Get Strong to Fight Childhood Cancer

Delivering exercise in paediatric oncology: A novel rehab pathway for personalised care

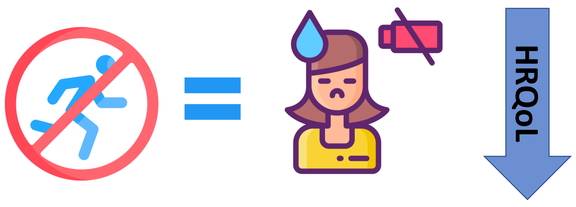
A. Solera-Sanchez[1], H. Marriott[1], S. Windsor[1], K. Straun[1], P. Wright[1], M.A. Neu[2], E. Dreismickenbecker[2], S. Stössel[2], L. Ploch[2], N. Paul[3], C. Ruckes[4], F. Lanfranconi[5], A. Balduzzi[5], J. Wiskemann[6], I. El-Rajab[6], V. Picmanova[7], C. Gravot[7], R. Mongondry[8], W. Bloch[9], K. Rizvi[10,a], M.K. Fridh[11,] A. Lucia[12], C. Fiuza-Luces[13], M. Götte[14,b], F. Spreafico[15], B. Konda[16], L. Kitanovski[17], M. Sowa-Israel[18], T. Baader[19], J. Faber[2] on behalf of the FORTEe Consortium

[a] on behalf of Youth Cancer Europe; [b] on behalf of Network ActiveOncoKids; [1] Oxford Brookes University, Department of Sport and Health Science and Social Work, OX3 0BP Oxford, UK; [2] University Medical Center of the Johannes Gutenberg-University Mainz, Childhood Cancer Center Mainz, 55131 Mainz, Germany; [3] University Medical Center of the Johannes Gutenberg-University Mainz, Institute for the History, Philosophy and Ethics of Medicine, 55131 Mainz, Germany; [4] University Medical Center of the Johannes Gutenberg-University Mainz, Interdisciplinary Centre for clinical Studies (IZKS), 55131 Mainz, Germany; [5] Fondazione Monza e Brianza per Il Bambino e La Sua Mamma, Clinica Pediatrica, Università degli Studi di Milano Bicocca, 20900 Monza, Italy; [6] Heidelberg University Hospital and National, Center for Tumor Diseases, Department of Medical Oncology, Working Group Exercise Oncology, 69120 Heidelberg, Germany; [7] Concentris research management GmbH, Project Management, 82256 Fürstenfeldbruck, Germany; [8] Centre de Lutte Contre le Cancer Léon Bérard, Prevention Cancer Environment Department, 69373 Lyon, France; [9] German Sport University Cologne, Department of Molecular and Cellular Sport Medicine at the Institute of Cardiology and Sports Medicine, 50933 Cologne, Germany; [10] Youth Cancer Europe, Youth Cancer Europe, 400 372 Cluj-Napoca, Romania; [11] Department of Pediatrics and Adolescent Medicine, University Hospital Rigshospitalet, 2100 Copenhagen, Denmark; [12] Universidad Europea de Madrid, School of Doctorate Studies and Research, 28670 Madrid, Spain; [13] Hospital 12 de Octubre Research Institute, 'imas12', Physical Activity and Health Laboratory, 28041 Madrid, Spain; [14] Essen University Hospital, Exercise Oncology Working Group, 45122 Essen, Germany; [15] Fondazione IRCCS Istituto Nazionale dei Tumori, Pediatric Oncology Unit, 20133 Milan, Italy; [16] Forma 3D Ltd., Forma 3D, 1000 Ljubljana, Slovenia; [17] University Medical Center Ljubljana, Division of Pediatrics, Department of Haematooncology, 1000 Ljubljana, Slovenia; [18] Nurogames GmbH, Nurogames, 50676 Cologne, Germany; [19] Pixformance Sports GmbH, Pixformance Sports, 14624 Dallgow-Döberitz, Germany.

Scan for full consortium author list.

BACKGROUND

Cancer is the leading cause of death from non-communicable diseases **in children** across Europe. While survival rates have increased over the last decades, **cancer treatment is associated with potential side effects**. Those are often **exacerbated as a result of physical inactivity**, negatively affecting fatigue levels and health-related quality of life (HRQoL).



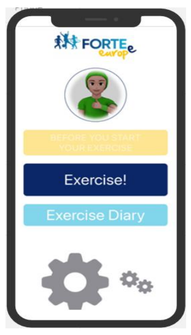
In adults, exercise revealed notable **effects** on **overall patient's wellbeing**. However, **in childhood cancer** patients, strong **evidence is lacking**.

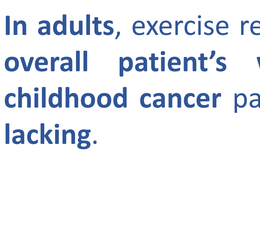
FORTEe project aims to evaluate a personalised and standardised **exercise intervention for children and adolescents undergoing anti-cancer treatment**.

METHODS

FORTEe is a **randomised control trial involving 16 partner institutions** from eight European countries.

The trial aims to evaluate a **personalised 8 to 10-week exercise intervention** for children and young people. Supportive **digital technologies** such as an **augmented reality app** and a **digital fitness device** (i.e., Pixformance) will be implemented.

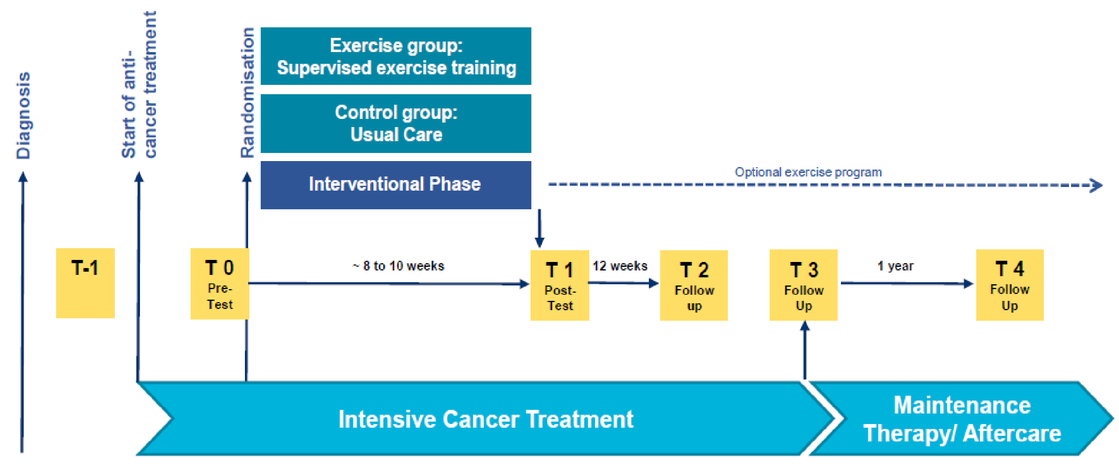




Eligibility: Confirmed Childhood Cancer Diagnosis (according to ICCC3, primary or secondary or relapsed disease); **≥4 and≤21 years** of age; **Planned or started chemo- and/or radiotherapy.**

Enrolment: As soon as possible after a confirmed childhood cancer diagnosis; **Informed consent in a time window of maximum 8 weeks** after the treatment start (start of chemo-/radiotherapy).

MEASUREMENTS



- **Questionnaires:** *Fatigue, QoL, mental health, resilience, physical activity*
- **Body composition***: Skinfolds, BIA, DEXA*
- **Endurance***: 6-minute walking test, assisted 6-minute cycling test, adapted Yo-Yo test, CPET*
- **Strength:** *medicine ball throw, bicep curl, dynamometry, sit-to-stand-test, leg extension machine*
- **Flexibility***: sit-and-reach test, goniometry (ankle, knee, hip)*
- **Functional Mobility***: QUICK Test, Timed-up-and-down stairs test*
- **Interview***: about the intervention, app+Pixformance (engagement, usability, acceptability)*

RESULTS

The **principal outcome** assessed will be the **effect of physical activity on cancer related fatigue**. Additionally, physical performance, mental health, and HRQoL will also be assessed, as well as the feasibility and usability of the digital health technologies.

CONCLUSION

The **findings will contribute** to the **development** of evidence-based **guidelines** and **novel digital health technologies** to **support paediatric oncology** rehabilitation. **FORTEe has the ambition** of **implementing exercise in paediatric oncology** as an evidence-based standard in clinical care for all cancer patients all over EU and beyond.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 945153.
This poster reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.