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Rehabilitation Current Awareness Bulletin

September 2020

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Title: The Place of Early Rehabilitation in Intensive Care Unit for COVID-19.

Citation: American Journal of Physical Medicine & Rehabilitation; Aug 2020; vol. 99 (no. 8); p. 677-678

Author(s): Masiero, Stefano; Zampieri, Davide; Del Felice, Alessandra

Abstract: In this article the author talks about early rehabilitation in intensive care unit for COVID-19. Topics discussed include multimodal rehabilitation, in every stage of the illness, must be part of a holistic medical approach, but consensus on timing and type of intervention is still missing; and urgent need to build a knowledge based on the most effective nonpharmacological measures to ensure the earliest discharge and the best recovery after complicated COVID-19 infection.

Title: App-based supplemental exercise in rehabilitation, adherence, and effect on outcomes: a randomized controlled trial.

Citation: Clinical Rehabilitation; Aug 2020; vol. 34 (no. 8); p. 1083-1093

Author(s): Li ; Bui, Tram; Phan, Hoang T; Llado, Ana; King, Clayton; Scrivener, Katharine

Question: To determine the uptake of an app-based supplemental exercise programme in a rehabilitation setting and the effect of such a programme on length of stay and function compared to usual care physiotherapy.

Design: Randomized controlled trial with random allocation and assessor blinding. Participants: A total of 144 individuals with mixed diagnoses (orthopaedic, neurological, reconditioning) admitted for inpatient sub-acute rehabilitation.

Interventions: Participants were randomly allocated to usual care physiotherapy (control group) or usual care physiotherapy with the addition of an app-based supplemental exercise programme (intervention group).

Outcome measures: The primary measure of interest was total supplementary exercise dosage completed by the intervention group. The primary between-group outcome measure was length of stay with secondary measures including walking endurance (Six-Minute Walk Test), walking speed (10-Metre Walk Test), functional mobility (Timed Up and Go Test) and level of disability (Functional Independence Measure).

Results: Participants in the intervention group performed 7 minutes (SD: 9) or 49 repetitions (SD: 48) of supplementary exercise using the app each day. There were no differences between the groups for length of stay (mean difference (MD): −0.5 days, 95% confidence interval (CI): −3.2 to 2.2) or change in any secondary functional outcome measures, including walking speed (MD: −0.1 m/s, 95% CI: −0.2 to 0.0) and disability (MD: −0.9, 95% CI: −3.6 to 1.8).

Conclusion: A small supplementary exercise dose was achieved by participants in the intervention group. However, such a programme did not affect length of stay or functional outcomes when compared to usual care.

Title: Holistic Treatment of Fibromyalgia Based on Physiopathology: An Expert Opinion.

Citation: Journal of clinical rheumatology : practical reports on rheumatic & musculoskeletal diseases; Aug 2020; vol. 26 (no. 5); p. 204-207

Author(s): Martínez-Lavín, Manuel

Abstract: Patients suffering from fibromyalgia have many vexing symptoms; in contrast, physicians do not have a logical physiopathological framework to explain the multiple complaints. The objective of this writing is to discuss a patient-centered holistic fibromyalgia therapy based on a coherent physiopathological model. The rationale proposing fibromyalgia as stress-related sympathetically maintained neuropathic pain syndrome has solid research foundations. Autoimmunity is evident in a subset of fibromyalgia cases. Dorsal root ganglia are likely the crucial sympathetic-nociceptive short circuit sites. Skin biopsy and corneal confocal microscopy have demonstrated small nerve fiber pathology in fibromyalgia cases.Patient empowerment through information and symptom validation is the first step for a successful fibromyalgia therapy.

Points To Highlight: Fibromyalgia is a genuine painful neuropathic pain syndrome. In fibromyalgia stress becomes pain. Autonomic (sympathetic) dysfunction explains the multiplicity of fibromyalgia symptoms. The well-informed patient (and her/his family) must take on the leading role in her/his own rehabilitation. Fibromyalgia treatment often requires important lifestyle changes. Physicians and allied health care personnel facilitate this adjustment. Specific fibromyalgia drivers are discussed. Common modern bad habits alter autonomic nervous system balance and worsen fibromyalgia symptoms. Currently used drugs for fibromyalgia are rudimentary and with low retention rates. Autoimmune fibromyalgia requires focused therapeutic approach.

Conclusion: A patient-centered holistic therapy aimed to regain autonomic nervous system resilience remains the most effective fibromyalgia therapy.

Future Directions: Corneal confocal microscopy will likely become an objective fibromyalgia diagnostic and follow-up procedure. More specific analgesic antineuropathic medications for fibromyalgia are on the horizon.

Title: A Need to Activate Lasting Engagement.

Citation: American Journal of Occupational Therapy; Sep 2020; vol. 74 (no. 5); p. 1-5

Author(s): Brick ; Lyons, Kathleen Doyle; Rodakowski, Juleen; Skidmore, Elizabeth

Abstract: Occupational therapy practitioners provide interventions to promote activity engagement to multiple clinical populations. They help clients develop restorative, adaptive, and compensatory skills to improve their performance in daily activities. The issue addressed in this article is that current clinical frameworks lack translation of learned skills to consistent everyday performance. There is a gap between what clients can do and what clients actually do in everyday life. Behavioral activation provides an explicit, structured, and practical approach that can translate capacity into long-term engagement. This article presents behavioral activation as a transdiagnostic approach that targets populations experiencing chronic illness to bridge the gap between what the client can do in therapy and what the client could do in everyday life. What This Article Adds: People with chronic illness have difficulty translating the skills learned in traditional practice settings to everyday life. Behavioral activation offers occupational therapy practitioners a practical structure to promote the translation of learned skills.

Title: Experiences of and support for the transition to practice of newly graduated occupational therapists undertaking a hospital graduate Program.

Citation: Australian occupational therapy journal; Sep 2020

Author(s): Turpin, Merrill; Fitzgerald, Cate; Copley, Jodie; Laracy, Sue; Lewis, Beverly

Introduction: Newly graduated occupational therapists face well-documented difficulties as they embark on professional practice. Occupational therapy departments need to ensure that new graduates conduct their roles appropriately while developing experience and building clinical and professional skills. This study aimed to explore the experiences of new graduates at a major Australian metropolitan hospital occupational therapy department, the support provided to them and their perceptions of this support.

Methods: The research design was Interpretive Description. Semi-structured interviews of approximately 60 min were undertaken with seven occupational therapists, their team leader and the Departmental Head. The two research questions were as follows: What were the graduates' experiences of their first year in practice? What support was provided to graduates and what were their perceptions of this?

Results: New graduates perceived the transition to practice as overwhelming, particularly regarding their caseload responsibility. During the first few months, work tasks took them longer and they felt stressed and anxious. They received a range of support and education, both inter-professional and discipline specific. Their occupational therapy team leader and clinical senior provided tailored support, guidance and reassurance. Guided questioning facilitated development of new graduates' clinical reasoning and professional skills. Reflection helped them to identify and address learning goals relating to occupational therapy professional competencies. New graduates valued having a consistent caseload and a supportive workplace was highly valued.

Conclusion: New graduates initially feel overwhelmed by being responsible for their decisions. However, they can benefit from tailored supervision and guided questioning to help develop clinical reasoning and professional skills, formal and informal support from experienced occupational therapists and their inter-professional teams and time to increase skill with their caseload. Engagement in a professional community of practice is important.

Title: Virtual reality gaming as a neurorehabilitation tool for brain injuries in adults: A systematic review.

Citation: Brain Injury; Oct 2020; vol. 34 (no. 10); p. 1322-1330

Author(s): Aulisio ; Han, Dong Y.; Glueck, Amanda C.

Abstract: Evidence of the effectiveness of virtual reality (VR) in motor and cognitive rehabilitation for traumatic brain injury (TBI) continues to be mixed. Therefore, we conducted a systematic literature review in accordance with PRISMA guidelines to strategically evaluate the strength of evidence supporting the use of VR as a rehabilitation tool for motor function and cognition in patients with TBI. The van Tulder criteria were modified to determine the quality of the outcomes of studies deemed eligible for inclusion in the review. Twelve studies were considered eligible for inclusion in the systematic review. These studies utilized methods of varying quality such as case and quasi-experimental studies and found moderately positive support for the effectiveness of VR-enhanced rehabilitation for both motor skills and cognitive deficits. The varying quality of the included studies provides moderate support for use of VR-enhanced rehabilitation techniques per the van Tulder criteria. This highlights the continued gap in the literature for robust studies that enable providers, policy makers, and the public to draw conclusions about the effectiveness of VR-enhanced rehabilitation for traumatic brain injury. Continued pursuit of analyses in the context of newer immersive VR-enhanced rehabilitation is recommended.

Title: A neuropsychologically-based intervention with increased follow-up support for employed women with multiple sclerosis: a pilot randomized controlled trial.

Citation: Clinical Rehabilitation; Oct 2020; vol. 34 (no. 10); p. 1292-1302

Author(s): Stimmel ; Cohen, Jenna N; Schneider, Shonna J; Portnoy, Jeffrey G; Seng, Elizabeth K; Foley, Frederick W

Objective: To evaluate feasibility and acceptability of a neuropsychologically-based vocational intervention with increased follow-up support for women with multiple sclerosis.

Design: Single-blinded parallel-group randomized controlled trial with 12-month follow-up. Setting: Tertiary-care multiple sclerosis center.

Participants: Forty-nine employed women with multiple sclerosis meeting criteria on measures of cognitive dysfunction (Symbol Digit Modalities Test), fatigue (Fatigue Severity Scale), and/or depression (Beck Depression Inventory/Patient Health Questionnaire).

Interventions: Participants received either neuropsychological testing and phone feedback regarding findings and tailored recommendations (standard-care treatment), or testing, in-person feedback, and two calls from a care-coordinator (experimental treatment).

Measures: Feasibility measures included enrollment and attrition rates, and compliance to recommendations at 12-months between groups. Acceptability was evaluated by participants' report of benefit from interventions. Secondary analyses included evaluation of symptom changes (cognition, fatigue, depression) from baseline to 12-months.

Results: Of 49 women meeting screening measure thresholds, 44 were randomized to treatment groups (attrition: standard-care = 8, experimental = 6), and 30 completed the study (standard-care = 14, experimental = 16). Recommendation adherence rates did not significantly differ between standard-care and experimental groups (31% vs 49%). However, 16/16 experimental participants at least partially completed given recommendations as compared to 8/14 in the standard-care group. Participants across groups (97%) reported benefit from participation. No significant differences in symptom outcomes between groups at 12-months.

Conclusion: In-person feedback and care-coordinator calls were feasible and acceptable additions to a neuropsychological intervention and may serve to increase recommendation adherence. Given high drop-out rate, particularly prior to testing, future research may explore avenues to improve completion rates and maximize benefits of such interventions.

Title: Energy management education and occupation-related outcomes in adults with chronic diseases: A scoping review.

Citation: British Journal of Occupational Therapy; Sep 2020; vol. 83 (no. 9); p. 561-575

Author(s): Farragher ; Jassal, Sarbjit V; McEwen, Sara; Polatajko, Helene J

Introduction: Fatigue is a pervasive symptom of chronic disease that often interferes with occupational performance. Our objective was to describe what is known about energy management education and occupation-related outcomes in adults with chronic diseases.

Methods: Seven electronic databases were searched for relevant literature published before August 2019. Eligible articles were full-text, available in English, and studied energy management education in adults with a chronic disease. The first author assessed article eligibility with validation from a second reviewer, extracted characteristics of included studies, and described them using descriptive statistics. A narrative synthesis of findings was conducted for each chronic disease population.

Results: Forty-four studies addressed eight different chronic disease populations. The most common program delivery format was face-to-face in a group setting (42%), 39% of programs were informed by a learning theory, and their median cumulative length was 8 hours. Positive outcomes were associated with a specific, group-based energy management program in people with multiple sclerosis. The evidence on other energy management programs and in other chronic disease populations was more limited and inconclusive.

Conclusions: Further research is needed to understand the impact of energy management education in chronic disease populations beyond multiple sclerosis, and its impact on occupational performance.

Title: Determining Safe Participation in Aerobic Exercise Early After Stroke Through a Graded Submaximal Exercise Test.

Citation: Physical Therapy; Sep 2020; vol. 100 (no. 9); p. 1434-1443

Author(s): Inness ; Aqui, Anthony; Foster, Evan; Fraser, Julia; Danells, Cynthia J; Biasin, Louis; Brunton, Karen; Howe, Jo-Anne; Poon, Vivien; Tang, Ada; Mansfield, Avril; Marzolini, Susan; Oh, Paul; Bayley, Mark

Objective: The benefits of aerobic exercise early after stroke are well known, but concerns about cardiovascular risk are a barrier to clinical implementation. Symptom-limited exercise testing with electrocardiography (ECG) is recommended but not always feasible. The purpose of this study was to determine the frequency of and corresponding exercise intensities at which ECG abnormalities occurred during submaximal exercise testing that would limit safe exercise prescription beyond those intensities.

Methods: This study was a retrospective analysis of ECGs from 195 patients who completed submaximal exercise testing during stroke rehabilitation. A graded submaximal exercise test was conducted with a 5- or 12-lead ECG and was terminated on the basis of predetermined endpoint criteria (heart rate, perceived exertion, signs, or symptoms). ECGs were retrospectively reviewed for exercise-induced abnormalities and their associated heart rates.

Results: The peak heart rate achieved was 65.4% (SD = 10.5%) of the predicted maximum heart rate or 29.1% (SD = 15.5%) of the heart rate reserve (adjusted for beta-blocker medications). The test was terminated more often because of perceived exertion (93/195) than because of heart rate limits (60/195). Four patients (2.1%) exhibited exercise-induced horizontal or downsloping ST segment depression of ≥1 mm. Except for 1 patient, the heart rate at test termination was comparable with the heart rate associated with the onset of the ECG abnormality.

Conclusion: A graded submaximal exercise test without ECG but with symptom monitoring and conservative heart rate and perceived exertion endpoints may facilitate safe exercise intensities early after stroke. Symptom-limited exercise testing with ECG is still recommended when progressing to higher intensity exercise. Impact Concerns about cardiovascular risk are a barrier to physical therapists implementing aerobic exercise in stroke rehabilitation. This study showed that, in the absence of access to exercise testing with ECG, submaximal testing with conservative heart rate and perceived exertion endpoints and symptom monitoring can support physical therapists in the safe prescription of aerobic exercise early after stroke.

Lay Summary: It is recommended that people with stroke participate in aerobic exercise as early as possible during their rehabilitation. A submaximal exercise test with monitoring of heart rate, perceived exertion, blood pressure, and symptoms can support physical therapists in safely prescribing that exercise.

Title: Exploring nursing and allied health perspectives of quality oral care after stroke: A qualitative study.

Citation: European Journal of Cardiovascular Nursing; Aug 2020; vol. 19 (no. 6); p. 505-512

Author(s): Ferguson ; George, Ajesh; Villarosa, Amy R; Kong, Ariana C; Bhole, Sameer; Ajwani, Shilpi

Background: Maintaining good oral health remains a challenge among those hospitalised after stroke. Stroke nurses and allied health clinicians have a potential role in providing oral care, but no studies in Australia to date have explored their perceptions and needs.

Aims: To explore the perspectives of nursing and allied health stroke clinicians regarding oral care for stroke patients across acute care and stroke rehabilitation settings.

Methods: This study followed an exploratory qualitative design, using a constructivist approach. Participants from two metropolitan public hospitals were purposively recruited to participate in focus groups. Data was thematically analysed.

Results: Twenty-one clinicians participated. Clinicians' knowledge and practices relating to oral healthcare for stroke patients were inadequate. Most staff felt they did not have adequate knowledge, resources and training to administer oral care in this setting and proposed enhancing education of stroke clinicians, patients and informal caregivers, as well as improving quality point of care resources. There was overall support for the integrated dental care after stroke model of care.

Discussion: This study revealed many gaps in current care and highlighted areas for improvement. Patients and their caregivers needed to be actively engaged as partners to improve oral healthcare within acute and rehabilitation stroke settings.

Conclusion: This study provided insight into nurses' and allied health stroke clinicians' current knowledge and practices of oral care in various stroke settings. The findings from this study will inform development of a model of care to train stroke nurses in providing oral care.

Title: Coping and Health-Related Quality of Life after Closed Head Injury.

Citation: Clinical neurology and neurosurgery; Sep 2020 ; p. 106194

Author(s): Hütter, Bernd-Otto; Huffmann, Beate; Gilsbach, Joachim-Michael

Objectives: In the present study the relationship between illness coping and health-related quality of life (HRQOL) in patients after closed head injury (CHI) was analyzed. Furthermore, the study was performed to assess the relative significance of clinical, neuroradiological, psychosocial variables and coping activities after CHI. We hypothesized that the effect of a depressive coping style is significantly stronger than that of all other variables considered.

Patients and Methods: This cross-sectional study took place at the outpatient clinic of the Department of Neurosurgery of the University of Technology (RWTH) Aachen, Germany. Of a total of 98 patients 1-2 years after CHI living in the catchment area of the university hospital fulfilling the inclusion criteria 63 individuals (mean age 40.6 years; 46 males) with a mean of 17.6 months after CHI took part in the study. HRQOL was assessed by means of the Aachen Life Quality Questionnaire (ALQI) and illness coping by the Freiburger Fragebogen zur Krankheitsverarbeitung (FKV).

Results: The patients complained most frequently of impairments in their HRQOL in the areas of free-time activities and social contact. The most intensely used coping activities were distraction and self-management, active problem-oriented coping and religion and

looking for sense. Regression analyses revealed exclusively the depressive coping style as the most important predictor of subjectively impaired HRQOL explaining up to 44% of the variance. There was only a modest relationship between patient age and active problem-oriented coping ($r = .43$; $p < .01$). The degree of education was negatively associated ($r = -.35$; $p < .01$) with depressive coping. A moderate severity of the injury led to significantly more intense activities in the area of minimizing and wishful thinking as compared to a mild CHI ($p < .05$).

Conclusions: In patients after CHI rehabilitation measures should focus to the HRQOL areas of free-time activities and social contact. Specific psychological interventions are called for in order to tackle the obviously dysfunctional depressive coping style.

Title: Experiences of augmented arm rehabilitation including supported self-management after stroke: a qualitative investigation.

Citation: Clinical rehabilitation; Sep 2020 ; p. 269215520956388

Author(s): Schnabel, Stefanie; van Wijck, Frederike; Bain, Brenda; Barber, Mark; Dall, Philippa; Fleming, Alexander; Kerr, Andrew; Langhorne, Peter; McConnachie, Alex; Molloy, Kathleen; Stanley, Bethany; Young, Heather Jane; Kidd, Lisa

Objective: To explore the experiences of stroke survivors and their carers of augmented arm rehabilitation including supported self-management in terms of its acceptability, appropriateness and relevance.
Design: A qualitative design, nested within a larger, multi-centre randomized controlled feasibility trial that compared augmented arm rehabilitation starting at three or nine weeks after stroke, with usual care. Semi-structured interviews were conducted with participants in both augmented arm rehabilitation groups. Normalization Process Theory was used to inform the topic guide and map the findings. Framework analysis was applied.
Setting: Interviews were conducted in stroke survivors' homes, at Glasgow Caledonian University and in hospital.
Participants: 17 stroke survivors and five carers were interviewed after completion of augmented arm rehabilitation.
Intervention: Evidence-based augmented arm rehabilitation (27 additional hours over six weeks), including therapist-led sessions and supported self-management.
Results: Three main themes were identified: (1) acceptability of the intervention (2) supported self-management and (3) coping with the intervention. All stroke survivors coped well with the intensity of the augmented arm rehabilitation programme. The majority of stroke survivors engaged in supported self-management and implemented activities into their daily routine. However, the findings suggest that some stroke survivors (male >70 years) had difficulties with self-management, needing a higher level of support.
Conclusion: Augmented arm rehabilitation commencing within nine weeks post stroke was reported to be well tolerated. The findings suggested that supported self-management seemed acceptable and appropriate to those who saw the relevance of the rehabilitation activities for their daily lives, and embedded them into their daily routines

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Title: Acceptability of a Mobile Phone-Based Augmented Reality Game for Rehabilitation of Patients With Upper Limb Deficits from Stroke: Case Study.

Citation: JMIR rehabilitation and assistive technologies; Sep 2020; vol. 7 (no. 2); p. e17822

Author(s): LaPiana, Nina; Duong, Alvin; Lee, Alex; Alschitz, Leon; Silva, Rafael M L; Early, Jody; Bunnell, Aaron; Mourad, Pierre

Background: Upper limb functional deficits are common after stroke and result from motor weakness, ataxia, spasticity, spatial neglect, and poor stamina. Past studies employing a range of commercial gaming systems to deliver rehabilitation to stroke patients provided short-term efficacy but have not yet demonstrated whether or not those games are acceptable, that is, motivational, comfortable, and engaging, which are all necessary for potential adoption and use by patients.

Objective: The goal of the study was to assess the acceptability of a smartphone-based augmented reality game as a means of delivering stroke rehabilitation for patients with upper limb motor function loss.

Methods: Patients aged 50 to 70 years, all of whom experienced motor deficits after acute ischemic stroke, participated in 3 optional therapy sessions using augmented reality therapeutic gaming over the course of 1 week, targeting deficits in upper extremity strength and range of motion. After completion of the game, we administered a 16-item questionnaire to the patients to assess the game's acceptability; 8 questions were answered by rating on a scale from 1 (very negative experience) to 5 (very positive experience); 8 questions were qualitative.

Results: Patients (n=5) completed a total of 23 out of 45 scheduled augmented reality game sessions, with patient fatigue as the primary factor for uncompleted sessions. Each patient consented to 9 potential game sessions and completed a mean of 4.6 (SE 1.3) games. Of the 5 patients, 4 (80%) completed the questionnaire at the end of their final gaming session. Of note, patients were motivated to continue to the end of a given gaming session (mean 4.25, 95% CI 3.31-5.19), to try other game-based therapies (mean 3.75, 95% CI 2.81-4.69), to do another session (mean 3.50, 95% CI 2.93-4.07), and to perform other daily rehabilitation exercises (mean 3.25, 95% CI 2.76-3.74). In addition, participants gave mean scores of 4.00 (95% CI 2.87-5.13) for overall experience; 4.25 (95% CI 3.31-5.19) for comfort; 3.25 (95% CI 2.31-4.19) for finding the study fun, enjoyable, and engaging; and 3.50 (95% CI 2.52-4.48) for believing the technology could help them reach their rehabilitation goals. For each of the 4 patients, their reported scores were statistically significantly higher than those generated by a random sampling of values (patient 1: P=.04; patient 2: P=.04; patient 4: P=.004; patient 5: P=.04).

Conclusions: Based on the questionnaire scores, the patients with upper limb motor deficits following stroke who participated in our case study found our augmented reality game motivating, comfortable, engaging, and tolerable. Improvements in augmented reality technology motivated by this case study may one day allow patients to work with improved versions of this therapy independently in their own home. We therefore anticipate that smartphone-based augmented reality gaming systems may eventually provide useful postdischarge self-treatment as a supplement to professional therapy for patients with upper limb deficiencies from stroke.

Title: Nordic walking for people with relapsing-remittent multiple sclerosis: A case series study.

Citation: Multiple sclerosis and related disorders; Sep 2020; vol. 46 ; p. 102479

Author(s): Martínez-Lemos, Iván; Martínez-Aldao, Daniel; Seijo-Martínez, Manuel; Ayán, Carlos

Background: Patients with multiple sclerosis (MS) show fatigue, impaired gait and decreased functional mobility, which lead to a low quality of life (QoL). Low-cost and easy to perform exercise modalities having a positive impact on the aforementioned symptoms are needed. The performance of Nordic Walking (NW) could be a useful rehabilitation strategy but, to our knowledge, no study has been published in this regard as yet. This case series

study aims at providing information regarding the usefulness and impact of a three-month NW program on self-perceived fatigue, functional mobility, physical fitness and QoL on a group of people with mild relapsing-remitting MS.

Methods: A case series study with multiple assessments was performed. Three data collection points at 1-week intervals for three weeks were done at baseline. The intervention consisted of a 12-weeks NW program with a total of four measurement occasions, one every three weeks. The Fatigue Severity Scale (FSS), the Timed up and Go test (TUG), the 6-Minute Walk test (6MWT) and the Multiple Sclerosis Impact Scale (MSIS-29), were used to assess the outcomes of the program on the participants' self-perceived fatigue, functional mobility, physical fitness and QoL, respectively.

Results: Of the 14 participants who volunteered for the study, five completed at least 80% of the planned sessions and were included in the final analysis. The intervention did not have a clinical significant impact on the participants' fatigue while its impact on their QoL showed mixed results. Positive trends were found for all the participants in their functional mobility and physical fitness. Regarding functional mobility, clinically important changes were observed in three participants. None of the observed changes in physical fitness achieved clinical significance.

Conclusion: A 12-week Nordic walking program did not appear to be particularly feasible and had little impact on the functional levels on a group of people with mild relapsing-remitting MS. Given that beneficial effects were seen in some participants, and taken into account the low adherence rate observed, future studies should explore the feasibility of NW programs performed under different environmental conditions (i.e. outdoors) and including motivational strategies aimed at increasing participation.

Title: The Impact of Robotic Rehabilitation on the Motor System in Neurological Diseases. A Multimodal Neurophysiological Approach.

Source: International journal of environmental research and public health; Sep 2020; vol. 17 (no. 18)

Author(s): Major, Zoltán Zsigmond; Vaida, Calin; Major, Kinga Andrea; Tucan, Paul; Simori, Gábor; Banica, Alexandru; Brusturean, Emanuela; Burz, Alin; Craciunas, Raul; Ulinici, Ionut; Carbone, Giuseppe; Gherman, Bogdan; Birlescu, Iosif; Pisla, Doina

Abstract: Motor disability is a key feature of many neurological diseases, influencing the social roles of affected patients and their ability to perform daily life activities. Current rehabilitation capacities are overwhelmed by the age-related increase of motor dysfunctions seen, for example, in stroke, extrapyramidal or neuromuscular diseases. As the patient to rehabilitation personnel ration increases, robotic solutions might establish the possibility to rapidly satisfy the increasing demand for rehabilitation. This paper presents an inaugural exploratory study which investigates the interchangeability of a novel experimental robotic rehabilitation device system with classical physical therapy, using a multimodal neurophysiological assessment of the motor system-quantitative electroencephalogram (EEG), motor conduction times and turn/amplitude analysis. Preliminary results show no significant difference between the two methods; however, a significant effect of the therapy was found on different pathologies (beneficial for vascular and extrapyramidal, or limited, and only on preventing reduction of joint movements in neuromuscular).

Neurotechnologies as tools for cognitive rehabilitation in stroke patients.

Citation: Expert review of neurotherapeutics; Sep 2020

Author(s): Draaisma, Laurijn R; Wessel, Maximilian J; Hummel, Friedhelm C

Introduction: Cognitive impairments are one of the most common remaining symptoms after a stroke. The use of neurotechnologies to enhance cognitive performance is a rapidly emerging field with encouraging results. Areas covered Here, the authors empirically review the respective literature and critically discuss the technologies that are currently most often used for cognitive enhancement in stroke patients, which are computerized cognitive training, virtual reality, non-invasive brain stimulation and brain-computer interfaces. The authors describe their advantages/disadvantages and the challenges and limitations to overcome.

Expert opinion: Although the current results are promising, more research is needed to be able to make conclusive statements and translate these approaches successfully in daily clinical life. Multidiscipline collaborations could aid to improve current neurotechnologies and provide guidelines for future implementations.

Title: Better balance: a randomised controlled trial of oculomotor and gaze stability exercises to reduce risk of falling after stroke.

Citation: Clinical rehabilitation; Sep 2020 ; p. 269215520956338

Author(s): Correia, Anabela; Pimenta, Carla; Alves, Marta; Virella, Daniel

Objective: To assess the effect of a domiciliary program of oculomotor and gaze stability exercises on the incidence of falls and risk of fall in stroke survivors.

Design: Two-arm, non-blinded parallel randomized controlled trial.

Subjects: Stroke survivors older than 60 years, with positive Romberg test and autonomous gait after the stroke.

Setting: Physiotherapy outpatient clinic of a tertiary care hospital.

Interventions: Every participant accomplished the current rehabilitation program; the intervention group was randomly allocated into an additional three weeks intervention with a domiciliary program of oculomotor and gaze stability exercises.

Main Measures: Primary outcome was the incidence of falls through the three weeks after the intervention started; in addition, the variation of the estimated risk for falling assessed by both Berg Balance Scale (four points) and Timed Up and Go Test (four seconds) was the secondary outcome.

Results: 79 patients were recruited and 68 completed the protocol (control group 35; intervention group 33). During the follow up, falls were registered in 4/35 participants in the control group and no event occurred in the intervention group (P = 0.064). The estimated risk for falling decreased in 11/35 control group participants and in 28/33 intervention group participants (RR 0.37; 95%CI 0.22-0.62; P < 0.001).

Conclusion: After three weeks of a domiciliary program of oculomotor and gaze stability exercises, the estimated risk of falling significantly diminished and no falls occurred among the intervention group. These findings encourage further exploration of this promising intervention.

Title: The effects of lower extremity cross-training on gait and balance in stroke patients: a double-blinded randomised controlled trial.

Citation: European journal of physical and rehabilitation medicine; Sep 2020

Author(s): Park, Chanhyun; Son, Hohee; Yeo, Bokgi

Background: Cross-training is an indirect intervention to promote muscle activity on the affected side by applying resistance exercise to stronger parts of the body. Indirect interventions are useful for treating patients who have difficulty with direct interventions. Previous studies have focused on measuring increased muscle strength and muscle activity in healthy individuals.

Aim: This study aimed to investigate the effects of cross-training on gait and balance in hemiplegic patients when applied to the affected and unaffected lower extremities.

Design: Double-blinded randomised controlled trial.

Setting: In-patients attending the rehabilitation treatment room of a single centre.

Population: Fifty-two stroke patients were randomly allocated to a control group (n=19), affected side cross-training group (n=15), and unaffected side cross-training group (n=18).

Methods: Patients were administered general neurological physiotherapy for 30 mins, twice daily, 5 days/week for 4 weeks. The two intervention groups underwent 30 mins of cross-training instead of general neurological physiotherapy once daily, 3 days/week for 4 weeks (post-intervention). For data analysis, one-way ANOVA for between-group comparisons and paired t-tests were performed for within-group comparisons between pre- and post-intervention groups (significance level of .05).

Results: In the Timed Up and Go test (TUG), comparing pre- and post-intervention, the control group showed no significant change (p>.05), while the affected side and unaffected side cross-training groups showed significant improvements in function (p.05), while the affected side and unaffected side cross-training groups showed significant increases in speed (p<.05). In balance testing, the limits of stability showed a significantly increase in all three groups (p.05).

Conclusions: Gait and balance improved in hemiplegic stroke patients who participated in cross-training, regardless of the intervention applied to the affected or unaffected side.

CLINICAL REHABILITATION IMPACT: In clinical settings, for patients who experience difficulties with direct interventions on the affected side, we propose indirect interventions to improve gait and balance.

Title: Gait Rehabilitation After Stroke: Should We Re-Evaluate Our Practice?

Citation: Stroke; Sep 2020 ; p. STROKEAHA120032041

Author(s): Cirstea, Carmen M

Title: Effect of rehabilitation physiotherapy intervention on life quality of patients with Squelae of stroke.

Citation: Minerva medica; Sep 2020

Author(s): Yang, Changwei; Zhao, Dai; Ba, Guangling

Title: Can we prevent poststroke cognitive impairment? An umbrella review of risk factors and treatments.

Citation: BMJ open; Sep 2020; vol. 10 (no. 9); p. e037982

Author(s): Obaid, Majed; Douiri, Abdel; Flach, Clare; Prasad, Vibhore; Marshall, Iain

Objectives: Cognitive impairment poststroke is progressive. We aimed to synthesise the existing evidence evaluating risk factors and the effects of treatments to prevent/improve cognitive function in patients who had a stroke with cognitive impairment.

Design: Umbrella review.

Data Source: Medline, PsycINFO, EMBASE, Cochrane and PROSPERO were searched from inception until 11 June 2019.

Eligibility Criteria: Published systematic review (SR) that incorporated randomised controlled trials to investigate an intervention to improve poststroke cognitive impairment, or SR of longitudinal observational studies that evaluated the risk factors of this condition. No restrictions were applied.

Data Extraction and Synthesis: From each eligible study, details were recorded by one reviewer in a validated form. Grading of Recommendations, Assessment, Development and Evaluations criteria were used to assess our certainty level of each outcome, and A Measurement Tool to Assess Systematic Reviews 2 to assess quality.

Results: Altogether, 3464 abstracts were retrieved, 135 full texts were evaluated and 22 SRs were included in the final analysis. From four SRs of observational studies, we found 19 significant associations with postulated risk factors, and those which we determined to be confident about were: atrial fibrillation (3 SRs, 25 original studies); relative risk 3.01 (1.96-4.61), ORs 2.4 (1.7-3.5) and 2.0 (1.4-2.8), leukoaraiosis, multiple and recurrent strokes, ORs 2.5 (1.9-3.4), 2.5 (1.9-3.1) and 2.3 (1.5-3.5), respectively. From 18 SRs of interventional trials, we found that interventions including physical activity or cognitive rehabilitation were enhancing cognitive function, while the certainty of the other interventions was rated low, due to limited methodological quality.

Conclusions: This review represents common risk factors related to poststroke cognitive impairment, in particular atrial fibrillation, and points to different interventions that warrant attention in the development of treatment strategies. Physical activity and cognitive rehabilitation interventions showed evidence of enhancing cognitive function; however, we could not recommend a change in practice yet, due to lack of strong evidence.

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Sources Used:

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

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