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Effects of a structured exercise intervention in childhood cancer patients during intensive treatment: Results of the multicenter randomized controlled FORTEe trial

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Background: Despite substantial advances in treatment, children and adolescents with cancer continue to face high morbidity and health issues, including cancer-related fatigue, treatment-related complications, and physical inactivity. Integrating exercise into pediatric oncology care has emerged as a promising approach to mitigate these burdens during cancer treatment. While preliminary data support its potential to reduce treatment-related side effects and enhance quality of life, robust evidence -especially from large, multicenter trials- remains limited. The aim of the randomized, controlled, multicenter FORTEe trial was to evaluate a personalized and standardized exercise intervention in children, adolescents, and young adults undergoing cancer treatment across ten centers in Europe.

Methods: Participants were randomly assigned to either the exercise intervention group, receiving a tailored, supervised 8–10 weeks lasting exercise program, or the control group, which received usual care. The exercise program includes endurance, strength, flexibility, and balance training, adapted to each patient's age, fitness, and cancer treatment phase. Exercise sessions were intended to take place 3–5 times a week with moderate intensity, with both frequency and intensity adapted to the clinical condition of the individual. Digital tools and telehealth solutions supported the intervention, allowing for both in-person and remote training.

Results: A total of 478 childhood cancer patients (mean age: 11.6 ± 4.4 years; 43 % female) were enrolled in the trial. The formal evaluation is ongoing, and the corresponding data will be available for presentation at the ISEO Inaugural Conference in July 2026.

Conclusion: As a progress beyond the current state-of-the-art, FORTEe has the ambition to implement pediatric exercise oncology as an evidence-based treatment option for all childhood cancer patients, ultimately integrating it as a standard into clinical practice worldwide.

Keywords

Childhood cancer, Exercise intervention, Randomized controlled trial, Cancer-related fatigue

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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