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Effects of Structured Exercise Interventions in Gynecologic Cancer Survivors: A Systematic Review and Meta-analysis of RCT

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Background: Gynecologic cancer (GC) survivors frequently experience declines in quality of life (QoL), physical function, and body composition following treatment. Exercise has emerged as a key survivorship strategy. However, previous meta-analyses in this population have shown inconsistent findings and limited coverage of functional and anthropometric outcomes. This systematic review and meta-analysis evaluated the effects of structured exercise interventions on QoL, physical fitness, and anthropometric indicators among GC survivors.

Methods: This review followed PRISMA guidelines and was prospectively registered in PROSPERO (CRD42025104043). PubMed and Embase were searched until March 2025. Eligible studies were randomized controlled trials (RCTs) evaluating structured exercise interventions in survivors of endometrial, ovarian, or cervical cancer. Outcomes included QoL, cardiorespiratory fitness (6-minute walk test, 6MWT), lower-extremity strength (30-second sit-to-stand test, 30STS), and body composition indicators (BMI and waist circumference). Risk of bias was assessed using standard methodological criteria. Random-effects models were applied, and effect sizes were presented as standardized mean differences (SMDs) or weighted mean differences (WMDs).

Results: Fourteen RCTs including 857 participants (456 exercise, 401 control) met the inclusion criteria. Exercise interventions significantly improved QoL (SMD = 0.34; 95% CI: 0.12-0.56; $p = 0.002$). Cardiorespiratory fitness improved by 27.9 meters on the 6MWT (WMD; 95% CI: 5.1-50.7; $p = 0.016$), and lower-extremity strength improved by 2.29 repetitions on the 30STS (WMD; 95% CI: 0.68-3.89; $p = 0.005$). BMI decreased modestly (WMD = -0.78 kg/m²; 95% CI: -1.45 to -0.10; $p = 0.024$), whereas changes in waist circumference were not statistically significant.

Conclusions: Structured exercise interventions demonstrate meaningful improvements in QoL, functional fitness, and BMI among GC survivors. These findings support integrating exercise into survivorship care pathways and highlight the need for future trials that examine long-term clinical outcomes and mechanistic biomarkers.

Keywords

gynecologic cancer, exercise intervention, meta-analysis, quality of life

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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