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Rehabilitation Current Awareness Bulletin

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Title: Mirror therapy and treadmill training for a patient with chronic stroke: A case report.

Citation: Physiotherapy Theory & Practice; May 2019; vol. 35 (no. 5); p. 478-488

Author(s): Broderick, Patrick; Horgan, Frances; Blake, Catherine; Hickey, Paula; O'Reilly, Joanne; Ehrensberger, Monika; Simpson, Daniel; Roberts, David; Monaghan, Kenneth

Introduction: A large proportion of patients with chronic stroke have permanent lower limb functional disability leading to reduced levels of independent mobility. Individually, both mirror therapy and treadmill training have been shown to improve aspects of lower limb functioning in patients with stroke. This case report examined whether a new combination of both interventions would lead to improvements in lower limb functional disability for a patient with chronic stroke.

Case Description: The participant was a 50-year-old female who had a left middle cerebral artery infarction (47 months' post stroke). Due to hemiparesis, she had lower limb motor impairment and gait deficits. Intervention: The participant engaged in a combination of mirror therapy and treadmill training for 30 minutes per day, 3 days per week, for 4 weeks.

Outcomes: Modified Ashworth Scale, Fugl-Meyer Assessment-Lower Extremity and the 10 m Walk Test demonstrated clinically meaningful change. The 6 Minute Walk Test did not demonstrate meaningful change.

Discussion: The positive outcomes from this new combination therapy for this participant are encouraging given the relatively small dose of training and indicate the potential benefit of mirror therapy as an adjunct to treadmill training for enhancing lower limb muscle tone, motor function and walking velocity in patients with chronic stroke.

Title: Experiences of challenges and support among family members of people with acquired brain injury: a qualitative study in the UK.

Citation: Brain Injury; Apr 2019; vol. 33 (no. 4); p. 401-411

Author(s): Holloway, Mark; Orr, David; Clark-Wilson, Jo

Primary objective: Family members (FM) are affected by the impact of an Acquired Brain Injury (ABI) upon their relatives and play an important role in rehabilitation and long-term support. This study explores how families are affected and integrates their views on the formal/informal support received as a consequence of ABI.

Research design: A qualitative research design was employed to capture the lived experience of FM of people with ABI. Method: Semi-structured interviews were conducted with 16 FM of people with severe ABI. Participants were chosen from respondents to a UK national online survey of affected individuals. Interview data were analysed using inductive thematic analysis.

Results: Family members' experiences are complex, enduring and are affected by the context in which the ABI occurs as well as by formal/informal support. The grief experienced by FM is ambiguous, develops over time and FM perceive little option but to remain involved. Experience of formal and informal support is noted to vary significantly in availability and quality, poor support exacerbates difficulties and isolates family members.

Conclusion: Greater understanding of the lived experience of FM is needed to support more effective responses to both them and the individual with ABI, integrating services and families to improve quality-of-life.

Title: The Effects of M2M and Adapted Yoga on Physical and Psychosocial Outcomes in People with Multiple Sclerosis.

Citation: Archives of Physical Medicine & Rehabilitation; Mar 2019; vol. 100 (no. 3); p. 391-400

Author(s): Young, Hui-Ju; Mehta, Tapan S.; Herman, Cassandra; Wang, Fuchenchu; Rimmer, James H.

Objective: To investigate the effects of two 12-week exercise training interventions, movement-to-music (M2M) and adapted yoga (AY), on physical and psychosocial outcomes in people with multiple sclerosis (MS).

Design: Three-arm randomized controlled proof-of-concept trial.

Setting: A community-based fitness facility.

Participants: Participants (N=81) with MS (Patient Determined Disease Steps [PDDS] self-reported disease status scores: 0-6) between ages of 18 and 65 years were randomized to M2M (n=27), AY (n=26), or waitlist control (n=28).

Interventions: Both M2M and AY completed three 60-minute exercise sessions per week for 12 weeks. Waitlist controls received biweekly newsletters via mail that contained educational information on living with MS.

Main Outcome Measures: Primary measures were timed Up and Go (TUG, s) test, 6-minute walk test (6MWT, m), and 5 times sit-to-stand test (FTSST, s). Secondary measures were self-reported outcomes assessed using Patient-Reported Outcomes Measurement Information System Fatigue and Pain Interference Short Form 8a. Participants were evaluated at baseline and postintervention. Primary analyses were performed using an intent-to-treat mixed model analysis of covariance.

Results: Comparisons across all 3 groups revealed significant group differences in TUG and 6MWT. Post hoc analyses indicated significant improvements in TUG (least square mean difference [95% confidence interval] = −1.9s [−3.3 to −0.5], P =.01, d =0.7) and 6MWT (41.0m [2.2-80.0], P =.04, d =0.6; controlled for PDDS) in M2M compared to controls, while no significant differences were observed when compared AY to controls. No significant group differences were found in FTSST, fatigue, and pain interference.

Conclusions: M2M may be a useful and enjoyable exercise form for people with MS in improving mobility and walking endurance and merits long-term study in larger study populations.

Title: Improvement of Upper Limb Motor Control and Function After Competitive and Noncompetitive Volleyball Exercises in Chronic Stroke Survivors: A Randomized Clinical Trial.

Citation: Archives of Physical Medicine & Rehabilitation; Mar 2019; vol. 100 (no. 3); p. 401-411

Author(s): Mandehgary Najafabadi, Mahbubeh; Azad, Akram; Mehdizadeh, Hajar; Behzadipour, Saeed; Fakhar, Maliheh; Taghavi Azar Sharabiani, Parvaneh; Parnianpour, Mohamad; Taghizadeh, Ghorban; Khalaf, Kinda

Objectives: To investigate the effects of competitive and noncompetitive volleyball exercises on the functional performance and motor control of the upper limbs in chronic stroke survivors.

Design: Randomized clinical trial.

Setting: Outpatient rehabilitation center.

Participants: Chronic stroke survivors (N=48).

Interventions: Participants were randomly assigned to competitive (n=16) or noncompetitive (n=16) volleyball exercise groups (60min/d volleyball exercise+30min/d traditional rehabilitation, 3d/wk for 7wk) and control group (n=16).

Main Outcome Measures: Reach and grasp motor control measures were evaluated through kinematic analysis. Functional outcomes were assessed via Motor Activity Log, Wolf Motor Function Test (WMFT), Box and Block Test, and Wrist Position Sense Test.

Results: Significant improvement of functional performance was observed in both competitive (P <.0001) and noncompetitive volleyball exercise groups (P .05), with the exception of WMFT score. Volleyball training, in general, resulted in more efficient spatiotemporal control of reach and grasp functions, as well as less dependence on feedback control as compared to the control group. Moreover, the competitive volleyball exercise group exhibited greater improvement in both functional performance and motor control levels.

Conclusions: Volleyball team exercises, especially in a competitive format, resulted in enhancing the efficacy of the preprogramming and execution of reach and grasp movements, as well as a shift from feedback to feedforward control of the affected upper limb in chronic stroke survivors. This may well be a potential underlying mechanism for improving functional performance.

Highlights: • Volleyball exercise results in improvement of upper limb motor function in chronic stroke survivors. • Volleyball exercise decreases the feedback dependency of motor control in chronic stroke survivors. • Performing volleyball exercise in a competitive form could enhance its positive effects in both functional and motor control levels.

Title: Employment Stability in the First 5 Years After Moderate-to-Severe Traumatic Brain Injury.

Citation: Archives of Physical Medicine & Rehabilitation; Mar 2019; vol. 100 (no. 3); p. 412-421

Author(s): DiSanto, Dominic; Kumar, Raj G.; Juengst, Shannon B.; Hart, Tessa; O'Neil-Pirozzi, Therese M.; Zasler, Nathan D.; Novack, Thomas A.; Dillahunt-Aspillaga, Christina; Graham, Kristin M.; Cotner, Bridget A.; Rabinowitz, Amanda R.; Dikmen, Sureyya; Niemeier, Janet P.; Kesinger, Matthew R.; Wagner, Amy K.

Objective: To characterize employment stability and identify predictive factors of employment stability in working-age individuals after moderate-to-severe traumatic brain injury (TBI) that may be clinically addressed.

Design: Longitudinal observational study of an inception cohort from the Traumatic Brain Injury Model Systems National Database (TBIMS-NDB) using data at years 1, 2, and 5 post-TBI.

Setting: Inpatient rehabilitation centers with telephone follow-up.

Participants: Individuals enrolled in the TBIMS-NDB since 2001, aged 18-59, with employment data at 2 or more follow-up interviews at years 1, 2, and 5 (N=5683).
Interventions: Not applicable.

Main Outcome Measure: Employment stability, categorized using post-TBI employment data as no paid employment (53.25%), stably (27.20%), delayed (10.24%), or unstably (9.31%) employed.

Results: Multinomial regression analyses identified predictive factors of employment stability, including younger age, white race, less severe injuries, preinjury employment, higher annual earnings, male sex, higher education, transportation independence postinjury, and no anxiety or depression at 1 year post-TBI.

Conclusions: Employment stability serves as an important measure of productivity post-TBI. Psychosocial, clinical, environmental, and demographic factors predict employment stability post-TBI. Notable predictors include transportation independence as well as the presence of anxiety and depression at year 1 post-TBI as potentially modifiable intervention targets

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Title: Functional Measures Upon Admission to Acute Inpatient Rehabilitation Predict Quality of Life After Ischemic Stroke.

Citation: Archives of Physical Medicine & Rehabilitation; Mar 2019; vol. 100 (no. 3); p. 481-481

Author(s): Lin, Chen; Katkar, Mansi; Lee, Jungwha; Roth, Elliot; Harvey, Richard L.; Prabhakaran, Shyam

Objective: To evaluate the association between functional measures at admission to acute inpatient rehabilitation (AIR) and health-related quality of life (HRQOL) scores at 3 months after ischemic stroke.

Design: Consecutive patients with ischemic stroke admitted to AIR were consented to a prospective registry. Setting Large academic referral inpatient rehabilitation hospital. Participants Patients (N=113) with ischemic stroke (mean age 70.6 ± 14.5y; 54.0% male; 56.6% white) were included in the analysis.

Interventions: Not applicable.

Main Outcome Measures: Admission FIM and Berg Balance Scores (BBS) were abstracted when available. The Neuro-Quality of Life questionnaire was used to assess 3-month HRQOL in 4 domains: upper extremity (UE), lower extremity (LE), executive functions (EF), and general concerns (GC). Associations of FIM and BBS scores with impaired HRQOL at 3 months were evaluated.

Results: The median time from stroke onset to admission FIM and BBS was 6.4 (interquartile range [IQR] 4.2-11.3) and 8.9 (IQR 5.8-14.4) days, respectively. A 5-point increase in admission FIM score decreased the likelihood of impairment in HRQOL at 3 months by 25% for GC (odds ratio [OR] 0.75, 95% confidence interval [CI] 0.61-0.93, P =.01), 31% for EF (OR 0.69, 95% CI 0.56-0.85, P =.001), 16% for UE function (OR 0.84, 95% CI 0.73-0.96, P =.01), and 21% for LE function (OR 0.79, 95% CI 0.67-0.93 P =.004). A 5-point increase in admission BBS decreased the likelihood of impairment in HRQOL domains at 3 months by 15% for UE function (OR 0.85, 95% CI 0.75-0.98, P =.02) and 25% for LE function (OR 0.75, 95% CI 0.64-0.89, P =.001).

Conclusions: Admission FIM and BBS were strongly associated with 3-month HRQOL associated across multiple domains following stroke. These findings indicate that HRQOL can be predicted earlier in a patient's course during AIR.

Title: Rehabilitation Outcomes of Patients With Severe Disability Poststroke.

Citation: Archives of Physical Medicine & Rehabilitation; Mar 2019; vol. 100 (no. 3); p. 520-520

Author(s): Scrutinio, Domenico; Guida, Pietro; Lanzillo, Bernardo; Ferretti, Chiara; Loverre, Anna; Montrone, Nicola; Spaccavento, Simona

Objective: To characterize rehabilitation outcomes of patients with severe poststroke motor impairment (MI) and develop a predictive model for treatment failure.

Design: Retrospective cohort study. Correlates of treatment failure, defined as the persistence of severe MI after rehabilitation, were identified using logistic regression analysis. Then, an integer-based scoring rule was developed from the logistic model.

Setting: Three specialized inpatient rehabilitation facilities. Participants Patients (N=1265) classified as case-mix groups (CMGs) 0108, 0109, and 0110 of the Medicare classification system.

Interventions: Not applicable.

Main Outcome Measure: Change in the severity of MI, as assessed by the FIM, from admission to discharge. Results Median FIM-motor (FIM-M) score increased from 17 (interquartile range [IQR] 14-23) to 38 (IQR, 25-55) points. Median proportional recovery, as expressed by FIM-M effectiveness, was 26% (IQR, 12-47). Median FIM-M change was 18 (IQR, 9-34) points. About 38.5% patients achieved the minimal clinically important difference. Eighteen point six percent and 32.0% of the patients recovered to a stage of either mild (FIM-M ≥62) or moderate (FIM-M 38-61) MI, respectively. All between-CMG differences were statistically significant. Outcomes have also been analyzed according to classification systems used in Australia and Canada. The scoring rule had an area under the curve of 0.833 (95% confidence interval, 0.808-0.858). Decision curve analysis displayed large net benefit of using the risk score compared with the treat all strategy.

Conclusions: This study provides a snapshot of rehabilitation outcomes in a large cohort of patients with severe poststroke MI, thus filling a gap in knowledge. The scoring rule accurately identified the patients at risk for treatment failure.

Title: Using child- and family-centred goal setting as an outcome measure in residential rehabilitation for children and youth with acquired brain injuries: The challenge of predicting expected levels of achievement.

Citation: Child: Care, Health & Development; Mar 2019; vol. 45 (no. 2); p. 286-291

Author(s): Kelly, Gemma; Dunford, Carolyn; Forsyth, Rob; Kavčič, Alja

Purpose: Collaborative, child- and family-centred goal setting is essential in paediatric, acquired brain injury (ABI) rehabilitation. This study aims to understand which goals children and families prioritize and how accurately therapists predict expected levels of achievement for these goals.

Methods: Routinely collected Goal Attainment Scale-Light data from 122 children with severe ABI receiving residential rehabilitation were retrospectively analysed. Goals were mapped onto the International Classification of Functioning, Disability and Health. Descriptive analysis of accuracy of therapists' prediction of goal achievement was conducted.

Results: Eight-hundred sixty goals were set: 82% in activities and participation domains, most commonly mobility, self-care, and communication chapters. Forty-six per cent of therapist-set expected levels of achievement for these goals were met at the expected level, and 24% were exceeded. Chapters with the highest prediction accuracy included two environmental chapters and one body structure and function. Accurate prediction of activity

and participation goals varied (35% in general tasks and demands to 58.8% in major life areas).

Conclusions: Children and families prioritize mobility, self-care, and communication during ABI residential rehabilitation. Setting expected outcomes for these goals is challenging, as demonstrated by the variety in accurate prediction rates between and within chapters. Families need to be aware of this uncertainty during goal-setting discussions.

Title: Building a Bridge to the Community: An Integrated Knowledge Translation Approach to Improving Participation in Community-Based Exercise for People After Stroke.

Citation: Physical Therapy; Mar 2019; vol. 99 (no. 3); p. 286-296

Author(s): Bird, Marie-Louise; Mortenson, B William; Chu, Francis; Acerra, Nicole; Bagnall, Eric; Wright, Angela; Hayley, Karen; Yao, Jennifer; Eng, Janice J

Background: People who have had a stroke and are living in the community have low levels of physical activity, which reduces their functional capacity and increases risks of developing secondary comorbid conditions. Exercise delivered in community centers can address these low levels of physical activity; however, implementing evidence-based programs to meet the needs of all community stakeholders is challenging.

Objectives: The objective of this study was to determine implementation factors to facilitate participation in relevant exercise and physical activity for people with chronic health conditions, like stroke.

Design: The design consisted of a qualitative observational study using an integrated knowledge translation approach. Methods Supported by an integrated knowledge translation approach, a series of focus groups—with stakeholder group representation that included people who had had a stroke and care partners, community organizations (ie, support groups, community center staff), health care providers, and exercise deliverers—was conducted. During the focus groups, participants provided perspectives on factors that could influence implementation effectiveness. Focus groups were recorded, transcribed, and thematically analyzed.

Results: Forty-eight stakeholders participated. Based on the themes, a new implementation model that describes the importance of relationships between community centers, clinicians, and people who have had a stroke is proposed. The development of partnerships facilitates the implementation and delivery of exercise programs for people with ongoing health needs. These partnerships address unmet needs articulated in the focus groups and could fill a gap in the continuity of care.

Conclusions: Data from this study support the need for the community sector to offer a continuing service in partnership with the health system and people with chronic health needs. It indicates the potential of clinicians to partner with people with chronic health conditions and empower them to improve participation in relevant health behaviors, like community-based exercise.

Title: TheraBracelet Stimulation During Task-Practice Therapy to Improve Upper Extremity Function After Stroke: A Pilot Randomized Controlled Study.

Citation: Physical Therapy; Mar 2019; vol. 99 (no. 3); p. 319-328

Author(s): Seo, Na J; Woodbury, Michelle L; Bonilha, Leonardo; Ramakrishnan, Viswanathan; Kautz, Steven A; Downey, Ryan J; Dellenbach, Blair H S; Lauer, Abigail W; Roark, Caroline M; Landers, Lauren E; Phillips, Sarah K; Vatinno, Amanda A

Background: Peripheral sensory stimulation has been used in conjunction with upper extremity movement therapy to increase therapy-induced motor gains in patients with stroke. The limitation is that existing sensory stimulation methods typically interfere with natural hand tasks and thus are administered prior to therapy, requiring patients' time commitment. To address this limitation, we developed TheraBracelet. This novel stimulation method provides subthreshold (ie, imperceptible) vibratory stimulation to the wrist and can be used during hand tasks/therapy without interfering with natural hand tasks. Objective The objective was to determine the feasibility of using TheraBracelet during therapy to augment motor recovery after stroke.

Design: The design was a triple-blinded pilot randomized controlled trial. Methods Twelve chronic stroke survivors were assigned to the treatment or control group. All participants completed 2-hour task practice therapy sessions thrice weekly for 2 weeks. Both groups wore a small vibrator on the paretic wrist, which was turned on to provide TheraBracelet stimulation for the treatment group and turned off for the control group to provide sham stimulation. Outcome measures (Box and Block Test [BBT] and Wolf Motor Function Test [WMFT]) were obtained at baseline, 6 days after therapy, and at follow-up 19 days after therapy.

Results: The intervention was feasible with no adverse events. The treatment group significantly improved their BBT scores after therapy and at follow-up compared with baseline, whereas the control group did not. For WMFT, the group × time interaction was short of achieving significance. Large effect sizes were obtained (BBT d = 1.43, WMFT d = 0.87). No indication of desensitization to TheraBracelet stimulation was observed. Limitations The limitation was a small sample size.

Conclusions: TheraBracelet could be a promising therapy adjuvant for upper extremity recovery after stroke.

Title: Falls among full-time wheelchair users with spinal cord injury and multiple sclerosis: a comparison of characteristics of fallers and circumstances of falls.

Citation: Disability & Rehabilitation; Feb 2019; vol. 41 (no. 4); p. 389-395

Author(s): Sung, JongHun; Trace, Yarden; Peterson, Elizabeth W.; Sosnoff, Jacob J.; Rice, Laura A.

Purpose: The purpose of this study is to (1) explore and (2) compare circumstances of falls among full-time wheelchair users with spinal cord injury (SCI) and multiple sclerosis (MS).

Methods: A mixed method approach was used to explore and compare the circumstances of falls of 41 full-time wheelchair users with SCI (n = 23) and MS (n = 18). In addition to collecting participants' demographic information (age, gender, type of wheelchair used, duration of wheelchair use, and duration of disability), self-reported fall frequency in the past 6 months, self-reported restriction in activity due to fear of falling and the Spinal Cord Injury-Fall Concerns Scale (SCI-FCS) was collected. Qualitative data in the form of participants' responses to an open-ended question yielding information regarding the circumstances of the most recent fall were also collected. To examine differences in survey outcomes and demographic characteristics between participants with SCI and MS, independent t-tests and Pearson's Chi-square tests were used. Qualitative data were analyzed with a thematic analysis.

Results: Statistical analysis revealed that individuals with MS (mean =3.3) had significantly higher average SCI-FCS than individuals with SCI (mean =2.4). The analysis of the participants' descriptions of the circumstances of their most recent falls resulted in three main categories: action-related fall contributors (e.g., transfer), (2) location of falls (e.g., bathroom), and (3) fall attributions (e.g., surface condition).

Conclusions: The results from this study helped to understand fall circumstances among full-time wheelchair users with MS and SCI. Findings from this study can inform the development of evidenced-based interventions to improve the effectiveness of clinically based treatment protocols. Implications for rehabilitation: Falls are a common health concern in full-time wheelchair users living with multiple sclerosis and spinal cord injury. The circumstances surrounding falls reported by full-time wheelchair users living with multiple sclerosis and spinal cord injuries were found to be multifactorial. The complex nature of falls must be taken into consideration in the development of fall prevention programs. Findings from this study can inform the development of comprehensive evidence-based, population-specific interventions to manage falls among full-time wheelchair users living with multiple sclerosis and spinal cord injury.

Title: Call for human contact and support: an interview study exploring patients' experiences with inpatient stroke rehabilitation and their perception of nurses' and nurse assistants' roles and functions.

Citation: Disability & Rehabilitation; Feb 2019; vol. 41 (no. 4); p. 396-404

Author(s): Loft, Mia Ingerslev; Martinsen, Bente; Esbensen, Bente Appel; Mathiesen, Lone L.; Iversen, Helle K.; Poulsen, Ingrid

Purpose: To describe patients' experiences with inpatient stroke rehabilitation and their perception of nurses' and nurse assistants' roles and functions during hospitalisation.

Materials and methods: In a qualitative study, 10 interviews with stroke patients were conducted, transcribed, and analysed using qualitative content analysis.

Results: The patients' experiences with inpatient stroke rehabilitation and their perception of nurses' and nurse assistants' roles and functions during hospitalisation were found to be related to one overall theme derived from 10 categories. As a recurring motif in the patients' interviews, they experienced existential thoughts, and these thoughts unquestionably affected their experiences within the rehabilitation unit. These thoughts enhanced their need for human contact, thereby affecting their relationships with and perceptions of the nursing staff.

Conclusion: The findings deepen our understanding of how patients experience inpatient rehabilitation. The patients struggled with existential thoughts and concerns about the future and therefore called for human contact and support from the nursing staff. They perceived the nursing staff as mostly polite and helpful, but were unclear about the nursing staff's function in rehabilitation which, in the patients' perspective, equals physical training. Implications for Rehabilitation: Nursing staff need to pay attention to the patients' needs, existential thoughts and concerns during inpatient rehabilitation. Meaningful goals for the rehabilitation of stroke patients are crucial, and it is vital that the patients commit to the goals. Patients expected polite and helpful nurses, but did not see them as therapeutic and active stakeholders, thus it is important that nursing staff present themselves as part of the interdisciplinary rehabilitation. There is a need for training and education of nursing staff, both pre and post graduate.

Title: Does a cycling program combined with education and followed by coaching promote physical activity in subacute stroke patients? A randomized controlled trial.

Citation: Disability & Rehabilitation; Feb 2019; vol. 41 (no. 4); p. 413-421

Author(s): Vanroy, Christel; Vanlandewijck, Yves; Cras, Patrick; Truijen, Steven; Vissers, Dirk; Swinnen, Anke; Bosmans, Matthieu; Wouters, Kristien; Feys, Hilde

Background: To investigate the effects of a three month active cycling program followed by coaching on physical activity in subacute stroke patients.

Methods: Patients (n = 59; mean age =65.4 ± 10.3) aged ≤80 years with first stroke and able to cycle at 50 revolutions/minute enrolled 3-10 weeks post stroke. Patients were randomly allocated to three month active cycling group (n = 33) or to a control group (n = 26), 3 x 30 minutes training/week. Afterwards, the active cycling group was randomized into a coaching (n = 15) versus non-coaching group (n = 16) for nine months. Physical activity was measured by objective and self-reported measures, which were taken before/after the active cycling program and during six and 12 months, except the Baecke-questionnaire, which was used at baseline and 12 months.

Results: A significant difference was found in Baecke/sport (95% confidence interval: 0.06, 2.24; p = 0.039) between the active cycling group and the control group, in patients with severe motor function deficits at baseline. Patients in the control group performed significant less sports at 12 months (mean Baecke/sportbaseline =3.07 ± 1.21, mean Baecke/sport12months = 1.43 ± 0.98; p = 0.01). Furthermore, all groups showed significant changes over time in all measures at three months (except: Physical Activity Scale for Individuals with Physical Disabilities, diary/Mets*minutes-moderate) and 12 month and additionally in a subgroup with severe motor function deficits (except diary Mets*minutes-sedentary). Conclusion: When active cycling combined with education is used in subacute patients with severe motor function deficits, more sport participation might be observed after one year. No other significant group differences were found over time. In all groups, however, patients showed significant improvement over time in physical activity measures. Future work is needed to explore the most effective coaching approach after an aerobic training program.

Implications for Rehabilitation: The active cycling program combined with education is applicable in subacute stroke patients as it required little stand-by assistance due to chip cards, the intensity was gradually built and the involvement of caregivers in the educational sessions. This training approach also revealed applicable in severely impaired stroke patients and might facilitate sport participation on the long-term. This randomized controlled study aims to quantify physical activity after stroke by using a combination of objective and self-report measures, which revealed detailed information about different aspects of physical activity levels. There is a need for coaching approaches that facilitate aerobic exercise after ending a supervised program. A coaching approach needs to guide patients in adopting aerobic exercise as a part of a lifestyle change and needs to be less time consuming.

Title: Accessory navicular syndrome as a cause of foot pain during stroke rehabilitation.

Citation: Age & Ageing; Feb 2019; vol. 48 ; p. 159-161

Author(s): Mulkerrin, Patrick; McLoughlin, Ray; O'Keeffe, Shaun T

Abstract: Although usually asymptomatic, an accessory navicular bone can lead to medial foot pain, especially in younger people engaged in high impact sports. In many such cases,

the tendon of posterior tibialis (which inverts and plantarflexes the foot) inserts onto the accessory bone resulting in greater strain on the tendon. In the present case, pain due to an accessory navicular bone first developed during stroke rehabilitation in a 69-year-old man. The relative overactivity of posterior tibialis in strokes involving the leg and overuse due to active rehabilitation were likely contributors. An accessory navicular syndrome should be considered as a cause of medial foot pain in patients following a stroke. As in our case, conservative management with rest, ice and elevation is usually successful.

Title: Characteristics and correlates of coping with multiple sclerosis: a systematic review.

Citation: Disability & Rehabilitation; Feb 2019; vol. 41 (no. 3); p. 250-264

Author(s): Keramat Kar, Maryam; Whitehead, Lisa; Smith, Catherine M.

Purpose: The purpose of this systematic review was to examine coping strategies that people with multiple sclerosis use, and to identify factors that influence their coping pattern.

Method: This systematic review followed the Joanna Briggs Institute guidelines for synthesizing descriptive quantitative research. The following databases were searched from the inception of databases until December 2016: Ovid (Medline, Embase, CINAHL, and PsycINFO), Science Direct, Web of Science, and Scopus. Manual search was also conducted from the reference lists of retrieved articles. Findings related to the patterns of coping with multiple sclerosis and factors influencing coping with multiple sclerosis were extracted and synthesized.

Results: The search of the database yielded 455 articles. After excluding duplicates (n = 341) and studies that did not meet the inclusion criteria (n = 27), 71 studies were included in the full-text review. Following the full-text, a further 21 studies were excluded. Quality appraisal of 50 studies was completed, and 38 studies were included in the review. Synthesis of findings indicated that people with multiple sclerosis use emotional and avoidance coping strategies more than other types of coping, particularly in the early stages of the disease. In comparison to the general population, people with multiple sclerosis were less likely to use active coping strategies and used more avoidance and emotional coping strategies. The pattern of coping with multiple sclerosis was associated with individual, clinical and psychological factors including gender, educational level, clinical course, mood and mental status, attitude, personality traits, and religious beliefs.

Conclusions: The findings of this review suggest that considering individual or disease-related factors could help healthcare professionals in identifying those less likely to adapt to multiple sclerosis. This information could also be used to provide client-centered rehabilitation for people living with multiple sclerosis based on their individual responses and perceptions for coping. Implications for rehabilitation: Engagement in coping with multiple sclerosis has been associated with individual factors and neuropsychological functions. Considering individual and disease-related factors would allow healthcare professionals to provide more tailored interventions to maintain and master coping with multiple sclerosis. People living with multiple sclerosis should be empowered to appraise and manage ability to cope based on the contextual evidence (individual and clinical condition). Rehabilitation services should move beyond physical management incorporating behavioral aspects for better functioning in living with multiple sclerosis.

Title: A study on the sleep quality, pain, and instrumental activities of daily living of outpatients with chronic stroke.

Citation: Journal of Physical Therapy Science; Feb 2019; vol. 31 (no. 2); p. 149-152

Author(s): JUHYUNG PARK

Purpose: The purpose of this study is to examine the sleep quality, pain, and instrumental activities of daily living (IADL) of outpatients with chronic stroke, and to examine their correlation.

Participants and Methods: This study was conducted on 42 outpatients with chronic stroke, and data on their sleep quality, pain, and instrumental activities of daily living were collected and analyzed using the survey measurement tools.

Results: The analysis shows significant correlations among the sleep quality, pain, and instrumental activities of daily living of the outpatients with chronic stroke.

Conclusion: The findings of this study confirmed that the sleep quality and pain of outpatients with chronic stroke was related with their capacities of instrumental activities of daily living.

Title: The experience of recurrent fallers in the first year after stroke.

Citation: Disability & Rehabilitation; Jan 2019; vol. 41 (no. 2); p. 142-149

Author(s): Walsh, Mary E.; Galvin, Rose; Williams, David J. P.; Harbison, Joseph A.; Murphy, Sean; Collins, Ronan; McCabe, Dominick J. H.; Crowe, Morgan; Horgan, N. Frances

Purpose: Understanding the experiences of fallers after stroke could inform falls-prevention interventions, which have not yet shown effectiveness in this population. The aim of this study was to explore the experience of recurrent fallers post-stroke in relation to recovery and living with falls.

Methods: Participants who had more than one fall in the first year after stroke were identified from a prospective cohort study. The methods of grounded theory informed data collection and analysis. Semi-structured interviews were conducted, audio-recorded and transcribed. Coding was conducted and categories were developed inductively.

Results: Nine stroke survivors aged 53-85 were interviewed 18-22 months post-discharge. Participants had experienced between 2 and 9 falls and one participant suffered a fracture. Three inter-linked categories were identified: (i) Judging the importance of falls by exploring cause and consequence, (ii) getting back up, and (iii) being careful.

Conclusions: Stroke survivors' assessment of their own falls-risk and their individual priorities contribute to their decisions around activity participation. "Being careful" could be described as a form of self-managing falls-risk. The inclusion of self-management principles, peer-educators, and education to rise from the floor in falls-management programmes warrants investigation. Not all falls were considered equally important by participants. This could be considered when defining falls-related outcomes.

Implications for Rehabilitation: Healthcare professionals may be able to offer an increased sense of control to stroke survivors through education about how to avoid particular causes and consequences of falls. Falls-related advice should be specific, relevant to the individual, and respectful of their sense of identity. Being able to rise from the floor appears to be important for coping with falls and falls-risk. Professionals should be cognisant

of the potential differences of opinion between stroke survivors and their families around management of falls-risk.

Title: Physiotherapy practice patterns in gait rehabilitation for adults with acquired brain injury.

Citation: Brain Injury; Mar 2019; vol. 33 (no. 3); p. 333-348

Author(s): Wilson, Terri; Martins, Olivia; Efrosman, Michelle; DiSabatino, Victoria; Benbrahim, B. Mohamed; Patterson, Kara K.

Objective: Gait dysfunction is common following acquired brain injury (ABI). Clinical practice guidelines can improve patient outcomes; however, information regarding ABI-specific management of gait dysfunction is limited. This study aimed to describe practice patterns of Canadian physiotherapists regarding gait rehabilitation in adults post-ABI.

Methods: An electronic questionnaire was developed and distributed across Canada to describe physiotherapy assessment methods, outcome measures, and treatment interventions used to manage gait dysfunction in adults with mild-moderate and severe ABI.

Results: Of 103 respondents who accessed the questionnaire, 59 met inclusion criteria and participated in the study. Methods most frequently used "often or very often" at initial and discharge assessments included visual observation (≥88.2% for adults with mild-moderate and severe ABI) and the Berg Balance Scale (≥76.3% for adults with mild-moderate ABI). Higher level gait training exercises were used more often for adults with mild-moderate than severe ABI. Physiotherapists commonly reported further research was required to develop and validate gait-specific outcome measures (42.4%) and treatment techniques (76.3%).

Conclusions: Physiotherapists' use of gait-specific treatment interventions, but not assessment methods, differs depending on ABI severity. Future work should investigate factors influencing these practice patterns. In addition, clinician-identified research priorities include ABI gait-specific outcome measures and technology-based interventions.

Title: Five-year follow-up of a cluster-randomized controlled trial of a client-centred activities of daily living intervention for people with stroke.

Citation: Clinical Rehabilitation; Feb 2019; vol. 33 (no. 2); p. 262-276

Author(s): Hedman, Annicka; Eriksson, Gunilla; von Koch, Lena; Guidetti, Susanne

Objective: To compare five-year outcomes and changes over time of a client-centred activities of daily living (ADL) intervention versus usual ADL interventions for people with stroke and their significant others.

Design: Five-year follow-up of a cluster-randomized controlled trial where a client-centred ADL intervention (n = 129) or usual ADL interventions (n = 151) were delivered to people with stroke.

Setting: Multicentre study including 16 inpatient or home-based rehabilitation units. Participants: People with stroke and significant others.

Intervention: The client-centred ADL intervention aimed at enabling agency in daily activities and participation in everyday life and at reducing caregiver burden.

Main measures: For people with stroke, perceived participation (Stroke Impact Scale), independence in ADL, life satisfaction, and use of formal/informal care were measured. For

significant others, caregiver burden, life satisfaction, and mood (Hospital Anxiety and Depression Scale) were assessed.

Results: Five years post-intervention, data were collected from 145 people with stroke (intervention group: n = 71/control group: n = 74) and 75 significant others (intervention group: n = 36/control group: n = 39). For those with stroke, the Participation domain of the Stroke Impact Scale showed no group differences at year five (68.9 vs 75.4, P = 0.062) or in changes over time. At year five, the control group had better outcomes regarding Other help/supervision. Significant others in the control group were more likely to show signs of depression at year five (odds ratio = 22.3; P < 0.001).

Conclusion: The client-centred ADL intervention appears to render similar long-term effects as usual ADL interventions for people with stroke, but for significant others signs of depression might be reduced.

Title: What factors affect clinical decision-making about access to stroke rehabilitation? A systematic review.

Citation: Clinical Rehabilitation; Feb 2019; vol. 33 (no. 2); p. 304-316

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

Objectives: To determine the factors affecting clinical decision-making about which patients should receive stroke rehabilitation.

Methods: Data sources (MEDLINE, CINAHL, AMED and PsycINFO) were searched systematically from database inception to August 2018. Full-text English-language studies of data from stroke clinicians were included. Studies of patients were excluded. The included studies were any design focussed on clinical decision-making for referral or admission into stroke rehabilitation. Summary factors were compiled from each included study. The quality of the included studies was assessed using the Mixed Methods Appraisal Tool.

Results: After removing duplicates, 1915 papers were identified, of which 13 met the inclusion criteria. Eight included studies were qualitative and one used mixed methods. A total of 292 clinicians were included in the studies. Quality of the included studies was mixed. Patient-level and organizational factors as well as characteristics of individual clinicians contributed to decisions about rehabilitation. The most often described factors were patients' pre- and poststroke function (n = 6 studies), presence of dementia (n = 6), patients' social/family support (n = 6), organizational service pressures (n = 7) and the decision-making clinician's own knowledge (n = 5) and emotions (n = 5).

Conclusion: The results highlight a lack of clinical guidance to aid decision-making and reveal that a subjective approach to rehabilitation decision-making influenced by patient-level and organizational factors alongside clinicians' characteristics occurs across services and countries.

Title: Pain management strategies among persons with long-term shoulder pain after stroke – a qualitative study.

Citation: Clinical Rehabilitation; Feb 2019; vol. 33 (no. 2); p. 357-364

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

Objective: To explore strategies that persons with persistent shoulder pain after stroke use to manage their pain in daily life.

Design: A qualitative study using semi-structured face-to-face interviews, analysed by content analysis.

Setting: A university hospital. Subjects: Thirteen community-dwelling persons (six women; median age: 65 years; range 57–77) with shoulder pain after stroke were interviewed median two years after the pain onset.

Results: An overall theme 'Managing shoulder pain by adopting various practical and cognitive strategies' emerged from the analysis. Three categories were identified: (1) practical modifications to solve daily life problems; (2) changed movement patterns and specific actions to mitigate the pain, by non-painful movements, avoidance of pain-provoking activities and various pain distracting activities and (3) learned how to deal with the pain mentally. Several strategies were used simultaneously and they were experienced successful to various degrees.

Conclusion: The findings in the present study indicate that persons with persistent shoulder pain after stroke use both practical and cognitive strategies to manage their pain.

Title: Botulinum Toxin Type A for the Treatment of Lower Limb Spasticity after Stroke.

Citation: Drugs; Feb 2019; vol. 79 (no. 2); p. 143-160

Author(s): Santamato, Andrea; Cinone, Nicoletta; Panza, Francesco; Letizia, Sara; Santoro, Luigi; Lozupone, Madia; Daniele, Antonio; Picelli, Alessandro; Baricich, Alessio; Intiso, Domenico; Ranieri, Maurizio

Abstract: Post-stroke lower limb spasticity impairs balance and gait leading to reduced walking speed, often increasing wheelchair use and caregiver burden. Several studies have shown that appropriate treatments for lower limb spasticity after stroke include injections of botulinum toxin type A (BoNT-A), phenol or alcohol, surgical correction and a rehabilitation program. In the present article, we review the safety and effectiveness of BoNT-A for the treatment of lower limb spasticity after stroke, with a focus on higher doses of BoNT-A. The cumulative body of evidence coming from the randomized clinical trials and open-label studies selected in the article suggest BoNT-A to be safe and efficacious in reducing lower limb spasticity after stroke. Studies of high doses of BoNT-A also showed a greater reduction of severe post-stroke spasticity. In stroke survivors with spasticity of the ankle plantar-flexor muscles, a combined approach between surgery and BoNT-A can be indicated. However, controversy remains about improvement in motor function relative to post-stroke spasticity reduction after BoNT-A treatment.

Title: Feasibility and Effectiveness Of Repetitive Gait Training Early After Stroke: A Systematic Review And Meta-Analysis.

Citation: Journal of Rehabilitation Medicine (Stiftelsen Rehabiliteringsinformation); Feb 2019; vol. 51 (no. 2); p. 78-88

Author(s): Schröder, Jonas; Truijen, Steven; Van Criekinge, Tamaya; Saeys, Wim

Background: Pre-clinical evidence suggests a period early after stroke during which the brain is most receptive to rehabilitation, if it is provided as high-dose motor training. Objective: To evaluate the feasibility of repetitive gait training within the first 3 months post-stroke and the effects on gait-specific outcomes.

Methods: PubMed, Web of Science, Cochrane Library, Rehab Data and PEDro databases were searched systematically. Randomized controlled trials were included to descriptively

analyse the feasibility and quantitatively investigate the effectiveness of repetitive gait training compared with conventional therapy.

Results: Fifteen randomized controlled trials were included. Repetitive training can safely be provided through body weight support and locomotor assistance from therapists or a robotic device. No difference in drop-out rates was reported despite the demanding nature of the intervention. The meta-analysis yielded significant, but small, effects on walking independence and endurance. Training with end-effector robots appears most effective.

Conclusion: Robots enable a substantial, yet feasible, increase in the quantity of walking practice early post-stroke, which might enhance functional recovery. However, the mechanisms underlying these effects remain poorly understood.

Title: Physical Performance and Fall Risk in Persons With Traumatic Brain Injury.

Citation: Perceptual & Motor Skills; Feb 2019; vol. 126 (no. 1); p. 50-69

Author(s): Klima, Dennis; Morgan, Lindsay; Baylor, Michelle; Reilly, Cordia; Gladmon, Daniel; Davey, Adam

Abstract: Injuries sustained from traumatic brain injury (TBI) culminate in both cognitive and neuromuscular deficits. Patients often progress to higher functioning on the Rancho continuum even while mobility deficits persist. Although prior studies have examined physical performance among persons with chronic symptoms of TBI, less is known about the relatively acute phase of TBI as patients prepare for rehabilitation discharge. The aims of this cross-sectional study were to (a) compare balance and gait performance in 20 ambulant persons with moderate to severe TBI who were nearing rehabilitation discharge with their age-matched controls and (b) describe performance with thresholds for fall risk and community navigation. During a designed task circuit, 40 participants (20 persons with TBI and 20 controls) performed the Timed Up and Go (TUG), gait velocity, and Walking and Remembering tests. Balance testing included the Fullerton Advanced Balance Scale (FABS) and instrumented Modified Clinical Test for Sensory Interaction in Balance (MCTSIB). Statistical analyses included analysis of covariance for group comparisons and a multivariate analysis of covariance for MCTSIB sway velocities with anthropometric controls. The TBI group (mean [M] age = 42, standard deviation [SD] =19.5 years; 70% males) performed significantly more poorly on all mobility tests ($p < .05$) and their scores reflected a potential fall risk. Gait velocity was significantly slower for the TBI versus control group ($M = .96$, $SD = 2.6$ vs. $M = 1.5$, $SD = 2.2$ m/s; $p < .001$), including TUG times ($M = 13.5$, $SD = 4.9$ vs. $M = 7.7$, $SD = 1.4$; $p < .001$). TBI participants also demonstrated significantly greater sway velocity on all MCTSIB conditions ($p < .01$) and lower performance on the FABS ($p < .001$). Performance indices indicate potential fall risk and community navigation compromise for individuals with moderate to severe TBI. Physical performance scores support the need for continued interventions to optimize functional mobility upon discharge.

Title: Effects of (music-based) rhythmic auditory cueing training on gait and posture post-stroke: A systematic review & dose-response meta-analysis.

Citation: Scientific reports; Feb 2019; vol. 9 (no. 1); p. 2183

Author(s): Ghai, Shashank; Ghai, Ishan

Abstract: Gait dysfunctions are common post-stroke. Rhythmic auditory cueing has been widely used in gait rehabilitation for movement disorders. However, a consensus regarding

its influence on gait and postural recovery post-stroke is still warranted. A systematic review and meta-analysis was performed to analyze the effects of auditory cueing on gait and postural stability post-stroke. Nine academic databases were searched according to PRISMA guidelines. The eligibility criteria for the studies were a) studies were randomized controlled trials or controlled clinical trials published in English, German, Hindi, Punjabi or Korean languages b) studies evaluated the effects of auditory cueing on spatiotemporal gait and/or postural stability parameters post-stroke c) studies scored ≥4 points on the PEDro scale. Out of 1,471 records, 38 studies involving 968 patients were included in this present review. The review and meta-analyses revealed beneficial effects of training with auditory cueing on gait and postural stability. A training dosage of 20-45 minutes session, for 3-5 times a week enhanced gait performance, dynamic postural stability i.e. velocity (Hedge's g: 0.73), stride length (0.58), cadence (0.75) and timed-up and go test (-0.76). This review strongly recommends the incorporation of rhythmic auditory cueing based training in gait and postural rehabilitation, post-stroke.

Title: Rehab-Net: Deep Learning framework for Arm Movement Classification using Wearable Sensors for Stroke Rehabilitation.

Citation: IEEE transactions on bio-medical engineering; Feb 2019

Author(s): Panwar, Madhuri; Biswas, Dwaipayan; Bajaj, Harsh; Jobges, Michael; Turk, Ruth; Maharatna, Koushik; Acharyya, Amit

Abstract: In this paper, we present a deep learning framework 'Rehab-Net' for effectively classifying three upper limb movements of the human arm, involving extension, flexion and rotation of the forearm which over the time could provide a measure of rehabilitation progress. The proposed framework, Rehab-Net is formulated with a personalized, light weight and low complex, customized CNN model, using 2-layers of Convolutional neural network (CNN), interleaved with pooling layers, followed by a fully-connected layer that classifies the three movements from tri-axial acceleration input data collected from the wrist. The proposed Rehab-net framework was validated on sensor data collected in two situations-a) seminaturalistic environment involving an archetypal activity of 'making-tea' with 4 stroke survivors and b) natural environment, where 10 stroke survivors were free to perform any desired arm movement for a duration of 120 minutes. We achieve an overall accuracy of 97.89% on semi-naturalistic data and 88.87% on naturalistic data which exceeded state-of-the-art learning algorithms namely, Linear Discriminant Analysis, Support Vector Machines, and k-means clustering with an average accuracy of 48.89%, 44.14% and 27.64%. Subsequently, a computational complexity analysis of the proposed model has been discussed with an eye towards hardware implementation. The clinical significance of this study is to accurately monitor the clinical progress of the rehabilitated subjects under the ambulatory settings.

Title: Systematic scoping review of frameworks used to develop rehabilitation interventions for older adults.

Citation: BMJ open; Feb 2019; vol. 9 (no. 2); p. e024185

Author(s): Booth, Vicky; Hood-Moore, Victoria; Hancox, Jennie E; Logan, Phillipa; Robinson, Katie R

Objectives: Rehabilitation interventions for older adults are complex as they involve a number of interacting components, have multiple outcomes of interest and are influenced by

a number of contextual factors. The importance of rigorous intervention development prior to formal evaluation has been acknowledged and a number of frameworks have been developed. This review explored which frameworks have been used to guide the development of rehabilitation interventions for older adults.

Design: Systematic scoping review.

Setting: Studies were not limited for inclusion based on setting.

Participants: Studies were included that featured older adults (>65 years of age).

Interventions: Studies were included that reported the development of a rehabilitation intervention.

Primary And Secondary Outcome Measures: Data were extracted on study population, setting, type of intervention developed and frameworks used. The primary outcome of interest was the type of intervention development framework.

Results: Thirty-five studies were included. There was a range of underlying medical conditions including mild cognitive impairment and dementia (n=5), cardiac (n=4), stroke (n=3), falls (n=3), hip fracture (n=2), diabetes (n=2), breast cancer (n=1), Parkinson's disease (n=1), depression (n=1), chronic health problems (n=1), osteoarthritis (n=1), leg ulcer (n=1), neck pain (n=1) and foot problems (n=1). The intervention types being developed included multicomponent, support based, cognitive, physical activities, nursing led, falls prevention and occupational therapy led. Twelve studies (34%) did not report using a framework. Five frameworks were reported with the Medical Research Council (MRC) framework for developing and evaluating complex interventions being the most frequently cited (77%, n=17).

Conclusion: At present, the MRC framework is the most popular for developing rehabilitation interventions for older adults. Many studies do not report using a framework. Further, specific guidance to assist this complex field of rehabilitation research is required.

Title: The Effectiveness of Driving Game on Trunk Control and Gait Ability in Stroke.

Citation: Journal of motor behavior; Feb 2019 ; p. 1-8

Author(s): Lee, Daegyun; Bae, Youngsook

Abstract: Patients who require neurological rehabilitation often do not comply with conventional programs because they find the therapy uninteresting. As a result, specialized interactive video games have been designed to be more enjoyable than conventional therapy (CT) tasks. This study aimed to assess the trunk control and gait ability of patients with chronic stroke after participation in driving-based interactive video games (DBIVG). Participants included 24 chronic stroke patients allocated to an experimental group (n = 13, CT + DBIVG) or a control group (n = 11, CT + treadmill walking training). Both groups received CT five days/week; the experimental and control groups participated in DBIVG and treadmill walking training, respectively, three days/week for four weeks. The primary outcome of trunk control was measured by the trunk impairment scale (TISall) and TIS subscales, including static sitting balance (TISssb), dynamic sitting balance (TISdsb), and trunk co-ordination (TISco). Gait ability was measured by the dynamic gait index (DGI), timed walking test (TWT), and time up and go test (TUGT). Both groups demonstrated significant improvements in TISall, TISdsb, and TUGT results. The experimental group showed significantly greater improvement in TISssb, TISco, and DGI than the control group. Our findings indicate that DBIVG can improve trunk control and gait ability in patients with chronic stroke.

Title: Cognitive, physical, and psychological benefits of yoga for acquired brain injuries: A systematic review of recent findings.

Citation: Neuropsychological rehabilitation; Feb 2019 ; p. 1-20

Author(s): Silveira, Kristen; Smart, Colette M

Abstract: Yoga is a holistic practice that - when incorporated effectively into neurorehabilitation - has potential to meet the complex needs of persons with acquired brain injury (ABI). This systematic review, conducted in accordance with PRISMA guidelines, investigated cognitive, physical, and psychological outcomes following controlled trials of yoga for ABI. The search returned six eligible studies, four of which focused specifically on stroke rehabilitation. For persons with ABI broadly, within-group improvements were found after yoga for psychological and physical adjustment, quality of life, and respiratory functioning. For stroke specifically, physical and memory recovery was greater in the yoga group vs. exercise control, and within-group improvements were noted for motor functioning, self-efficacy, and quality of life outcomes. Lack of (1) between-group analyses despite the inclusion of control groups, and (2) a common yoga rehabilitation protocol including frequency, length, and duration of yoga must be addressed in future research to establish efficacy of these interventions. Considerations for psychophysiological outcome measures and cultural factors are presented in the context of future research and clinical directions.

Title: The Role of Personalized Virtual Reality in Education for Patients Post Stroke-A Qualitative Case Series.

Citation: Journal of stroke and cerebrovascular diseases : the official journal of National Stroke Association; Feb 2019; vol. 28 (no. 2); p. 450-457

Author(s): Thompson-Butel, Angelica G; Shiner, Christine T; McGhee, John; Bailey, Benjamin John; Bou-Haidar, Pascal; McCorriston, Michael; Faux, Steven G

Background: Education is essential to promote prevention of recurrent stroke and maximize rehabilitation; however, current techniques are limited and many patients remain dissatisfied. Virtual reality (VR) may provide an alternative way of conveying complex information through a more universal language.AIMTo develop and conduct preliminary assessments on the use of a guided and personalized 3D visualization education session via VR, for stroke survivors and primary caregivers.

Methods: Four poststroke patients and their 4 primary caregivers completed the 3D visualization education session as well as pre- and postintervention interviews. Each patient had a different stroke etiology (i.e., ischemic thrombotic stroke, ischemic embolic stroke, hemorrhagic stroke, and transient ischemic attack followed by ischemic stroke, respectively). This new approach uses preintervention interview responses, patient MRI and CT datasets, VR head mounted displays, 3D computer modeling, and game development software to develop the visualization. Pre- and postintervention interview responses were analyzed using a qualitative phenomenological methodology approach.

Results: All participants safely completed the study and were highly satisfied with the education session. In this subset of participants, prior formal stroke education provision was limited. All participants demonstrated varied improvements in knowledge areas including brain anatomy and physiology, brain damage and repair, and stroke-specific information such as individual stroke risk factors and acute treatment benefits. These improvements were accompanied by feelings of closure, acceptance, and a greater motivation to manage their stroke risk.

Conclusions: Preliminary results suggest this approach provides a safe and promising educational tool to promote understanding of individualized stroke experiences.

Sources Used:

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

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