

Rehabilitation Current Awareness Bulletin

October 2019

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Title: An equine-assisted therapy intervention to improve pain, range of motion, and quality of life in adults and older adults with arthritis: A randomized controlled trial.

Citation: Applied Nursing Research; Oct 2019; vol. 49 ; p. 5-12

Author(s): White-Lewis, Sharon; Johnson, Rebecca; Ye, Sangbeak; Russell, Cynthia

Abstract: To compare equine-assisted therapy to exercise education on pain, range of motion, and quality of life in adults and older adults with arthritis. Quality of life for adults and older adults is negatively impacted by arthritis pain, stiffness, and decreased function. Equine-assisted therapy provides unique movements to the rider's joints and muscles improving pain, range of motion, and quality of life and has improved outcomes in balance, gait, strength, functional mobility, and spasticity for older adults, stroke, spinal cord injury, and multiple sclerosis patients. No research has investigated the effects on adults and older adults with arthritis. Twenty adults and older adults with arthritis recruited from rheumatology clinics participated in a randomized controlled trial for six weeks. Participants and research assistants were blinded to assignment. Standardized valid and reliable instruments were used to measure pain, range of motion, and quality of life targeting back, knees, shoulders, and hips. Mean age was 63.85 (SD 6.885, 53–75) years. Pain significantly improved in shoulders ($p = 0.007$), hips ($p = 0.027$), and back ($p = 0.006$), not knees ($p = 0.061$). Range of motion improved for back ($p = 0.02$), hips ($p = 0.04$), shoulders ($p = 0.005$) and not knees. Quality of life improved for upper limb ($p = 0.002$), lower limb ($p = 0.021$), and affect ($p = 0.030$), not social interaction and symptoms. This randomized controlled trial provides evidence that equine-assisted therapy decreases pain, and improves range of motion, and quality of life for adults and older adults with arthritis. Further fully powered research with cost/benefit outcomes would be beneficial. • Equine-assisted therapy improved arthritic back pain and range of motion. • Equine-assisted therapy improved quality of life aspects: affect and upper limbs. • Shoulder and knee pain and range of motion did not improve.

Title: Moving stroke rehabilitation evidence into practice: a systematic review of randomized controlled trials.

Citation: Clinical Rehabilitation; Oct 2019; vol. 33 (no. 10); p. 1586-1595

Author(s): Bird, Marie-Louise; Miller, Tiev; Connell, Louise A; Eng, Janice J

Objective: The aim of this study was to investigate the effectiveness of interventions aimed at moving research evidence into stroke rehabilitation practice through changing the practice of clinicians. Data sources: EMBASE, CINAHL, Cochrane and MEDLINE databases were searched from 1980 to April 2019. International trial registries and reference lists of included studies completed our search.

Review methods: Randomized controlled trials that involved interventions aiming to change the practice of clinicians working in stroke rehabilitation were included. Bias was evaluated using RevMan to generate a risk of bias table. Evidence quality was evaluated using GRADE criteria.

Results: A total of 16 trials were included (250 sites, 14,689 patients), evaluating a range of interventions including facilitation, audit and feedback, education and reminders. Of which, 11 studies included multicomponent interventions (using a combination of interventions). Four used educational interventions alone, and one used electronic reminders. Risk of bias was generally low. Overall, the GRADE criteria indicated that this body of literature was of low quality. This review found higher efficacy of trials which targeted fewer outcomes. Subgroup analysis indicated moderate-level GRADE evidence (103 sites, 10,877 patients)

that trials which included both site facilitation and tailoring for local factors were effective in changing clinical practice. The effect size of these varied (odds ratio: 1.63–4.9). Education interventions alone were not effective.

Conclusion: A large range of interventions are used to facilitate clinical practice change. Education is commonly used, but in isolation is not effective. Multicomponent interventions including facilitation and tailoring to local settings can change clinical practice and are more effective when targeting fewer changes.

Title: Upper Limb Performance in Daily Life Improves Over the First 12 Weeks Poststroke.

Citation: Neurorehabilitation & Neural Repair; Oct 2019; vol. 33 (no. 10); p. 836-847

Author(s): Waddell, Kimberly J.; Strube, Michael J.; Tabak, Rachel G.; Haire-Joshu, Debra; Lang, Catherine E.

Background: Upper limb (UL) performance, or use, in daily life is complex and likely influenced by many factors. While the recovery trajectory of UL impairment poststroke is well documented, little is known about the recovery trajectory of sensor-measured UL performance in daily life early after stroke and the potential moderating role of psychosocial factors.

Objective: To examine the recovery trajectory of UL performance within the first 12 weeks poststroke and characterize the potential moderating role of belief, confidence, and motivation on UL performance.

Methods: This was a longitudinal, prospective cohort study quantifying UL performance and related psychosocial factors early after stroke. UL performance was quantified via bilateral, wrist-worn accelerometers over 5 assessment sessions for 24 hours. Belief, confidence, and motivation to use the paretic UL, and self-perceived barriers to UL recovery were quantified via survey. Change in 4 accelerometer variables and the moderating role of psychosocial factors was tested using hierarchical linear modeling. The relationship between self-perceived barriers and UL performance was tested via Spearman rank-order correlation analysis.

Results: UL performance improved over the first 12 weeks after stroke. Belief, confidence, and motivation did not moderate UL performance over time. There was a negative relationship between UL performance and self-perceived barriers to UL recovery at week 2, which declined over time.

Conclusions: Sensor-measured UL performance can improve early after stroke. Early after stroke, rehabilitation interventions may not need to directly target belief, confidence, and motivation but may instead focus on reducing self-perceived barriers to UL recovery.

Title: Upper limb rehabilitation in chronic stroke using neurologic music therapy: Two contrasting case studies to inform on treatment delivery and patient suitability.

Citation: Nordic Journal of Music Therapy; Oct 2019; vol. 28 (no. 5); p. 382-404

Author(s): Street, Alexander J.; Fachner, Jörg; Magee, Wendy L.

Introduction: Therapeutic Instrumental Music Performance (TIMP) is well suited for upper limb rehabilitation following stroke. Published protocols serve to inform clinicians on intervention design and delivery. However, few case studies are available that address

patient suitability, protocol modifications to support treatment adherence and suitability of home environment.

Methods: Two case studies from a small randomized controlled trial illustrate TIMP protocol modifications and considerations required for home delivery. Qualitative, quantitative and observational data report on participants' outcomes and engagement with six weeks of bi-weekly exercises. TIMP adaptations to enhance audio-motor synchronization are described.

Results: Outcomes for the less impaired participant with fewer complex health needs were significantly better after six weeks, particularly pinch grip (1 peg in 20 seconds to 15/120). The second participant improved on the water pouring task: 44 seconds to 13.16.

Discussion: Severity of stroke and impairment are major factors influencing treatment outcomes. Flexibility in the TIMP protocols, such as emphasizing the underlying pulse and building the dynamic contour, aids treatment adherence and movement synchrony. It is essential to assess homes for access, sound containment and space. Outcome measures for detecting compensatory movement, smoothness and velocity of movement are needed to better inform treatment effects.

Title: Circuit class therapy for improving mobility after stroke: A Cochrane review summary.

Citation: International Journal of Nursing Studies; Sep 2019; vol. 97 ; p. 130-131

Author(s): van Wissen, Kim; Blanchard, Denise

Abstract: After a stroke, people characteristically experience a loss of function. Reviewers (English et al., 2017) provide evidence-based insights into the value of instigating CCT into post-stroke rehabilitation. The review examines the effectiveness of CCT for people who have experienced stroke. The meta-analysis includes seventeen trials comprising 1297 participants. Results demonstrate that CCT is a worthwhile intervention to establish and support mobility post-stroke. The primary effect of CCT was to improve walking capacity, measured by a walk test. CCT improves gaining independence in activities of daily living.

Title: Rasch Analysis Of The Uk Functional Assessment Measure In A Sample Of Patients With Traumatic Brain Injury From The Uk National Clinical Database.

Citation: Journal of Rehabilitation Medicine (Stiftelsen Rehabiliteringsinformation); Sep 2019; vol. 51 (no. 8); p. 566-574

Objective: To determine whether the UK Functional Assessment Measure (UK FIM+FAM) fits the Rasch model in patients with complex disability following traumatic brain injury.

Design: Psychometric evaluation including preliminary exploratory and confirmatory factor analyses followed by Rasch analysis. Participants: A multicentre UK national cohort of 1,956 patients admitted for specialist rehabilitation following traumatic brain injury.

Results: The suitability of the Partial Credit Model was confirmed by the likelihood-ratio test (χ^2 (df86) =7,325.0, $p < 0.001$). Exploratory and confirmatory factor analyses supported 3 factors (Motor, Communication, Psychosocial). Rasch analysis of the full scale incorporating the 3 factors as superitems resulted in an acceptable overall model fit (χ^2 (df24)=36.72, $p = 0.05$) and strict uni-dimensionality when tested on a sub-sample of $n = 320$. These results were replicated in a full sample ($n = 1,956$) showing uni-dimensionality and good reliability with Person Separation Index = 0.81, but item trait interaction was significant due to the large sample size. No significant differential item functioning was observed for any personal

factors. Neither uniform rescaling of items nor exclusion of participants with extreme scores improved the model fit.

Conclusion: The UK FIM+FAM scale satisfies the Rasch model reasonably in traumatic brain injury. A conversion table was produced, but its usefulness in clinical practice requires further exploration and clinical translation.

Title: Impact of secondary health conditions on social role participation for a long-term physical disability cohort.

Citation: Psychology, Health & Medicine; Dec 2019; vol. 24 (no. 10); p. 1159-1170

Author(s): Hreha, Kimberly P.; Smith, Amanda E.; Wong, Jennifer L.; Mroz, Tracy M.; Fogelberg, Donald J.; Molton, Ivan

Abstract: For people living with long-term physical disability (LTPD) social participation may involve managing physical impairments and secondary health conditions (SHCs) that are not due to the pathophysiology of the LTPD diagnosis itself. Prior research found a negative relationship between SHCs and participation in social roles in people with spinal cord injury (SCI). We expand on this research by investigating the influence of SHCs on participation in social roles for people with one of four LTPDs, controlling for co-variables. We (1) evaluated the associations between SHCs and participation in social roles; and (2) determined whether SHCs on individuals' ability to participate in social roles varies by type of diagnosis in those aging with either SCI, muscular sclerosis, muscular dystrophy, or post-polio syndrome. Cross-sectional, secondary data analysis from a return-by-mail survey. N = 1,573. Data were analyzed with multiple linear regressions (hypothesis 1), and then three moderated regressions (hypothesis 2). After controlling for demographics, SHCs were associated with lower ability to participate in social roles and accounted for 48% of the variance (all p's <.001). The relationship between depression and social role participation was moderated by diagnosis, such that depression was more negatively associated with social participation among individuals with SCI ($p = .020$). Thus, SHC negatively impact participation in social roles.

Title: The feasibility of Pilates to improve symptoms of anxiety, depression, and fatigue among people with Multiple Sclerosis: An eight-week randomized controlled pilot trial.

Citation: Psychology of Sport & Exercise; Nov 2019; vol. 45

Author(s): Fleming, Karl M.; Coote, Susan B.; Herring, Matthew P.

Abstract: Evidence supports benefits of exercise for mental health among people with Multiple Sclerosis (PwMS). However, non-traditional exercise modes like Pilates remain understudied. This eight-week randomized pilot trial explored indicators of feasibility of supervised or home-based Pilates compared to wait-list control on mental health outcomes among PwMS. The pilot trial took place in Limerick (August to October 2017). We recruited through the MS Society of Ireland Midwest region. Seventeen females (49.8 ± 8.4 y) were randomized to two weekly 60-min supervised or home-based Pilates sessions guided by a DVD, or wait-list control. Feasibility relative to recruitment, retention, compliance, and presence/absence of adverse events was examined. Well-validated questionnaires assessed symptoms of anxiety, depression, and fatigue. Standardized mean differences and Hedges' d were calculated to explore magnitude of change in response to Pilates compared to wait-list. Nineteen participants registered interest. Following screening, 17 met inclusion

criteria and accepted randomization. Attrition was 40% for supervised Pilates; no home-based or wait-list participant withdrew. Pilates compliance was >80%. No adverse events were reported. Compared to wait-list, home-based Pilates scores were significantly lower for feelings of depressed mood at weeks 4, 6, and 8 ($d = 0.47-1.25$; all $p \leq 0.02$), physical symptoms of fatigue at weeks 4 and 8 ($d = 0.82-0.84$; all $p \leq 0.005$), and total fatigue at weeks 4 and 8 ($d = 0.57-0.60$; all $p \leq 0.02$). Findings support the feasibility of home-based Pilates to improve mental health outcomes among women with MS with minimal-to-mild mobility disability. Results support development of future larger home-based randomized controlled trials to better understand Pilates' effects. • Seventeen women with MS randomized to supervised or home-based Pilates or wait list. • Aspects of feasibility, anxiety, depression, and fatigue assessed across 8-week trial. • No home-based or wait-list participant withdrew, and no adverse events were reported. • Pilates compliance (>80%) and outcome assessment completion (100%) was high. • Home-based Pilates appears to be feasible and acceptable for women with MS.

Title: Caregiver Determinants of Hospitalizations Post Stroke: Adopting a Stroke Patient Caregiver Dyadic Approach...American Congress of Rehabilitation Medicine Annual Conference, 3-8 November 2019, Chicago, Illinois

Citation: Archives of Physical Medicine & Rehabilitation; Oct 2019; vol. 100 (no. 10)

Author(s): Tan, Chuen Seng; Luo, Nan; Tan, Kelvin Bryan; Choon-Huat Koh, Gerald; Tyagi, Shilpa

Title: Racial Differences in Discharge Location After a Traumatic Brain Injury Among Older Adults.

Citation: Archives of Physical Medicine & Rehabilitation; Sep 2019; vol. 100 (no. 9); p. 1622-1628

Author(s): Vadlamani, Aparna; Perry, Justin A.; McCunn, Maureen; Stein, Deborah M.; Albrecht, Jennifer S.

Abstract: To determine if there were racial differences in discharge location among older adults treated for traumatic brain injury (TBI) at a level 1 trauma center. Retrospective cohort study. R Adams Cowley Shock Trauma Center. Black and white adults aged ≥ 65 years treated for TBI between 1998 and 2012 and discharged to home without services or inpatient rehabilitation ($N=2902$). We assessed the association between race and discharge location via logistic regression. Covariates included age, sex, Abbreviated Injury Scale-Head score, insurance type, Glasgow Coma Scale score, and comorbidities. There were 2487 (86%) whites and 415 blacks (14%) in the sample. A total of 1513 (52%) were discharged to inpatient rehabilitation and 1389 (48%) were discharged home without services. In adjusted logistic regression, blacks were more likely to be discharged to inpatient rehabilitation than to home without services compared to whites (odds ratio 1.34, 95% confidence interval, 1.06-1.70). In this group of Medicare-eligible older adults, blacks were more likely to be discharged to inpatient rehabilitation compared to whites.

Title: Does pre-existing cognitive impairment impact on amount of stroke rehabilitation received? An observational cohort study.

Citation: Clinical Rehabilitation; Sep 2019; vol. 33 (no. 9); p. 1492-1502

Author(s): Longley, Verity; Peters, Sarah; Swarbrick, Caroline; Rhodes, Sarah; Bowen, Audrey

Objective: To examine whether stroke survivors in inpatient rehabilitation with pre-existing cognitive impairment receive less therapy than those without.

Design: Prospective observational cohort. Setting: Four UK inpatient stroke rehabilitation units.

Participants: A total of 139 stroke patients receiving rehabilitation, able to give informed consent/had an individual available to act as personal consultee. In total, 33 participants were categorized with pre-existing cognitive impairment based on routine documentation by clinicians and 106 without.

Measures: Number of inpatient therapy sessions received during the first eight weeks post-stroke, referral to early supported discharge, and length of stay.

Results: On average, participants with pre-existing cognitive impairment received 40 total physiotherapy and occupational therapy sessions compared to 56 for those without (mean difference = 16.0, 95% confidence interval (CI) = 2.9, 29.2), which was not fully explained by adjusting for potential confounders (age, sex, National Institutes of Health Stroke Scale (NIHSS), and pre-stroke modified Rankin Scale (mRS)). While those with pre-existing cognitive impairment received nine fewer single-discipline physiotherapy sessions (95% CI = 3.7, 14.8), they received similar amounts of single-discipline occupational therapy, psychology, and speech and language therapy; two more non-patient-facing occupational therapy sessions (95% CI = -4.3, -0.6); and nine fewer patient-facing occupational therapy sessions (95% CI = 3.5, 14.9). There was no evidence to suggest they were discharged earlier, but of the 85 participants discharged within eight weeks, 8 (42%) with pre-existing cognitive impairment were referred to early supported discharge compared to 47 (75%) without.

Conclusion: People in stroke rehabilitation with pre-existing cognitive impairments receive less therapy than those without, but it remains unknown whether this affects outcomes.

Title: Cognition in stroke rehabilitation and recovery research: Consensus-based core recommendations from the second Stroke Recovery and Rehabilitation Roundtable.

Citation: International journal of stroke : official journal of the International Stroke Society; Sep 2019 ; p. 1747493019873600

Author(s): McDonald, Matthew W; Black, Sandra E; Copland, David A; Corbett, Dale; Dijkhuizen, Rick M; Farr, Tracy D; Jeffers, Matthew S; Kalaria, Rajesh N; Karayanidis, Frini; Leff, Alexander P; Nithianantharajah, Jess; Pendlebury, Sarah; Quinn, Terence J; Clarkson, Andrew N; O'Sullivan, Michael J

Abstract: Cognitive impairment is an important target for rehabilitation as it is common following stroke, is associated with reduced quality of life and interferes with motor and other types of recovery interventions. Cognitive function following stroke was identified as an important, but relatively neglected area during the first Stroke Recovery and Rehabilitation Roundtable (SRRR I), leading to a Cognition Working Group being convened as part of SRRR II. There is currently insufficient evidence to build consensus on specific approaches to cognitive rehabilitation. However, we present recommendations on the integration of cognitive assessments into stroke recovery studies generally and define priorities for ongoing and future research for stroke recovery and rehabilitation. A number of promising interventions are ready to be taken forward to trials to tackle the gap in evidence for

cognitive rehabilitation. However, to accelerate progress requires that we coordinate efforts to tackle multiple gaps along the whole translational pathway.

Title: Standardized measurement of quality of upper limb movement after stroke: Consensus-based core recommendations from the Second Stroke Recovery and Rehabilitation Roundtable.

Citation: International journal of stroke : official journal of the International Stroke Society; Sep 2019 ; p. 1747493019873519

Author(s): Kwakkel, G; Wegen, Eeh Van; Burridge, J H; Winstein, C J; Dokkum, Leh van; Murphy, M Alt; Levin, M F; Krakauer, J W; ADVISORY group

Abstract: The second Stroke Recovery and Rehabilitation Roundtable "metrics" task force developed consensus around the recognized need to add kinematic and kinetic movement quantification to its core recommendations for standardized measurements of sensorimotor recovery in stroke trials. Specifically, we focused on measurement of the quality of upper limb movement. We agreed that the recommended protocols for measurement should be conceptually rigorous, reliable, valid and responsive to change. The recommended measurement protocols include four performance assays (i.e. 2D planar reaching, finger individuation, grip strength, and precision grip at body function level) and one functional task (3D drinking task at activity level) that address body function and activity respectively. This document describes the criteria for assessment and makes recommendations about the type of technology that should be used for reliable and valid movement capture. Standardization of kinematic measurement protocols will allow pooling of participant data across sites, thereby increasing sample size aiding meta-analyses of published trials, more detailed exploration of recovery profiles, the generation of new research questions with testable hypotheses, and development of new treatment approaches focused on impairment. We urge the clinical and research community to consider adopting these recommendations.

Title: Predictors of Cognitive Impairment After Stroke: A Prospective Stroke Cohort Study.

Citation: Journal of Alzheimer's disease : JAD; Sep 2019

Author(s): Ding, Meng-Yuan; Xu, Yi; Wang, Ying-Zhe; Li, Pei-Xi; Mao, Yi-Ting; Yu, Jin-Tai; Cui, Mei; Dong, Qiang

Background: Post-stroke cognitive impairment (PSCI) significantly affects stroke survivors' quality of life and rehabilitation. A risk model identifying cognitive decline at admission would help to improve early detection and management of post-stroke patients.

Objective: To develop a new clinical risk score for ischemic stroke survivors in predicting 6-12 months PSCI.

Methods: We prospectively enrolled 179 patients diagnosed with acute ischemic stroke within a 7-day onset. Data were analyzed based on baseline demographics, clinical risk factors, and radiological parameters. Logistic regression and area under the receiver operating curve (AUROC) were used to evaluate model efficiency.

Results: One hundred forty-five subjects completed a 6-12-month follow-up visit, and 77 patients (53.1%) were diagnosed with PSCI. Age ($\beta=0.065$, OR=1.067, 95% CI=1.016-1.120), years of education ($\beta=-0.346$, OR=0.707, 95% CI=0.607-0.824), periventricular hyperintensity grading ($\beta=1.253$, OR=3.501, 95% CI=1.652-7.417), diabetes mellitus ($\beta=1.762$, OR=5.825, 95% CI=2.068-16.412), and the number of acute nonlacunar infarcts

($\beta=0.569$, OR=1.766, 95% CI=1.243-2.510) were independently associated with 6-12 month PSCI, constituting a model with optimal predictive efficiency (AUC=0.884, 95% CI=0.832-0.935).

Conclusions: The optimized risk model was effective in screening stroke survivors at high risk of developing 6-12 months PSCI in a simple and pragmatic way. It could be a potential tool to identify patients with a high risk of PSCI at an early stage in clinical practice after further independent external cohort validation.

Title: Self-rated health after stroke: a systematic review of the literature.

Citation: BMC neurology; Sep 2019; vol. 19 (no. 1); p. 221

Author(s): Araújo, Érika de Freitas; Viana, Ramon Távora; Teixeira-Salmela, Luci Fuscaldi; Lima, Lidiane Andrea Oliveira; Faria, Christina Danielli Coelho de Moraes

Background: Self-rated health (SRH) allows for comparison and identification of the health status of various populations. The aim of this study was to conduct a systematic review of the literature to expand the understanding of SRH after stroke.

Methods: This systematic review was registered with PROSPERO (CRD42017056194) and conducted according to PRISMA guidelines. Studies published until December 2018 that evaluated the SRH of adults with stroke were included.

Results: Of the 2132 identified studies, 51 were included. Only four studies had experimental designs (7.8%). In 60.7% of the studies, SRH was assessed by variations on direct questions (i.e., general and comparative SRH). Analog visual scales and quality of life instruments were also used to evaluate SRH, but there is no consensus regarding whether they are appropriate for this purpose. The results of cross-sectional and longitudinal studies revealed significant associations between poor SRH and stroke as well as between SRH, function, and disability. The power of SRH to predict stroke mortality is still uncertain. Two interventions (a home-based psychoeducational program concerning stroke health care and family involvement in functional rehabilitation) effectively improved SRH.

Conclusions: Direct questions are the most common method of evaluating SRH after stroke. Studies reported significant associations between the SRH of individuals with stroke and several relevant health outcomes. However, few experimental studies have evaluated SRH after stroke. Interventions involving health education and family involvement had a significant impact on SRH.

Title: Physical activity on prescription at the time of stroke or transient ischemic attack diagnosis - from a patient perspective.

Citation: Disability and rehabilitation; Sep 2019 ; p. 1-8

Author(s): Jansson, Ann-Sofie B; Carlsson, Gunnel

Introduction: Physical activity is known to reduce the risk of recurrent stroke. Despite this many individuals diagnosed with stroke have an insufficient level of physical activity. Physical activity on prescription is provided within healthcare to encourage increased physical activity.

Purpose: To examine individuals' experiences of physical activity on prescription at the time of stroke or transient ischemic attack diagnosis and explore various factors affecting the ability to follow the prescription.

Material and method: A qualitative approach was undertaken; using interviews, analyzed with content analysis to elicit information from individuals who had been admitted to a stroke unit due to stroke or transient ischemic attack.

Results: Five women and five men (median age 60.5 years), eight with stroke and two with TIA (median NIHSS at onset 2.5), participated and the analysis resulted in an overall theme Change of life-style through physical activity on prescription - a multifaceted process containing the categories Experience of support, Barriers and opportunities and Personal motivators.

Conclusion: Individuals need to participate in the prescription process when prescription on physical activity is initiated in acute stroke care and clinicians need to reflect on how the prescription is implemented and followed-up; creating good conditions for long-term effects.

Implications for Rehabilitation: When prescribing physical activity on prescription healthcare providers in acute stroke care need to consider: • The right timing: when and how physical activity on prescription should be given. • How to create opportunities for individuals to participate in the prescription process. • How to create individual adaptation of the prescription. • How to ensure that follow-up is conducted by registered healthcare professionals with knowledge of physical activity as disease prevention.

Title: Impact of nutritional status, muscle mass and oral status on recovery of full oral intake among stroke patients receiving enteral nutrition: A retrospective cohort study.

Citation: Nutrition & dietetics: the journal of the Dietitians Association of Australia; Sep 2019

Author(s): Nishioka, Shinta; Yamasaki, Kazumi; Ogawa, Kenji; Oishi, Kana; Yano, Yoko; Okazaki, Yuka; Nakashima, Ryusei; Kurihara, Masaki

Aim: To clarify the correlation between malnutrition, muscle mass and oral status, and swallowing function recovery in stroke patients receiving enteral nutrition.

Methods: Patients with stroke and dysphagia receiving any amount of enteral nutrition in rehabilitation wards from 2012 to 2016 were eligible for inclusion in this retrospective study. On admission, body composition by bioimpedance analysis, malnutrition confirmed by the European Society for Clinical Nutrition and Metabolism criteria, oral status, functional independence measure and demographic data were collected. Characteristics were compared between "oral intake alone" and "artificial nutrition" groups based on the discharge status. Kaplan-Meier methods and the Cox proportional hazards model were used to determine explanatory factors for the probability of full oral intake.

Results: Among 174 patients, 113 were analysed (55 women; median age, 77 years). Overall, 61% and 39% were classified as "oral intake alone" and "artificial nutrition," respectively. Days from onset to admission to rehabilitation wards and motor Functional Independence Measure were higher in the "oral intake alone" group. Kaplan-Meier analysis demonstrated that patients with lower muscle mass exhibited lower probability of full oral intake ($P = .009$). The Cox proportional hazards model suggested that lower muscle mass (hazard ratio, 0.493; 95% CI, 0.286-0.850) and poor oral hygiene (hazard ratio, 0.573; 95% CI, 0.333-0.987) were independently correlated with "oral intake alone" status. Malnutrition and other oral status are not related to achieving full oral intake.

Conclusions: Skeletal muscle mass and oral hygiene are independently correlated with full oral intake among stroke patients receiving enteral nutrition during the rehabilitation phase.

Title: Why exercise may be beneficial in concussion rehabilitation: A cellular perspective.

Citation: Journal of science and medicine in sport; Oct 2019; vol. 22 (no. 10); p. 1090-1096

Author(s): Dech, Ryan T; Bishop, Scott A; Neary, J Patrick

Introduction: Concussion diagnosis and rehabilitation management has become a prevalent area of research, and yet much is still unknown about these complex injuries. Historically, exercise prescription post-concussion was conservatively used for rehabilitation due to the suspected harmful effects that exercise can have on damaged neurons, and increase in symptoms. However, there has been a shift to implement exercise earlier into recovery as several studies have demonstrated positive outcomes.

Objective: The objective of this literature review is to update the reader about new advances in concussion research related to the beneficial effects of physical activity from both a neurometabolic and a broader physiological perspective, using gene expression as a vehicle to demonstrate why and how physical activity has the capacity to optimize recovery from a cellular perspective. To further this clinical guideline, the evidence must continue to support these positive outcomes from an inductive and deductive physiologic approach (i.e., the clinical evidence aligned from a micro- to macroscopic approach and vice versa).

Design: Narrative review.

Methods: Pubmed and Medline were used with the following key words: concussion and, physical activity, neurometabolic, gene regulation, trauma, nervous system, mild head injury, acute exercise, cellular physiology and pathophysiology.

Conclusion: It is our contention that understanding the cellular perspective will help guide clinical management, and promote research into post-concussion exercise.

Title: A Framework for Designing Inpatient Stroke Rehabilitation Facilities: A New Approach Using Interdisciplinary Value-Focused Thinking.

Citation: HERD; Oct 2019; vol. 12 (no. 4); p. 142-158

Author(s): Lipson-Smith, Ruby; Churilov, Leonid; Newton, Clare; Zeeman, Heidi; Bernhardt, Julie

Aim: To use Value-Focused Thinking to investigate what is important in the design of inpatient stroke rehabilitation facility buildings.

Background: Many stroke patients require inpatient rehabilitation in a dedicated facility. Rehabilitation facilities are healthcare spaces, but they are also learning spaces where patients practice targeted tasks to acquire new skills and to reacquire skills and abilities that were compromised as a result of their stroke. There is currently no consensus regarding how the design of inpatient rehabilitation facilities could be optimized for patients' learning.

Method: We used Value-Focused Thinking to develop a framework of what interdisciplinary experts consider important for inpatient stroke rehabilitation facility design. Two workshops were conducted. The following experts were invited to participate: past patients with experience of stroke rehabilitation; stroke rehabilitation clinicians; stroke rehabilitation academics; healthcare environments academics; learning environments academics; architects, designers, and wayfinders with experience designing healthcare or learning environments; and healthcare design policy makers.

Results: Thirty experts participated. The experts' final framework included 16 criteria that were considered fundamentally important for inpatient stroke rehabilitation facility design,

and 14 criteria that were considered instrumentally important. Inpatient stroke rehabilitation facility design should maximize efficiency, maximize effectiveness (i.e., patients' clinical and functional outcomes), foster emotional well-being, and maximize safety. Opportunities to practice physical, cognitive, and social activity were considered important for patients' outcomes.

Conclusions: Value-Focused Thinking was an effective and equitable means of engaging experts from multiple disciplines. Designers, planners, and developers of inpatient stroke rehabilitation facilities should consider the rehabilitation-specific framework developed in this study alongside evidence from other healthcare settings.

Title: Exploring future possibilities of using information and communication technology in multidisciplinary rehabilitation after stroke - a grounded theory study.

Citation: Scandinavian journal of occupational therapy; Sep 2019 ; p. 1-8

Author(s): Gustavsson, Martha; Ytterberg, Charlotte; Guidetti, Susanne

Background: Using Information and Communication Technology (ICT) could increase the intensity of rehabilitation, the level of patient activity and participation in everyday life after stroke and is in line with having a person-centred approach.

Aim: To explore how healthcare professionals use and could potentially use ICT to enable a person-centred rehabilitation process after stroke. **Methods:** Six individual and two focus group interviews were conducted with a group of healthcare professionals working within rehabilitation after stroke. A grounded theory approach was used to collect and analyze the data.

Results: The professionals described their current use of ICT as well as their vision of how ICT could be incorporated as a tool in rehabilitation for sharing in four categories: (1) Sharing of information, (2) Collaborating from a distance, (3) Having transparency in the documentation and (4) Supporting patients' use of ICT.

Conclusion: Professionals state that using ICT solutions in rehabilitation after stroke could increase sharing between professionals and their patients and increase patient participation in the rehabilitation process. **Significance:** This study highlights the importance of developing ICT that healthcare professionals could use along with a person-centred approach. The results will be used to develop an ICT-supported multidisciplinary intervention for rehabilitation after stroke.

Title: Moving stroke rehabilitation research evidence into clinical practice: Consensus-based core recommendations from the Stroke Recovery and Rehabilitation Roundtable.

Citation: International journal of stroke : official journal of the International Stroke Society; Sep 2019 ; p. 1747493019873597

Author(s): Eng, Janice J; Bird, Marie-Louise; Godecke, Erin; Hoffmann, Tammy C; Laurin, Carole; Olaoye, Olumide A; Solomon, John; Teasell, Robert; Watkins, Caroline L; Walker, Marion F

Abstract: Moving research evidence to practice can take years, if not decades, which denies stroke patients and families from receiving the best care. We present the results of an international consensus process prioritizing what research evidence to implement into stroke rehabilitation practice to have maximal impact. An international 10-member

Knowledge Translation Working Group collaborated over a six-month period via videoconferences and a two-day face-to-face meeting. The process was informed from surveys received from 112 consumers/family members and 502 health care providers in over 28 countries, as well as from an international advisory of 20 representatives from 13 countries. From this consensus process, five of the nine identified priorities relate to service delivery (interdisciplinary care, screening and assessment, clinical practice guidelines, intensity, family support) and are generally feasible to implement or improve upon today. Readily available website resources are identified to help health care providers harness the necessary means to implement existing knowledge and solutions to improve service delivery. The remaining four priorities relate to system issues (access to services, transitions in care) and resources (equipment/technology, staffing) and are acknowledged to be more difficult to implement. We recommend that health care providers, managers, and organizations determine whether the priorities we identified are gaps in their local practice, and if so, consider implementation solutions to address them to improve the quality of lives of people living with stroke.

Title: Evidence of chronic stroke rehabilitation interventions in activities and participation outcomes: systematic review of meta-analyses of randomized controlled trials.

Citation: European journal of physical and rehabilitation medicine; Sep 2019

Author(s): García-Rudolph, Alejandro; Laxe, Sara; Saurí, Joan; Opisso, Eloy; Tormos, Josep M; Bernabeu, Montserrat

Introduction: Stroke is a leading cause of long-term disabilities worldwide. A great deal of meta-analyses of Randomized Controlled Trials (RCTs) address rehabilitation in chronic stroke, several of them with focus on activities and participation, considered critical outcomes of successful rehabilitation. Nevertheless, substantial heterogeneity might exist between studies, the reported associations may be causal, but they might also be flawed, as inherent study biases such as residual confounding and selective reporting of positive results may exaggerate the effect of interventions in chronic phase. Furthermore, most RCTs might focus on specific rehabilitation domains, not paying the same attention to others.

Evidence Acquisition: Formal evaluation of published systematic reviews of meta-analyses (January 2008 to November 2018) of rehabilitation in chronic phase to 1) assess the strength of evidence: participants, publication biases, heterogeneity, prediction intervals (PIs) 2) grade the evidence to perform qualitative analysis on effects sizes and heterogeneity, 3) perform meta-regressions and sensitivity analysis on relevant covariates 4) map outcomes to activities and participation domain of the World Health Organization's International Classification of Functioning, Disability and Health (ICF). Systematic review on meta-analyses of RCTs addressing activities and participation will be performed in Medline, Web of Science, Scopus, Cochrane and Google Scholar.

Evidence Synthesis: A total of 97 meta-analyses on 31 different rehabilitation interventions involving 25,275 participants were included. Thirty-nine meta-analyses (40.74%) reported statistically significant findings ($P < 0.05$) in both fixed and random effects sizes. Their magnitude was small in 62.96% cases, moderate in 19.75% and large in 17.28%. Heterogeneity was low in 48.48%, moderate and high in 21.2%. The mean number of participants is 815, far away from the convincing, highly suggestive, or suggestive required evidence levels. All PIs include the null value. Mobility is addressed by 87% of the identified meta-analyses, with 75% of them focusing exclusively in mobility.

Conclusions: The findings of this study show a clear need for high quality RCTs examining the effectiveness of rehabilitation interventions addressing activities and participation. The

ICF framework may contribute to a holistic approach in chronic stroke rehabilitation, including not only motor functioning but also the ability to participate in everyday life activities.

Title: Longitudinal changes in activity participation in the first year post-stroke and association with depressive symptoms.

Citation: Disability and rehabilitation; Oct 2019; vol. 41 (no. 21); p. 2548-2555

Author(s): Tse, Tamara; Linden, Thomas; Churilov, Leonid; Davis, Stephen; Donnan, Geoffrey; Carey, Leeanne M

Research question: 1. Does activity participation improve over time in the first year after stroke? 2. What is the association of depressive symptoms on retained activity participation 12-months post-stroke adjusting for neurological stroke severity and age? 3. Is an improvement in activity participation associated with a decrease in depressive symptoms between 3- and 12-months post-stroke?

Design: Longitudinal observational study of activity participation and depressive symptoms in ischemic stroke survivors.

Participants: A total of 100 stroke survivors with mild neurological stroke severity.

Methods: A total of 100 stroke survivors were recruited from five metropolitan hospitals and assessed at 3- and 12-months post-stroke using measures of activity participation (Activity Card Sort-Australia (ACS-Aus)) and depressive symptoms (Montgomery-Asberg Depression Rating Scale Structured Interview Guide (MADRS-SIGMA)).

Results: There was a significant association between time (pre-stroke to 3-months post-stroke) and current activity participation (-5.2 activities 95% CI -6.8 to -3.5, $p < 0.01$) and time (pre-stroke to 12-months) and current activity participation (-2.1 activities 95% CI -3.7 to -0.5, $p = 0.01$). At 12-months post-stroke, a one-point increase in depressive symptoms was associated with a median decrease of 0.3% (95% CI -1.4% to -0.1%, $p = 0.02$) of retained overall activity participation, assuming similar neurological stroke severity and age. A decrease in depressive symptoms between 3- and 12-months post-stroke was associated with an improvement of 0.31 (95% CI -0.5 to -0.1, $p = 0.01$) in current activity participation.

Conclusions: Activity participation improves during the first year of recovery post-stroke in stroke survivors with mild neurological stroke severity and is associated with depressive symptoms over time and at 12-months post-stroke. Implications for rehabilitation Improvements in participation occur in the first 3-months post-stroke and continue to a lesser degree in the first year after stroke. Depressive symptoms are associated with lower participation at 12-months. A multidimensional approach targeting depressive symptoms and increasing participation in the early months post-stroke and throughout the first-year after stroke is recommended to increase overall recovery following stroke. A focus on increasing leisure activity participation is recommended to improve depressive symptoms.

Title: Cognitive reserve impacts on disability and cognitive deficits in acute stroke.

Citation: Journal of neurology; Oct 2019; vol. 266 (no. 10); p. 2495-2504

Author(s): Umarova, Roza M; Sperber, Christoph; Kaller, Christoph P; Schmidt, Charlotte S M; Urbach, Horst; Klöppel, Stefan; Weiller, Cornelius; Karnath, Hans-Otto

Objective: Although post-stroke cognitive deficit can significantly limit patient independence and social re-integration, clinical routine predictors for this condition are lacking. 'Cognitive

reserve' limits the detrimental effects of slowly developing neurodegeneration. We aimed to determine whether comparable effects also exist in acute stroke. Using 'years of education' as a proxy, we investigated whether cognitive reserve beneficially influences cognitive performance and disability after stroke, whilst controlling for age and lesion size as measure of stroke pathology.

Methods: Within the first week of ischemic right hemisphere stroke, 36 patients were assessed for alertness, working memory, executive functions, spatial neglect, global cognition and motor deficit at 4.9 ± 2.1 days post-stroke, in addition to routine clinical tests (NIH Stroke Scale, modified Rankin Scale on admission < 24 h post-stroke and at discharge 9.5 ± 4.7 days post-stroke). The impact of education was assessed using partial correlation analysis adjusted for lesion size, age, and the time interval between stroke and assessment. To validate our results, we compared groups with similar age and lesion load, but different education levels.

Results: In the acute stroke phase, years of education predicted both severity of education independent (alertness) and education dependent (working memory, executive functions, global cognition) cognitive deficits and disability (modified Rankin Scale). Spatial neglect seemed to be independent.

Interpretation: Proxies of cognitive reserve should be considered in stroke research as early as in the acute stroke phase. Cognitive reserve contributes to inter-individual variability in the initial severity of cognitive deficits and disability in acute stroke, and may suggest individualised rehabilitation strategies.

Title: Stroke self-management and the role of self-efficacy.

Citation: Disability and rehabilitation; Sep 2019 ; p. 1-10

Author(s): Nott, Melissa; Wiseman, Leah; Seymour, Tanya; Pike, Shannon; Cuming, Tana; Wall, Gemma

Purpose: This study explored the impact of a 12-week stroke self-management program on occupational performance, the role of self-efficacy on improving occupational performance and the potential barriers and facilitators to self-efficacy as reported by clients and careers.

Materials and methods: Participants (n = 40) were recruited to participate in a self-management program after admission to hospital with diagnosis of stroke. A pre-post study was conducted and data were obtained from participants using: the Canadian Occupational Performance Measure, Stroke Self-efficacy Questionnaire, and semi-structured interviews with five participants and two careers. Data analysis was conducted using parametric statistics and thematic analysis.

Results: Significant improvements were observed in occupational performance ($t = 11.2$; $p = 0.001$) and satisfaction ($t = 9.7$; $p = 0.001$). Self-efficacy was shown to be a significant mediator to improvements in occupational performance ($F = 7.08$; $p < 0.01$) and satisfaction ($F = 6.52$; $p = 0.02$). Three key barriers and facilitators emerged from the thematic analysis: "Support in making the transition home," "Getting back to normal," and "Reflecting on shared experiences."

Conclusions: Engagement in a stroke-specific self-management program can improve client-perceived occupational performance and satisfaction. Self-efficacy was shown to be a mediating variable to occupational performance improvements. Future research should explore further the facilitatory strategies of self-efficacy during stroke self-management programs to maximize rehabilitation outcomes. Implications for rehabilitation Multi-modal self-management programs are recommended as effective for improving client-perceived occupational performance of people who have experienced stroke. Returning to valued occupations, goal setting, shared experiences, and local support are recommended

components of a self-management program for stroke survivors. Focusing on enhancing client confidence, competence, and self-efficacy is recommended to achieve occupational performance gains through self-management. Occupational therapy coaching is recommended to guide participants through the self-management processes of goal-setting, shared problem-solving, performance evaluation, and reflection.

Title: Interventions to promote work participation after ischaemic stroke: A systematic review.

Citation: Clinical neurology and neurosurgery; Oct 2019; vol. 185 ; p. 105458

Author(s): Brouns, Raf; Valenzuela Espinoza, Alexis; Goudman, Lisa; Moens, Maarten; Verlooy, Jan

Abstract: Only a disappointingly low proportion of patients successfully engage in professional activities after ischaemic stroke. This systematic review maps all contemporary evidence regarding interventions aiming to promote return-to-work in survivors of ischaemic stroke. We performed a search according to Preferred Reporting Items for Systematic Review and Meta-Analyses guidelines and searched five reference databases. Prospective trial registers and grey literature were also assessed, and we executed backwards and forward reference searching. The study protocol was registered in PROSPERO (CRD42017077796). The search yielded 444 records of which 174 were duplicates. Backward and forward reference searching resulted in 808 unique records. Eleven articles were retained for full-text analysis and two met the selection criteria. A controlled before-after study showed beneficial effects of intravenous thrombolytic treatment in patients with moderate to severe acute ischaemic stroke. A retrospective study with low methodological quality reported improved vocational outcome of an outpatient rehabilitation program in patients with mild to moderate ischaemic stroke. We conclude that there currently is insufficient evidence regarding the effectiveness of interventions to promote return-to-work in patients with ischaemic stroke, though intravenous thrombolytic therapy has shown beneficial effects and there are indications that rehabilitation programs may also be advantageous.

Title: Exploring changing needs following minor stroke.

Citation: Health & social care in the community; Sep 2019

Author(s): Finch, Emma; Foster, Michele; Fleming, Jennifer; Cruwys, Tegan; Williams, Ian; Shah, Darshan; Jaques, Katherine; Aitken, Philip; Worrall, Linda

Abstract: Medical advances have led to many of the severe consequences of stroke being averted. Consequently, more people are being discharged from hospital following treatment for what is classed as minor stroke. The needs of people with minor stroke have received little research attention. The aim of the current study was to conduct an exploratory prospective needs analysis to document the unmet health, rehabilitation and psychosocial needs of a recently hospitalised minor stroke cohort approximately 2 weeks (T1) and 2 months (T2) post-hospital discharge. An exploratory cohort design was used to explore the unmet health, service and social needs of 20 patients with minor stroke. Participants completed questionnaires (Survey of Unmet Needs and Service Use, Mayo-Portland Adaptability Inventory-4, Exeter Identity Transition Scales, RAND 36-Item Health Survey 1.0) at T1 and T2. Nine participants reported unmet needs at T1 and seven participants reported unmet needs at T2. Between T1 and T2, there was a significant improvement in perceived

role limitations due to physical health. Participation in society was significantly better at T2. In conclusion, patients with minor stroke report health, service and social needs that are unmet by existing services. This patient cohort urgently requires co-ordinated services to detect and manage these unmet needs.

Title: Clinical application of backward walking training to improve walking function, balance, and fall-risk in acute stroke: a case series.

Citation: Topics in stroke rehabilitation; Oct 2019; vol. 26 (no. 7); p. 497-502

Author(s): DeMark, Louis; Fox, Emily J; Spigel, Pamela M; Osborne, Jacqueline; Rose, Dorian K

Background: With limited inpatient rehabilitation (IR) length of stays for patients post-stroke, it is critical to maximize the effectiveness of interventions to address their balance and gait speed deficits. Backward walking (BW) is an emerging training approach; however, its application to patient populations consistent with those in IR is limited.

Objectives: To describe the effects of an additional BW training program to standard IR care on balance, walking ability and fall-risk in a heterogenic caseload of adults <2 weeks post-stroke with a broad range of lesion locations and physical sequelae.

Methods: Eight patients with first-time stroke (5 male; average age 66.5 ± 11.7 years; average stroke onset 7.6 ± 1.6 days; 6 right hemiparesis) participated in 10-daily sessions that included 20 min of over ground BW training for each session, in addition to standard IR. Standard outcome measures were used to assess balance, walking ability and fall-risk at admission and post-intervention.

Results: All eight patients demonstrated improvements in all outcomes with a clinically meaningful increase in forward walking speed, as measured by 10MWT. Four participants exceeded fall-risk cut-off scores for all balance-related outcome measures.

Conclusions: In a diverse patient population early after stroke, individuals successfully participated in an additional BW training program. Despite the patients' acuity and severe impairments in walking, significant gains in balance and walking function were noted. This program may be useful in improving outcomes with patient characteristics commonly seen in IR.

Title: Return to Employment After Stroke in Young Adults: How Important Is the Speed and Energy Cost of Walking?

Source: Stroke; Sep 2019 ; p. STROKEAHA119025614

Author(s): Jarvis, Hannah L; Brown, Steven J; Price, Michelle; Butterworth, Claire; Groenevelt, Renee; Jackson, Karl; Walker, Louisa; Rees, Nia; Clayton, Abigail; Reeves, Neil D

Background and Purpose: A quarter of individuals who experience a stroke are under the age of 65 years (defined as young adults), and up to 44% will be unable to return to work poststroke, predominantly because of walking difficulties. No research study has comprehensively analyzed walking performance in young adult's poststroke. The primary aim of this study is to investigate how a stroke in young adults affects walking performance (eg, walking speed and metabolic cost) compared with healthy age-matched controls. The secondary aim is to determine the predictive ability of walking performance parameters for return to employment poststroke.

Methods: Forty-six individuals (18-40 years: n=6, 41-54 years: n=21, 55-65 years: n=19) who have had a stroke and 15 healthy age-matched able-bodied controls were recruited from 6 hospital sites in Wales, United Kingdom. Type, location, cause of stroke, and demographic factors (eg, employment status) were recorded. Temporal and spatial walking parameters were measured using 3-dimensional gait analysis. Metabolic energy expenditure and metabolic cost of walking were captured during 3 minutes of walking at self-selected speed from measurements of oxygen consumption.

Results: Stroke participants walked slower ($P < 0.004$) and less efficiently ($P < 0.002$) than the controls. Only 23% of stroke participants returned to employment poststroke. Walking speed was the strongest predictor (sensitivity, 0.90; specificity, 0.82) for return to work ($P = 0.004$) with a threshold of 0.93 m/s identified: individuals able to walk faster than 0.93 m/s were significantly more likely to return to work poststroke than those who walked slower than this threshold.

Conclusions: This study is the first to capture walking performance parameters of young adults who have had a stroke and identifies slower and less efficient walking. Walking speed emerged as the strongest predictor for return to employment. It is recommended that walking speed be used as a simple but sensitive clinical indicator of functional performance to guide rehabilitation and inform readiness for return to work poststroke.

Title: The development of cognitive and emotional impairment after a minor stroke: A longitudinal study.

Citation: Acta neurologica Scandinavica; Oct 2019; vol. 140 (no. 4); p. 281-289

Author(s): Morsund, Åse H; Ellekjaer, Hanne; Gramstad, Arne; Reiestad, Magnus T; Midgard, Rune; Sando, Sigrid B; Jonsbu, Egil; Naess, Halvor

Objectives: To study the development of cognitive and emotional symptoms between 3 and 12 months after a minor stroke.

Material and Methods: We included patients from stroke units at hospitals in the Central Norway Health Authority and from Haukeland University Hospital. We administered a selection of cognitive tests, and the patients completed a questionnaire 3 and 12 months post-stroke. Cognitive impairment was defined as impairment of ≥ 2 cognitive tests.

Results: A total of 324 patients completed the 3-month testing, whereas 37 patients were lost to follow-up at 12 months. The results showed significant improvement of cognitive function defined as impairment of ≥ 2 cognitive tests ($P = .03$) from months 3 to 12. However, most patients still showed cognitive impairment at 12 months with a prevalence of 35.4%. There is significant association between several of the cognitive tests and hypertension and smoking ($P = .002$ and $.05$). The prevalence of depression, but not anxiety, increased from 3 to 12 months ($P = .04$). The prevalence of fatigue did not change and was thus still high with 29.5% after 12 months.

Conclusions: This study shows that an improvement of cognitive function still occurs between 3 and 12 months. Despite this, the prevalence of mostly minor cognitive impairment still remains high 12 months after the stroke. The increasing prevalence of depressive symptoms highlights the importance of being vigilant of depressive symptoms throughout the rehabilitation period. Furthermore, high prevalence of fatigue persisted.

Title: Dance-based exergaming for upper extremity rehabilitation and reducing fall-risk in community-dwelling individuals with chronic stroke. A preliminary study.

Citation: Topics in stroke rehabilitation; Oct 2019 ; p. 1-11

Author(s): Subramaniam, Savitha; Bhatt, Tanvi

Background: Post-stroke, individuals demonstrate persistent upper extremity (UE) motor impairments that impact functional movements and change-in-support strategies essential for recovery from postural instability.

Objectives: This study primarily aims to quantify the effect of dance-based exergaming (DBExG) intervention on improving paretic UE movement control. The secondary aim is to assess if these improvements in UE movement control if observed, could partially account for improved fall-risk.

Methods: Thirteen adults with chronic stroke received DBExG training using the commercially available Kinect dance gaming "Just Dance 3". Surface electromyography of shoulder muscle activity during the stand-reaching task and UE shoulder kinematics for a dance trial were recorded. Changes in balance control were determined using the Activities-specific Balance Confidence scale [ABC] and Timed-Up-and-Go test [TUG].

Results: Post-training, participants demonstrated improvements in shoulder muscle activity in the form of performance (reaction time, burst duration, and movement time) and production outcomes (peak acceleration) ($p < .05$). There was also a post-training increase in shoulder joint excursion (Ex) and peak joint angles (\angle) during dance trials ($p < .05$). Participants exhibited positive post-intervention correlations between ABC and shoulder joint Ex [R² of 0.43 ($p < .05$)] and between TUG and peak joint \angle [R² of 0.51 ($p < .05$)].

Conclusion: Findings demonstrated the beneficial effect of DBExG for improving UE movement and the training-induced gains were also positively correlated with improvements in fall-risk measures in people with chronic stroke. Thus, DBEx training could be used as a meaningful clinical application for this population group.

Title: Current therapy for the upper limb after stroke: a cross-sectional survey of UK therapists.

Citation: BMJ open; Sep 2019; vol. 9 (no. 9); p. e030262

Author(s): Stockley, Rachel; Peel, Rosemary; Jarvis, Kathryn; Connell, Louise

Objectives: To survey the reported content, frequency and duration of upper limb treatment provided by occupational and physiotherapists for people after stroke in the UK. DESIGN A cross-sectional online survey was used. Description and analysis of the data were based on items from the Template for Intervention Description and Replication (Who, Where, What and How much).

Setting: The online survey was distributed via professional and social networks to UK-based therapists.

Participants: Respondents were occupational or physiotherapists currently working clinically in the UK with people after stroke. Over the 6 week data collection period, 156 respondents opened the survey, and 154 completed it. Respondents comprised 85 physiotherapists and 69 occupational therapists.

Results: Respondents reported treating the upper limb a median of three times a week (range: 1 to 7) for a mean of 29 min (SD: 18). Most ($n=110$) stated this was supplemented by rehabilitation assistants, family and/or carers providing additional therapy a median of three times a week (range 1 to 7). Functional training was the most commonly reported treatment for people with mild and moderate upper limb deficits (>40%). There was much less consistency in treatments reported for people with severe upper limb deficits with less than 20% ($n=28$) reporting the same treatments.

Conclusions: This study provides a contemporaneous description of reported therapy in the UK for people with upper limb deficits after stroke and a detailed template to inform standard therapy interventions in future research. Several evidence-based therapies were reported to be used by respondents (eg, constraint induced movement therapy), but others were not (eg, mental imagery). The findings also highlight that the current reported provision of upper limb therapy is markedly less than what is likely to be effective. This underlines an urgent need to configure and fund services to empower therapists to deliver greater amounts of evidence-based treatment for people with upper limb deficits after stroke.

Sources Used: The following databases are used in the creation of this bulletin: Amed, Cinahl & Medline.

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