VS patient in the future.

Acknowledgements

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Validation of the Subjective Index of Physical and Social Outcome (SIPSO)

R Trigg and VA Wood

Research & Development Support Unit, Wolfson Centre, Royal United Hospital, Bath

Background: The Subjective Index of Physical and Social Outcome (SIPSO) is a 10-item index of a person's ability to reintegrate into the community following stroke.^{1,2} The measure has been developed over the last four years, funded by the NHS Executive's Programme on Cardiovascular Disease and Stroke. The first stages of its development were presented at a previous meeting of SRR. Further validation of the SIPSO has been undertaken.

Methods: The SIPSO was administered to 261 patients in its final form to confirm its psychometric properties and subscale structure. Responsiveness to change and reliability of proxy responses were also assessed.

Results: Internal consistency (item-total correlations >0.6) and test-retest reliability (intraclass correlation coefficient = 0.96) of the measure were confirmed. Construct validity was confirmed with significant correlations ($r = 0.58-0.82$) with the six subsections of the Functional Limitations Profile and the Reintegration to Normal Living

Index. Confirmatory factor analysis of the measure found that the first five items form a robust subscale which clearly related to physical function. The items within the second subscale (questions 6–10) measure several domains (social, leisure, self-image) and do not form a homogeneous group.

The SIPSO was able to detect an improvement in integration within a sample of patients ($n = 52$) over a three-month period soon after discharge (effect size = 0.26). The hypothesis that the degree of improvement experienced by patients following discharge from hospital would be small but should be detectable was confirmed. The agreement between proxy and patient on the SIPSO was acceptable for individual items (kappa value range = 3.1–5.8) and total score (intraclass correlation coefficient = 0.96).

Conclusion: The SIPSO is a brief, self-complete measure, with proven validity and reliability, which addresses both quantitative and qualitative aspects of activities and interaction. It provides a useful measure for evaluating rehabilitation programmes which aim to reintegrate patients to their prestroke lifestyle. The authors recommend that the SIPSO should be used as a 10-item measure of integration.

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Changes in the normal characteristic pattern of abdominal muscle thickness in rowers with low back pain

G Rankin, M Stokes and DJ Newham

Royal Hospital for Neuro-disability, London and Applied Biomedical Research Group, GKT School of Biomedical Sciences, King's College London

Background: The relationship between the size and therefore force-generating capacity of individual abdominal muscles is unknown and may be influenced by various factors. The aim of this study was to investigate the normal relative contribution of individual muscles to total abdominal muscle thickness, and to examine the association with training and low back pain (LBP).

Method: Three groups of male subjects (age range 18–30 years) were studied: elite rowers with ($n = 10$) or without ($n = 20$) current or previous LBP and age-matched controls ($n = 18$). Real-time ultrasound imaging was used to measure the external oblique (EO), internal oblique

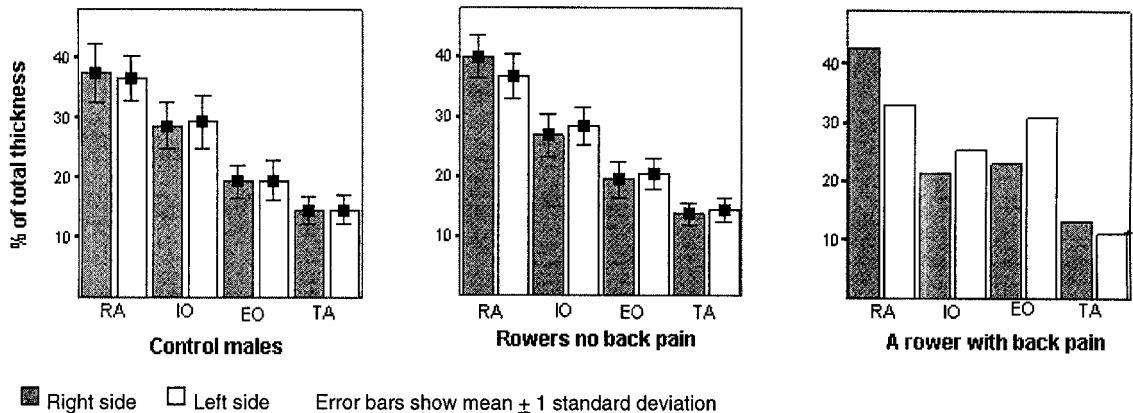


Figure 1 Graphs showing the relative thickness of rectus abdominis (RA), internal oblique (IO), external oblique and transversus abdominis (TA) in a group of rowers with low back pain and a control group. The graph on the right shows an example of an abnormal pattern of relative thickness in an individual rower with back pain.

(IO), transversus abdominis (TA) and rectus abdominis (RA) bilaterally. The relative thickness of each muscle was expressed as a percentage of total abdominal muscle thickness.

Results: The controls and rowers without LBP showed the same pattern of order of relative thickness. As a group the rowers with LBP were not significantly different from the other two groups. However, as each rower with LBP showed a different pattern and considerable individual variation, analysis of group means was therefore inappropriate. Fisher's Exact Test classified the rowers with LBP as showing significantly abnormal patterns ($p < 0.05$). An example of a rower with LBP is shown in Figure 1.

Discussion: A characteristic pattern of relative abdominal muscle thickness was found in controls and rowers without LBP. In rowers with LBP the pattern was altered; this could be a cause or effect of LBP.

Conclusions: Ultrasound imaging can be used to aid assessment of abdominal muscle involvement in LBP. Specific abnormalities could be addressed by individual exercise programmes, the effects of which need to be evaluated to provide evidence for rehabilitation.

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Depression in elderly fallers: an evaluation of a screening tool

CE Lightbody, CL Watkins

School of Nursing, Midwifery & Health Visiting, University of Manchester

M Leathley

Stroke Team for Audit & Research, University Hospital Aintree

M Gosney and N Carroll

Department of Geriatric Medicine, University of Liverpool

Introduction: Tinetti *et al.*¹ found an increased risk of falling in those who were depressed (RR 1.7, 95% CI 1.2–2.3). Identifying and treating depression may decrease the risk of falling. A simple screening tool may improve detection of mood problems. A screening question, 'Do you often feel sad or depressed?' (Yale) which is simply answered 'Yes' or 'No', had a sensitivity of 69% and a specificity of 90% in community-dwelling medically ill patients. This study reports the use of the Yale in elderly fallers.

Methods: From a cohort of 348 community-dwelling elderly fallers who participated in a randomized control trial (RCT) of falls prevention 2–3 years previously 100 (50 from each arm) were randomly selected. Those able and consenting underwent a clinical interview for depression (Montgomery Asberg Depression Rating Scale, MADRS) and the Yale.

Results: Of the 100 subjects approached 65 were included (26 unable or unwilling to consent, three dead, four nursing home, two unable to contact). Median age 75 (interquartile range 72–81), 49 (75%) were female. Thirty-five per cent were classified as depressed (>6 on MADRS) (Table 1).

Table 1

Yale	MADRS classification		
	Depressed	Not depressed	
Depressed	15	7	Positive predictive value = 68%
Not depressed	8	35	Negative predictive value = 81%
	Sensitivity 65%	Specificity 83%	Efficiency = 77%

Conclusion: Depression is common in elderly fallers. The Yale will be a useful screening tool for depression in this group as part of a management pathway.

Reference

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The inter-rater reliability of the Balance Performance Monitor when measuring sitting-symmetry and weight-shift activity after stroke in a community setting

Cath Sackley

Department of Physiotherapy, School of Health Sciences, University of Birmingham

Background and purpose: Impair sitting-balance after stroke is predictive of poor outcome. Little evidence exists to support the use of remedial therapy, particularly in a community setting and the reliability of tools to measure sitting-symmetry have not been established. This study examined the intra-rater reliability of sitting-symmetry and weight-shift activity measures using the Balance Performance Monitor (BPM).

Subjects: Forty-nine adult stroke volunteers (median age 73 years, IQR 68–81 years).

Setting: Community groups in Nottingham.

Measures: Sitting-symmetry and weight-shift activity, using the BPM.

Analysis: Intraclass correlation coefficients (ICCs) and the 95% confidence interval (CI) for the ICCs, and Bland and Altman method for assessing agreement, including reliability coefficient.

Results: Between-tests reliability for sitting-symmetry test was high with ICCs (1,1) of 0.93, 95% CI is 0.87–0.96. The mean of the differences (\bar{d}) = -0.084 and the standard deviation of the differences (SD_{diff}) = 1.38. The 95% CI for \bar{d} is -0.312 to 0.48. The coefficient of repeatability is 3.76 and the 95% limits of agreement are -2.844 to 2.676.

Between-tests reliability for weight-shift-activity was high, with reliability coefficients from ICCs (1,1) of 0.86, 95% CI is 0.77–0.92. The mean

of the differences (\bar{d}) is -0.079 and the standard deviation of the differences (SD_{diff}) = 0.94. The 95% CI for \bar{d} is -0.346 to 0.188. The coefficient of repeatability is 1.73 and the 95% limits of agreement are -1.959 to 1.801.

Conclusions: The 95% CI for \bar{d} for both parameters cross 0, indicating that it is unlikely that bias exists between the tests. Measures of sitting-symmetry and weight-shift activity demonstrated acceptable levels of reliability.

The frequency of joint contractures, pressure sores, painful shoulder, other pain and falls after severely disabling stroke

Catherine M Sackley and Michael E Dewey

Trent Institute for Health Services Research, School of Community Health Sciences, Queens Medical Centre, Nottingham

Objective: To investigate frequency of immobility-related complications; joint contractures, pressure sores, painful shoulder, other pain and falls in the first year after severely disabling stroke.

Design: Inception cohort followed for one year assessed at 3, 6 and 12 months post stroke.

Setting: Subjects identified in hospital and followed-up at their place of residence.

Participants: Adult stroke survivors with a Barthel Index <11/20 three months after stroke identified by the Nottingham Stroke Register, 146 subjects were identified over a seven-month period.

Measures: Barthel Index, pressure sores (present/not present), contractures (site of contracture, estimated 30% or higher restriction), shoulder pain (subjective view of patient or observation by therapist), other pain (report from resident or carer and drug administration records), falls (included all transfer accidents and slips, scored as either having or not having a fall).

Results: Of the 146 identified, 122 were included (median age 76, 86 men, 60 women), 85 (70%) of these were assessed at six months and 76 (62%) at 12 months. Seventy-three subjects had significant communication or other cognitive impairments. Consequently, the majority of information

was gathered via examination or from carers' reports or written records. Twenty-four people (20%) experienced pressure sores, 67 (55%) contractures, 59 (48%) shoulder pain, 80 (66%) falls and 59 (48%) other pain.

Conclusions: Immobility-related complications are very common in the first year after severely disabling stroke. It is likely that they have significant effects on the sufferers' quality of life and ability to benefit from rehabilitation.

Does type of service provision affect the participation of physically disabled young adults?

Nuala Bent, Alan Tennant

Rheumatology & Rehabilitation Research Unit, Research School of Medicine, University of Leeds,

Teresa Swift

Centre for Ethics in Medicine, Bristol and

M Anne Chamberlain

Rheumatology & Rehabilitation Research Unit, Research School of Medicine, University of Leeds

Introduction: In order to facilitate the transition to adulthood for young people with physical disabilities, there is a need for reliable, accessible and high-quality services that address all aspects of adult life. Yet there is little evidence to suggest

that the needs of these young people are being met by current services.

Setting: Four areas of England; two with a multidisciplinary team in place and two with 'ad hoc' services.

Subjects: Two hundred and fifty-four young people with physical disabilities, aged between 17 and 28 years were recruited.

Methods: Semi-structured interviews included measures of impairment, disability, handicap and quality of life together with some standardized psycho-social measures. Information was also collected on demographics, economic details, and use and knowledge of services. Interviews were conducted face to face and for those with communication difficulties, a proxy was present. The London Handicap Scale (participation) was chosen as the main outcome measure, dichotomized at the median.

Results: A forward stepwise logistic regression analysis suggests that the odds of being in the upper half of participation are increased by the absence of pain (1.96) and fatigue (3.19), and not being stressed (2.66). Adjusting for these values, young people cared for by specialist teams dedicated to their needs were 2.54 times more likely to be participating than those cared for by ad hoc services (in all cases $p < 0.05$).

Conclusion: Adjusting for impairments, having access to a multidisciplinary team increases the odds of participation of young people with physical and complex disabilities.