

powered by



GERMAN  
CANCER RESEARCH CENTER  
IN THE HELMHOLTZ ASSOCIATION

Contribution ID: 109

Type: 1 - Scientific Poster

# CHEMOTHERAPY-RELATED CARDIOTOXICITY CAN BE PREVENTED THROUGH EXERCISE IN CHILDHOOD CANCER SURVIVORS: A FRAMEWORK FOR EXERCISE-INDUCED CARDIOPROTECTION

Wednesday 22 July 2026 12:25 (20 minutes)

**PURPOSES:** Pediatric cancer patients exposed to anthracycline drugs are at high risk of cardiac dysfunction and early-stage of heart failure. Hence, chemotherapy-related cardiotoxicity is a long-term complication in childhood cancer survivors and is associated with mortality. Strategies to mitigate these effects are explored. Exercise has emerged as a promising intervention to address long-term cardiac complications. This study aims to provide an overview of the current literature and to develop a framework for exercise-induced cardioprotection in childhood cancer survivors.

**METHODS:** A comprehensive literature search was conducted to identify relevant studies. Our framework was developed using a structured six-step approach: (1) defining the scope of exercise-induced cardioprotection in childhood cancer survivors; (2) identifying key components of chemotherapy-related cardiotoxicity and exercise mechanisms; (3) synthesizing evidence from therapeutic trials; (4) establishing a conceptual model linking exercise to cardiovascular outcomes; (5) identifying critical knowledge gaps; and (6) refining the framework through expert input.

**RESULTS:** The framework for exercise-induced cardioprotection involves integrating both primary prevention (i.e., exercise initiated before or during treatment to reduce cardiotoxic impact) and secondary prevention (i.e., exercise used after treatment to manage or reverse subclinical or overt cardiac dysfunction). Five themes have been identified: (1) Risk Identification, (2) Assessment & Stratification, (3) Prevention Strategies, (4) Implementation & Monitoring, (5) Outcomes & Long-Term Follow-up. Exercise interventions can lead to cardioprotective mechanisms and improved cardiac outcomes. Therefore, exercise training can preserve cardiac function, while low activity levels and physical deconditioning increases mortality and cardiac dysfunction.

**CONCLUSIONS:** Our framework highlights the need for exercise-based strategies to mitigate chemotherapy-related cardiotoxicity, focusing on anthracycline-induced cardiac damage. In fact, exercise holds strong potential in mitigating chemotherapy-related cardiotoxicity in childhood cancer survivors. This framework guides future research and clinical applications while identifying the need for more therapeutic trials and long-term follow-ups in childhood cancer survivors.

## Keywords

Survivorship; Prevention; Pediatrics; Cardio-Oncology

## Conflict of Interest & Ethical Approval

yes

## Abstract submitters declaration

yes

**Author:** Mrs SHOLLER, CHLOE (PENN STATE COLLEGE OF MEDICINE)

**Co-author:** Dr CARU, MAXIME (PENN STATE COLLEGE OF MEDICINE)

**Presenter:** Mrs SHOLLER, CHLOE (PENN STATE COLLEGE OF MEDICINE)

**Session Classification:** Poster Session