Article Details

Title: The Effectiveness of Combined Exercise Interventions for Preventing Postmenopausal Bone Loss: A Systematic Review and Meta-analysis.
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Abstract:

Study Design Systematic review and meta-analysis. Background It remains unclear whether exercise combining different types of physical activities (combined exercise interventions) would effectively preserve postmenopausal women`s bone mineral density (BMD) at different sites. Objective To examine the impact of combined exercise interventions on lumbar spine, femoral neck, total hip, and total body BMD in postmenopausal women. Methods An electronic database search was conducted in PubMed, EMBASE, SPORTDiscus, and Web of Science up to January 1, 2016. Randomized controlled trials that conducted combined exercise interventions and reported BMD values in postmenopausal women were included. Two authors independently extracted the data from individual studies. The primary end point was the change in BMD values from baseline to follow-up. The effect sizes were estimated by the standardized mean difference (SMD) methods using fixed-effects models. Results Eleven randomized controlled trials including 1061 postmenopausal women met the inclusion criteria. The levels of between-study heterogeneity were relatively low (I2<50%). Exercise integrating different physical activities significantly increased lumbar spine (SMD, 0.170; 95% confidence interval [CI]: 0.027, 0.313; P = .019), femoral neck (SMD, 0.177; 95% CI: 0.030, 0.324; P = .018), total hip (SMD, 0.198; 95% CI: 0.037, 0.359; P = .016), and total body (SMD, 0.257; 95% CI: 0.053, 0.461; P = .014) BMD. Combined exercise interventions generated a beneficial effect on femoral neck BMD (SMD, 0.219; 95% CI: 0.034, 0.404; P = .020) in groups with women aged younger than 60 years, and significantly improved lumbar spine BMD (SMD, 0.349; 95% CI: 0.064, 0.634; P = .016) in groups with women aged 60 years or older. Conclusion Our findings suggest that combined exercise interventions appear to be effective in preserving postmenopausal women`s BMD at the lumbar spine, femoral neck, total hip, and total body. Level of Evidence Therapy, level 1a. J Orthop Sports Phys Ther 2017;47(4):241-251. Epub 3 Mar 2017. doi:10.2519/jospt.2017.6969.