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Gait Rehabilitation of Progressive Speed Treadmill Training Using A Real-Walk Video For Stroke Patients

Hwang Jae Lee^{1,2)}, Yun Hee Kim¹⁾, Min Kyu Kim^{2,3)}, Wan Hee Lee²⁾

¹⁾Department of Physical and Rehabilitation Medicine, Center for Prevention & Rehabilitation, Heart Vascular and Stroke, Samsung Medical Center, Seoul, Republic of Korea,

²⁾Department of Physical Therapy, College of Health and Welfare, Sahmyook University, Seoul, Republic of Korea,

³⁾Department of Physical Therapy, Myongji choonhey hospital, Seoul, Republic of Korea

INTRODUCTION

The purpose of the present study was to investigate the effectiveness of the virtual walking training program using a real-walk video on walking balance, spatiotemporal gait parameters and architecture of lower limb muscles in stroke patients.

CLINICAL SIGNIFICANCE

On the basis of previous studies, this study attempted to investigate how VR that is similar to the real world affects gait performance in patients with stroke.

METHODS

Sixteen patients with stroke were randomly assigned to either the progressive speed treadmill training combined real-walk video (PSTT-RWV) group (mean age of 46.1 ± 6.7 years; 4 males & 4 females) and conventional progressive speed treadmill training (CPSTT) group (mean age of 48.1 ± 6.6 years; 5 males & 3 females). PSTT-RWV group was participated progressive speed treadmill training combined real-walk video for 30 minutes per day, 5 times a week, for 5 weeks and the CPSTT group was participated progressive speed treadmill training without real-walk video for 30 minutes a day, 5 times a week. In all subjects, gait speed were measured using the GAITRite walkway system. In functional abilities, balance was measured using Berg Balance Scale (BBS) and Timed Up and Go (TUG) test. In addition, architecture of lower limb muscles was measured using the real-time B-mode ultrasonography.

RESULTS

In walking balance, greater improvement on the BBS and TUG was observed in the PSTT-RWV group compared with the CPSTT group ($p < 0.01$). In the spatiotemporal gait parameters, greater improvement on all parameters was observed in the PSTT-RWV group compared with the CPSTT group ($p < 0.05$).

DISCUSSION

This study suggested that the multisensory feedback provided by the PSTT-RWV reduced the perception of exertion during training and increased patient motivation. As a result, this study suggests that the virtual walking treadmill training using a real-walk video may be a valid approach to enhance walking ability in stroke patients.