Background: Knee osteoarthritis causes pain, can limits mobility and is linked to excessive knee loading. Gait retraining with biofeedback shows promise, but optimal feedback strategies remain unclear. This study compared different biofeedback approaches.

Methods: Fifty individuals with knee osteoarthritis were randomised to gait pattern feedback group, knee moment feedback group, or control group. Participants underwent a six-week programme, with activity knee pain, functional ability and biomechanical assessments conducted at baseline, post-intervention, and one-month follow-up. Data were analysed using linear mixed models under an intention-to-treat approach.

Results: All groups improved in functional ability and activity knee pain post-intervention ($p < 0.001$), with sustained benefits in the intervention groups ($p < 0.001$). Only the gait pattern group showed a lasting reduction in the 1st peak knee adduction moment during (-7.6%, $p = 0.003$; maintained at follow-up). No significant change in foot progression angle was observed in any group. Step width increased during stair ascent and sit-to-stand ($p \leq 0.010$) and step length decreased during walking ($p = 0.021$) for all groups, but both changes were transient.

Conclusion: Gait retraining improves pain and function in individuals with knee OA, but gait pattern feedback uniquely reduces joint loading during walking, supporting the importance of target-specific personalised gait modifications for long-term biomechanical benefit.