

The Relationship between Foot Arch Index with Quadriceps and Hamstring Muscle Strength in Patients with Flat Feet Deformity and Bilateral Knee Osteoarthritis

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Knee osteoarthritis (KOA) is a common type of arthritis in Sri Lanka. Any alterations of the mechanical alignments in the knee have an impact on the foot structure which biomechanically linked by a kinematic chain. This study aimed to evaluate the relationship between foot arch index (FAI) with quadriceps and hamstring muscles strength in patients with flatfoot deformity and bilateral KOA. An analytical cross-sectional study was conducted under the non-probability sampling method including 72 patients (aged above 45 years), who were clinically diagnosed with bilateral KOA and flatfoot deformity, attending the Musculoskeletal Department of University Hospital, Kotelawala Defence University. An interviewer administered form was used to obtain demographic data and a modified sphygmomanometer was used to measure isometric strength quadriceps and hamstring muscles. Foot arch index was measured using the Harrismat. Data were statistically analysed using Statistical Package for the Social Sciences software, version 22. Significantly negative correlations ($p < 0.05$) were identified between the FAI with the muscular strength of ipsilateral and contralateral hamstrings ($p = 0.04$) and contralateral quadriceps ($p = 0.01$) in the sample of dominant side flat feet deformity ($n = 64$). FAI did not indicate any significant association with the muscular strength in both ipsilateral and contralateral quadriceps and hamstring muscles in the sample with non-dominant side flatfoot deformity ($n = 70$). Increased foot arch index is a contributing factor to the reduction of muscle strength in ipsilateral and contralateral hamstring and contralateral quadriceps in KOA patients with the presence of flatfoot deformity in the dominant leg.

Keywords: *foot arch index, quadriceps strength, hamstring strength, knee osteoarthritis, flatfoot deformity*