Relationship between physical performance and quadriceps muscle strength of the patients with knee osteoarthritis attending the Rheumatology and Rehabilitation clinics in the National Hospital of Sri Lanka

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Knee osteoarthritis (KOA) is a major cause of pain and disability worldwide. Quadriceps weakness has been identified as an important contributor to functional limitations. Physical performance (i.e theability to carry out functional activities such as mobility, balance, and strength-based tasks.), is a key outcome in KOA, as reduced performance limits independence and quality of life. While this association is well established globally, evidence from South Asian populations is limited. Sociocultural and demographic factors may influence outcomes differently in local settings. This study aimed to investigate the relationship between quadriceps muscle strength and physical performance in KOA patients attending the National Hospital of Sri Lanka in order to provide region-specific evidence to guide rehabilitation strategies. An analytical cross-sectional study was conducted among patients with clinically diagnosed KOA, aged >50 years, attending the Rheumatology clinics at the National Hospital of Sri Lanka. Demographic data were collected using an interviewer-administered questionnaire. Quadriceps muscle strength was measured using a hand-held dynamometer, while physical performance was assessed with the Timed Up and Go (TUG) test, a validated measure of functional mobility. Data were analyzed using SPSS v22. Spearman correlation and Mann–Whitney U tests were applied to determine associations. The study included 112 participants (mean age 58.57 ± 6.59 years; 91.1% female). Most participants (89.3%) presented with bilateral KOA. The mean quadriceps muscle strength was 38.38 N (± 10.41), while the mean physical performance measured by the TUG test was 13.3s (± 2.75) seconds. Correlation analysis showed a negative correlation between quadriceps strength and TUG time ($r = -0.53$, $p < 0.001$), indicating that lower quadriceps strength was associated with poorer physical performance. Age demonstrated a positive correlation with TUG time ($r = 0.505$, $p<0.001$), suggesting that older participants performed worse on the mobility test. In addition, quadriceps strength was significantly lower in females compared to males ($p=0.026$), though no significant gender differences were observed in TUG performance ($p=0.155$). This study confirms the association between quadriceps strength and physical performance in KOA patients in a Sri Lankan population, consistent with international findings. However, the predominance of female participants and the relatively younger mean age compared to global cohorts suggest unique contextual factors. These findings emphasize the need for targeted quadriceps strengthening in local rehabilitation programmes to enhance mobility and quality of life in KOA patients.

Keywords: *Knee osteoarthritis*, *Physical performance*, *Quadriceps muscle strength*