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Does self-repetitive assistive sit-to-stand training facilitate the independence in sit-to-stand of stroke patient? A randomized controlled trial

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Introduction

Sit-to-stand is one of the most commonly performed functional activities in our daily lives, and a prerequisite for transfer, ambulation or stair-climbing. It is particularly difficult for the stroke patients. Intensive task-related training had shown effective to improve the rate of its recovery. However, manual training a patient intensively may be unbearable to physiotherapist who may prone to injury in a busy training environment. Assistive device would be an alternate way in achieving the aim.

Objectives

The purpose of this study is to investigate the effect of the 10-sessions of self-repetitive assistive sit-to-stand exercise to improve the independence of standing up in stroke patient.

Methodology

This study was an assessor-blinded, randomized controlled trial. All selected participants were unable to stand up independently before the training. Then, they were randomly assigned to one of the two groups: control and intervention group. Both groups of participants had conventional physiotherapy program for 45 minutes, 5 days/week. The control group had also received manual sit-to-stand training by physiotherapist. The intervention group performed the training by an assistive device: The Sit-to-Stand trainer® with self-designed audio feedback repeating the words “比心機”. Both groups performed for 10 minutes, 5 days/week. The ability of independence in sit-to-stand, Berg Balance Scale (BBS) and Modified Rivermead Mobility Index (MRMI) were assessed after 5 sessions and 10 sessions of training.

Result

From January 2015 to January 2016, 21 out of 28 stroke patients completed the study (intervention: 13, control: 8; mean age 70.7 years). After 5 sessions of training, 9 out of 13 patients (69%) in intervention group and 1 out of 8 patients (12.5%) in control group can regain the independence of sit-to-stand ($p < 0.05$). The intervention group also showed significant improvement in BBS ($p < 0.05$). After 10 sessions of training, 10 out of 13 patients (77%) in intervention group and 3 out of 8 patients (37.5%) in

control group can regain this ability ($p>0.05$). Both groups showed significant improvements in BBS and MRMI ($p<0.05$). The results indicated that the self-repetitive assistive training can enhance the rate and promote the chance of the independence in sit-to-stand of stroke patients. It may also reduce the chance of staff repetitive injury and increase self-esteem and confidence of patients. Regaining of this ability is essential to facilitate other functional activities so that discharge planning can be determined earlier.