

ORAL PRESENTATION OP12

Effectiveness of Lower Limb Balance Training Compared with Lower Limb Strength Training on Postural Control Among Patients with Type 2 Diabetes Mellitus.

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ABSTRACT

Background: Type 2 diabetes mellitus impairs postural control through sensory, proprioceptive, and motor dysfunction, increasing fall risk and reducing functional mobility. Although lower limb balance and strength training are commonly prescribed, evidence comparing their effectiveness remains limited. **Aim:** To compare the effects of lower limb balance training and lower limb strength training on postural control among patients with diabetes mellitus. **Methods:** A systematic review was conducted following PRISMA guidelines. PubMed, Scopus, and Google Scholar were searched for studies published between 2021 and 2025. Studies were selected using the PICOS framework and included randomized controlled trials involving adults with diabetes mellitus that compared lower limb balance training with strength training or usual care and reported postural control outcomes. Of 1,075 records identified, six studies met the eligibility criteria following title, abstract, and full-text screening. **Results:** Six randomized controlled trials involving adults with type 2 diabetes mellitus, including those with diabetic peripheral neuropathy, were included. Balance-focused interventions consistently improved postural control, mobility, and fall-related outcomes ($p < 0.001$). Significant improvements were observed in Berg Balance Scale scores (43.57–51.04), Functional Reach Test (9.42–13.18 cm), and Timed Up and Go performance (18.93–10.20 s) ($p < 0.001$). Tai Chi reduced fall incidence and improved balance confidence, while balance training with elastic bands produced greater improvements in balance and fear of falling than conventional resistance training. Resistance training alone improved muscle strength but showed limited effects on dynamic postural balance. **Conclusion:** Lower limb balance training appears more effective than lower limb strength training for improving postural control and reducing fall risk among patients with diabetes mellitus. Balance-based interventions should be incorporated into rehabilitation programmes for this population.

Keywords: T2DM; Diabetes Mellitus; lower limb; balance training; postural control

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