Oral Communication
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High- *vs.* Low-Intensity Resistance Training in Knee Osteoarthritis: A Comparative Study

Topic: Exercise

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BACKGROUND

Osteoarthritis (OA) is a leading cause of pain and disability, affecting older adults wordwilde, especially women over 60. Quadriceps weakness is a key risk factor, contributing to functional decline, proprioceptive deficits, and fall risk. As a result, quadriceps strengthening through resistance training (RT) is considered a first-line therapy for OA management. The optimal intensity for maximizing benefits remains unclear. This study compares the effects of high-intensity resistance training (HIRT) and low-intensity resistance training (LIRT) on muscle strength, pain relief, and functional capacity in individuals with knee OA (KOA).

METHODS

Twenty-four women with KOA were randomized into one of the two groups: LI-RT (30% one repetition maximum [1-RM]) and high-intensity resistance training (HI-RT, 80% 1-RM). Patients underwent a 12 weeks supervised training program targeting lower-limb muscles three times per week. Pain levels (VAS), quadriceps strength (knee extension 1-RM, isokinetic testing), and functional performance (Timed up and go « TUG » test, 30s chair-stand test, WOMAC score) were assessed before and after the intervention.

RESULTS

High-intensity resistance training and LIRT led to significant increases in knee extension 1-RM (HIRT+33% *vs.* LIRT +26%) and peak torque in isokinetic evaluation (+ 27% *vs.* +12.5%) all $p < 0.0001$ with HIRT demonstrating superior improvements. Functional performance, measured by the timed-stands test, improved in both groups (HIRT +18% *vs.* LIRT +8%), with HIRT showing significantly greater benefits. However, the Timed-Up-and-Go (TUG) test showed no significant difference between groups. Regarding pain and physical function, HIRT led to a -42% improvement in WOMAC physical function, while LIRT reduced WOMAC pain scores by -30% ($p < 0.05$). Mean VAS decreases from 6 to 2 in LIRT group. Notably, exercise-induced knee pain occurred in 16.7% of participants (2 out of 12) in the HIRT group, leading to their exclusion.

CONCLUSION

Both HIRT and LIRT are effective for managing KOA. HIRT offers greater strength and functional benefits. LIRT suits patients with pain sensitivity. Blood flow restriction training (BFRT) may potentially enhance strength and function while reducing pain and joint stress. Future research should optimize personalized RT strategies, including BFRT.

Statement of Disclosures

None

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