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## Patient characteristics related with exercise training response in breast cancer patients undergoing cancer treatment

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**Background:** Exercise is an effective measure for mitigating treatment-related side effects and improving physical functioning in cancer patients (Campbell et al., 2019), but not all patients benefit equally from exercise. Most research in exercise oncology has not sufficiently emphasized this inter-individual variability or explored the factors that may influence it. Goal of this study is to explore how treatment- and patient-related variables influence resistance training (RT) progression trajectories in breast cancer patients undergoing adjuvant therapy.

**Methods:** Data from 69 breast cancer patients across two randomized controlled trials were analyzed. Participants performed a progressive supervised, machine-based full-body RT program twice weekly for 12 weeks during adjuvant chemotherapy or radiotherapy. A three-level hierarchical Bayesian growth model was fitted to assess the impact of potential predictors on training progression, which was operationalized as the z-standardized volume load (load × repetitions × sets).

**Results:** Participants showed consistent increases in volume load per training session (TS) (Posterior Mean = 0.053 SMD; 90% HDI = 0.006–0.101) with minimal variability across exercises (Posterior Mean (SD) = 0.013; 90% HDI = < 0.001 to 0.027) but substantial variability across individuals (Posterior Mean (SD) = 0.062, 90% HDI = 0.057 to 0.067). Training progression was unaffected by age (Posterior Mean = 0.004; 90% HDI = –0.007 to 0.014). However, Taxane administration (Posterior Mean = –0.013 SMD per session; 90% HDI = –0.033 to 0.005) and time since surgery (Posterior Mean = 0.015; 90% HDI = 0.005 to 0.027) emerged as potential modifiers, while baseline fatigue and physical functioning showed no association with either baseline volume load nor progression.

**Conclusion:** Resistance training (RT) during adjuvant cancer therapy leads to consistent gains in training volume load. However, these gains are influenced by treatment status. Nevertheless, substantial inter-individual variability remains, highlighting the need for individualized exercise prescriptions in oncology.

### Keywords

Resistance training, response variability, adjuvant therapy, bayesian modeling

### Conflict of Interest & Ethical Approval

yes

### Abstract submitters declaration

yes

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