University Hospitals Bristol NHS
NHS Foundation Trust

Stroke Rehabilitation

Evidence Update

March 2018

(Quarterly)

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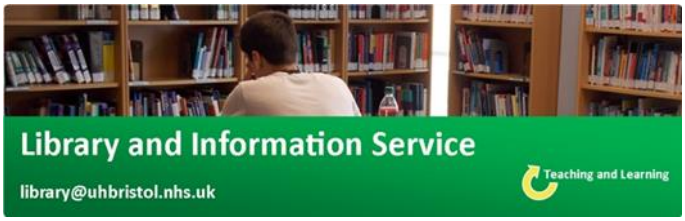

Training Calendar 2018

March (13.00-14.00)	
8th (Thu)	Statistics
12th (Mon)	Literature Searching
20th (Tue)	Critical Appraisal
28th (wed)	Statistics
April (12.00-13.00)	
5th (Thu)	Literature Searching
9th (Mon)	Critical Appraisal
17th (Tue)	Statistics
25th (Wed)	Literature Searching
May (13.00-14.00)	
3rd (Thu)	Critical Appraisal
11th (Fri)	Statistics
14th (Mon)	Literature Searching
22nd (Tue)	Critical Appraisal
30th (Wed)	Statistics

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Contents

Departmental News

News, Research, Conferences, Training etc

Please contact us with any departmental news you wish to share here with your colleagues in your Evidence Update bulletin.

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Updates

NICE National Institute for Health and Care Excellence

Systematic review of clinical practice guidelines to identify recommendations for rehabilitation after stroke and other acquired brain injuries Source: PubMed - 28 February 2018 - Publisher: Bmj Open Read Summary

Stroke and TIA Source: Clinical Knowledge Summaries - 28 February 2018

On the reporting of experimental and control therapies in stroke rehabilitation trials: A systematic-review Source: PubMed - 02 February 2018 - Publisher: Archives Of Physical Medicine And Rehabilitation Read Summary

Patent foramen ovale closure vs. medical therapy for cryptogenic stroke: a meta-analysis of randomized controlled trials 24 March 2018 - Publisher: European Heart Journal UKMi comment

Percutaneous closure versus medical therapy for strokewith patent foramen Ovale: a systematic review and meta-analysis Source: PubMed - 02 March 2018 - Publisher: Bmc Cardiovascular Disorders Read Summary

How does virtual reality compare with conventional therapy during stroke rehabilitation?
Source: Cochrane Clinical Answers - 23 February 2018
More: Systematic Reviews

Primary 'dehydration' and acute stroke: a systematic research review
Source: PubMed - 01 March 2018 - Publisher: Journal Of Neurology Read Summary

Peripheral somatosensory stimulation and postural recovery after stroke - a systematic review
Source: PubMed - 23 February 2018 - Publisher: Topics In Stroke Rehabilitation Read Summary

How does circuit class therapy compare with an alternative intervention for improving mobility in people after stroke? Source: Cochrane Clinical Answers - 02 February 2018

Cochrane Library

Tai Chi for improving recovery after stroke

Hong Wei Zhang , Rui Zheng , Chuanshan Xu , Zhi Xiu Lin , Ying Qin , Jing Cai and Qiuju Yuan Online Publication Date: March 2018

UpToDate® *OpenAthens login required. Register here: https://openathens.nice.org.uk/*
No relevent evidence

Journal Tables of Contents

Click on the hyperlinked journal title (+ Ctrl) for the most recent tables of contents. If you would like any of the papers in full text then please get in touch: library@uhbristol.nhs.uk

Stroke

April 2018, Volume 49, Issue 4

British Journal of Occupational Therapy

Volume 81, Issue 3, March 2018

Physiotherapy

March 2018 Volume 104, Issue 1, p1-152, e1-e2

Library Clinic

Stop by and find out more about our services. We will be here to answer any questions you may have!

March 7th: **Canteen (Level 9, BRI)** *12.00-14.00*

March 19th: **Welcome Centre, BRI** *10.00-16.00*

April 4th: **Foyer, Education Centre** *12.00-14.00*

April 11th: **Foyer, St Michael's Hospital** *12.00-14.00*

May 2nd: **Canteen (Level 9, BRI)** *12.00-14.00*

June 6th: **Terrace (Level 4, Education Centre)** *12.00-14.00*

June 19th: **Welcome Centre, BRI** *10.00-16.00*

July 3rd: **Welcome Centre, BRI** *10.00-16.00*

July 4th: **Canteen (Level 9, BRI)** *12.00-14.00*

August 8th: **Foyer, Education Centre** *12.00-14.00*

August 29th: **Foyer, St Michael's Hospital** *12.00-14.00*

September 5th: **Canteen (Level 9, BRI)** *12.00-14.00*

September 11th: **Welcome Centre, BRI** *10.00-16.00*

October 3rd: **Terrace (Level 4, Education Centre)** *12.00-14.00*

November 7th: **Canteen (Level 9, BRI)** *12.00-14.00*

December 5th: **Foyer, Education Centre** *12.00-14.00*

December 11th: **Welcome Centre, BRI** *10.00-16.00*

Recent Database Articles on Stroke Recovery

Below is a selection of articles on oral and maxillofacial surgery recently added to the healthcare databases, grouped into the following categories:

Early Stroke Discharge
Occupational Therapy
Upper Limb
Cognition and Perception

If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: library@uhbristol.nhs.uk

Early Stroke Discharge

The novel language-systematic aphasia screening SAPS: screening-based therapy in combination with computerised home training.

Author(s): Krzok, Franziska; Rieger, Verena; Niemann, Katharina; Nobis-Bosch, Ruth;

Source: International journal of language & communication disorders; Mar 2018; vol. 53 (no. 2); p. 308-323

Publication Type(s): Journal Article

Abstract:BACKGROUNDSAPS-'Sprachsystematisches Aphasiescreening'-is a novel language-systematic aphasia screening developed for the German language, which already had been positively evaluated. It offers a fast assessment of modality-specific psycholinguistic components at different levels of complexity and the derivation of impairment-based treatment foci from the individual performance profile. However, SAPS has not yet been evaluated in combination with the new SAPS-based treatment.AIMSTo replicate the practicality of SAPS and to investigate the effectiveness of a SAPS-based face-to-face therapy combined with computerised home training in a feasibility study. To examine the soundness of the treatment design, to determine treatment-induced changes in patient performance as measured by SAPS, to assess parallel changes in communicative abilities, and to differentiate therapy effects achieved by face-to-face therapy versus add-on effects achieved by later home training.METHODS & PROCEDURESSixteen participants with post-stroke aphasia (PWAs) were included into the study. They were administered the SAPS and communicative testing before and after the treatment regimen. Each PWA received one therapy session followed by home training per day, with the individual treatment foci being determined according to initial SAPS profile, and duration of treatment and possible change of focus dependent on performance assessed by continuous therapy monitoring.OUTCOMES & RESULTSThe combination of therapy and home training based on the SAPS was effective for all participants. We showed significant improvements for impairment-based SAPS performance and, with high inter-individual variability, in everyday communication. These two main targets of speech and language therapy were correlated and SAPS improvements after therapy were significantly higher than after home training.CONCLUSIONS & IMPLICATIONSSAPS offers the assessment of an individual performance profile in order to derive

sufficiently diversified, well-founded and specific treatment foci and to follow up changes in performance. The appending treatment regimen has shown to be effective for our participants. Thus, the study revealed feasibility of our approach.

Feasibility of a novel intervention to improve participation after stroke.

Author(s): Stark, Susan; Keglovits, Marian; Somerville, Emily; Hu, Yi-Ling; Conte, Jane; Yan, Yan

Source: British Journal of Occupational Therapy; Feb 2018; vol. 81 (no. 2); p. 116-124

Publication Type(s): Academic Journal

Abstract: Introduction Stroke is a leading cause of serious, long-term disability in the United States. With shorter inpatient hospital stays, more time in rehabilitation is devoted to medical stabilization and less on skills to regain independence in daily activities. The transition home may be an opportunity for intervention focused on regaining independence. We propose an enhanced rehabilitation transition program called Community Participation Transition after Stroke. Method A prospective, randomized, single-blinded, parallel-group pilot study was completed with 15 participants to demonstrate feasibility. Findings Fidelity to the protocol was achieved: The Community Participation Transition after Stroke group received 81% of the planned minutes and 83% of the intervention visits. There was no difference between groups for healthcare utilization or falls. Adherence was 85% at three months and 71% at nine months for the home modification intervention. At 6 months, scores improved by 17.39 points for the Community Participation Transition after Stroke group, and 1.30 points for the control group. Environmental barriers decreased in both groups. Conclusion This pilot study demonstrated that it is feasible to implement a community participation intervention during the period of transitioning home from inpatient rehabilitation for stroke survivors. Additional studies are necessary to determine the efficacy of the intervention.

How active are patients in setting goals during rehabilitation after stroke? A qualitative study of clinician perceptions.

Author(s): Parsons, John G. M.; Plant, Sarah E.; Slark, Julia; Tyson, Sarah F.

Source: Disability & Rehabilitation; Feb 2018; vol. 40 (no. 3); p. 309-316

Publication Type(s): Academic Journal

Abstract: Purpose:We investigated stroke rehabilitation clinician's perceptions of the patient as an active partner in setting goals within stroke rehabilitation and factors that influence patient engagement. Methods:Semi-structured interviews, subject to general inductive analysis with 20 Clinicians' working in three UK based stroke rehabilitation teams (one in-patient ward and two community based rehabilitation teams). Results:There were three key themes that impacted on the patients active involvement in setting goals for rehabilitation after stroke: Patient barriers to goal setting (knowledge of the patient and family, who is the patient and the stroke's impact); How we work as a team (the role of the patient in setting goals, the effect of clinician attributes on goal setting); and How systems impact goal setting (goal-setting practice, home versus hospital, and professional/funder expectations of clinicians'). Conclusions:Goal setting served a range of different, sometimes conflicting, functions within rehabilitation. Clinicians' identified the integral nature of goals to engage and motivate patients and to provide direction and purpose for rehabilitation. Further, there was an identified need to consider the impact of prioritizing clinician-derived goals at the expense of patient-identified goals. Lastly the reliance on the SMART goal format requires further consideration, both in terms of the proposed benefits and whether they disempower the patient during rehabilitation.Implications for rehabilitationGoal setting is often promoted as a relatively simple, straightforward way to structure interactions with patientsPatient-related factors together with resourcing constraints are significant barriers to patient-centered goal setting,

particularly during inpatient rehabilitationClinicians need to have pragmatic tools that can be integrated into practice to ensure that goal-setting practice can be maximized for patients with different intrinsic characteristics

A Community-Based, Bionic Leg Rehabilitation Program for Patients with Chronic Stroke: Clinical Trial Protocol.

Author(s): Wright, Amy; Stone, Keeron; Lambrick, Danielle; Fryer, Simon; Stoner, Lee;

Source: Journal of Stroke & Cerebrovascular Diseases; Feb 2018; vol. 27 (no. 2); p. 372-380

Publication Type(s): Academic Journal

Abstract: Stroke is a major global health problem whereby many survivors have unmet needs concerning mobility during recovery. As such, the use of robotic-assisted devices (i.e., a bionic leg) within a community setting may be an important adjunct to normal physiotherapy in chronic stroke survivors. This study will be a dual-center, randomized, parallel group clinical trial to investigate the impact of a community-based training program using a bionic leg on biomechanical, cardiovascular, and functional outcomes in stroke survivors. Following a baseline assessment that will assess gait, postural sway, vascular health (blood pressure, arterial stiffness), and functional outcomes (6-minute walk), participants will be randomized to a 10-week program group, incorporating (1) a physiotherapy plus community-based bionic leg training program; (2) physiotherapy only; or (3) usual care control. The training program will involve participants engaging in a minimum of 1 hour per day of bionic leg activities at home. Follow-up assessments, identical to baseline, will occur after 10 weeks, and 3 and 12 months postintervention. Given the practical implications of the study, the clinical significance of using the bionic leg will be assessed for each outcome variable. The potential improvements in gait, balance, vascular health, and functional status may have a meaningful impact on patients' quality of life. The integration of robotic devices within home-based rehabilitation programs may prove to be a cost-effective, practical, and beneficial resource for stroke survivors.

Home-based neurologic music therapy for arm hemiparesis following stroke: results from a pilot, feasibility controlled trial.

Author(s): Street, Alexander J; Magee, Wendy L; Bateman, Andrew; Parker, Michael

Source: Clinical rehabilitation; Jan 2018; vol. 32 (no. 1); p. 18-28

Publication Type(s): Journal Article

Available at Clinical Rehabilitation - from PubMed Central

Abstract:OBJECTIVETo assess the feasibility of a randomized controlled trial to evaluate music therapy as a home-based intervention for arm hemiparesis in stroke.DESIGNA pilot feasibility randomized controlled trial, with cross-over design. Randomization by statistician using computer-generated, random numbers concealed in opaque envelopes.SETTINGParticipants' homes across Cambridgeshire, UK.SUBJECTSEleven people with stroke and arm hemiparesis, 3-60 months post stroke, following discharge from community rehabilitation.INTERVENTIONSEach participant engaged in therapeutic instrumental music performance in 12 individual clinical contacts, twice weekly for six weeks.MAIN MEASURESFeasibility was estimated by recruitment from three community stroke teams over a 12-month period, attrition rates, completion of treatment and successful data collection. Structured interviews were conducted pre and post intervention to establish participant tolerance and preference. Action Research Arm Test and Nine-hole Peg Test data were collected at weeks 1, 6, 9, 15 and 18, pre and post intervention by a blinded assessor.RESULTSA total of 11 of 14 invited participants were recruited (intervention n = 6, waitlist n = 5). In total, 10 completed treatment and data collection.CONCLUSIONIt cannot be concluded whether a larger trial would be feasible due to unavailable data regarding a number of eligible patients screened. Adherence to

treatment, retention and interview responses might suggest that the intervention was motivating for participants.TRIAL REGISTRATIONClinicalTrials.gov identifier NCT 02310438.

Hospital recruitment for a pragmatic cluster-randomized clinical trial: Lessons learned from the COMPASS study.

Author(s): Johnson, Anna M; Jones, Sara B; Duncan, Pamela W; Bushnell, Cheryl D;

Source: Trials; Jan 2018; vol. 19 (no. 1); p. 74

Publication Type(s): Journal Article

Available at Trials - from EBSCO (MEDLINE Complete)

Abstract:BACKGROUNDPragmatic randomized clinical trials are essential to determine the effectiveness of interventions in "real-world" clinical practice. These trials frequently use a cluster-randomized methodology, with randomization at the site level. Despite policymakers' increased interest in supporting pragmatic randomized clinical trials, no studies to date have reported on the unique recruitment challenges faced by cluster-randomized pragmatic trials. We investigated key challenges and successful strategies for hospital recruitment in the Comprehensive Post-Acute Stroke Services (COMPASS) study.METHODSThe COMPASS study is designed to compare the effectiveness of the COMPASS model versus usual care in improving functional outcomes, reducing the numbers of hospital readmissions, and reducing caregiver strain for patients discharged home after stroke or transient ischemic attack. This model integrates early supported discharge planning with transitional care management, including nurse-led follow-up phone calls after 2, 30, and 60 days and an in-person clinic visit at 7-14 days involving a functional assessment and neurological examination. We present descriptive statistics of the characteristics of successfully recruited hospitals compared with all eligible hospitals, reasons for non-participation, and effective recruitment strategies.RESULTSWe successfully recruited 41 (43%) of 95 eligible North Carolina hospitals. Leading, non-exclusive reasons for non-participation included: insufficient staff or financial resources (n = 33, 61%), lack of health system support (n = 16, 30%), and lack of support of individual decision-makers (n = 11, 20%). Successful recruitment strategies included: building and nurturing relationships, engaging team members and community partners with a diverse skill mix, identifying gatekeepers, finding mutually beneficial solutions, having a central institutional review board, sharing published pilot data, and integrating contracts and review board administrators.CONCLUSIONSAlthough we incorporated strategies based on the best available evidence at the outset of the study, hospital recruitment required three times as much time and considerably more staff than anticipated. To reach our goal, we tailored strategies to individuals, hospitals, and health systems. Successful recruitment of a sufficient number and representative mix of hospitals requires considerable preparation, planning, and flexibility. Strategies presented here may assist future trial organizers in implementing cluster-randomized pragmatic trials.TRIAL REGISTRATIONClinicaltrials.gov, NCT02588664 . Registered on 23 October 2015.

Mobility Device Quality Affects Participation Outcomes for People With Disabilities: A Structural Equation Modeling Analysis.

Author(s): Magasi, Susan; Wong, Alex; Miskovic, Ana; Tulsky, David; Heinemann, Allen W.

Source: Archives of Physical Medicine & Rehabilitation; Jan 2018; vol. 99 (no. 1); p. 1-8

Publication Type(s): Academic Journal

Abstract: Objective To test the effect that indicators of mobility device quality have on participation outcomes in community-dwelling adults with spinal cord injury, traumatic brain injury, and stroke by using structural equation modeling. Design Survey, cross-sectional study, and model testing. Setting Clinical research space at 2 academic medical centers and 1 free-standing rehabilitation hospital. Participants Community-dwelling adults (N=250; mean age, 48±14.3y) with spinal cord injury,

traumatic brain injury, and stroke. Interventions Not applicable. Main Outcomes Measures The Mobility Device Impact Scale, Patient-Reported Outcomes Measurement Information System Social Function (version 2.0) scale, including Ability to Participate in Social Roles and Activities and Satisfaction with Social Roles and Activities, and the 2 Community Participation Indicators' enfranchisement scales. Details about device quality (reparability, reliability, ease of maintenance) and device type were also collected. Results Respondents used ambulation aids (30%), manual (34%), and power wheelchairs (30%). Indicators of device quality had a moderating effect on participation outcomes, with 3 device quality variables (repairability, ease of maintenance, device reliability) accounting for 20% of the variance in participation. Wheelchair users reported lower participation enfranchisement than did ambulation aid users. Conclusions Mobility device quality plays an important role in participation outcomes. It is critical that people have access to mobility devices and that these devices be reliable.

Occupational Therapy

Predicting fitness-to-drive following stroke using the Occupational Therapy - Driver Off Road Assessment Battery.

Author(s): Unsworth, Carolyn A; Baker, Anne; Lannin, Natasha; Harries, Priscilla; Strahan, Janene

Source: Disability and rehabilitation; Feb 2018 ; p. 1-6

Publication Type(s): Journal Article

PubMedID: 29488407

Abstract:INTRODUCTIONIt is difficult to determine if, or when, individuals with stroke are ready to undergo on-road fitness-to-drive assessment. The Occupational Therapy - Driver Off Road Assessment Battery was developed to determine client suitability to resume driving. The predictive validity of the Battery needs to be verified for people with stroke.AIMExamine the predictive validity of the Occupational Therapy - Driver Off Road Assessment Battery for on-road performance among people with stroke.METHODOff-road data were collected from 148 people post stroke on the Battery and the outcome of their on-road assessment was recorded as: fit-to-drive or not fit-to-drive.RESULTSThe majority of participants (76%) were able to resume driving. A classification and regression tree (CART) analysis using four subtests (three cognitive and one physical) from the Battery demonstrated an area under the curve (AUC) of 0.8311. Using a threshold of 0.5, the model correctly predicted 98/112 fit-to-drive (87.5%) and 26/36 people not fit-to-drive (72.2%).CONCLUSIONThe three cognitive subtests from the Occupational Therapy - Driver Off Road Assessment Battery and potentially one of the physical tests have good predictive validity for client fitness-to-drive. These tests can be used to screen client suitability for proceeding to an on-road test following stroke. Implications for Rehabilitation: Following stroke, drivers should be counseled (including consideration of local legislation) concerning return to driving. The Occupational Therapy - Driver Off Road Assessment Battery can be used in the clinic to screen people for suitability to undertake on road assessment. Scores on four of the Occupational Therapy - Driver Off Road Assessment Battery subtests are predictive of resumption of driving following stroke.

Community Use of Physical and Occupational Therapy After Stroke and Risk of Hospital Readmission.

Author(s): Freburger, Janet K; Li, Dongmei; Fraher, Erin P

Source: Archives of physical medicine and rehabilitation; Jan 2018; vol. 99 (no. 1); p. 26

Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Journal Article Research Support, U.s. Gov't, P.h.s.

Abstract:OBJECTIVESTo determine whether receipt of therapy and number and timing of therapy visits decreased hospital readmission risk in stroke survivors discharged home.DESIGNRetrospective cohort analysis of Medicare claims (2010-2013).SETTINGAcute care hospital and community.PARTICIPANTSPatients hospitalized for stroke who were discharged home and survived the first 30 days (N=23,413; mean age ± SD, 77.6±7.5y).INTERVENTIONSPhysical and occupational therapist use in the home and/or outpatient setting in the first 30 days after discharge (any use, number of visits, and days to first visit).MAIN OUTCOME MEASURESHospital readmission 30 to 60 days after discharge. Covariates included demographic characteristics, proxy variables for functional status, hospitalization characteristics, comorbidities, and prior health care use. Multivariate logistic regression analyses were conducted to examine the relation between therapist use and readmission.RESULTSDuring the first 30 days after discharge, 31% of patients saw a therapist in the home, 11% saw a therapist in an outpatient setting, and 59% did not see a therapist. Relative to patients who had no therapist contact, those who saw an outpatient therapist were less likely to be readmitted to the hospital (odds ratio, 0.73; 95% confidence interval, 0.59-0.90). Although the point estimates did not reach statistical significance, there was some suggestion that the greater the number of therapist visits in the home and the sooner the visits started, the lower the risk of hospital readmission.CONCLUSIONSAfter controlling for observable demographic-, clinical-, and health-related differences, we found that individuals who received outpatient therapy in the first 30 days after discharge home after stroke were less likely to be readmitted to the hospital in the subsequent 30 days, relative to those who received no therapy.

Occupational therapy for complex inpatients with stroke: identification of occupational needs in post-acute rehabilitation setting.

Author(s): Schiavi, Margherita; Costi, Stefania; Pellegrini, Martina; Formisano, Debora; Borghi

Source: Disability and rehabilitation; May 2018; vol. 40 (no. 9); p. 1026-1032

Publication Type(s): Journal Article

Abstract:PURPOSEInpatients admitted to rehabilitation express needs not linked to disease causing hospitalization. This observational cross-sectional study identifies features and occupational needs of complex inpatients during rehabilitation, focusing on function and ability, regardless of diagnosis.METHODThis study included sixteen adult inpatients with stroke, deemed complex according to Rehabilitation Complexity Scale-Extended, at admission to Rehabilitation ward (from July 2014 to February 2015). Patients with primary psychiatric disorders, language barriers, cognitive or severe communication deficits were excluded. Upon admission, a multidisciplinary team collected data on general health, independence in daily activities (Modified Barthel Index), fatigue (Fatigue Severity Scale), resistance to sitting and ability to perform instrumental activities (Instrumental Activities of Daily Living). The occupational therapist identified occupational needs according to Canadian Occupational Performance Measure.RESULTSInpatients enrolled in this study were dependent in basic ADL, limited in instrumental ADL and easily fatigable. Their occupational needs related to self-care (75%) and, to a lesser extent, productivity (15%) and leisure (10%). According to inpatients, rehabilitation process should firstly address self-care needs, followed by productivity and leisure problems.CONCLUSIONSDespite small sample size, this study described patterns of occupational needs in complex inpatients with stroke. These results will be implemented in client-centered rehabilitation programs to be tested in a phase-two trial. [NCT02173197] Implications for Rehabilitation Priority occupational needs of complex inpatients with stroke during rehabilitation are focused on self-care area. Productivity and leisure problems also arise in early post-acute phase. Client-centered rehabilitation programs should firstly address self-care needs and, later on, they should also focus on the recovery of family and social roles.

Occupational Therapy Practitioners' Perspectives of Mental Health Practices With Clients in Stroke Rehabilitation.

Author(s): Simpson, Emily K; Ramirez, Narissa M; Branstetter, Brittany; Reed, Aileen; Lines, Evan

Source: OTJR : occupation, participation and health; Mar 2018 ; p. 1539449218759627

Publication Type(s): Journal Article

Abstract: Following a stroke, depression and anxiety may negatively affect recovery and decrease quality of life. Occupational therapy (OT) practitioners are distinctly qualified to address both the physical and psychosocial sequelae of a stroke, including clients' mental and emotional health. This study explored the ways in which OT practitioners address the mental health needs of clients post stroke. A sequential explanatory mixed-methods design was used to collect both survey and focus group data. In all, 754 OT practitioners across the United States completed an online survey, and 10 practitioners participated in focus groups. Practitioners considered their clients' mental health needs to be a priority (68.17%); however, only 56.64% were satisfied with the care they provided related to mental and emotional health. They identified barriers that included limited time, increased productivity standards, expectations related to physical recovery, and poor educational preparation. Practitioners are motivated to improve their provision of mental health services to clients post stroke. To address the conflict between practice realities and professional values, education programs should better integrate curricular components that focus on physical and mental health.

Content of conventional therapy for the severely affected arm during subacute rehabilitation after stroke: An analysis of physiotherapy and occupational therapy practice.

Author(s): de Jong, Lex D; van Wijck, Frederike; Stewart, Roy E; Geurts, Alexander C H

Source: Physiotherapy research international : the journal for researchers and clinicians in physical therapy; Jan 2018; vol. 23 (no. 1)

Publication Type(s): Journal Article

Abstract:BACKGROUND AND PURPOSEPhysiotherapy (PT) and occupational therapy (OT) are key professions providing treatment for the arm after stroke; however, knowledge about the content of these treatments is scant. Detailed data are needed to replicate interventions, evaluate their effective components, and evaluate PT and OT practice. This paper describes PT and OT treatment for the severely affected arm in terms of duration, content according to components and categories of the International Classification of Human Functioning, Disability and Health, and to analyze differences between professions.METHODSDesign: This is a retrospective analysis of randomized trial data.PARTICIPANTS46 patients after stroke with poor arm motor control recruited from inpatient neurological units from three rehabilitation centers in the Netherlands.PROCEDUREPTs and OTs recorded duration and content of arm treatment interventions for 8 weeks using a bespoke treatment schedule with 15 International Classification of Human Functioning, Disability and Health categories.RESULTSPTs and OTs spent on average 4-7 min per treatment session (30 min) on arm treatment. OTs spent significantly more time providing arm treatment and treatment at the activities level than PTs. PTs spent 79% of their arm treatment time on body functions, OTs 41%. OTs spent significantly more time on "moving around using transportation," "self care," and "household tasks" categories.CONCLUSIONSPatients after stroke with a severely affected arm and an unfavorable prognosis for arm motor recovery receive little arm-oriented PT and OT. Therapists spent most arm treatment time on body functions. There was a considerable overlap in the content of PT and OT in 12 of the 15 categories. Results can be generalized only to patients with poor arm motor control and may not represent practice in other countries.

Examining Guided and Directed Cues in Strategy Training and Usual Rehabilitation.

Author(s): Rouch, Stephanie; Skidmore, Elizabeth R

Source: OTJR : occupation, participation and health; Feb 2018 ; p. 1539449218758618

Publication Type(s): Journal Article

Abstract: Therapist approach and feedback during rehabilitation may influence patient outcomes. It is unclear how much guided cueing, the approach used in strategy training, is present in usual rehabilitation care. We compared the frequency of guided and directed cueing in strategy training sessions with cueing in usual care occupational and physical therapy. We videotaped strategy training, occupational therapy, and physical therapy sessions among 20 patients admitted to inpatient rehabilitation after stroke. Using a standardized coding scheme, we coded and analyzed frequencies of therapists' cues (guided or directed). The proportion of guided cues was significantly higher in strategy training intervention (42%) compared with occupational therapy (4%) and physical therapy (3%). Preliminary research suggests that guided cueing may be more prevalent in strategy training than in usual care. Given that guided cueing provides more opportunity for patients to take an active role in their rehabilitation, guided cueing may lead to superior outcomes.

Changing practice in the assessment and treatment of somatosensory loss in stroke survivors: protocol for a knowledge translation study.

Author(s): Cahill, Liana S; Lannin, Natasha A; Mak-Yuen, Yvonne Y K; Turville, Megan L

Source: BMC health services research; Jan 2018; vol. 18 (no. 1); p. 34

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

Abstract:BACKGROUNDThe treatment of somatosensory loss in the upper limb after stroke has been historically overshadowed by therapy focused on motor recovery. A double-blind randomized controlled trial has demonstrated the effectiveness of SENSe (Study of the Effectiveness of Neurorehabilitation on Sensation) therapy to retrain somatosensory discrimination after stroke. Given the acknowledged prevalence of upper limb sensory loss after stroke and the evidence-practice gap that exists in this area, effort is required to translate the published research to clinical practice. The aim of this study is to determine whether evidence-based knowledge translation strategies change the practice of occupational therapists and physiotherapists in the assessment and treatment of sensory loss of the upper limb after stroke to improve patient outcomes.METHOD/DESIGNA pragmatic, before-after study design involving eight (n = 8) Australian health organizations, specifically sub-acute and community rehabilitation facilities. Stroke survivors (n = 144) and occupational therapists and physiotherapists (~10 per site, ~n = 80) will be involved in the study. Stroke survivors will be provided with SENSe therapy or usual care. Occupational therapists and physiotherapists will be provided with a multi-component approach to knowledge translation including i) tailoring of the implementation intervention to site-specific barriers and enablers, ii) interactive group training workshops, iii) establishing and fostering champion therapists and iv) provision of written educational materials and online resources. Outcome measures for occupational therapists and physiotherapists will be pre- and post-implementation questionnaires and audits of medical records. The primary outcome for stroke survivors will be change in upper limb somatosensory function, measured using a standardized composite measure.DISCUSSIONThis study will provide evidence and a template for knowledge translation in clinical, organizational and policy contexts in stroke rehabilitation.TRIAL REGISTRATIONAustralian New Zealand Clinical Trials Registry (ANZCTR) retrospective registration ACTRN12615000933550 .

Feasibility of task-specific brain-machine interface training for upper-extremity paralysis in patients with chronic hemiparetic stroke.

Author(s): Nishimoto, Atsuko; Kawakami, Michiyuki; Fujiwara, Toshiyuki; Hiramoto, Miho;

Source: Journal of rehabilitation medicine; Jan 2018; vol. 50 (no. 1); p. 52-58

Publication Type(s): Journal Article

Available at Journal of Rehabilitation Medicine - from EBSCO (MEDLINE Complete)

Abstract:OBJECTIVEBrain-machine interface training was developed for upper-extremity rehabilitation for patients with severe hemiparesis. Its clinical application, however, has been limited because of its lack of feasibility in real-world rehabilitation settings. We developed a new compact task-specific brain-machine interface system that enables task-specific training, including reach-and-grasp tasks, and studied its clinical feasibility and effectiveness for upper-extremity motor paralysis in patients with stroke.DESIGNProspective beforeâ€"after study.SUBJECTSTwenty-six patients with severe chronic hemiparetic stroke.METHODSParticipants were trained with the brain-machine interface system to pick up and release pegs during 40-min sessions and 40 min of standard occupational therapy per day for 10 days. Fugl-Meyer upper-extremity motor (FMA) and Motor Activity Log-14 amount of use (MAL-AOU) scores were assessed before and after the intervention. To test its feasibility, 4 occupational therapists who operated the system for the first time assessed it with the Quebec User Evaluation of Satisfaction with assistive Technology (QUEST) 2.0.RESULTSFMA and MAL-AOU scores improved significantly after brain-machine interface training, with the effect sizes being medium and large, respectively ($p<0.01$, $d=0.55$; $p<0.01$, $d=0.88$). QUEST effectiveness and safety scores showed feasibility and satisfaction in the clinical setting.CONCLUSIONOur newly developed compact brain-machine interface system is feasible for use in real-world clinical settings.

A pilot study: Can the UFOV assessment be used as a repeated measure to determine timing of on-road assessment in stroke?

Author(s): McNamara, Annabel; John Barr, Christopher; Bond, Malcolm J; George, Stacey

Source: Australian occupational therapy journal; Feb 2018

Publication Type(s): Journal Article

Abstract:BACKGROUND/AIMSUseful Field of View scores are predictive of on-road performance post-stroke. No objective data exist to determine if the Useful Field of View (UFOV) assessment can be used as a repeated measure in the post-stroke population to determine timing of occupational therapy on-road assessment as recovery occurs. The aims of this study were to determine whether there is a practice effect if the UFOV is administered at one, two and three months' post-stroke and to assess optimal time post-stroke to refer to an on-road assessment.METHODForty-two participants, 17 men (40.5%), with a mean age of 71 years (SD 9.33) were randomly allocated to 1. Assessment group - UFOV at one, two and three months' post-stroke, 2. Control group-UFOV at three months' post-stroke. Parametric and non-parametric tests were utilised depending on data distribution.RESULTSNo significance was found between; three months' subtest 1 ($P = 0.463$), three months' subtest 2 ($P = 0.729$) and three months' subtest 3 ($P = 0.534$) between the assessment and control groups. Both group's scores were combined to examine pass/fail rates of UFOV assessment to indicate timing of referral to on-road assessments. At one month, 16.9% stroke survivors passed the UFOV, when reassessed at three months 69.1% passed and 28.6% again failed.CONCLUSIONImprovements in scores at one month intervals over three months are due to improvements in abilities assessed by the UFOV as no practice effect was found to influence scores. UFOV scores performed at monthly intervals post-stroke can be used to guide the timing of an occupational therapy on-road assessment, with an increased likelihood of passing, as recovery occurs. This repeated use of the UFOV assessment can assist referral practices that best utilise driving rehabilitation programmes. Larger studies need to be conducted to confirm these results.

Facilitators for travelling with local public transport among people with mild cognitive limitations after stroke.

Author(s): Ståhl, Agneta; Månsson Lexell, Eva

Source: Scandinavian journal of occupational therapy; Mar 2018; vol. 25 (no. 2); p. 108-118

Publication Type(s): Journal Article

Abstract:INTRODUCTIONPrevious research of how people with stroke manage public transport has mainly focused on barriers due to physical limitations whereas the influence of cognitive limitations is scarce. There is also a lack of knowledge of facilitators that can help to overcome these barriers. The aim of this study was to describe facilitators for travelling with public transport, e.g. local buses, among people with mild cognitive limitations after stroke.METHODSA multiple case study research design was used, where quantitative and qualitative data were utilized, and analysed according to a mixed methods design.FINDINGSThe case descriptions reveal how people with mild cognitive limitations after stroke manage their trips but constantly have to be prepared to solve problems to unexpected events. Personal characteristics and other individual strategies together with support and solutions from society were important facilitators for travelling with bus.DISCUSSIONThis study takes a new approach by specifically describing facilitators for travelling with public transport among people with mild cognitive limitations after stroke. To facilitate participation in society for this particular traveller group, occupational therapists have an important role when new technology and interventions that target bus travels, and other modes of transport are developed.

Virtual Activities of Daily Living for Recovery of Upper Extremity Motor Function.

Author(s): Adams, Richard J; Lichter, Matthew D; Ellington, Allison; White, Marga; Armstead, Kate

Source: IEEE transactions on neural systems and rehabilitation engineering : a publication of the IEEE Engineering in Medicine and Biology Society; Jan 2018; vol. 26 (no. 1); p. 252-260

Publication Type(s): Journal Article

Abstract:A study was conducted to investigate the effectiveness of virtual activities of daily living (ADL) practice using the SaeboVR software system for the recovery of upper extremity (UE) motor function following stroke. The system employs Kinect sensor-based tracking to translate human UE motion into the anatomical pose of the arm of the patient's avatar within a virtual environment, creating a virtual presence within a simulated task space. Patients gain mastery of 12 different integrated activities while traversing a metaphorical "road to recovery" that includes thematically linked levels and therapist-selected difficulty settings. Clinical trials were conducted under the study named Virtual Occupational Therapy Application. A total of 15 chronic phase stroke survivors completed a protocol involving three sessions per week over eight weeks, during which they engaged in repetitive task practice through performance of the virtual ADLs. Results show a clinically important improvement and statistically significant difference in Fugl-Meyer UE assessment scores in the study population of chronic stroke survivors over the eight-week interventional period compared with a non-interventional control period of equivalent duration. Statistically significant and clinically important improvements are also found in the wolf motor function test scores. These results provide new evidence for the use of virtual ADL practice as a tool for UE therapy for stroke patients. Limitations of the study include non-blinded assessments and the possibility of selection and/or attrition bias.

Efficacy of Short-Term Robot-Assisted Rehabilitation in Patients With Hand Paralysis After Stroke: A Randomized Clinical Trial.

Author(s): Villafañe, Jorge H; Taveggia, Giovanni; Galeri, Silvia; Bissolotti, Luciano; Mullè, Chiara

Source: Hand (New York, N.Y.); Jan 2018; vol. 13 (no. 1); p. 95-102

Publication Type(s): Journal Article

Abstract:BACKGROUNDWe evaluated the effectiveness of robot-assisted motion and activity in additional to physiotherapy (PT) and occupational therapy (OT) on stroke patients with hand paralysis.METHODSA randomized controlled trial was conducted. Thirty-two patients, 34.4% female (mean ± SD age: 68.9 ± 11.6 years), with hand paralysis after stroke participated. The experimental group received 30 minutes of passive mobilization of the hand through the robotic device Gloreha (Brescia, Italy), and the control group received an additional 30 minutes of PT and OT for 3 consecutive weeks (3 d/wk) in addition to traditional rehabilitation. Outcomes included the National Institutes of Health Stroke Scale (NIHSS), Modified Ashworth Scale, Barthel Index (BI), Motricity Index (MI), short version of the Disabilities of the Arm, Shoulder and Hand (QuickDASH), and the visual analog scale (VAS) measurements. All measures were collected at baseline and end of the intervention (3 weeks).RESULTSA significant effect of time interaction existed for NIHSS, BI, MI, and QuickDASH, after stroke immediately after the interventions (all, $P < .001$). The experimental group had a greater reduction in pain compared with the control group at the end of the intervention, a reduction of 11.3 mm compared with 3.7 mm, using the 100-mm VAS scale.CONCLUSIONSIn the treatment of pain and spasticity in hand paralysis after stroke, robot-assisted mobilization performed in conjunction with traditional PT and OT is as effective as traditional rehabilitation.

Using Delphi methodology in the development of a new patient-reported outcome measure for stroke survivors with visual impairment.

Author(s): Hepworth, Lauren R; Rowe, Fiona J

Source: Brain and behavior; Feb 2018; vol. 8 (no. 2); p. e00898

Publication Type(s): Journal Article

Available at Brain and Behavior - from PubMed Central

Abstract: IntroductionThe aim of this study was to ascertain what items stroke survivors and stroke care professionals think are important when assessing quality of life for stroke survivors with visual impairment for inclusion in the new patient-reported outcome measure.MethodsA reactive Delphi process was used in a three-round electronic-based survey. The items presented consisted of 62 items originally sourced from a systematic review of existing vision-related quality of life instruments and stroke survivor interviews, reduced and refined following a ranking exercise and pilot with stroke survivors with visual impairment. Stakeholders (stroke survivors/clinicians) were invited to take part in the process. A consensus definition of ≥70% was decided a priori. Participants were asked to rank importance on a 9-point scale and categorize the items by relevance to types of visual impairment following stroke or not relevant. Analysis of consensus, stability, and agreement was conducted.ResultsIn total, 113 participants registered for the Delphi survey of which 47 (41.6%) completed all three rounds. Response rates to the three rounds were 78/113 (69.0%), 61/76 (81.3%), and 49/64 (76.6%), respectively. The participants included orthoptists (45.4%), occupational therapists (44.3%), and stroke survivors (10.3%). Consensus was reached on 56.5% of items in the three-round process, all for inclusion. A consensus was reached for 83.8% in the categorization of items. The majority (82.6%) of consensus were for relevant to 'all visual impairment following stroke'; two items were deemed 'not relevant'.ConclusionThe lack of item reduction achieved by this Delphi process highlights the need for additional methods of item reduction in the development of a new PROM for visual impairment following stroke. These results will be considered alongside Rasch analysis to achieve further item reduction. However, the Delphi survey remains important as it provides clinical and patient insight into each item rather than purely relying on the psychometric data.

Rehabilitation Interventions for Upper Limb Function in the First Four Weeks Following Stroke: A Systematic Review and Meta-Analysis of the Evidence.

Author(s): Wattchow, Kimberley A; McDonnell, Michelle N; Hillier, Susan L

Source: Archives of physical medicine and rehabilitation; Feb 2018; vol. 99 (no. 2); p. 367-382

Publication Type(s): Journal Article Review

Abstract:OBJECTIVETo investigate the therapeutic interventions reported in the research literature and synthesize their effectiveness in improving upper limb (UL) function in the first 4 weeks poststroke.DATA SOURCESElectronic databases and trial registries were searched from inception until June 2016, in addition to searching systematic reviews by hand.STUDY SELECTIONRandomized controlled trials (RCTs), controlled trials, and interventional studies with pre/posttest design were included for adults within 4 weeks of any type of stroke with UL impairment. Participants all received an intervention of any physiotherapeutic or occupational therapeutic technique designed to address impairment or activity of the affected UL, which could be compared with usual care, sham, or another technique.DATA EXTRACTIONTwo reviewers independently assessed eligibility of full texts, and methodological quality of included studies was assessed using the Cochrane Risk of Bias Tool.DATA SYNTHESISA total of 104 trials (83 RCTs, 21 nonrandomized studies) were included (N=5225 participants). Meta-analyses of RCTs only (20 comparisons) and narrative syntheses were completed. Key findings included significant positive effects for modified constraint-induced movement therapy (mCIMT) (standardized mean difference [SMD]=1.09; 95% confidence interval [CI], .21-1.97) and task-specific training (SMD=.37; 95% CI, .05-.68). Evidence was found to support supplementary use of biofeedback and electrical stimulation. Use of Bobath therapy was not supported.CONCLUSIONSUse of mCIMT and task-specific training was supported, as was supplementary use of biofeedback and electrical simulation, within the acute phase poststroke. Further high-quality studies into the initial 4 weeks poststroke are needed to determine therapies for targeted functional UL outcomes.

A retrospective study to assess resource utilization and costs in patients with post-stroke spasticity in the United Kingdom.

Author(s): Raluy-Callado, Mireia; Cox, Andrew; MacLachlan, Sharon; Bakheit, Abdel M; Moore, A Peter; Dinet, Jerome; Gabriel, Sylvie

Source: Current medical research and opinion; Feb 2018 ; p. 1-18

Publication Type(s): Journal Article

Abstract:OBJECTIVEPost-stroke spasticity (PSS) is a common complication following stroke. This study describes the differences in healthcare resource utilization between patients who do and do not develop PSS in the United Kingdom.METHODSAdults registered in The Health Improvement Network database with a recorded stroke between 2007 and 2011 were included. PSS was identified through Read codes; machine learning was used to retrospectively identify unrecorded PSS events. Patients with diagnosed or predicted PSS in the 12 months after stroke were matched to those with no PSS on age, sex, number of strokes, socioeconomic status, and comorbidities using the nearest neighbor algorithm. Utilization and costs associated with general practitioner visits, nurse visits, hospitalizations, referrals to specialists, laboratory tests, and medications in the 12 months after stroke were compared.RESULTSOverall, 2,951 PSS cases were matched to 37,753 controls. During the first year, more PSS cases visited a physiotherapist (19% vs. 7%) and occupational therapist (12% vs. 5%) compared to controls. A greater proportion of cases were also referred to specialists (76% vs. 64%) and hospitalized (33% vs. 9%) compared to controls. Medication for spasticity was, on average, 14.68 prescriptions for cases and 5.64 for controls. Total mean costs per patient were £1,270 (standard deviation [SD]: 772) and £635 (SD: 273) for cases and controls, respectively.CONCLUSIONCosts after stroke for patients developing PSS are twice as high compared

to patients who do not develop it, with the major driver being the number of hospital admissions. This highlights the need for better recording and closer management of PSS.

The experiences of stroke survivors with managing eating 6 months post stroke.

Author(s): Jones, Natalie; Nasr, Nasrin

Source: British Journal of Occupational Therapy; Feb 2018; vol. 81 (no. 2); p. 106-115

Publication Type(s): Academic Journal

Abstract: Introduction: Stroke affects activities of daily living such as eating. Little is known about how stroke survivors cope with eating difficulties in the long term. This research conducted in the United Kingdom explores the complex phenomenon of eating difficulties 6 months post stroke.Method: This qualitative study used a participatory approach to explore the experiences of seven stroke survivors using a focus group and visual methods of photography, to explore the lived experiences of managing eating with a stroke disability.Findings: Participants (n = 8) identified barriers to managing eating including physical, social, environmental and emotional issues. Participants recognised that sustaining eating activities regardless of their disabilities was important for their wellbeing. Stroke survivors sought opportunities to participate in occupations that revolved around eating, which enabled them to experience mastery over eating activities. Participants viewed eating activities as a way to self-monitor recovery and progression.Conclusion: This study informs occupational therapy practice about how people living with stroke strive to adapt to eating difficulties.

Selection of Post-Acute Care for Stroke Patients.

Author(s): Gulfo, Kathryn M.; Gillen, Glen

Source: Open Journal of Occupational Therapy (OJOT); Jan 2018; vol. 6 (no. 1); p. 1-12

Publication Type(s): Academic Journal

Available at The Open Journal of Occupational Therapy - from EBSCO (CINAHL with Full Text)

Abstract: Background: Significant variation exists in post-acute care for stroke survivors. This study examines referral practices of occupational and physical therapists for patients after acute stroke. Method: Occupational therapists (OTs) and physical therapists (PTs) were surveyed either electronically or in person at a national conference. The respondents selected the most appropriate referral for each of five case vignettes. The referral choices included Inpatient Rehabilitation Facility (IRF), Skilled Nursing Facility (SNF), Long-Term Acute Care Hospital (LTACH), home with home services, or home with outpatient services. Demographic data included practice location, setting, and duration. The respondents were also asked to rate how strongly 15 clinical factors influence their referral decisions. Results: The 33 OTs and 41 PTs favored similar referrals. Consensus was observed in four of the five cases. No differences were observed among the respondents based on practice location, practice setting, or number of years in practice and the referrals. Prognosis for functional improvement and pre-stroke functional status were identified as the most important factors influencing referral decisions. Conclusion: Further studies are needed to define areas of broad consensus as well as areas of disagreement, with subsequent efforts to clarify optimal treatment algorithms for patients who currently receive variable rehabilitative care.

Upper Limb

Patients' and Health Professionals' Experiences of Using Virtual Reality Technology for Upper Limb Training after Stroke: A Qualitative Substudy

Author(s): Pallesen H.; Andersen M.B.; Hansen G.M.; Lundquist C.B.; Brunner I.

Source: Rehabilitation Research and Practice; 2018; vol. 2018

Publication Type(s): Article

Available at Rehabilitation Research and Practice - from Europe PubMed Central - Open Access

Abstract: Background. In recent years, virtual reality (VR) therapy systems for upper limb training after stroke have been increasingly used in clinical practice. Therapy systems employing VR technology can enhance the intensity of training and can also boost patients' motivation by adding a playful element to therapy. However, reports on user experiences are still scarce. Methods. A qualitative investigation of patients' and therapists' perspectives on VR upper limb training. Semistructured face-to-face interviews were conducted with six patients in the final week of the VR intervention. Therapists participated in two focus group interviews after the completion of the intervention. The interviews were analyzed from a phenomenological perspective emphasizing the participants' perceptions and interpretations. Results. Five key themes were identified from the patients' perspectives: (i) motivational factors, (ii) engagement, (iii) perceived improvements, (iv) individualization, and (v) device malfunction. The health professionals described the same themes as the patients but less positively, emphasizing negative technical challenges. Conclusion. Patients and therapists mainly valued the intensive and motivational character of VR training. The playful nature of the training appeared to have a significant influence on the patients' moods and engagement and seemed to promote a "gung-ho" spirit, so they felt that they could perform more repetitions.

Overflow using proprioceptive neuromuscular facilitation in post-stroke hemiplegics: A preliminary study

Author(s): de Oliveira K.C.R.; Sande de Souza L.A.P.; Emilio M.M.; da Cunha L.F.; Lorena D.M.

Source: Journal of Bodywork and Movement Therapies; 2018

Publication Type(s): Article In Press

Abstract: Hemiplegia is the classic condition resulting from a stroke. To assist in recovery, the overflow method can be employed to stimulate the affected limb, using the healthy contralateral lower limb (LL) to activate the plegic upper limb (UL) musculature. The aim of this study was to evaluate the immediate effect of overflow using the PNF method on the plegic upper limb muscles of post-stroke individuals in the acute and chronic stages, as well as on the muscles of healthy individuals. A total of 22 individuals participated in the work, comprising 8 healthy individuals (control group), 6 post-stroke acute stage individuals (acute group), and 8 post-stroke chronic stage individuals (chronic group). The participants were assessed using a questionnaire with sections for personal and disease data and application of the ICF scale and the Fugl-Meyer index. The three groups were submitted to electromyographic evaluation, using the posterior deltoid (PD), anterior deltoid (AD), pectoralis major (PM), and external oblique (EO) muscles in four different positions: P1 (resting the UL, with the LL contralateral to the affected limb positioned in diagonal); P2 (resting the UL, with manual resistance in the contralateral LL); P3 (affected UL positioned in diagonal, with manual resistance in the contralateral LL) e P4 (affected UL positioned in diagonal, with fixed point and manual resistance in the contralateral LL). The electromyography results revealed no significant differences between most of the positions for the four muscles evaluated ($p > 0.05$). However, high clinical relevance ($d > 0.8$) was found for muscle activation in positions 2 and 4. It could be concluded that for post-stroke individuals in the acute and chronic stages, overflow using PNF effectively increased activation of the PD, AD, PM, and EO muscles in the P2, as well as position 4.

Kinematic measures for upper limb robot-assisted therapy following stroke and correlations with clinical outcome measures: A review

Author(s): Tran V.D.; Dario P.; Mazzoleni S.

Source: Medical Engineering and Physics; 2018

Publication Type(s): Article In Press

Abstract: Aim of the study: This review classifies the kinematic measures used to evaluate post-stroke motor impairment following upper limb robot-assisted rehabilitation and investigates their correlations with clinical outcome measures. Methods: An online literature search was carried out in PubMed, MEDLINE, Scopus and IEEE-Xplore databases. Kinematic parameters mentioned in the studies included were categorized into the International Classification of Functioning, Disability and Health (ICF) domains. The correlations between these parameters and the clinical scales were summarized. Results: Forty-nine kinematic parameters were identified from 67 articles involving 1750 patients. The most frequently used parameters were: movement speed, movement accuracy, peak speed, number of speed peaks, and movement distance and duration. According to the ICF domains, 44 kinematic parameters were categorized into Body Functions and Structure, 5 into Activities and no parameters were categorized into Participation and Personal and Environmental Factors. Thirteen articles investigated the correlations between kinematic parameters and clinical outcome measures. Some kinematic measures showed a significant correlation coefficient with clinical scores, but most were weak or moderate. Conclusions: The proposed classification of kinematic measures into ICF domains and their correlations with clinical scales could contribute to identifying the most relevant ones for an integrated assessment of upper limb robot-assisted rehabilitation treatments following stroke. Increasing the assessment frequency by means of kinematic parameters could optimize clinical assessment procedures and enhance the effectiveness of rehabilitation treatments. Copyright © 2018 IPEM.

Is mirror therapy an effective adjunct to traditional inpatient care for treating upper limb hemiparesis and spasticity in individuals post stroke? A meta-analysis

Author(s): Carranza, Marissa Nicole

Source: Dissertation Abstracts International: Section B: The Sciences and Engineering; 2018; vol. 78 (no. 10)

Publication Type(s): Dissertation Abstract Dissertation

Abstract: Objective: The purpose of this meta-analysis is to examine the effectiveness of mirror therapy as an adjunct to a traditional inpatient care for treating upper limb hemiparesis and spasticity in individuals post stroke. Methods: Studies examined the application of mirror therapy as an adjunct to traditional inpatient care provided for individuals post-stroke. These studies were performed in similar treatment settings and reported on Fugl-Meyer Upper Extremity Assessment (FMA-UE) and/or the Modified Ashworth Scale (MAS). Results: In the analyses of the FMA-UE and the MAS, a moderate effect was observed, in favor of mirror therapy. No statistical significance was found with either outcome measure. Conclusion: Mirror therapy may be beneficial as an adjunct to traditional inpatient care for improving motor recovery of the upper limb post-stroke. Effective management of spasticity after stroke requires a targeted, multimodal approach. Study Design: A meta-analysis of randomized control trials (RCTs), including pilot RCTs, examining the effects of mirror therapy applied as an adjunct to traditional inpatient care for upper limb recovery post-stroke. (PsycINFO Database Record (c) 2017 APA, all rights reserved)

Unexpected elements of human force control and instances of preservation after severe stroke: Implications for optimality, variability and rehabilitation technology

Author(s): Smith, Brendan Wesley

Source: Dissertation Abstracts International: Section B: The Sciences and Engineering; 2018; vol. 78 (no. 11)

Publication Type(s): Dissertation Abstract Dissertation

Abstract: Feedback control of human force production involves optimally distributing available computational resources between dual priorities of reliability and energetics. This balance enables the diversity and extent of our daily motor function, but given the neuromuscular system's susceptibility to damage, such as following stroke, the demands on force control can change dramatically. It is not well understood which elements of force control are preserved after stroke or whether, and with what timescale, the motor system adapts this essential tuning. This dissertation studied force control by young adults, older adults, and stroke survivors using a visuomotor grip force paradigm and a novel, lever drive wheelchair. We show for the first time that slacking, defined as an unprompted and persistent tendency to reduce muscle force, is a fundamental aspect of force control ideally posed to govern the tuning between efficiency and accuracy. Slacking prompts regular feedback corrections that explain an elusive nonlinearity observed in the noise-to-signal ratio of human force via a novel stochastic model. This explanation yielded key evidence that indeed the motor system dynamically adapts its tuning, both immediately to environmental demands, and in response to long term modulations including aging. Surprisingly, slacking and grip force control are largely preserved following stroke, and appear to preserve this crucial adaptability. Next, we show for the first time that people with severe stroke retain sufficient force control with their shoulder and elbow to propel lever drive wheelchairs. They exhibit altered elbow muscle activation patters but avoid unhealthy compensation with the trunk or shoulder---supporting the likelihood of therapeutic benefit. This work has several important implications. It elevates slacking as a major design consideration for machines that physically interact with humans, including rehabilitation exoskeletons, teleoperation systems and devices that employ human force production for control input. It implies that slacking, a hitherto unrecognized but major contributor to human motor variability, might be manipulated to promote movement optimization and rehabilitation. Finally, it motivates devices, such as lever drive wheelchairs, that leverage force control and other capacities preserved following stroke to empower individuals seeking to incorporate therapeutic, functional exercise into their daily lives. (PsycINFO Database Record (c) 2017 APA, all rights reserved)

Effects of combining high- and low-frequency repetitive transcranial magnetic stimulation on upper limb hemiparesis in the early phase of stroke.

Author(s): Long, Hua; Wang, Hongbin; Zhao, Chenguang; Duan, Qiang; Feng, Feng; Hui, Nan; Mao, Li

Source: Restorative neurology and neuroscience; 2018; vol. 36 (no. 1); p. 21-30

Publication Type(s): Journal Article

Abstract:BACKGROUNDBoth high-frequency repetitive transcranial magnetic stimulation (HF-rTMS) and low-frequency rTMS (LF-rTMS) are reported to benefit upper limb motor function rehabilitation in patients with stroke. However, the efficacy of combining LF- and HF-rTMS (LF-HF rTMS) has not been adequately explored, especially in the early phase of stroke.OBJECTIVETo compare the effects of LF- and LF-HF rTMS on the upper limb motor function in the early phase post stroke.METHODSSixty-two patients were randomly assigned to three groups: LF-rTMS group (1 Hz rTMS to the contralesional hemisphere), LF-HF rTMS group (1 Hz rTMS to the contralesional hemisphere followed by 10 Hz rTMS to the lesional hemisphere) and sham group. The patients received the same conventional rehabilitation accompanied with sessions of rTMS for 15 consecutive days. The upper limb motor function was evaluated using the Fugl-Meyer Assessment (FMA) and the Wolf Motor Function Test (WMFT) before the first session, after the last session, and at 3 months after the last session.RESULTSAll patients finished the study without any adverse reaction. Three groups exhibited improvement in terms of the FMA score and the log WMFT time at

the end of the treatment and 3 months later. Better improvement was found in the LF-HF rTMS group than in the LF-rTMS and sham groups.CONCLUSIONThe results indicated that both LF- and LF-HF rTMS were effective in promoting upper limb motor recovery in patients with acute stroke. Combining HF- and LF-rTMS protocol in the present study is tolerable and more beneficial for motor improvement than the unilateral use of LF-rTMS alone.

Mirror therapy for an adult with central post-stroke pain: a case report.

Author(s): Corbetta, Davide; Sarasso, Elisabetta; Agosta, Federica; Filippi, Massimo; Gatti, Roberto

Source: Archives of physiotherapy; 2018; vol. 8 ; p. 4

Publication Type(s): Journal Article

Available at Archives of Physiotherapy - from PubMed Central

Abstract: BackgroundTreatment of central post-stroke pain (CPSP) after a thalamic-capsular stroke is generally based on pharmacological approach as it is low responsive to physiotherapy. In this case report, the use of mirror therapy (MT) for the reduction of CPSP in a subject after a stroke involving thalamus is presented.Case presentationFive years after a right lenticular-capsular thalamic stroke, despite a good recovery of voluntary movement that guaranteed independence in daily life activities, a 50-year-old woman presented with mild weakness and spasticity, an important sensory loss and a burning pain in the left upper limb. MT for reducing arm pain was administered in 45-min sessions, five days a week, for two consecutive weeks. MT consisted in performing symmetrical movements of both forearms and hands while watching the image of the sound limb reflected by a parasagittal mirror superimposed to the affected limb. Pain severity was assessed using visual analogue scale (VAS) before and after the intervention and at one-year follow-up. After the two weeks of MT, the patient demonstrated 4.5 points reduction in VAS pain score of the hand at rest and 3.9 points during a maximal squeeze left hand contraction. At one-year follow-up, pain reduction was maintained and also extended to the shoulder.ConclusionThis case report shows the successful application of a motor training with a sensory confounding condition (MT) in reducing CPSP in a patient with a chronic thalamic stroke.

Automatic Detection of Compensation During Robotic Stroke Rehabilitation Therapy.

Author(s): Zhi, Ying Xuan; Lukasik, Michelle; Li, Michael H; Dolatabadi, Elham; Wang, Rosalie H

Source: IEEE journal of translational engineering in health and medicine; 2018; vol. 6 ; p. 2100107

Publication Type(s): Journal Article

Available at IEEE Journal of Translational Engineering in Health and Medicine - from Europe PubMed Central - Open Access

Abstract: Robotic stroke rehabilitation therapy can greatly increase the efficiency of therapy delivery. However, when left unsupervised, users often compensate for limitations in affected muscles and joints by recruiting unaffected muscles and joints, leading to undesirable rehabilitation outcomes. This paper aims to develop a computer vision system that augments robotic stroke rehabilitation therapy by automatically detecting such compensatory motions. Nine stroke survivors and ten healthy adults participated in this study. All participants completed scripted motions using a table-top rehabilitation robot. The healthy participants also simulated three types of compensatory motions. The 3-D trajectories of upper body joint positions tracked over time were used for multiclass classification of postures. A support vector machine (SVM) classifier detected lean-forward compensation from healthy participants with excellent accuracy (AUC = 0.98, F1 = 0.82), followed by trunk-rotation compensation (AUC = 0.77, F1 = 0.57). Shoulder-elevation compensation was not well detected (AUC = 0.66, F1 = 0.07). A recurrent neural network (RNN) classifier, which encodes the temporal dependency of video frames, obtained similar results. In contrast, F1-scores in stroke survivors were low for all three compensations while using RNN: lean-forward compensation (AUC = 0.77, F1 = 0.17), trunk-rotation compensation (AUC = 0.81, F1 = 0.27), and shoulder-elevation

compensation (AUC = 0.27, F1 = 0.07). The result was similar while using SVM. To improve detection accuracy for stroke survivors, future work should focus on predefining the range of motion, direct camera placement, delivering exercise intensity tantamount to that of real stroke therapies, adjusting seat height, and recording full therapy sessions.

Shoulder pain after stroke - experiences, consequences in daily life and effects of interventions: a qualitative study.

Author(s): Lindgren, Ingrid; Gard, Gunvor; Brogårdh, Christina

Source: Disability & Rehabilitation; May 2018; vol. 40 (no. 10); p. 1176-1182

Publication Type(s): Academic Journal

Abstract: Purpose: To describe experiences of shoulder pain after stroke, how pain affects daily life and perceived effects of interventions. Method: A qualitative interview study including 13 community-dwelling persons (six women; median age 65 years) with persistent shoulder pain after stroke. Results: Three categories emerged from the content analysis. In "Multiple pain characteristics" an insidious pain onset was reported. The pain existed both day and night and could be located around the shoulder girdle but also have radiation to the arm and hand. An explanation of the pain was seldom given. In "Limitations caused by the pain" it was described how the pain negatively influenced personal care, household activities and leisure, but also could lead to emotional reactions. In "Multiple pain interventions with various effects" a variety of interventions were described. Self-management interventions with gentle movements were perceived most effective. A restraint attitude to pain medication due to side effects was reported. Conclusions: Shoulder pain after stroke can lead to a variety of pain characteristics. As the pain is complex and may affect many important areas in a person's life, multidisciplinary rehabilitation interventions are important.

An exploration of physiotherapists' experiences of robotic therapy in upper limb rehabilitation within a stroke rehabilitation centre.

Author(s): Stephenson, Andrew; Stephens, John

Source: Disability & Rehabilitation: Assistive Technology; Apr 2018; vol. 13 (no. 3); p. 245-252

Publication Type(s): Academic Journal

Abstract: Purpose:Strokes are the world's leading cause of adult disability, with movement impairment being more common in the upper limb (UL). Robotic therapy (RT) is identified as an effective adjunct to promote movement but with limited effect on functional capabilities. There is currently limited research in user experience of RT, specifically that of physiotherapists. This study sought to explore physiotherapists' experience of using RT in rehabilitation of the UL, within a stroke rehabilitation centre in the north of England. Method:Physiotherapists (n = 6) shared their experiences of working with the InMotion2 robot through semi-structured interviews. Thematic analysis was employed to interpret data, identify emergent themes and interdependent relationships between them. Findings:Five interdependent themes were identified focused around individualized care, influenced by evidence for practice, human relationships, skill mix, and resources and resource management. All physiotherapists valued the use of RT as an adjunct to conventional therapy, although barriers to successful implementation seemed to dominate the views of some. Conclusions:RT was perceived positively by physiotherapists, regarded as an adjunct to conventional therapy. A framework to summarize the relationships of participants' views and experiences is proposed in an attempt to understand the influences on the clinical use of RT. Implications for RehabilitationRobotic therapy (RT) is valued as an adjunct to (conventional) person-centred rehabilitation.Resource management and skill mix are viewed as two key challenges to the

successful implementation of RT.The production of evidence-based guidelines would be a useful development in the advancement.

Effects of modified constraint-induced movement therapy in the recovery of upper extremity function affected by a stroke: a single-blind randomized parallel trial-comparing group versus individual intervention.

Author(s): Doussoulin, Arlette; Rivas, Claudia; Rivas, Rodrigo; Saiz, José

Source: International journal of rehabilitation research. Internationale Zeitschrift fur Rehabilitationsforschung. Revue internationale de recherches de readaptation; Mar 2018; vol. 41 (no. 1); p. 35-40

Publication Type(s): Journal Article

Abstract: An extensive corpus of literature supports the positive impact of constraint-induced movement therapy (CIMT) on neuroplasticity and the recovery of function. However, its clinical applicability is limited by the time of intervention and individual modality. We propose to assess the efficacy of modified CIMT protocols through a group therapy intervention. To determine the effectiveness of a group therapy, compared with individual modified CIMT, in increasing the use and functionality of movement of a paretic upper limb. The study was a single-blind, randomized parallel trial. Thirty-six patients who had had a stroke more than 6 months previously were divided randomly into two intervention groups. The independent variable was the implementation of group or individual modalities for 3 h for 10 consecutive days and the dependent variables were evaluated by the Motor Activity Log and Action Research Arm Test, at baseline (preintervention evaluation), end (postintervention evaluation), and 6 months after intervention (follow-up). By controlling the preintervention evaluations, analyses of covariance indicated that both dependent variables presented significant differences in favor of the group therapy at both the postintervention evaluation and the follow-up evaluations. Both types of intervention generated increases in the function and use of the upper extremity, with these increases being higher in the group therapy. The effects of the group therapy modality were maintained 6 months after the intervention ended.

Upper Limb Isokinetic Strengthening Versus Passive Mobilization in Patients With Chronic Stroke: A Randomized Controlled Trial.

Author(s): Coroian, Flavia; Jourdan, Claire; Bakhti, Karima; Palayer, Claire; Jaussent, Audrey

Source: Archives of Physical Medicine & Rehabilitation; Feb 2018; vol. 99 (no. 2); p. 321-328

Publication Type(s): Academic Journal

Abstract: Objective To assess the benefit of isokinetic strengthening of the upper limb (UL) in patients with chronic stroke as compared to passive mobilization. Design Randomized blinded assessor controlled trial. Setting Physical Medicine and Rehabilitation departments of 2 university hospitals. Participants Patients (N=20) with incomplete hemiplegia (16 men; mean age, 64y; median time since stroke, 32mo). Interventions A 6-week comprehensive rehabilitation program, 3d/wk, 3 sessions/d. In addition, a 45-minute session per day was performed using an isokinetic dynamometer, with either isokinetic strengthening of elbow and wrist flexors/extensors (isokinetic strengthening group) or passive joint mobilization (control group). Main Outcome Measures The primary endpoint was the increase in Upper Limb Fugl-Meyer Assessment (UL-FMA) score at day 45 (t1). Secondary endpoints were increases in UL-FMA scores, Box and Block Test scores, muscle strength, spasticity, and Barthel Index at t1, t2 (3mo), and t3 (6mo). Results Recruitment was stopped early because of excessive fatigue in the isokinetic strengthening group. The increase in UL-FMA score at t1 was 3.5±4.4 in the isokinetic strengthening group versus 6.0±4.5 in the control group (P =.2). Gains in distal UL-FMA scores were larger (3.1±2.8) in the control group versus 0.6±2.5 in the isokinetic strengthening group (P =.05). No significant group difference was observed

in secondary endpoints. Mixed models confirmed those results. Regarding the whole sample, gains from baseline were significant for the UL-FMA at t1 (+4.8; P <.001), t2, and t3 and for the Box and Block Test at t1 (+3; P =.013) and t2. Conclusions In a comprehensive rehabilitation program, isokinetic strengthening did not show superiority to passive mobilization for UL rehabilitation. Findings also suggest a sustained benefit in impairments and function of late UL rehabilitation programs for patients with stroke.

Rehabilitation Interventions for Upper Limb Function in the First Four Weeks Following Stroke: A Systematic Review and Meta-Analysis of the Evidence.

Author(s): Wattchow, Kimberley A.; McDonnell, Michelle N.; Hillier, Susan L.

Source: Archives of Physical Medicine & Rehabilitation; Feb 2018; vol. 99 (no. 2); p. 367-382

Publication Type(s): Academic Journal

Abstract: Objective To investigate the therapeutic interventions reported in the research literature and synthesize their effectiveness in improving upper limb (UL) function in the first 4 weeks poststroke. Data Sources Electronic databases and trial registries were searched from inception until June 2016, in addition to searching systematic reviews by hand. Study Selection Randomized controlled trials (RCTs), controlled trials, and interventional studies with pre/posttest design were included for adults within 4 weeks of any type of stroke with UL impairment. Participants all received an intervention of any physiotherapeutic or occupational therapeutic technique designed to address impairment or activity of the affected UL, which could be compared with usual care, sham, or another technique. Data Extraction Two reviewers independently assessed eligibility of full texts, and methodological quality of included studies was assessed using the Cochrane Risk of Bias Tool. Data Synthesis A total of 104 trials (83 RCTs, 21 nonrandomized studies) were included (N=5225 participants). Meta-analyses of RCTs only (20 comparisons) and narrative syntheses were completed. Key findings included significant positive effects for modified constraint-induced movement therapy (mCIMT) (standardized mean difference [SMD]=1.09; 95% confidence interval [CI], .21–1.97) and task-specific training (SMD=.37; 95% CI, .05–.68). Evidence was found to support supplementary use of biofeedback and electrical stimulation. Use of Bobath therapy was not supported. Conclusions Use of mCIMT and task-specific training was supported, as was supplementary use of biofeedback and electrical simulation, within the acute phase poststroke. Further high-quality studies into the initial 4 weeks poststroke are needed to determine therapies for targeted functional UL outcomes.

Explicit motor sequence learning with the paretic arm after stroke.

Author(s): Fleming, Melanie K.; Newham, Di J.; Rothwell, John C.

Source: Disability & Rehabilitation; Feb 2018; vol. 40 (no. 3); p. 323-328

Publication Type(s): Academic Journal

Abstract: Purpose:Motor sequence learning is important for stroke recovery, but experimental tasks require dexterous movements, which are impossible for people with upper limb impairment. This makes it difficult to draw conclusions about the impact of stroke on learning motor sequences. We aimed to test a paradigm requiring gross arm movements to determine whether stroke survivors with upper limb impairment were capable of learning a movement sequence as effectively as age-matched controls. Materials and methods:In this case-control study, 12 stroke survivors (10–138 months post-stroke, mean age 64 years) attempted the task once using their affected arm. Ten healthy controls (mean 66 years) used their non-dominant arm. A sequence of 10 movements was repeated 25 times. The variables were: time from target illumination until the cursor left the central square (onset time; OT), accuracy (path length), and movement speed. Results:OT reduced with training (p 0.1). We quantified learning as the OT difference between the end of training and a random sequence; this was smaller for stroke survivors than controls (p = 0.015). Conclusions:Stroke survivors can learn a movement sequence with their paretic arm, but demonstrate impairments in

sequence specific learning.Implications for RehabilitationMotor sequence learning is important for recovery of movement after stroke.Stroke survivors were found to be capable of learning a movement sequence with their paretic arm, supporting the concept of repetitive task training for recovery of movement.Stroke survivors showed impaired sequence specific learning in comparison with age-matched controls, indicating that they may need more repetitions of a sequence in order to re-learn movements.Further research is required into the effect of lesion location, time since stroke, hand dominance and gender on learning of motor sequences after stroke.

Progressive abduction loading therapy with horizontal-plane viscous resistance targeting weakness and flexion synergy to treat upper limb function in chronic hemiparetic stroke: A randomized clinical trial

Author(s): Ellis M.D.; Carmona C.; Drogos J.; Dewald J.P.A.

Source: Frontiers in Neurology; Feb 2018; vol. 9

Publication Type(s): Article

Available at Frontiers in neurology - from Europe PubMed Central - Open Access

Abstract: Background: Progressive abduction loading therapy has emerged as a promising exercise therapy in stroke rehabilitation to systematically target the loss of independent joint control (flexion synergy) in individuals with chronic moderate/severe upper-extremity impairment. Preclinical investigations have identified abduction loading during reaching exercise as a key therapeutic factor to improve reaching function. An augmentative approach may be to additionally target weakness by incorporating resistance training to increase constitutive joint torques of reaching with the goal of improving reaching function by "overpowering" flexion synergy. The objective was, therefore, to determine the therapeutic effects of horizontal-plane viscous resistance in combination with progressive abduction loading therapy. Methods: 32 individuals with chronic hemiparetic stroke were randomly allocated to two groups. The two groups had equivalent baseline characteristics on all demographic and outcome metrics including age (59 +/- 11 years), time poststroke (10.1 +/- 7.6 years), and motor impairment (Fugl-Meyer, 26.7 +/- 6.5 out of 66). Both groups received therapy three times/week for 8 weeks while the experimental group included additional horizontal-plane viscous resistance. Quantitative standardized progression of the intervention was achieved using a robotic device. The primary outcomes of reaching distance and velocity under maximum abduction loading and secondary outcomes of isometric strength and a clinical battery were measured at pre-, post-, and 3 months following therapy. Results: There was no difference between groups on any outcome measure. However, for combined groups, there was a significant increase in reaching distance (13.2%, effect size; d = 0.56) and velocity (13.6%, effect size; d = 0.27) at posttesting that persisted for 3 months and also a significant increase in abduction, elbow extension, and external rotation strength at posttesting that did not persist 3 months. Similarly, the clinical battery demonstrated a significant improvement in participant-reported measures of "physical problems" and "overall recovery" across all participants. Conclusion: The strengthening approach of incorporating horizontal-plane viscous resistance did not enhance the reaching function improvements observed in both groups. Data do not support the postulation that one can be trained to "overpower" the flexion synergy with resistance training targeting constitutive joint torques of reaching. Instead, flexion synergy must be targeted with progressive abduction loading to improve reaching function.

Predictors of activities of daily living outcomes after upper limb robot-assisted therapy in subacute stroke patients

Author(s): Franceschini M.; Goffredo M.; Pournajaf S.; Paravati S.; De Pisi F.; Galafate D.; Agosti M

Source: PLoS ONE; Feb 2018; vol. 13 (no. 2)

Publication Type(s): Article

Available at PLoS ONE - from EBSCO (MEDLINE Complete)

Abstract: Background Upper limb recovery is one of the main goals of post-stroke rehabilitation due to its importance for autonomy in Activities of Daily Living (ADL). Although the efficacy of upper limb Robot-assisted Therapy (RT) is well established in literature, the impact of the initial status of the patient on the effects of RT is still understudied. This paper aims to identify whether demographic, clinical and motor characteristics of stroke patients may influence the ability to independently perform ADL after RT. Methods A retrospective study was conducted on sixty stroke patients who conducted planar upper limb goal-directed tasks with the InMotion 2.0 robot. The RT was administered 5 days/week for 4 weeks and each session lasted 45 minutes. The primary outcome measure was the Modified Barthel Index (BI), dichotomized into favourable (BI 75) and unfavourable (BI<75) outcomes. The potential predictors were the demographic and clinical records, and the following clinical assessment scores: Modified Ashworth Scale-Shoulder (MAS-S); Modified Ashworth Scale-Elbow (MAS-E); Fugl-Meyer Assessment Upper Extremity (FMA-UE); upper limb section of the Motricity Index (MIul); total passive Range Of Motion (pROM); and Box and Block Test (BBT). Results Statistical analysis showed that the BBT, FMA-UE and MIul scores were significant predictors of a favourable outcome in ADL. The cut-off scores of the independent variables were calculated (FMA-UE = 32; MIul = 48; BBT = 3) with respect to the dichotomic BI outcome. Their robustness was assessed with the Fragility Index (FMA-UE = 2; MIul = 3; BBT = 7), showing that BBT is the most robust predictor of favourable BI outcome. Moreover, subjects with all predictors higher than the cut-off scores had higher probability to increase their independence in ADL at the end of the therapy. Demographic records, spasticity and pROM were not identified as predictors. Conclusion Stroke patients with greater manual dexterity and less impairment appear to have a higher probability of achieving clinically significant ADL outcomes after upper limb RT. The obtained results can help to optimise the management of RT treatment planning. Further studies on a larger number of patients with a long-term follow up are recommended in order to evaluate other potential predictors and to validate the results.

Cortico-spinal excitability and hand motor recovery in stroke: a longitudinal study

Author(s): Veldema J.; Bosl K.; Nowak D.A.

Source: Journal of Neurology; Feb 2018 ; p. 1-8

Publication Type(s): Article In Press

Abstract: Objective: To describe the relationship between changes of cortico-spinal excitability and motor recovery of the affected hand after stroke. Methods: Eighteen hemiparetic stroke patients with a severe-to-mild upper limb motor impairment were randomized. Cortico-spinal excitability measures (resting motor thresholds and motor evoked potentials) obtained from a distal (abductor pollicis brevis) and proximal (biceps brachii) upper limb muscle were assessed for both hemispheres. Motor function of the affected hand was tested by the Wolf Motor Function and Action Research Arm tests. The evaluations were performed at baseline and weekly over 7 weeks of in-patient neurological rehabilitation. Results: Severe hand dysfunction was associated with a strong suppression of ipsilesional cortico-spinal excitability and a shift of excitability towards the contralesional hemisphere. Mild hand impairment was associated with a shift of cortico-spinal excitability towards the ipsilesional hemisphere. Favorable motor recovery correlated with an increase of ipsilesional cortico-spinal excitability.

Human arm joints reconstruction algorithm in rehabilitation therapies assisted by end-effector robotic devices

Author(s): Bertomeu-Motos A.; Blanco A.; Barios J.A.; Garcia-Aracil N.; Badesa F.J.; Zollo L.

Source: Journal of NeuroEngineering and Rehabilitation; Feb 2018; vol. 15 (no. 1)

Publication Type(s): Article

Available at Journal of neuroengineering and rehabilitation - from PubMed Central

Abstract: Background: End-effector robots are commonly used in robot-assisted neuro-rehabilitation therapies for upper limbs where the patient's hand can be easily attached to a splint. Nevertheless, they are not able to estimate and control the kinematic configuration of the upper limb during the therapy. However, the Range of Motion (ROM) together with the clinical assessment scales offers a comprehensive assessment to the therapist. Our aim is to present a robust and stable kinematic reconstruction algorithm to accurately measure the upper limb joints using only an accelerometer placed onto the upper arm. Methods: The proposed algorithm is based on the inverse of the augmented Jaciobian as the algorithm (Papaleo, et al., Med Biol Eng Comput 53(9):815-28, 2015). However, the estimation of the elbow joint location is performed through the computation of the rotation measured by the accelerometer during the arm movement, making the algorithm more robust against shoulder movements. Furthermore, we present a method to compute the initial configuration of the upper limb necessary to start the integration method, a protocol to manually measure the upper arm and forearm lengths, and a shoulder position estimation. An optoelectronic system was used to test the accuracy of the proposed algorithm whilst healthy subjects were performing upper limb movements holding the end effector of the seven Degrees of Freedom (DoF) robot. In addition, the previous and the proposed algorithms were studied during a neuro-rehabilitation therapy assisted by the 'PUPArm' planar robot with three post-stroke patients. Results: The proposed algorithm reports a Root Mean Square Error (RMSE) of 2.13cm in the elbow joint location and 1.89cm in the wrist joint location with high correlation. These errors lead to a RMSE about 3.5 degrees (mean of the seven joints) with high correlation in all the joints with respect to the real upper limb acquired through the optoelectronic system. Then, the estimation of the upper limb joints through both algorithms reveal an instability on the previous when shoulder movement appear due to the inevitable trunk compensation in post-stroke patients. Conclusions: The proposed algorithm is able to accurately estimate the human upper limb joints during a neuro-rehabilitation therapy assisted by end-effector robots. In addition, the implemented protocol can be followed in a clinical environment without optoelectronic systems using only one accelerometer attached in the upper arm. Thus, the ROM can be perfectly determined and could become an objective assessment parameter for a comprehensive assessment.

Impacts of Sensation, Perception, and Motor Abilities of the Ipsilesional Upper Limb on Hand Functions in Unilateral Stroke: Quantifications From Biomechanical and Functional Perspectives

Author(s): Hsu H.-Y.; Ke C.-W.; Kuan T.-S.; Yang H.-C.; Tsai C.-L.; Kuo L.-C.

Source: PM and R; Feb 2018; vol. 10 (no. 2); p. 146-153

Publication Type(s): Article

Abstract: Background: The presence of subtle losses in hand dexterity after stroke affects the regaining of independence with regard to activities of daily living. Therefore, awareness of ipsilesional upper extremity (UE) function may be of importance when developing a comprehensive rehabilitation program. However, current hand function tests seem to be unable to identify asymptomatic UE impairments. Objectives: To assess the motor coordination as well as the sensory perception of an ipsilesional UE using biomechanical analysis of performance-oriented tasks and conducting a Manual Tactile Test (MTT). Design: Case-controlled study. Setting: A university hospital. Participants: A total of 21 patients with unilateral stroke, along with 21 matched healthy control

subjects, were recruited. Methods: Each participant was requested to perform a pinch-holding-up activity (PHUA) test, object-transport task, and reach-to-grasp task via motion capture, as well as the MTT. Main Outcome Measurements: The kinetic data of the PHUA test, kinematics analysis of functional movements, and time requirement of MTT were analyzed. Results: Patients with ipsilesional UE had an inferior ability to scale and produce pinch force precisely when conducting the PHUA test compared to the healthy controls (P <.05). The movement time was statistically longer and peak velocity was significantly lower (P <.05) in the performance-oriented tasks for the ipsilesional UE patients. The longer time requirement in 3 MTT subtests showed that the ipsilesional UE patients experienced degradation in sensory perception (P <.001). Conclusion: Comprehensive sensorimotor assessments based on functional perspectives are valid tools to determine deficits in the sensation-perception-motor system in the ipsilesional UE. Integration of sensorimotor training programs for ipsilesional UE in future neuro-rehabilitation strategies may provide more beneficial effects to regain patients' motor recovery and to promote daily living activity independence than focusing on paretic arm motor training alone. Level of Evidence: III Copyright © 2018 American Academy of Physical Medicine and Rehabilitation

Effects of high-frequency repetitive transcranial magnetic stimulation on reducing hemiplegic shoulder pain in patients with chronic stoke: a randomized controlled trial

Author(s): Choi G.-S.; Chang M.C.

Source: International Journal of Neuroscience; Feb 2018; vol. 128 (no. 2); p. 110-116

Publication Type(s): Article

Abstract: Objective: To examine whether high-frequency (10 Hz) repetitive transcranial magnetic stimulation (rTMS), applied over the primary motor cortex of the affected hemisphere, could be used to manage hemiplegic shoulder pain (HSP). Methods: Twenty-four chronic stroke patients with chronic HSP, randomly assigned into the rTMS group (10 sessions of high-frequency stimulation) or the sham group (sham stimulation), were performed. The Numeric Rating Scale (NRS) was used to evaluate the intensity of pain at pretreatment, and at 1 day, and 1, 2 and 4 weeks after treatment. Changes in upper-limb motor function were evaluated using the Motricity Index (MI-UL) and modified Brunnstrom Classification (MBC). Results: When compared to pretreatment, the rTMS group showed a significant decrease in the NRS score at 1 day, and 1, 2 and 4 weeks after finishing rTMS sessions, with no significant change in the sham group. The NRS score after the rTMS sessions reduced by 30.1% at 1 day, 29.3% at 1 week, 28.0% at 2 weeks and 25.3% at 4 weeks. Passive shoulder range of motion, MI-UL, and MBC, however, did not significantly change in either group. Conclusions: High-frequency rTMS could be used as a safe, beneficial therapeutic tool to manage HSP. We think it can be used as an adjuvant therapeutic modality to enhance the therapeutic outcome of HSP. Copyright © 2017 Informa UK Limited, trading as Taylor & Francis Group.

A clinical study on acupuncture in combination with routine rehabilitation therapy for early pain recovery of post-stroke shoulder-hand syndrome

Author(s): Zheng J.; Wu Q.; Wang L.; Guo T.

Source: Experimental and Therapeutic Medicine; Feb 2018; vol. 15 (no. 2); p. 2049-2053

Publication Type(s): Article

Available at Experimental and therapeutic medicine - from PubMed Central

Abstract: The clinical effect of acupuncture in combination with rehabilitation therapy for post-stroke shoulder-hand syndrome (SHS) was explored. Patients (178) with post-stroke SHS who received treatment in the Dalian Second Hospital from March 2012 to March 2016 were included in this study. The patients were divided into experimental group (89 cases) and control group (89 cases). Patients in the control group received rehabilitation therapy, while those in the treatment

group received acupuncture treatment in addition to rehabilitation therapy. Visual analogue scale (VAS) was applied to assess the pain degree of patients. Fugl-Meyer assessment (FMA), functional comprehensive assessment (FCA) and assessment of quality of life (QoL) were used to evaluate rehabilitation condition of the patients. Early pain relief, rehabilitation of upper extremity motor function and improvement of QoL after treatment were compared between the two groups. The scores of VAS, FMA, FCA and QoL showed obvious differences between the two groups after treatment (P<0.05). The scores of the experimental group were significantly better than those of the control group, and the improvement in upper extremity motor function of the patients in the experimental group was better than that of the patients in the control group. The total effective rate of the patients in the experimental group was higher than that of control group (P<0.05). The effect in improving the upper extremity motor function of the patients in the experimental group was better than that of control group. The scores of QoL of the patients in the experimental group were better than that of the patients in the control group (P<0.05). In conclusion, acupuncture in combination with rehabilitation therapy can improve early pain and rehabilitation significantly and enhance QoL for patients with post-stroke SHS, which is worthy of being widely used in clinical practice.

Aerobic exercise prior to task-specific training to improve poststroke motor function: A case series.

Author(s): Valkenborghs, S R; Visser, M M; Nilsson, M; Callister, R; van Vliet, P

Source: Physiotherapy research international : the journal for researchers and clinicians in physical therapy; Feb 2018

Publication Type(s): Case Reports

Abstract:BACKGROUNDAerobic exercise can improve upper limb motor function in both healthy and stroke populations. Research in animals after stroke has shown that aerobic exercise combined with forelimb motor training improved forelimb motor function more than aerobic exercise or motor training alone. There is a lack of knowledge about this combined intervention in humans after stroke.PURPOSEThese 2 case reports describe the exploratory implementation of a combined aerobic exercise and task-specific training intervention to improve upper limb motor function in one person in subacute stroke recovery and one person in chronic stroke recovery.METHODSCase descriptions Subacute participant: 45-year-old female, 3 months after ischemic stroke resulting in left-sided hemiparesis affecting her non-dominant upper limb, with a baseline Action Research Arm Test (ARAT) score of 10/57 and Wolf Motor Function Test (WMFT) score of 39/75. Chronic participant: 69-year-old female, 14 years after ischemic stroke resulting in right-sided hemiparesis affecting her non-dominant upper limb, with a baseline ARAT score of 13/57 and WMFT score of 34/75. Intervention Participants performed 30 min of lower limb cycling immediately prior to 30 min of upper limb task-specific training. Sessions were undertaken 3 times a week for 8 weeks in a university rehabilitation laboratory. Results The combined intervention was feasible and perceived as acceptable and beneficial. Participants improved their upper limb motor function on the ARAT (subacute participant = 4 points; chronic participant = 2 points) and WMFT (subacute participant = 5 points; chronic participant = 3 points). Participants improved their aerobic fitness (subacute participant = +4.66 ml O2 /kg/min; chronic participant = +7.34 ml O2 /kg/min) and 6-minute walking distance (subacute participant = +50 m; chronic participant = +37 m). Discussion Combining aerobic exercise with task-specific training may be a worthwhile therapeutic approach to improve upper limb motor function suitable for persons in the subacute or chronic phase after stroke.

Does transcranial direct current stimulation during writing alleviate upper limb freezing in people with Parkinson's disease? A pilot study.

Author(s): Broeder, Sanne; Heremans, Elke; Pinto Pereira, Marcelo; Nackaerts, Evelien; Meesen, Raf; Verheyden, Geert; Nieuwboer, Alice

Source: Human movement science; Feb 2018

Publication Type(s): Journal Article

Abstract: Transcranial direct current stimulation (tDCS) over the primary motor cortex (M1) can boost motor performance in Parkinson's disease (PD) when it is applied at rest. However, the potential supplementary therapeutic effect of the concurrent application of tDCS during the training of motor tasks is largely unknown. The present study examined the effects of tDCS on upper limb motor blocks during a freezing-provoking writing task (the funnel task) requiring up- and down-stroke movements at alternating amplitudes. Ten PD patients and 10 age-matched controls underwent two sessions of writing combined with 20 min of anodal or sham tDCS on the left M1 in a randomized cross-over design. The primary outcome was the number of upper limb freezing episodes during five trials of the funnel task on a touch-sensitive tablet. PD patients showed a significant reduction in freezing episodes during tDCS compared to sham. No effects of tDCS were found for the amplitude, variability and speed of the strokes outside the freezing episodes. However, patients who reported freezing episodes in daily life (N = 6) showed a beneficial effect of tDCS on stroke characteristics. These results indicate a subgroup-dependent variability in response to non-invasive brain stimulation applied during the performance of motor tasks in PD. This warrants future studies to examine tDCS as an adjuvant tool for training programs aimed to reduce motor deficits related to freezing.

Virtual reality for upper limb rehabilitation in sub-acute and chronic stroke: a randomized controlled trial.

Author(s): Kiper, Pawel; Szczudlik, Andrzej; Agostini, Michela; Opara, Jozef; Nowobilski, Roman

Source: Archives of physical medicine and rehabilitation; Feb 2018

Publication Type(s): Journal Article

Abstract:OBJECTIVETo evaluate the effectiveness of reinforced feedback in virtual environment (RFVE) treatment combined with conventional rehabilitation (CR) in comparison with CR alone, and to study whether changes are related to stroke aetiology (i.e. ischemic or hemorrhagic).DESIGNRandomized controlled trial.SETTINGInpatients in a hospital facility for intensive rehabilitation.PARTICIPANTS136 patients within one year from onset of a single stroke.INTERVENTIONSThe experimental treatment was based on the combination of RFVE with CR, while control treatment was based on the same amount of CR. Both treatments lasted 2 hours daily, 5 days a week, for 4 weeks.MAIN OUTCOME MEASURESFugl-Meyer upper extremity (F-M UE) scale (primary outcome), Functional Independence Measure (FIM), National Institutes of Health Stroke Scale (NIHSS), and Edmonton Symptom Assessment Scale (ESAS) (secondary outcomes). Kinematic parameters of requested movements: duration (Time), mean linear velocity (Speed), number of submovements (Peak) (secondary outcomes).RESULTS136 patients (ischemic=78, hemorrhagic=58) were randomized in two groups (RFVE=68, CR=68) and stratified by stroke aetiology (ischemic, hemorrhagic). Both groups improved after treatment, but the experimental group had better results than the control group (Mann-Whitney U test) at: F-M UE ($p<0.001$), FIM ($p<0.001$), NIHSS ($p\leq0.014$), ESAS ($p\leq0.022$), Time ($p<0.001$), Speed ($p<0.001$), Peak ($p<0.001$). Stroke aetiology did not have significant effects on patient outcomes.CONCLUSIONThe RFVE therapy combined with CR treatment promotes better outcomes for upper limb than the same amount of CR, regardless of stroke aetiology (Clinical Trial Registration - NCT01955291).

Effectiveness of a single session of dual-transcranial direct current stimulation in combination with upper limb robotic-assisted rehabilitation in chronic stroke patients: a randomized, double-blind, cross-over study.

Author(s): Dehem, Stéphanie; Gilliaux, Maxime; Lejeune, Thierry; Delaunois, Emmanuell

Source: International journal of rehabilitation research. Internationale Zeitschrift fur Rehabilitationsforschung. Revue internationale de recherches de readaptation; Feb 2018

Publication Type(s): Journal Article

Abstract: The impact of transcranial direct current stimulation (tDCS) is controversial in the neurorehabilitation literature. It has been suggested that tDCS should be combined with other therapy to improve their efficacy. To assess the effectiveness of a single session of upper limb robotic-assisted therapy (RAT) combined with real or sham-tDCS in chronic stroke patients. Twenty-one hemiparetic chronic stroke patients were included in a randomized, controlled, cross-over double-blind study. Each patient underwent two sessions 7 days apart in a randomized order: (a) 20 min of real dual-tDCS associated with RAT (REAL+RAT) and (b) 20 min of sham dual-tDCS associated with RAT (SHAM+RAT). Patient dexterity (Box and Block and Purdue Pegboard tests) and upper limb kinematics were evaluated before and just after each intervention. The assistance provided by the robot during the intervention was also recorded. Gross manual dexterity (1.8±0.7 blocks, P=0.008) and straightness of movement (0.01±0.03, P0.05). The assistance provided by the robot was similar during both interventions (P>0.05). The results showed a slight improvement in hand dexterity and arm movement after the REAL+RAT tDCS intervention. The observed effect after a single session was small and not clinically relevant. Repetitive sessions could increase the benefits of this combined approach.

Outcome measurement of hand function following mirror therapy for stroke rehabilitation: A systematic review.

Author(s): Cantero-Téllez, Raquel; Naughton, Nancy; Algar, Lori; Valdes, Kristin

Source: Journal of hand therapy : official journal of the American Society of Hand Therapists; Feb 2018

Publication Type(s): Journal Article

Abstract:STUDY DESIGNSystematic review.INTRODUCTIONMirror therapy is a treatment used to address hand function following a stroke. Measurement of outcomes using appropriate assessment tools is crucial; however, many assessment options exist.PURPOSE OF THE STUDYThe purpose of this study is to systematically review outcome measures that are used to assess hand function following mirror therapy after stroke and, in addition, to identify the psychometric and descriptive properties of the included measures and through the linking process determine if the outcome measures are representative of the International Classification of Functioning, Disability and Health (ICF).METHODSFollowing a comprehensive literature search, outcome measures used in the included studies were linked to the ICF and analyzed based on descriptive information and psychometric properties.RESULTSEleven studies met inclusion criteria and included 24 different assessment tools to measure hand or upper limb function. Most outcome measures used in the selected studies (63%) were rated by the evaluating therapist. Thirteen outcome measures (54%) linked to the ICF body function category and 10 measures (42%) linked to activities and participation. One outcome measure was linked to not defined, and all other ICF categories were not represented. A majority of outcome measures have been assessed for validity, reliability, and responsiveness, but responsiveness was the least investigated psychometric property.DISCUSSIONCurrent studies on mirror therapy after stroke are not consistent in the assessment tools used to determine hand function. Understanding of study outcomes requires analysis of the assessment tools. The outcome measures used in the included studies are not representative of personal and environmental factors, but tools linking to body functions and activities and participations provide important information on functional outcome.CONCLUSIONSIntegrating a combination of measures that are psychometrically sound and reflective of the ICF should be considered for assessment of hand function after mirror therapy after stroke.

Can the integrity of the corticospinal tract predict the long-term motor outcome in poststroke hemiplegic patients?

Author(s): Kim, Ae Ryoung; Kim, Dae Hyun; Park, So Young; Kyeong, Sunghyon; Kim, Yong Wook

Source: Neuroreport; Feb 2018

Publication Type(s): Journal Article

Abstract: This study aimed to investigate the long-term motor outcome according to early diffusion tensor tractography findings for the affected corticospinal tract (CST) in poststroke hemiplegic patients. A total of 48 supratentorial subacute patients after stroke were enrolled, who had a brain MRI scan within 6 weeks from onset, and no stroke recurrence reported within the 2-year follow-up period. Diffusion tensor images were obtained and CSTs were reconstructed. The participants were classified into three groups: type A, the CST originating from the primary motor cortex was preserved around the lesion area; type B, the CST was similar to type A, except that the fiber originated from the area adjacent to the primary motor cortex; and type C, the CST was interrupted or not shown. Motor functions using Fugl-Meyer Motor Assessment (FMA), the Box and Block Test (BBT), and Functional Ambulation Category, and cognitive function using Mini-Mental Status Examination (MMSE) were measured at baseline and at 2 years from stroke onset. Changes in FMA and BBT were significantly different according to diffusion tensor tractography type at follow-up ($P<0.05$), but Functional Ambulation Category and Mini-Mental Status Examination were not. In post-hoc analysis, groups A and B showed greater significant improvements on the BBT and on the upper FMA subscale (shoulder/elbow, wrist, and hand) compared with group C (corrected $P<0.05$), but did not on lower FMA. This study showed the importance of CST integrity for stoke motor recovery. The early integrity of the CST may be useful in predicting long-term motor outcomes, specifically with motor recovery of the upper extremity and hand function.

Predicting shoulder function after constraint-induced movement therapy: a retrospective cohort study.

Author(s): Hansen, Gunhild Mo; Svendsen, Susanne Wulff; Brunner, Iris; Nielsen, Jørgen Feldbæk

Source: Topics in stroke rehabilitation; Feb 2018 ; p. 1-7

Publication Type(s): Journal Article

Abstract: Background Several predictors have been associated with upper extremity (UE) recovery after stroke, but characteristics that predict shoulder function after constraint-induced movement therapy (CIMT) have not yet been identified. Objectives To identify predictors associated with satisfactory shoulder function in patients with reduced shoulder function at admission to CIMT. Methods One hundred and seventy five patients were treated using CIMT while in a specialized inpatient hospital. Satisfactory shoulder function was defined according to the functional ability scale of the Wolf Motor Function test. Predictors of satisfactory shoulder function after CIMT were identified using multivariable logistic regression. Results Better distal arm function and good proximal shoulder function on admission to CIMT were strong predictors of satisfactory shoulder function, while age and time of admission to CIMT since stroke were not. Seventeen percent of all CIMT-participants with reduced shoulder function pre-CIMT reached a level of satisfactory shoulder function after CIMT. Discussion A substantial part of patients with reduced shoulder function reached a level of satisfactory shoulder function after CIMT. Intensive CIMT training, comprising tasks that require both distal and proximal UE function, may increase shoulder function in patients with a potential functional reserve.

Cognition and Perception

Cerebrovascular and Alzheimer disease: Fellow travelers or partners in crime?

Author(s): Nucera A.; Hachinski V.

Source: Journal of Neurochemistry; 2018

Publication Type(s): Article In Press

Abstract: In this review, we will discuss the progressive decline in cognitive and intellectual performance in late life that has led to great challenges for medical and community services. The term 'vascular cognitive impairment' is defined as any cognitive impairment that is caused by or associated with vascular factors. It can occur alone or in association with Alzheimer disease. The good news is that because vascular risk factors are treatable, it should be possible to prevent or delay some dementias. Since vascular cognitive impairment may often go unrecognized, many experts recommend screening with brief tests to assess memory, thinking, and reasoning for everyone considered to be at high risk for this disorder. Up to 64% of persons 65 years or older who have experienced a stroke have some degree of cognitive impairment with up to one third developing dementia. Postmortem studies indicate that up to 34% of dementia cases show significant vascular pathology. It suggests that ischemic stroke triggers additional pathophysiological process that may lead to a secondary degenerative process that may interact with Alzheimer disease pathology thus accelerating the ongoing primary neurodegeneration. Mechanisms could include hypoperfusion, hypoxia, and neuroinflammation, one of the links between the two pathologies. Stroke and dementia share the same risk and protective factors. Since stroke interact with dementia of all types it may already be possible to reduce or delay some dementias by a number of interventions known to prevent stroke. This article is part of the Special Issue "Vascular Dementia".Copyright © 2018 International Society for Neurochemistry.

Unilateral spatial neglect after posterior parietal damage.

Author(s): Vallar, Giuseppe; Calzolari, Elena

Source: Handbook of clinical neurology; 2018; vol. 151 ; p. 287-312

Publication Type(s): Journal Article

Abstract: Unilateral spatial neglect is a disabling neurologic deficit, most frequent and severe after right-hemispheric lesions. In most patients neglect involves the left side of space, contralateral to a right-hemispheric lesion. About 50% of stroke patients exhibit neglect in the acute phase. Patients fail to orient, respond to, and report sensory events occurring in the contralateral sides of space and of the body, to explore these portions of space through movements by action effectors (eye, limbs), and to move the contralateral limbs. Neglect is a multicomponent higher-level disorder of spatial awareness, cognition, and attention. Spatial neglect may occur independently of elementary sensory and motor neurologic deficits, but it can mimic and make them more severe. Diagnostic tests include: motor exploratory target cancellation; setting the midpoint of a horizontal line (bisection), that requires the estimation of lateral extent; drawing by copy and from memory; reading, assessing neglect dyslexia; and exploring the side of the body contralateral to the lesion. Activities of daily living scales are also used. Patients are typically not aware of neglect, although they may exhibit varying degrees of awareness toward different components of the deficit. The neural correlates include lesions to the inferior parietal lobule of the posterior parietal cortex, which was long considered the unique neuropathologic correlate of neglect, to the premotor and to the dorsolateral prefrontal cortices, to the posterior superior temporal gyrus, at the temporoparietal junction, to subcortical gray nuclei (thalamus, basal ganglia), and to parietofrontal white-matter fiber tracts, such as the superior longitudinal fascicle. Damage to the inferior parietal lobule of the posterior parietal cortex is specifically associated with the mainly egocentric, perceptual, and exploratory

extrapersonal, and with the personal, bodily components of neglect. Productive manifestations, such as perseveration, are not a correlate of posterior parietal cortex damage.

Using technology to overcome the language barrier: the Cognitive Assessment for Aphasia App.

Author(s): Wall, Kylie Janine; Cumming, Toby Borland; Koenig, Sebastian Thomas

Source: Disability and rehabilitation; Jun 2018; vol. 40 (no. 11); p. 1333-1344

Publication Type(s): Journal Article

Abstract:PURPOSEWe developed and explored the feasibility and user acceptance of the Cognitive Assessment for Aphasia App: a non-immersive virtual reality cognitive assessment for stroke survivors, designed to be inclusive of individuals with aphasia.METHODSParticipants were assessed on a battery of pen-and-paper cognitive tests and the Cognitive Assessment for Aphasia App. Feasibility was explored by quantifying missing data for test completion, determining user acceptance for the app by measuring participants' preferred testing method, enjoyment and perceived task difficulty and time-taken to complete the test.RESULTSSixty-four stroke participants (35 with aphasia, 29 without aphasia) and 32 controls were recruited. Only one participant with aphasia was unable to complete all the Cognitive Assessment for Aphasia App tasks, whereas 13 participants were unable to complete all pen-and-paper tasks. Only 14% of participants preferred the pen-and-paper tests, and preference did not significantly differ between groups. Ninety-five per cent of participants were neutral or enjoyed the app and 4% perceived it to be very difficult. Higher age was negatively associated with user acceptance measures.CONCLUSIONThe study shows preliminary evidence for the Cognitive Assessment for Aphasia App to be a feasible cognitive assessment for stroke survivors with and without aphasia. The app is currently being validated in stroke. Implications for rehabilitation The Cognitive Assessment for Aphasia App is a feasible tool for assessing post-stroke cognition in acute, inpatient rehabilitation and community settings. In research trials examining cognition, individuals with aphasia are often excluded. The Cognitive Assessment for Aphasia App permits the inclusion of these individuals, enhancing generalizability. The Cognitive Assessment for Aphasia App provides an alternative method to assess cognition that is quicker and preferred over standard neuropsychological tests.

Cognitive outcomes of pediatric stroke.

Author(s): Jacomb, Isabella; Porter, Melanie; Brunsdon, Ruth; Mandalis, Anna; Parry, Louise

Source: Child neuropsychology : a journal on normal and abnormal development in childhood and adolescence; Apr 2018; vol. 24 (no. 3); p. 287-303

Publication Type(s): Journal Article

Abstract:A limited number of longitudinal studies have investigated long-term neuropsychological development in the pediatric stroke population. This study retrospectively examines cognitive outcomes in 41 children with a history of stroke, with reference to age at stroke, laterality, region and mechanism of stroke. In the course of recovery, neuropsychological measures of intellectual functioning and memory were administered at two time points, whilst executive functioning, attention and academic skills were administered at one time point. As predicted, children with stroke performed significantly worse compared to normative expectations on all neuropsychological measures. Up to two thirds of children scored in the borderline impaired and impaired ranges on at least one domain of cognition. Performance on intellectual and memory assessment remained relatively stable over time. Younger age at stroke was found to be associated with poorer intellectual functioning. No effects of laterality of stroke on neuropsychological performance over time were found. Children with subcortical stroke demonstrated a greater improvement in immediate memory over time than children with cortical stroke. These findings reveal that children with stroke display long-term cognitive difficulties that typically remain stable over time. Attention and academic skills

are particularly vulnerable to impairment. Further evidence that age at stroke is a significant factor in terms of cognitive outcome is provided, in support of the "early vulnerability" position.

Return to work after young stroke: A systematic review.

Author(s): Edwards, Jodi D; Kapoor, Arunima; Linkewich, Elizabeth; Swartz, Richard H

Source: International journal of stroke : official journal of the International Stroke Society; Apr 2018; vol. 13 (no. 3); p. 243-256

Publication Type(s): Journal Article

Abstract: Background The incidence of stroke in young adults is increasing. While many young survivors are able to achieve a good physical recovery, subtle dysfunction in other domains, such as cognition, often persists, and could affect return to work. However, reported estimates of return to work and factors affecting vocational outcome post-stroke vary greatly. Aims The aims of this systematic review were to determine the frequency of return to work at different time points after stroke and identify predictors of return to work. Summary of review Two electronic databases (Medline and Embase) were systematically searched for articles according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. A total of 6473 records were screened, 68 were assessed for eligibility, and 29 met all inclusion criteria (working-age adults with stroke, return to work evaluated as an outcome, follow-up duration reported, and publication within the past 20 years). Return to work increased with time, with median frequency increasing from 41% between 0 and 6 months, 53% at 1 year, 56% at 1.5 years to 66% between 2 and 4 years post-stroke. Greater independence in activities of daily living, fewer neurological deficits, and better cognitive ability were the most common predictors of return to work. Conclusion This review highlights the need to examine return to work in relation to time from stroke and assess cognition in working age and young stroke survivors. The full range of factors affecting return to work has not yet been explored and further evaluations of return to work interventions are warranted.

Improving Cognitive Function in Patients with Stroke: Can Computerized Training Be the Future?

Author(s): De Luca R.; Leonardi S.; Russo M.; Aragona B.; Torrisi M.; Maggio M.G.; Bramanti A.;

Source: Journal of Stroke and Cerebrovascular Diseases; Apr 2018; vol. 27 (no. 4); p. 1055-1060

Publication Type(s): Article

Abstract: Background: Cognitive impairment after stroke is common and can cause disability with a high impact on quality of life and independence. Cognitive rehabilitation is a therapeutic approach designed to improve cognitive functioning after central nervous system's injuries. Computerized cognitive rehabilitation (CCR) uses multimedia and informatics resources to optimize cognitive compromised performances. The aim of this study is to evaluate the effects of pc cognitive training with Erica software in patients with stroke. Methods: We studied 35 subjects (randomly divided into 2 groups), affected by either ischemic or hemorrhagic stroke, having attended from January 2013 to May 2015 the Laboratory of Robotic and Cognitive Rehabilitation of Istituto di Ricerca e Cura a Carattere Scientifico Neurolesi in Messina. Cognitive dysfunctions were investigated through a complete neuropsychological battery, administered before (T0) and after (T1) each different training. Results: At T0, all the patients showed language and cognitive deficits, especially in attention process and memory abilities, with mood alterations. After the rehabilitation program (T1), we noted a global cognitive improvement in both groups, but a more significant increase in the scores of the different clinical scales we administered was found after CCR. Conclusions: Our data suggest that cognitive pc training by using the Erica software may be a useful methodology to increase the post-stroke cognitive recovery.

Cultural adaptation and psychometric testing of the scenario test uk for people with aphasia

Author(s): Hilari, Katerina; Galante, Lara; Huck, Anneline; Pritchard, Madeleine; Allen, Lucy;

Source: International Journal of Language & Communication Disorders; Mar 2018 ; p. No

Publication Type(s): Journal Peer Reviewed Journal

Abstract: Background This study explores the psychometric properties of The Scenario Test UK, a culturally adapted version of the Dutch original (The Scenario Test) developed by van der Meulen et al. in 2010, which evaluates functional, daily-life communication in aphasia. The Scenario Test assesses communication in an interactive context with a supportive communication partner. Aims To evaluate the reliability (internal consistency, interrater and test–retest reliability) and construct validity (convergent, discriminant and known-groups validity) of The Scenario Test UK. Methods & Procedures The Scenario Test UK and other language, cognition and praxis assessments were administered to persons with aphasia after stroke (3+ months post-stroke) and to non-aphasic controls. Participants were recruited primarily through community stroke groups. Measures were completed in an interview format. Standard psychometric criteria were used to evaluate reliability and construct validity. Outcomes & Results A total of 74 participants with aphasia and 20 participants without aphasia took part in The Scenario Test UK. The test showed high levels of reliability. Internal consistency (Cronbach's α = 0.92), interrater reliability (ICC = 0.95) and test–retest reliability (ICC = 0.96) were excellent. Interrater agreement in scores on the individual items ranged from good to excellent (κ = 0.41–1.00) for all but two items (item 4c κ = 0.38, item 6c κ = 0.36). The test demonstrated good levels of convergent (ρ = 0.37–0.75) and discriminant validity (ρ = –0.04 to 0.23). There was strong evidence for known groups validity (U = 132.50, p

Study protocol for Vitality: a proof-of-concept randomised controlled trial of exercise training or complex mental and social activities to promote cognition in adults with chronic stroke.

Author(s): Best, John R; Eng, Janice J; Davis, Jennifer C; Hsiung, Robin; Hall, Peter A;

Source: BMJ open; Mar 2018; vol. 8 (no. 3); p. e021490

Publication Type(s): Journal Article

Available at BMJ open - from Europe PubMed Central - Open Access

Abstract:INTRODUCTIONCerebrovascular disease-such as stroke-is the second most common cause of dementia (ie, vascular dementia). Specifically, a stroke increases one's risk for dementia by a factor of two. Thus, stroke survivors represent a target population in need of intervention strategies to promote cognitive function and prevent dementia. The current standard of care in stroke rehabilitation does not adequately address the significant cognitive consequences of stroke, especially for those who are in the chronic phase (ie, >12 months since an index stroke). Two potential intervention strategies are: (1) exercise training and (2) cognitive and social enrichment activities.METHODS AND ANALYSISThe aim of this proof-of-concept randomised controlled trial is to determine whether a 6-month targeted exercise training programme or a 6-month cognitive and social enrichment programme can efficaciously and efficiently improve cognitive function in older adults with chronic stroke compared with a 6-month stretch and tone programme (ie, control). The primary measurement periods will be baseline, month 6 (postintervention) and month 12 (6-month follow-up). The primary outcome measure will be performance on the Alzheimer's Disease Assessment Scale-Cognitive-Plus (ADAS-Cog-Plus), a global measure of cognitive performance using multidimensional item response theory to summarise scores from the 13-item ADAS-Cog and other standard cognitive assessments. The primary analysis will compare changes in ADAS-Cog-Plus performance from baseline to month 6. Proof-of-concept outcomes relating to intervention feasibility will be analysed descriptively. The economic evaluation will examine the incremental costs and health outcome benefits generated by both interventions versus the control.ETHICS AND DISSEMINATIONEthical approval has been obtained from the University of British Columbia's Clinical

Research Ethics Board (H13-00715, 26 July 2013). Any modifications to the protocol will require a formal amendment to the protocol and approval by the Research Ethics Board. Outcomes of this randomised controlled trial and the statistical code to generate those outcomes will be disseminated through publication in peer-reviewed journals as well as conference presentations.TRIAL REGISTRATION NUMBERNCT01916486.

Network meta-analysis of diagnostic test accuracy studies identifies and ranks the optimal diagnostic tests and thresholds for healthcare policy and decision making.

Author(s): Owen, Rhiannon K; Cooper, Nicola J; Quinn, Terence J; Lees, Rosalind; Sutton, Alex J

Source: Journal of clinical epidemiology; Mar 2018

Publication Type(s): Journal Article

Abstract:OBJECTIVENetwork meta-analyses have extensively been used to compare the effectiveness of multiple interventions for healthcare policy and decision-making. However, methods for evaluating the performance of multiple diagnostic tests are less established. In a decision-making context, we are often interested in comparing and ranking the performance of multiple diagnostic tests, at varying levels of test thresholds, in one simultaneous analysis.STUDY DESIGN AND SETTINGMotivated by an example of cognitive impairment diagnosis following stroke, we synthesized data from 13 studies assessing the efficiency of two diagnostic tests: Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA), at two test thresholds: MMSE

Feasibility of incorporating functionally relevant virtual rehabilitation in sub-acute stroke care: perception of patients and clinicians.

Author(s): Demers, Marika; Chan Chun Kong, Daniel; Levin, Mindy F

Source: Disability and rehabilitation. Assistive technology; Mar 2018 ; p. 1-7

Publication Type(s): Journal Article

Abstract:PURPOSETo determine user satisfaction and safety of incorporating a low-cost virtual rehabilitation intervention as an adjunctive therapeutic option for cognitive-motor upper limb rehabilitation in individuals with sub-acute stroke.METHODSA low-cost upper limb virtual rehabilitation application incorporating realistic functionally-relevant unimanual and bimanual tasks, specifically designed for cognitive-motor rehabilitation was developed for patients with sub-acute stroke. Clinicians and individuals with stroke interacted with the intervention for 15-20 or 20-45 minutes, respectively. The study had a mixed-methods convergent parallel design that included a focus group interview with clinicians working in a stroke program and semi-structured interviews and standardized assessments (Borg Perceived Exertion Scale, Short Feedback Questionnaire) for participants with sub-acute stroke undergoing rehabilitation. The occurrence of adverse events was also noted.RESULTSThree main themes emerged from the clinician focus group and patient interviews: Perceived usefulness in rehabilitation, satisfaction with the virtual reality intervention and aspects to improve. All clinicians and the majority of participants with stroke were highly satisfied with the intervention and perceived its usefulness to decrease arm motor impairment during functional tasks. No participants experienced major adverse events.CONCLUSIONSIncorporation of this type of functional activity game-based virtual reality intervention in the sub-acute phase of rehabilitation represents a way to transfer skills learned early in the clinical setting to real world situations. This type of intervention may lead to better integration of the upper limb into everyday activities. Implications for Rehabilitation • Use of a cognitive-motor low-cost virtual reality intervention designed to remediate arm motor impairments in sub-acute stroke is feasible, safe and perceived as useful by therapists and patients for stroke

rehabilitation. • Input from end-users (therapists and individuals with stroke) is critical for the development and implementation of a virtual reality intervention.

Cognitive and Mood Assessment Tools for Use in Stroke.

Author(s): Quinn, Terence J.; Elliott, Emma; Langhorne, Peter

Source: Stroke (00392499); Feb 2018; vol. 49 (no. 2); p. 483-490

Publication Type(s): Academic Journal

Diagnostic test accuracy of the montreal cognitive assessment in the detection of post-stroke cognitive impairment under different stages and cutoffs: A systematic review and meta-analysis

Author(s): Shi, Dan; Chen, Xiao; Li, Zheng

Source: Neurological Sciences; Feb 2018 ; p. No

Publication Type(s): Journal Peer Reviewed Journal

Abstract: The purposes of this review were to give the optimal cutoffs of the Montreal Cognitive Assessment (MoCA) by comparing sensitivity and specificity under different cutoffs and compare the MoCA with other screening tools in post-stroke cognitive impairment (PSCI) determined by a neuropsychological evaluation. Articles were derived from a systematic search in PubMed, Web of science, Embase, and CINAHL and were assessed for internal validity by the Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2). The figure of risk of bias was made by Review Manager 5.3, and data of selected studies were synthesized by MetaDisc 1.4. Twelve diagnostic studies, involving 2130 patients, were included. The area under the curve (AUC) under cutoffs of 20v19, 21v20, and 26v25 are 0.90, 0.90, and 0.95, showing high predictive validity for PSCI screening within 1 month. When the sensitivity and specificity are equal important, the optimal cutoff is 20v19 (Youden Index = 0.58). Compared to the Mini-Mental State Examination (MMSE), the MoCA has higher sensitivity but lower specificity. The optimal cutoff differs in different stages of stroke. Both the MMSE and MoCA are appropriate screening tools for PSCI, and the use of these two tools should be in accordance with the aim of screening. The Addenbrooke's Cognitive Examination-Revised (ACE-R) can act as a supplement for the MoCA. (PsycINFO Database Record (c) 2018 APA, all rights reserved) (Source: journal abstract)

Using the Oxford cognitive screen to detect cognitive impairment in stroke patients: A comparison with the Mini-Mental State Examination

Author(s): Mancuso M.; Abbruzzese L.; Damora A.; Pirrotta F.; Demeyere N.; Varalta V.

Source: Frontiers in Neurology; Feb 2018; vol. 9

Publication Type(s): Article

Available at Frontiers in neurology - from frontiersin.org

Abstract: Background: The Oxford Cognitive Screen (OCS) was recently developed with the aim of describing the cognitive deficits after stroke. The scale consists of 10 tasks encompassing five cognitive domains: attention and executive function, language, memory, number processing, and praxis. OCS was devised to be inclusive and un-confounded by aphasia and neglect. As such, it may have a greater potential to be informative on stroke cognitive deficits of widely used instruments, such as the Mini-Mental State Examination (MMSE) or the Montreal Cognitive Assessment, which were originally devised for demented patients. Objective: The present study compared the OCS with the MMSE with regards to their ability to detect cognitive impairments post-stroke. We further aimed to examine performance on the OCS as a function of subtypes of cerebral infarction and clinical severity. Methods: 325 first stroke patients were consecutively enrolled in the study over a 9-

month period. The OCS and MMSE, as well as the Bamford classification and NIHSS, were given according to standard procedures. Results: About a third of patients (35.3%) had a performance lower than the cutoff(< 22) on the MMSE, whereas 91.6% were impaired in at least one OCS domain, indicating higher incidences of impairment for the OCS. More than 80% of patients showed an impairment in two or more cognitive domains of the OCS. Using the MMSE as a standard of clinical practice, the comparative sensitivity of OCS was 100%. Out of the 208 patients with normal MMSE performance 180 showed impaired performance in at least one domain of the OCS. The discrepancy between OCS and MMSE was particularly strong for patients with milder strokes. As for subtypes of cerebral infarction, fewer patients demonstrated widespread impairments in the OCS in the Posterior Circulation Infarcts category than in the other categories. Conclusion: Overall, the results showed a much higher incidence of cognitive impairment with the OCS than with the MMSE and demonstrated no false negatives for OCS vs MMSE. It is concluded that OCS is a sensitive screen tool for cognitive deficits after stroke. In particular, the OCS detects high incidences of stroke-specific cognitive impairments, not detected by the MMSE, demonstrating the importance of cognitive profiling.

Effects of virtual reality-based training with BTs-Nirvana on functional recovery in stroke patients: preliminary considerations

Author(s): De Luca R.; Russo M.; Naro A.; Tomasello P.; Leonardi S.; Santamaria F.; Desiree L.;

Source: International Journal of Neuroscience; Feb 2018 ; p. 1-6

Publication Type(s): Article In Press

Abstract: Aim of the study: Cognitive impairment occurs frequently in post-stroke patients. This study aimed to determine the effects of a virtual reality training (VRT) with BTs-Nirvana (BTsN) on the recovery of cognitive functions in stroke patients, using the Interactive-Semi-Immersive Program (I-SIP). Materials and methods: We enrolled 12 subjects (randomly divided into two groups: experimental group (EG); and control group (CG)), who attended the Laboratory of Robotic and Cognitive Rehabilitation of IRCCS Neurolesi of Messina from January to June 2016. The EG underwent a VRT with BTsN, whereas CG received a standard cognitive treatment. Both the groups underwent the same conventional physiotherapy program. Each treatment session lasted 45 minutes and was repeated three times a week for 8 weeks. All the patients were evaluated by a specific clinical-psychometric battery before (T0), immediately (T1), and one month (T2) after the end of the training. Results: At T1, the EG presented a greater improvement in the trunk control test ($p = 0.03$), the Montreal Cognitive Assessment ($p = 0.01$), the selective attention assessment scores ($p = 0.01$), the verbal memory ($p = 0.03$), and the visuospatial and constructive abilities ($p = 0.01$), as compared to CG. Moreover, such amelioration persisted at T2 only in the EG. Conclusions: According to these preliminary data, VRT with I-SIP can be considered a useful complementary treatment to potentiate functional recovery, with regard to attention, visual-spatial deficits, and motor function in patients affected by stroke.

Rhythm perception and production abilities and their relationship to gait after stroke.

Author(s): Patterson, Kara K; Wong, Jennifer S; Knorr, Svetlana; Grahn, Jessica A

Source: Archives of physical medicine and rehabilitation; Feb 2018

Publication Type(s): Journal Article

Abstract:OBJECTIVESTo assess rhythm abilities, describe their relationship to clinical presentation, and to determine if rhythm production independently contributes to temporal gait asymmetry post-stroke.DESIGNCross-sectional.SETTINGLarge urban rehabilitation hospital and university.PARTICIPANTSIndividuals with subacute and chronic stroke (n=39) and data for healthy

adults extracted from a pre-existing database (n=21).INTERVENTIONNot applicable.MAIN OUTCOME MEASURESStroke group: National Institutes of Health Stroke Scale (NIHSS), Chedoke-McMaster Stroke Assessment (CMSA) leg and foot scales, Montreal Cognitive Assessment (MoCA), rhythm perception and production (Beat Alignment Test; BAT) and spatiotemporal gait parameters were assessed. Temporal gait asymmetry (TGA) was quantified with the swing time symmetry ratio. Healthy group: age and beat perception scores assessed by BAT. Rhythm perception of the stroke group and healthy adults was compared with ANOVA. Spearman correlations quantified the relationship between rhythm perception and production abilities and clinical measures. Multiple linear regression assessed the contribution of rhythm production along with motor impairment and time post stroke to TGA.RESULTSRhythm perception in the stroke group was worse than healthy adults (F(1,56) = 17.5, p=0.0001) Within the stroke group, rhythm perception was significantly correlated with CMSA leg (rs =0.33, p=0.04), and foot (rs =0.49, p=0.002) scores but not NIHSS or MOCA scores. The model for TGA was significant (F(3,35)=12.8, p

Preliminary validation study of the Russian Birmingham Cognitive Screen.

Author(s): Kuzmina, E; Humphreys, G W; Riddoch, M J; Skvortsov, A A; Weekes, B S

Source: Journal of clinical and experimental neuropsychology; Feb 2018; vol. 40 (no. 1); p. 1-16

Publication Type(s): Journal Article

Abstract:INTRODUCTIONThe Birmingham Cognitive Screen (BCoS) is designed for use with individuals who have acquired language impairment following stroke. Our goal was to develop a Russian version of the BCoS (Rus-BCoS) by translating the battery following cultural and linguistic adaptations and establishing preliminary data on its psychometric properties.METHODFifty patients with left-hemisphere stroke were recruited, of whom 98% were diagnosed with mild to moderate aphasia. To check whether the Rus-BCoS provides stable and consistent scores, internal consistency, test-retest, and interrater types of reliability were determined. Eight participants with stroke and 20 neurologically intact participants were assessed twice. To inspect the discriminative power of the battery, 63 participants without brain impairment were tested with the Rus-BCoS. Additionally, the Russian version of the Montreal Cognitive Assessment (MoCA), Quantitative Assessment of Speech in Aphasia, and Luria's Neuropsychological Assessment Battery were used to examine convergent validity, sensitivity, and specificity of the Rus-BCoS.RESULTSThe internal consistency as well as test-retest and interrater reliability of the Rus-BCoS satisfied criteria for the research use. Performance on a majority of tasks in the battery correlated significantly with independently validated tests that putatively measure similar cognitive processes. Critically, all patients with aphasia returned nonzero scores in at least one task in all the Rus-BCoS sections, with the exception of the Controlled Attention section where two patients with severe executive control deficits could not perform.CONCLUSIONSThe Rus-BCoS shows promise as a comprehensive cognitive screening tool that can be used by clinicians working with Russian-speaking persons experiencing poststroke aphasia after much further validation and development of reliable normative standards. Given a lack of quantitative neuropsychological assessment tools in Russia, however, we contend the Rus-BCoS offers potential benefits to clinicians and patients. However, data from research studies with a broader sample of Russian speakers are needed.

Investigating cognitive ability and self-reported driving performance of post-stroke adults in a driving simulator

Author(s): Blane, Alison; Falkmer, Torbjörn; Lee, Hoe C.; Willstrand, Tania Dukic

Source: Topics in Stroke Rehabilitation; Jan 2018; vol. 25 (no. 1); p. 44-53

Publication Type(s): Journal Peer Reviewed Journal Journal Article

Abstract: Background: Safe driving is a complex activity that requires calibration. This means the driver can accurately assess the level of task demand required for task completion and can accurately evaluate their driving capability. There is much debate on the calibration ability of post-stroke drivers. Objectives: The aim of this study was to assess the cognition, self-rated performance, and estimation of task demand in a driving simulator with post-stroke drivers and controls. Methods: A between-groups study design was employed, which included a post-stroke driver group and a group of similarly aged older control drivers. Both groups were observed driving in two simulator-based driving scenarios and asked to complete the NASA Task Load Index (TLX) to assess their perceived task demand and self-rate their driving performance. Participants also completed a battery of psychometric tasks to assess attention and executive function, which was used to determine whether post-stroke cognitive impairment impacted on calibration. Results: There was no difference in the amount of perceived task demand required to complete the driving task. Despite impairments in cognition, the post-stroke drivers were not more likely to over-estimate their driving abilities than controls. On average, the post-stroke drivers self-rated themselves more poorly than the controls and this rating was related to cognitive ability. Conclusion: This study suggests that post-stroke drivers may be aware of their deficits and adjust their driving behavior. Furthermore, using self-performance measures alongside a driving simulator and cognitive assessments may provide complementary fitness-to-drive assessments, as well as rehabilitation tools during post-stroke recovery (PsycINFO Database Record (c) 2018 APA, all rights reserved) (Source: journal abstract)

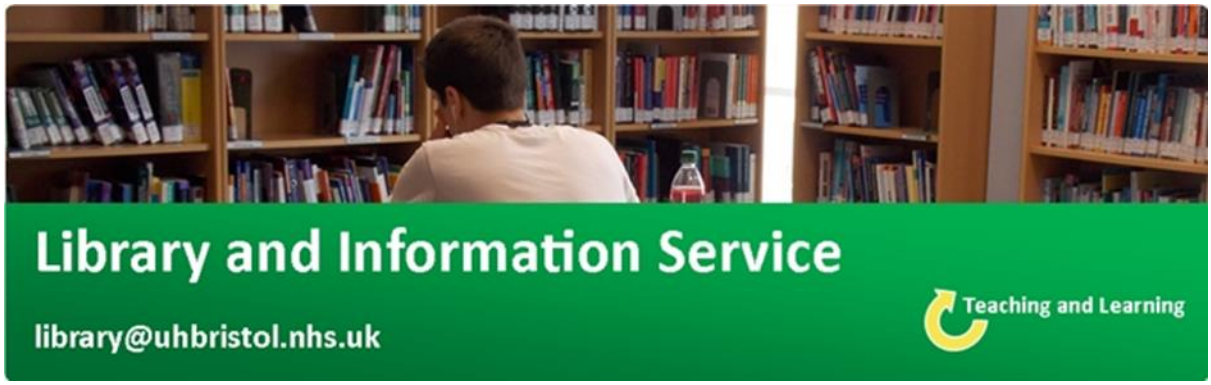
A single session of moderate intensity walking increases brain-derived neurotrophic factor (BDNF) in the chronic post-stroke patients

Author(s): de Morais, Viviane Aparecida Carvalho de; da Silva Tourino, Marina Ferreira;

Source: Topics in Stroke Rehabilitation; Jan 2018; vol. 25 (no. 1); p. 1-5

Publication Type(s): Journal Peer Reviewed Journal Journal Article

Abstract: Background: Aerobic exercise, even for short durations, may promote an increase in serum concentrations of brain-derived neurotrophic factor (BDNF). However, it is necessary to determine the optimal exercise types and intensities to increase BDNF levels. Objectives: This aim of this study was investigate the effects of mild and moderate intensity acute aerobic exercise on serum BDNF levels in patients in the chronic post-stroke phase. Methods: The participants answered a socio-demographic questionnaire, cognitive assessment (Mini Mental State Examination), assessment of depressive symptoms (Hamilton Depression Scale), fatigue (Fatigue Severity Scale) and functional capacity (6-minute walk test). Blood samples were collected before and after each session. The measurement of the concentration of BDNF was performed using the enzyme-linked immunosorbent assay . Patients were asked to walk for 30-min in the target training zone (mild intensity, 50–63% of maximum heart rate, and moderate intensity, 64–76% of maximum heart rate), once each week for 2 consecutive weeks. Results: Our results indicate that 30 min of acute aerobic exercise at a moderate intensity, but not at a mild intensity, increases serum BDNF levels in the chronic post-stroke phase. Conclusions: This study suggests a potential mechanism for the beneficial effects of exercise as a component of recovery from stroke, and provides the basis for future studies that will elucidate the specific parameters for clinical applications. (PsycINFO Database Record (c) 2018 APA, all rights reserved) (Source: journal abstract)



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Staffed hours: 8am-5pm, Monday to Friday

Swipe-card access: 7am-11pm, seven days a week

Level Five, Education and Research Centre

University Hospitals Bristol

Contact your Outreach Librarian:

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