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The Effects of Physical Exercise Program on Sarcopenic Patients with Fracture Hip Operation in Geriatric Day Hospital

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Introduction

Sarcopenia, muscle loss in aging, is one of the major causes that lead to frailty, fall and fractures. Physical activity and exercise were showed to slow the loss of skeletal muscle function and reduce the likelihood of falls and fall-related injuries.

Physiotherapists play a major role to prescribe suitable exercise program for the elderly patients with sarcopenia especially for those who have lower limb complication such as hip fracture and being immobilized in the hospital for a certain period.

Evidences shown both progressive resistive exercise and power exercise can revert sacropenia [Waters, 2010]. A specific rehabilitation physical training program on geriatric hip fracture patients with sarcopenia was commenced at the Orthopaedic Department of Caritas Medical Centre (CMC) from 1st July 2015. This rehabilitation training program focused on increasing their muscle mass and strength, improving their mobility and functional status, and hence minimizing the risk of fall and eventually decreasing risk of mortality.

Objectives

To investigate the effect of the progressive resistance training (PRT) for postsurgical hip fracture patient with sarcopenia in Geriatric Day Hospital (GDH)

Methodology

29 postsurgical hip fracture patients with newly diagnosed sarcopenia during CMC hospitalization were recruited. 21 patients received a standard progressive resisted exercise program focusing on a 3 month progressive resistance exercise in GDH (PRT group). 8 patients, who did not attend the GDH training, were allocated to the control group (non-PRT group). A set of standardized assessment, including hand grip strength, isometric knee extension strength and functional mobility status, namely Elderly Mobility Scale (EMS) and Modified Functional Ambulation Catagories (MFAC), was done before the program and after 3-month training.

Result

All outcome parameters, including functional outcomes, hand grip and isometric knee extension strength, in PRT group improved after the 3-month exercise program. Isometric knee extension strength in PRT group was significantly improved when comparing with non-PRT group ($p < 0.01$). The gain in knee extension strength for PRT group was $+6.5 \pm 3.88$ kg (pre training knee strength = 7.9 ± 3.57 kg vs post training knee strength = 14.5 ± 6.01 kg). The function mobility status as reflected in change in EMS score was significantly improved in PRT group ($Z = -3.93$; $p < 0.00$). The average improvement in median EMS in PRT group was 8 ± 4 (pre-training median EMS score = 9 ± 3 vs post training median EMS score = 18 ± 3). The results imply that this specific resisted rehabilitation program is effective in the treatment of sarcopenia for the elderly with various postsurgical hip fracture conditions. Moreover, it is suggested that both improvement in knee extension strength and functional scores are the important indicators for the preventive measure of fall risk.