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The feasibility of a multi-phasic, exercise-based intervention utilising behavioural change, dyadic coping and wearable technology in women before and after surgery for early-to-locally advanced breast cancer

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Background: Women undergoing breast cancer surgery often experience declines in physical function and quality of life. Preoperative exercise may mitigate these effects, but implementation is complicated by the short time frames between diagnosis and surgery. The feasibility of a remotely supervised, multi-phasic program in this context is uncertain.

Methods: We conducted a feasibility study of a remotely supervised, multi-modal exercise intervention incorporating behavioural change, dyadic coping, and wearable technology. Thirty-four women with early-to-locally advanced breast cancer scheduled for surgery participated in supervised and unsupervised sessions before and after surgery. The primary objective was feasibility and safety with secondary, exploratory outcomes in physical function and quality of life.

Results: Recruitment targets were achieved after a modest, 12-week, extension. Retention and adherence exceeded predefined thresholds: 85% of participants completed post-intervention assessments, 76% completed three-month follow-up, and adherence to supervised sessions was 86% preoperatively and 88% postoperatively. The intervention was well tolerated, with 59% of participants reporting no adverse events; most reported events were mild, transient, and consistent with postoperative recovery and exercise. Exploratory analyses demonstrated clinically meaningful improvements from baseline to post-intervention in six-minute walk distance (+48 m), estimated VO_2max (+3 $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$), and sit-to-stand (+2 repetitions), with gains maintained at three-month follow-up. Shoulder RoM in the surgical arm improved post intervention by +31° from its postoperative nadir, and by a further +50° at three-month follow-up. Patient-reported outcomes recovered post-intervention in physical (+14 points), role (+33 points), and social functioning (+26 points), with reductions in pain (-16.7 points) and fatigue (-6.3 points). Emotional and cognitive functioning also improved, while body image and sexual wellbeing remained impaired.

Conclusions: A multi-phase exercise program is broadly feasible and safe for women undergoing breast cancer surgery, and its high retention and adherence, along with encouraging functional and psychosocial trends, support progression to a larger multicenter trial.

Keywords

Breast cancer; feasibility; physical function; quality of life

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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