

## POSTER PRESENTATION PP7

# Bridging Preventive Care and Active Ageing: Effects of Home-Based Open and Closed Kinetic Chain Exercise on Functional Performance, Trunk Biomechanics and Quality of Life in Women with Mild Knee Osteoarthritis

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## ABSTRACT

**Background and Objectives:** Preventive physiotherapy supports active ageing and reduces knee osteoarthritis burden. Although exercise is recommended, the comparative effects of open kinetic chain (OKC) and closed kinetic chain (CKC) home-based exercise on function, trunk biomechanics and quality of life remain unclear. This study evaluated an eight-week physiotherapist-guided OKC and CKC programme in women with mild knee osteoarthritis. **Methods:** This single-blind randomized controlled trial recruited 66 women aged  $\geq 50$  years in Putrajaya, Malaysia. Participants were randomized into OKC, CKC or education-only control groups. Sample size was calculated using G\*Power based on WOMAC function, with effect size 0.50, 90% power and alpha 0.05. Exercise groups performed home exercises three times weekly, guided by an initial physiotherapy session, exercise diary and bi-weekly telephone follow-up. Outcomes were assessed at baseline and post-intervention by a blinded assessor. Trial registration: NCT04678609. **Results:** Fifty-nine participants completed the study. Compared with education-only control, both exercise groups showed significant improvements in pain, WOMAC physical function, quality of life, walking speed and five-time sit-to-stand performance. Large effects were observed for pain reduction ( $p < 0.001$ , partial  $\eta^2 = 0.658$ ), WOMAC physical function ( $p < 0.001$ , partial  $\eta^2 = 0.454$ ), walking speed ( $p < 0.001$ , partial  $\eta^2 = 0.527$ ) and five-time sit-to-stand performance ( $p < 0.001$ , partial  $\eta^2 = 0.444$ ). Trunk flexion also improved significantly with a moderate effect size ( $p = 0.007$ , partial  $\eta^2 = 0.123$ ). **Conclusion:** Physiotherapist-guided home-based OKC and CKC exercise improved pain, mobility, biomechanics and quality of life, supporting active ageing in community physiotherapy care.

**Keywords:** Knee osteoarthritis; active ageing; physiotherapy; home-based exercise; biomechanics; quality of life

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