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Non-Response to Resistance and Aerobic Training among Cancer Patients and Associated Factors: A Systematic Review

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Background: Exercise interventions are consistently evidenced as effective supportive therapy measures in oncology. Meta-analyses and clincial guidelies demonstrate beneficial effects in quality of life, physical function, cardiorespiratory fitness, and improvements in treatment-related adverse effects through resistance and aerobic training. However, individual studies report substantial interindividual variability, including cases of "non-response". To date, no systematic review has exmined non-response to resistance- and aerobic-based exercise interventions in cancer patients. Zhe aim of this review is to quantify the prevalence of non-response and identify associated factors.

Methods: A systematic literature search was conducted between May and October 2025 in PubMed, Embase, and Web of Science. The PICO-based search strategy included terms such as "cancer,""exercise,""non-responder,""response heterogeneity,""endurance,"and "resistance."Screening and study selection were performed independently by two reviewers. Inclusion criteria were: (i) adult oncological populations, (ii) supervised endurance and/or resistance training interventions, (iii) explicit quantification of non-responders and/or extractable data showing no or negative changes in relevant health-related outcomes (e.g., VO_2peak, muscular strength, fatigue), and (iv) intervention studies, including randomized controlled trials (RCT), controlled trials, clinical trials, and feasibility studies.

Preliminary Results: Of 1.447 studies identified after deduplication, 250 were selected for full-text screening. Of the five studies identified, one was an RCT with a non-exercising control group, while the remaining four were clinical trials without a control condition. Included studies were targeting both strength- and aerobic-related outcomes. Potential moderators and contributing factors identified include baseline fitness, treatment history, training dose/volume, level of supervision, inflammatory and medication profiles, and adherence.

Keywords

cancer, exercise, non-response, intervention effect heterogeneity

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

Author: HERZOG, Katharina Maria

Co-authors: WISKEMANN, Joachim (Universitätsklinikum Heidelberg); BAUER, Nikolai; SCHERER-TRAME, Sophie; SIEMENS, Waldemar

Presenter: HERZOG, Katharina Maria

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