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Contribution ID: 368

Type: 2 - Scientific Poster or Talk

## Oncoactivate: A Woman-Centered mHealth Platform for Perioperative Exercise in Breast Cancer — Feasibility and Preliminary Clinical Outcomes

**Background:** Perioperative exercise reduces treatment-related impairments in women with breast cancer, yet access to supervised programs remains limited, particularly in Latin American healthcare systems. Digital platforms offer a scalable alternative, provided they are designed to sustain engagement under the physical and emotional demands of cancer treatment. Oncoactivate was developed through an iterative, woman-centered co-design process, grounded in the principle that trust and autonomy are prerequisites for adherence in vulnerable populations, to deliver structured, progressive exercise across the perioperative continuum.

**Methods:** Following the Medical Research Council framework, platform development proceeded through three phases: clinical conceptualization, prototype development through co-design, and iterative usability testing using think-aloud protocols and the System Usability Scale (SUS). A single-arm pilot feasibility study subsequently enrolled 50 women with confirmed breast cancer diagnosis scheduled for or recently recovered from surgery, recruited digitally across Chile. Primary outcomes were recruitment, retention, platform adherence, and safety. Secondary exploratory outcomes included quality of life (EORTC QLQ-C30).

**Results:** Preliminary usability testing (n=22) yielded a mean SUS score of 70.2 ( $\pm 6.3$ ), informing targeted platform refinements prior to pilot deployment. In the pilot cohort (n=50), retention was 100% and platform adherence reached 76%, exceeding the predefined feasibility threshold of 70%. Mean intervention duration was  $5.4 \pm 2.2$  weeks. No exercise-related adverse events were recorded. Exploratory analyses showed significant improvements in global health status (+12.2%,  $p < 0.001$ ) and overall quality of life (+5.0%,  $p = 0.012$ ).

**Conclusions:** Oncoactivate demonstrated feasibility, safety, and preliminary clinical benefit as a fully digital perioperative exercise intervention for women with breast cancer. Woman-centered design proved essential to achieving high adherence and retention, outcomes that reflect not only platform usability but the alignment between intervention design and users' lived experience. These findings support larger controlled trials and highlight the potential of digitally delivered exercise to improve access to perioperative rehabilitation in resource-constrained settings.

### Keywords

breast cancer; mHealth; perioperative exercise; woman-centered design

### Conflict of Interest & Ethical Approval

yes

### Abstract submitters declaration

yes

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**Session Classification:** Poster Session