LOCAL EFFECTS OF STRENGTH TRAINING IN FRAIL ELDERLY WOMAN

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Aging is accompanied with loss of muscle mass and strength, a phenomenon called sarcopenia. Observational studies indicate that approximately 1% of muscle mass is lost per year after 40 years of life (Janssen et al. 2000) and the rate still increases with age. Appropriate strength training may stop or at least slow down these processes (Frontera et al. 1988). The purpose of our study was to determine the effects of specific strength training program in the frail elderly woman aimed to stabilize lower trunk.

Twenty-two women were assigned randomly to an exercise (E) or control group (C). The group E included 8 women (76.5±7.5 years of age, 68.9±12.7 kg, 162.6±10.4 cm). The group C included 14 women (80.1±4.9 years of age, 61.0±12.0 kg, 160.3±7.5 cm). We measured maximal isometric torque for left plantar flexion and dorsal flexion (90 deg in ankle and knee respectively), left knee extension (KEL) (90 deg position), right knee extension (KER) (90 deg position), forward body lean (BLF) (standing position), backward body lean (BLB) (standing position), left (BLL) and right (BLR) side body lean (standing position) before and after the training program. The training program included warm up, strength exercises (main stress on lower trunk stabilization and leg extension) and flexibility for hip extensors and flexors. It was performed twice a week for 6 months. The intensity level for strength exercises at the end of training period was set to 70% of MVC and number of repetitions in set was kept close to its maximum. ANCOVA was used to test the differences between groups in measured parameters after the special training program.

Different responses between groups were observed in strength related to trunk stabilization and at left knee extension. There were no differences in strength for the right knee extension, plantar and dorsal flexion.

Strength program increased muscle strength in muscle groups directly involved into exercise (except the right knee extension) and as it is published in literature (Frontera et al., 1988). Possible reasons for no-response of KER could be relatively short time (only few last weeks) that knee extension exercise (squat) was included and lateral dominance since both legs performed simultaneously. Decrease in plantar and dorsal flexion was expected since there were no exercises for ankle movements. It is concluded that effects of strength training were strongly related to exercise location.

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