

Effectiveness of a community-based muscle strengthening exercise program to increase muscle strength among pre-frail older persons in Malaysia: a pilot study

ABSTRACT

Deterioration in muscle mass and muscle strength is common among the frail older persons, cause functional dependence and decrease in the quality of life. Therefore, the identification of cost-effective interventions to prevent or ameliorate frailty is crucially needed. The aim of this study is to determine the effectiveness of a Community-based Muscle Strengthening Exercise (COME) program to increase muscle strength among pre-frail older persons. This study was a quasi-experimental study. A total of 32 older persons aged 60 years and older with pre-frail symptoms were recruited from the community center. The COME was developed based on the Growing Stronger program and the Otago Home Exercise Program. COME was designed to strengthen all of the major muscle groups in the upper and lower extremities. The exercise program was conducted for 12 weeks and divided into 3 parts; (1) to strengthen the body slowly and gently, using only body weight, (2) to introduce dumbbells and ankle weights to increase strength and (3) to add various new ways to boost strength even more. Functional tests were measured before and after the intervention. The results revealed non-significant p-value for pre- and post-intervention comparison for all study outcomes. Observing the values of mean difference, the study intervention was shown to have slightly improved the time up and go (Mean difference = -0.25), and sit-to-stand duration (Mean difference = -0.41) as well as the handgrip strength (Mean difference = 0.68) among the participants. On the assessment of Cohen ES, all three improvements exhibited small effect sizes. Sit-to-stand duration was shown to have most benefited from the intervention with highest ES among the outcome variables (ES = 0.20). COME intervention program among pre-frail older persons showed favorable trend toward improvement of upper and lower extremities muscle strength. This study should be further tested in randomized control trial to confirm its effectiveness.

Keyword: Community-dwelling; Exercise; Muscle strength; Older persons; Pre-frail