Relationship between Quadriceps Muscle Strength and Postural Balance in Institutionalized Elderly People in Two Selected Elders' Homes in Colombo District

G.A.D. Perera*, I.M. Kandege and L.G.O. Pramodhya

Department of physiotherapy, Faculty of Allied Sciences,
General Sir John Kotelawala Defense University, Colombo 10390, Sri Lanka
**amaradamayanthi@gmail.com*

The quadriceps muscle strength and the postural balance are two main clinical characteristics that deteriorate with the process of aging. The apparent evidence depicted the alters in the postural balance in the elders is rooted due to the changes in the quadriceps muscle strength. However, there is less knowledge about the role of the quadriceps muscle strength in the changes of postural balance among the elderly. In Sri Lanka, there were not enough studies carried out to determine the relationship between the quadriceps muscle strength and postural balance in elderly people. Our study was carried out to determine the relationship between quadriceps muscle strength and postural balance in older people in Salina Alwis elders' home and Sahana Udaya elders' home. A cross-sectional study was conducted under a non-probability convenient sampling method to collect the data. Sixty elders (34 females & 26 males) who dwelt in the two elders' homes participated in the study. Bilateral quadriceps muscle strength was measured using a modified sphygmomanometer test (MST) and postural balance was assessed by mini-Balance Evaluation Systems Test (Mini-BEST).The mean age of the participants was 76.67 (SD ± 6.23) years old. The mean and standard deviations of right quadriceps muscle strength, left quadriceps muscle strength, and average quadriceps muscle strength were 149.90 (SD ± 28.53) mmHg, 137.63 (SD ± 24.35) mmHg, 143.83 (SD ± 25.68) mmHg respectively. The mean postural balance was 20.88 (SD ± 2.70). According to the Pearson correlation coefficient, there was positive linear relationship between quadriceps muscle strength and postural balance ($p = 0.000$, $r = 0.815$) among elderly people. The study revealed a strong positive correlation between quadriceps muscle strength and postural balance in the elderly people who participated in this study.

Keywords: Quadriceps muscle strength, Postural balance, Institutionalized elderly, Modified Sphygmomanometer Test, Mini-balance Evaluation System Test