

EFFECTS OF VIRTUAL REALITY-BASED REHABILITATION ON BURNED HANDS

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Introduction

Hands are the most frequent sites of burn injury, and proper management is essential to assure that optimal functional recovery is achieved. Many interventions have been developed and tried for burn patients, however, hand rehabilitation tool is limited. Virtual reality(VR)-based rehabilitation has been proven to be beneficial on upper extremity function. In this study, we investigated the effects of VR-based based rehabilitation on burned hands, and compare the findings to those of amount-matched conventional rehabilitation in burn patients.

Method

The present study was a single-blinded, randomized controlled trial. The study included 31 burned patients with dominant right-hand function impairment. The patients were randomized to a Smart Glove(SG) group or a conventional intervention(CON) group. The each intervention was applied to the affected hands for four weeks. We evaluated the clinical and functional variables. Hand function was evaluated by the Jebsen-Taylor hand function test(JTT), Purdue pegboard test(PPT), Grasp and pinch power test and Michigan hand function Questionnaire(MHQ). These assessments were evaluated before the intervention and four weeks after the intervention.

Results

The 16 subjects showed significant interval changes in the hand grip strength after the 4 weeks of treatment in the SG group($p < .05$). The times used for conducting each test in the JTT were improved in every domains. Feeding and Checker scores were decreased significantly after SG intervention ($p < .05$). The Scores on hand function items of of the Korean version of Michigan Hand Outcomes Questionnaire(MHQ) were improved. Function, Activity of Daily Living, Satisfy and Pain Scores were significantly improved ($p < .05$). The improvements in the JTT, PPT, grasp and pinch power test, and MHQ scores were significantly greater in the SG group than in the CON group.

Conclusion

The results of this study suggest that the VR-based rehabilitation might be more effective than amount-matched conventional rehabilitation for recovering hand function on burned hand. VR-based rehabilitation may be considered as a treatment option for burned hands