Oral Communication
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Effects of Home-Based Virtual Reality Upper Extremity Rehabilitation in Patients With Chronic Stroke: A Randomized Controlled Trial

Topic: Virtual Reality

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BACKGROUND

Virtual reality (VR) has the potential to be used safely and effectively in home-based rehabilitation. This study aimed to investigate the effects of home-based VR upper extremity rehabilitation in chronic stroke patients.

METHODS

This was a single-blind, randomized, controlled trial conducted at two centers. The subjects were 14 outpatients with chronic stroke more than six months after the onset of the stroke. The participants were randomly divided into two groups. The intervention group (n = 7) performed a home rehabilitation program for the paretic hand (30 min/day, 5 days/week) using a VR device (RAPAEL Smart Glove™; NEOFECT Co., Yung-in, Korea) for four weeks. The control group (n = 7) participated in a conventional home rehabilitation program at the same frequency. All participants received outpatient occupational therapy once a week during the study period. The outcome measures included the Fugl-Meyer Assessment of upper extremity motor function (FMA-UE), Motor Activity Log-14 (MAL), Jebsen-Taylor Hand Function Test (JTT), and Box and Block Test (BBT) scores.

RESULTS

All 14 participants completed the study. In the intervention group, the mean difference in FMA-UE scores before-post intervention was 8.9 ± 6.9 (mean = 8, IQR = 2-16), and before-post 4w intervention was 10.1 ± 7.7 (mean = 8, IQR = 5-15). These changes exceeded both the minimal detectable change at the 90% confidence level (MDC90) of 3.2 and the minimal clinically important difference (MCID) of 5.25 for the FMA-UE. Compared to the control group, the intervention group showed more significant improvements in FMA-UE (p = 0.027), MAL (p = 0.014), JTT (p = 0.002), and BBT (p = 0.014). No adverse events were observed during or after the intervention. These results indicate that the VR intervention led to improvements not only in upper extremity function but also in the frequency of paretic hand use and tool and object manipulation in daily life in chronic stroke patients.

CONCLUSION

Compared to a conventional home program, combining a task-oriented VR home program and outpatient occupational therapy might lead to greater improvements in upper extremity function and the frequency of use of the paretic hand.

Statement of Disclosures

None

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