



International Bobath Instructors Training Association

An international association for adult neurological rehabilitation

IBITA

FROM THE EDUCATION COMMITTEE – AUGUST 2007

RECENT ARTICLES OF INTEREST

TI: Can quality of movement be measured? Rasch analysis and inter-rater reliability of the Motor Evaluation Scale for Upper Extremity in Stroke Patients (MESUPES).
AU: Van,-de,-Winckel,-A; Feys,-H; van,-der,-Knaap,-S; Messerli,-R; Baronti,-F; Lehmann,-R; Van,-Hemelrijk,-B; Pante,-F; Perfetti,-C; De,-Weerd,-W
SO: Clin-Rehabil. 2006 Oct; 20(10): 871-84.
IS: 0269-2155
PY: 2006
LA: English

ABSTRACT

OBJECTIVE: Clinical scales evaluating arm function after stroke are weak at detecting quality of movement. Therefore a new scale, the Motor Evaluation Scale for Upper Extremity in Stroke Patients (MESUPES), was developed, comprising 22 items pertaining to arm and hand performance. The scale was investigated for validity and unidimensionality using the Rasch measurement model, and for inter-rater reliability. **SETTING:** Twelve hospitals and rehabilitation centres in Belgium, Germany and Switzerland. **PATIENTS:** There were 396 patients (average age 63.38+/-12.89 years) in the Rasch study and 56 patients (average age 65.68+/-12.75 years) in the reliability study. **MAIN MEASURES:** The scale was examined on its fit to the Rasch model, thereby evaluating the scale's unidimensionality and validity. Differential item functioning was performed to test the stability of item hierarchy on several variables. Inter-rater reliability was examined with kappa values, weighted percentage agreement and intraclass correlation coefficients (ICC). **RESULTS:** Based on Rasch analysis, five items were removed. The MESUPES was divided in two tests: the MESUPES-arm test (8 items) and MESUPES-hand test (9 items). Both scales fitted the Rasch model. All items were stable among the subgroups of the sample. ICCs were 0.95 (95% confidence interval (CI) 0.91 -0.97) and 0.97 (95% CI 0.95-0.98) for the total score on arm and hand test respectively. The scale was also reliable at item level (weighted kappa 0.62 -0.79, weighted percentage agreement 85.71 -98.21). **CONCLUSION:** The MESUPES-arm and MESUPES-hand meet the statistical properties of reliability, validity and unidimensionality. Both tests provide a useful clinical and research tool to qualitatively evaluate arm and hand function during recovery after stroke.

DE: CEREBROVASCULAR-ACCIDENT; DISABILITY-EVALUATION; PSYCHOMOTOR-DISORDERS
MT: HUMANS-; REHABILITATION-; DIAGNOSIS-
XREC: ABSTRACT (AB)
UD: 200701
AN: 0092085

COMMENTS

This research set out to evaluate the psychometric properties of the Motor Evaluation Scale for Upper Extremity in Stroke Patients (MESUPES) which is a measure of quality of movement based on the work of Perfetti. Quality of movement is identified as being the most efficient and most similar to that performed by healthy subjects. The authors identify that there is still controversy as to whether patients need to adopt less efficient strategies as part of recovery. They believe that this is not the case and that qualitatively correct movements should be measured.

The principle component analysis of this research identified two dimensions to the scale i.e. hand and arm and called MESUPES-arm and MESUPES-hand. Two arm and three hand items were removed from the original scale as they showed misfit to the model. These included supination of the forearm, reaching for a bottle at 30cm high, abduction of the thumb, extension of the index finger and making a roof with the hand. The latter three were thought to recover quickly as they are most frequently used

in daily life and so adversely affected the subscales in the Rasch model. These are assumptions that are not supported by any evidence.

They also describe the scales as being organised in a hierarchical manner.

The MESUPES-arm component of the test assesses movements of the arm in supine and unsupported sitting (although they do say that a support can be given to patients who are unable to sit). They do not assess arm movements in standing. They assess the tonal level during movements, how much assistance is required, how much of the movement is performed normally and also whether the movement is performed slower than expected.

This research stresses the importance of using Rasch analysis to assess the psychometric properties of MESUPES. This is because parametric testing can be used through converting the ordinal data into interval data.

TI: Constraint-induced movement therapy in patients with stroke: a pilot study on effects of small group training and of extended mitt use.

AU: Brogardh,-C; Sjolund,-BH

SO: Clin-Rehabil. 2006 Mar; 20(3): 218-27.

IS: 0269-2155

PY: 2006

LA: English

ABSTRACT

OBJECTIVE: (1) To evaluate constraint-induced movement therapy for chronic stroke patients modified into group practice to limit the demand on therapist resources. (2) To explore whether extended mitt use alone may enhance outcome. **DESIGN:** A combined case-control and randomized controlled study with pre- and post-treatment measures by blinded observers. **SETTING:** A university hospital rehabilitation department. **PARTICIPANTS:** Sixteen stroke patients (nine men and seven women; mean age 56.7 years; on average 28.9 months post stroke, five of whom were 6-9 months post stroke) with moderate motor impairments in the contralateral upper limb. **INTERVENTION:** Constraint-induced therapy (mitt on the less affected hand 90% of waking hours for 12 days) with 2-3 patients per therapist and 6 h of group training per day. After the training period, the patients were randomized either to using the mitt at home every other day for two-week periods for another three months (in total 21 days) or to no further treatment. **OUTCOME MEASURES:** Modified Motor Assessment Scale, Sollerman Hand Function Test, Two-Point Discrimination test and Motor Activity Log. **RESULTS:** The mean motor performance improved significantly after two weeks of constraint-induced group therapy on Motor Assessment Scale (1.44 (95% confidence interval (95% CI) 0.59-2.28) points; $P = 0.003$) and on Sollerman Hand Function Test (3.81 (95% CI 0.26-7.36) points; $P = 0.037$) but showed no sensory change in the Two-Point Discrimination Test ($P = 0.283$). The median difference in self-reported motor ability (Motor Activity Log) also improved ($P < 0.001$). However, no additional effect was seen from wearing a mitt for another three months. **CONCLUSION:** Constraint-induced group therapy, allowing several patients per therapist, seems to be a feasible alternative to improve upper limb motor function. The restraint alone, extended in time, did not enhance the treatment effect.

DE: PROTECTIVE-CLOTHING; DISABILITY-AIDS; PHYSICAL-THERAPY-MODALITIES;
CEREBROVASCULAR-ACCIDENT

MT: HUMANS-; REHABILITATION-; PILOT-PROJECTS

XREC: ABSTRACT (AB)

UD: 200607

AN: 0085737

COMMENTS

This study is a small study in 2 parts involving 16 stroke patients all at least 6 months post stroke. The first part of the study assessed the use of a mitt and 6 hours of group therapy over 12 days i.e. used group therapy as opposed to one to one intervention as in Taubs and other studies. The second part looked at half of the group continuing mitt use and the other half not, although the latter group was encouraged to still try to use their affected limb over and above the other limb. This part of the study

did not demonstrate any significant differences in recovery. This could be due to the intensity of the training prior to the second part of the study and the carryover effect from using the mitt even in the group who did not continue use.

The first part of the study demonstrated that significant improvement could be made from mitt use and group therapy as opposed to one to one intervention.

As with many of these studies the inclusion criteria meant that the subjects had for example, considerable upper limb and hand control plus minimal balance problems.

The study does include an interesting discussion and review of previous studies.

TI: The effect of a task-oriented intervention on arm function in people with stroke: a randomized controlled trial.

AU: Higgins,-J; Salbach,-NM; Wood-Dauphinee,-S; Richards,-CL; Cote,-R; Mayo,-NE

SO: Clin-Rehabil. 2006 Apr; 20(4): 296-310.

IS: 0269-2155

PY: 2006

LA: English

ABSTRACT

OBJECTIVE: To evaluate the efficacy of a task-oriented intervention in enhancing arm function in people with stroke. **DESIGN:** Two-centre, observer-blinded, stratified, block-randomized controlled trial. **SETTING:** General community. **PATIENTS:** Ninety-one individuals within one year of a first or recurrent stroke consented to participate between May 2000 and February 2003. **Interventions:** The experimental intervention involved practice of functional, unilateral and bilateral tasks that were designed to improve gross and fine manual dexterity whereas the control intervention was composed of walking tasks. Members in both groups participated in three sessions a week for six weeks. **MAIN OUTCOME MEASURE(S):** The primary test of arm function was the Box and Block Test. Secondary tests included the Nine-Hole Peg Test, maximal grip strength, the Test d'Evaluation des Membres superieurs des Personnes Agees (TEMPA) and the Stroke Rehabilitation Assessment of Movement. **RESULTS:** Results are for the more affected arm. Baseline performance on the Box and Block Test was an average of 26 blocks (standard deviation (SD) = 16) in the experimental group (n = 47) and 26 blocks (SD = 18) in the control group (n = 44). These values represent approximately 40% of age-predicted values. Values for the postintervention evaluation were an average of 28 (SD = 17) and 28 (SD = 19) blocks for the experimental and control group respectively. No meaningful change on other measures of arm function was observed. **CONCLUSIONS:** A task-oriented intervention did not improve voluntary movement or manual dexterity of the affected arm in people with chronic stroke.

DE: CEREBROVASCULAR-ACCIDENT; ARM-; EXERCISE-THERAPY

MT: HUMANS-; REHABILITATION-

PT: Randomized-Controlled-Trial; Clinical-Trial

XREC: ABSTRACT (AB)

UD: 200608

AN: 0086681

COMMENTS

The purpose of the study was primarily to evaluate the effects of a less intensive task-oriented intervention programme. Previous studies investigating constraint induced movement intervention (CIMT) require up to 90% of the day to be spent on movements of the more affected upper limb. The researchers in this study believe this to be beyond the stamina of the vast majority of stroke patients. This was a relatively large study of 91 subjects. A power calculation by the researchers in a pilot study estimated 60 subjects would yield meaningful differences.

The subjects within each group were stratified into mild moderate and severe stroke (all of the subjects could walk at least 10 metres with or without an aid). They did not identify the upper limb impairment of these subjects.

The intervention consisted of repetitive practice of tasks that subjects could perform and guided help/passive movements and vibration for movements they couldn't perform. They used a variety of outcome measures measuring both impairment and activity levels.

The intervention seemed repetitive and the authors did say that it was difficult to motivate patients with no active movement of the affected upper limb. The fact that they then conclude that this study indicates that therapies now in use are ineffective in the treatment of stroke subjects with no initial movement in there arm is not based on sufficient evidence. They are making assumptions that all therapeutic interventions are based on repetitive practice of passive movements.

The results did not demonstrate any statistically significant differences between the two treatment groups. In fact there was a tendency for the subjects in the walking group to have improved arm performance, especially in more integrated tasks that require both the use of the arm and the lower extremity. The researchers could not rule out the fact that the walking group were using there affected upper limb in daily tasks. This is very interesting for the Bobath concept, as a key feature of treatment of the upper limb is related to integrating upper limb movement with the whole body and incorporating it into more efficient balance strategies. As well as making treatment individual, motivating and task specific.