

PROCEEDINGS OF SRR

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AN EVALUATION OF THE USE OF MICROSWITCH CONTROLLED COMPUTER GAMES IN IMPROVING CHOICE REACTION TIME FOR ADULTS WITH INTELLECTUAL DISABILITIES

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Background:

The inability of people with intellectual disabilities to make choices may result from their lack of opportunities to practice this skill. Interactive software may provide these opportunities and software that requires a timed response may reduce choice reaction time. The study aimed to investigate whether adults with intellectual disabilities who participate in repeated sessions playing a microswitch controlled computer game would show a significant decrease between baseline and post intervention choice reaction time (CRT).

Method

16 people attending an adult day care centre underwent familiarisation sessions with a six option choice reaction timer before undergoing a test of their baseline (CRT). They were then randomly assigned to one of two groups matched on ability, age, sex and ethnicity. The intervention group then had 8, twice-weekly sessions playing a microswitch controlled computer game which demanded responses within a limited time period while the control group spent the same amount of time playing a game with no time limits on responses. Finally all participants repeated the test of CRT.

Results

The intervention group showed a significant ($p < 0.003$) reduction in their CRT from baseline while the control group did not.

Discussion

Future research should investigate whether exposure to computer games influences more ecologically valid measures of cognition.

Conclusion

Playing a computer game that requires responses to be made within a limited time period can reduce CRT measured by standard laboratory equipment. Future research should investigate whether exposure to computer games influences more ecologically valid measures of cognition.

PREDICTORS OF SUCCESS OF TOTAL HIP REPLACEMENT IN PATIENTS WITH OSTEOARTHRITIS

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Background:

Total Hip Replacement (THR) is routinely conducted to relieve pain and loss of function in hip osteoarthritis. The success of THR is variable; it is not possible to explain the variance in outcome solely with demographic and medical factors. This study assessed whether psychological factors were partially responsible for outcome of THR.

Method

Pre-operatively, patients completed NEO-Five Factor Inventory, Multi-dimensional Health Locus of Control questionnaire, and Coping Strategies Questionnaire. Pain and function were assessed at baseline and 3-months post-operatively using the Oxford Hip Score (OHS) and the Self-Report Harris Hip Score (HHS). For analytic purposes the OHS and HHS were split

into components representing pain and function. Forward stepwise multiple regression analyses were conducted to identify psychological, medical and demographic factors which predicted outcome of THR at 3-months post-surgery.

Results

3-month data was recorded for 82 patients. 31% of the variance in the scores for HHS functional component was explained by pre-operative functional level and Catastrophizing. Pre-operative function was positively associated whilst Catastrophizing was negatively associated. Similar findings were recorded for OHS functional component. Pre-operative pain was a significant predictor of OHS pain and HHS pain.

Discussion

Levels of pre-operative pain and function are important in predicting levels of pain and function in patients 3-months post-THR. Additionally, Catastrophizing, a cognitive coping strategy associated with negative thoughts about the future, appears to be an important predictor of poorer post-operative functioning.

Conclusion

Pre-operative function and pain and tendency to Catastrophize are predictors of success of THR.

AN EXPLORATORY RANDOMISED CONTROLLED TRIAL OF EXTRA PRACTICE IN SIT TO STAND (STS) GIVEN TO STROKE PATIENTS IN HOSPITAL

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Background:

Regaining the ability to stand up after a stroke is an important prerequisite for independence in self-care. Despite this, patients are offered very little practice in standing up in hospital. The purpose of the study was to evaluate the effects of supplementary supervised practice on performance of sit to stand (STS).

Method

Patients with stroke were randomized into either STS practice (n=9), or a control group (n=9) that received practice in upper limb tasks. Five 30-minute practice sessions, supervised by a physiotherapy assistant, were provided over one week. Movement time, percentage body weight taken through the affected leg and the number of STSs performed in one minute were measured at baseline and one week later. Frequency of STS during the daytime was monitored.

Results

At baseline STS performance characteristics were similar for the groups. Mean (SD) daily frequency of STS was 18.6 (8.4), control group, 66 (17.8), experimental group. After intervention there were no differences in movement time or the number of STSs performed in one minute between groups. However there was a clinically significant mean difference of 10% of body weight taken through the affected leg after treatment (ANOVA interaction group*time: $F_{1,16} = 11.1$, $p = 0.004$). The control group reduced weight through the affected leg, while the training group increased weight.

Discussion

The extra practice resulted in a mean increase of 50 stands per day and led to more symmetrical weight bearing in STS.

Conclusion

Just one week of extra practice has a beneficial effect on learning to stand up.

IDENTIFYING TREATMENT PROCESS IN THE CLINICAL APPLICATION OF ELECTRONIC MUSIC TECHNOLOGIES WITH COMPLEX DISABILITIES.

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Background:

Rehabilitation for complex disabilities requires increasingly the use of electronic assistive technologies to meet patient needs. We aimed to define the treatment process when

electronic music technologies triggered by assistive devices are used with complex clients in therapy.

Method

Six music therapists experienced in using electronic technologies and with 1.5-22 years experience were recruited through the professional body. Participants worked with different complex populations providing diverse perspectives. In individual semi-structured interviews participants described the use of technologies with specific reference to a range of clinical cases. Interview transcripts were analysed independently by two interdisciplinary investigators using open coding procedures from Grounded Theory. Analyses were triangulated and member-checked at second interviews checking for negative cases and novel material.

Results

A five-stage process emerged when therapists use electronic music technologies with complex clients. Underpinning the process are resources such as access to equipment and the skills and knowledge to use it. Assessment of the client's movement patterns considers the range and resolution of movements to determine input devices with appropriate characteristics. Next, treatment planning considers the potential musical output. Developing interactive intervention then depends on establishing the client's awareness of cause and effect.

Discussion

Matching input device to movement and establishing cause and effect were key steps in ensuring successful outcomes with complex cases. These aspects involve skills which are outside the current scope of practice for music therapists indicating training development needed.

Conclusion

Qualitative exploration revealed clinical practices for which there are no existing guidelines. Further research will test the proposed process model.

SENSORY IMPAIRMENT AND RECOVERY AFTER STROKE

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Background:

Sensory impairment is common after stroke but there is limited information on recovery. The purpose of this study was to investigate the extent of recovery and the factors that are related to sensory impairment and recovery in stroke patients.

Method

Patients with a first stroke were recruited on admission to two rehabilitation units. The NSA, which measures tactile sensations, proprioception and stereognostic ability, was administered on admission and at two, four and six months after stroke.

Results

Seventy patients (mean 71 years (SD=10.00), 36 men) were recruited over fifteen months. Sensory impairment was common and significantly related to stroke severity. Stereognosis was the most frequently and severely impaired sensation.

There was significant recovery at six months post-stroke for upper limb tactile sensations ($f=3.50$, $p=0.016$), stereognosis ($f=3.25$, $p=0.023$) and proprioception ($f=3.44$, $p=0.018$). Lower limb tactile sensations did not show significant recovery ($f=0.64$, $p=0.591$), and there was no consistent recovery pattern in individuals.

Stroke severity, initial sensory impairment and activities of daily living ability were significantly related to sensory recovery, but only accounted for 46-71% of the variance.

Discussion

Sensory impairment reflected stroke severity, with those patients who had less severe strokes more likely to show improvement in sensation compared with those who had a more severe stroke. However low variance indicated other factors were involved.

Conclusion

Sensory impairment in the lower limb did not significantly recover. Sensory outcome could not be accurately predicted, suggesting other potentially treatable factors such as cognitive and perceptual ability were involved.

VALIDATION OF SCREENING MEASURES FOR ASSESSING MOOD IN STROKE PATIENTS

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Background:

There are few validated measures for assessing mood in stroke patients and even fewer suitable for stroke patients with communication problems. The aim of this study was to compare the Stroke Aphasic Depression Questionnaire Hospital version (SADQ-H), Signs of Depression Scale (SODS), Visual Analog Mood Scales (VAMS) and Visual Analogue Self-Esteem Scale (VASES) in screening for mood problems after stroke.

Method

One hundred stroke patients (51 men, median age 71.50 years) completed the VAMS and VASES in hospital at one month post-stroke. A nurse completed the SADQ-H and SODS in relation to the patient. Those without communication problems also completed the Hospital Anxiety and Depression Scale (HADS).

Results

The internal consistency of the SADQ-H ($\alpha=.84$), VAMS ($\alpha=.71$) and VASES ($\alpha=.83$) was high but for the SODS was low ($\alpha=.53$). The HADS depression scale significantly correlated with all scales ($r=.34-.55$, $p<.004$ - $p<.001$). Only the SADQ-H 10-item version, VAMS and VASES significantly correlated with HADS anxiety ($r=.40-.52$, $p<.005$ - $p<.001$). Appropriate cut-offs were identified for the SADQ-H (17/18), SADQ-H10 (5/6) and VAMS 'sad' item (22/23) in relation to HADS depression. No appropriate cut-offs were identified in comparison to HADS anxiety.

Discussion

The SADQ-H, SADQ-H10 and SODS were appropriate for screening for possible depression after stroke but not anxiety. The SADQ-H10 had higher internal consistency, sensitivity and specificity than the SODS and is shorter than the SADQ-H, therefore it is recommended for screening. The VASES and VAMS are more suitable for assessing the severity of low mood

Conclusion

Further validation is required with stroke patients who have low mood.

A SYSTEMATIC EVALUATION OF THE ADAPTATION OF DEPRESSION DIAGNOSTIC METHODS FOR STROKE SURVIVORS WHO HAVE APHASIA

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Background:

One in three stroke survivors has aphasia (language comprehension and expression impairment). Depression is conventionally diagnosed on the basis of self-report in interviews or questionnaire responses. We aimed to systematically determine how depression diagnostic methods have been adapted to enable people with aphasia to participate in stroke studies.

Method

We first systematically reviewed published depression following stroke studies (to December 2005) and identified that 60 of 129 studies had included individuals with aphasia (21 included all available individuals with aphasia, 39 included only those with mild/moderate aphasia). From these studies, we identified the main depression diagnostic method used and any reported adaptations applied to the diagnosis of depression in people with aphasia.

Results

Main depression diagnostic methods reported included structured clinical interviews, observer rated scales and self-report questionnaires. Less than half of studies (25/60; 42%) reported how the diagnosis of depression was achieved amongst participants with aphasia. These

reported adaptive methods included: proxy ratings by carers, nurses and other rehabilitation staff, modifying questions to require simple responses and visual analogue scales. Convincing evidence of the validity or reliability of these adaptations was not provided by reviewed studies.

Discussion

The reporting of depression diagnostic adaptations in the literature has been infrequent. A suitably comprehensive, valid and reliable method of depression diagnosis for patients with aphasia is not yet available to practicing clinicians or researchers.

Conclusion

There is a need for depression and language experts to develop a depression diagnostic tool for individuals who have aphasia.

A STUDY TO INVESTIGATE THE EFFECTS OF A SHORT, EXERCISE AND EDUCATION PROGRAMME ON EXERCISE SELF-EFFICACY AND LEVELS OF ACTIVITY IN ADULTS WITH ACQUIRED NEUROLOGICAL PATHOLOGIES.

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Background:

Objectives:

To evaluate the effects of a 4 week exercise and education programme in relation to psychological constructs

Method

Randomised, single-blind controlled trial. Participants include adults with monophasic, neurological pathology, recently discharged from hospital.

Treatment group = 4 week, exercise and education programme and standard follow-up care.

Control group = standard follow-up care.

Measurements at baseline and 6 weeks, including exercise self-efficacy scale, human activity profile, short form 36 (quality of life), UWIST checklist and hospital anxiety and depression scale (mood).

Results

44 participants completed the questionnaire measures at 6 weeks post-baseline.

Improvements in exercise self-efficacy were found in the treatment group but not the control group and this difference was found to be both statistically and clinically significant ($p=0.001$).

Increases in activity levels were noted in both the treatment and control groups but no significant, between group differences were highlighted. Quality of Life dimensions also showed small improvements in both groups but again there were no significant between group differences. The 'physical health' dimensions and the 'general health' dimension exhibited a trend towards more positive change following the intervention but these differences were not statistically relevant. There were no improvements in mood seen within either study group.

Discussion

This was an exploratory study, therefore replication with larger numbers and in alternative environments is recommended

Conclusion

The programme resulted in significant self-efficacy gains and exhibited positive influence over general and physical health dimensions related to quality of life. The study was unable to provide evidence of benefit to activity levels and mood.

"IT WAS JUST LIKE STARTING A NEW JOB ALL OVER AGAIN." PERSONAL EXPERIENCES OF RETURNING TO WORK FOLLOWING A MILD OR MODERATE HEAD INJURY

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Background:

About 63% of all Head Injuries(HI) occur in teenagers and adults of working age. Individuals with mild or moderate HI often have unrecognised problems affecting return to work. Previous studies have identified factors that predict return to work, however information about individual experiences of returning to work after HI is limited.

Method

Qualitative interviews were used to explore the work related expectations and experiences of workers who had sustained mild to moderate HI. Thirty three one-to-one interviews were conducted. A sampling frame was used to obtain a spread of participants by age, gender and work type. Full typed transcripts were produced for thematic analysis.

Results

Twenty three participants had returned to work at the time of the interview (4-6 months post injury), 8 were either still off work or had lost their job. Key issues for the participants were the invisibility of their injury and continuing symptoms affecting their ability to do their job, barriers to return to work and lack of advice and guidance on the best time to resume working.

Discussion

Participants found return to work support systems to be poorly coordinated and managed. Information and advice on return to work, coping strategies, and emotional support were lacking.

Conclusion

It is important to raise the awareness of doctors and other health care professionals in order to anticipate the vocational rehabilitation needs of patients who have sustained mild to moderate HI. Such patients may require additional coordinated interventions to ensure a successful and most importantly a sustained return to work.

IDENTIFICATION OF MOVEMENT VARIABLES THAT CAN PROVIDE KNOWLEDGE OF PERFORMANCE WITHIN AN UPPER LIMB REHABILITATION PROGRAMME

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Background:

Equipment that provides knowledge-of-results (KR) or knowledge-of-performance (KP) of therapist-defined "goal" movements could augment traditional therapy regimes. The first stage of the development of such equipment is to identify variables that could be used to provide feedback and quantifying changes post-stroke.

Method

Upper-limb function was assessed in eight post-stroke subjects (mean age=71, SD=6.84, duration since episode: 3-months to 5-years) and five age-matched healthy subjects (mean age=68.5, SD=6.4) using the DASH score. Reach and hand-to-mouth movements were quantified using a motion-capture system with a 13-marker protocol defining four upper-limb segments. Each subject repeated movements at a self-selected speed for a maximum of 30s. Whole-cycle, outward-reach-phase and inward-reach-phase were calculated.

Results

Post-stroke patients demonstrated:

Longer cycle durations with similar relative time in each phase

Reduced elbow flexion/extension range of motion (ROM)

Reduced shoulder ROM

Greater anterior/posterior trunk deviation

Reduced outward and inward wrist peak velocity

Reduced length-of-reach

Discussion

There is limited biomechanical data available on post-stroke upper limb function. We have identified 4 key variables that could be used to provide KP feedback during a rehabilitation programme: length-of-reach; movement phase durations; ROM of shoulder and elbow joints, and trunk deviation. There were significant variations in performance across the group, reflecting each individual's movement strategy and functional ability.

Conclusion

Movement tracking systems that can quantify changes in upper limb performance within a home environment are now available. We have identified output variables that provide KP. Given the variability of these data, variables will need to be specified within each individual's rehabilitation program.

USE OF SPEECH RECOGNITION TECHNOLOGY FOR PROVIDING FEEDBACK IN THE TREATMENT OF A SPEECH DISORDER

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Background:

Dysarthria is a neuromuscular speech disorder commonly acquired after stroke or head injury. In practice, speech and language therapists usually discontinue dysarthria treatment when a plateau in spontaneous recovery is reached. However, there is some evidence from single case studies that people with chronic dysarthria can improve their speech with intervention several years after the onset of the disorder. This study compares the effects of traditional treatment for a client with longstanding, stable dysarthria with computer supplemented treatment in which speech recognition technology is exploited to provide feedback.

Method

An ABAC design was used to compare six weeks of weekly traditional treatment with six weeks of computer treatment over six months for KD, a woman with severe, longstanding dysarthria who had been discharged from therapy due to lack of motivation.

Results

Significant improvements were made following computer treatment ($p < 0.05$) but not following traditional treatment. KD enjoyed using the computer program, and reported feeling more motivated to practise speech exercises, practising for longer periods of time than with traditional exercises.

Discussion

Although group results from 7 subjects showed equal effects of computer and traditional treatment, as an individual, KD made greater improvements with computer treatment with speech recognition generated feedback than with traditional techniques. The authors propose that the consistency of the feedback afforded by speech recognition technology provided the motivation required by KD to facilitate the process of relearning.

Conclusion

Speech recognition technology can provide consistent feedback on speech practice attempts which may motivate clients with dysarthria to improve their speech.