

S10 - A Randomised Controlled Trial of Bilateral Movement-based Computer Games Training to Improve Motor Function of Upper Limb and Quality of Life in Sub-acute Stroke Patients

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Introduction: Sensorimotor impairment, which could significantly affect the motor function of upper limbs and quality of life, is common in stroke survivors. Application of bilateral movement training in a virtual reality-based environment could provide a platform for engaging and motivating the patients, as well as facilitating the effects of self-assisted and highly repetitive task-oriented training.

Objectives: To investigate whether bilateral movement-based computer training (BMCT) would be superior to the conventional training in improving the motor control and functional use of paretic upper limb in sub-acute stroke patients.

Methodology: A stratified, single-blinded, randomised controlled trial (RCT) was conducted in Geriatric Day Hospital of Shatin Hospital. Patients with sub-acute stroke were randomly assigned to one of the two groups for 30 minutes of upper limbs training: (1) BMCT and (2) video-directed conventional training (VDCT). Both groups also received standard conventional physiotherapy training program for 16 intervention sessions over 8-week period. The motor control and function of paretic upper limb were evaluated by Fugl-Meyer Assessment of Upper Extremity (FMA-UE), Action Research Arm Test (ARAT) and Grip Strength (GS). Health-related quality of life was measured by the Hong Kong version of the Short-Form Health Survey (SF-36). All the outcomes were recorded at baseline, after 8 intervention sessions (A_1) and 16 intervention sessions (A_2), and 4 weeks after the end of the whole intervention period (A_{FU}).

Results: Of the 93 patients participating in the study, 47 (50.5%) were allocated to the BMCT group. The average age of the patients in BMCT and VDCT groups were 65.1 ± 10.2 and 66.0 ± 9.0 years old, respectively. Both groups demonstrated statistically significant increases in mean scores of FMA-UE, ARAT and GS (affected hand) from baseline to A_1 , A_2 , and A_{FU} . The mean changes from baselines in FMA-UE, ARAT and GS (affected hand) scores were statistically significantly greater in the BMCT group than the VDCT group at all visits (all p-values < 0.05). No significant difference between the groups was identified in the mean changes of SF-36 scores from baseline at any time point.

Conclusions: The results of this RCT demonstrated that application of BMCT is effective in improving the motor control and function of paretic upper limb in sub-acute stroke patients. BMCT is regarded as a useful complement to conventional therapy in stroke rehabilitation. Implementation of this technology at home or in day care centres could motivate patients to exercise as well as to maintain or even improve their physical health after being discharged from rehabilitation.

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