



# 3rd Pediatric Exercise Oncology Congress

# FORTEe



## Precision-based Exercise Protocols in Pediatric Oncology – the FORTEe booklet.

Lanfranconi F.<sup>1</sup>, Corti E.<sup>1</sup>, Konda B.<sup>2</sup>, Zardo W.<sup>3</sup>, Moriggi T.<sup>1</sup>, Peli L.<sup>1</sup>, Dreismickenbecker E.<sup>4</sup>, Neu M.<sup>4</sup>, Fiuza Luces C.<sup>5</sup>, Lucía A.<sup>5</sup>, Faber J.<sup>4</sup>, Balduzzi A.<sup>6,7</sup> on behalf of the FORTEe Consortium.

<sup>1</sup> Fondazione Monza e Brianza per il Bambino e la sua Mamma – Centro Maria Letizia Verga, Monza (Italy) <sup>2</sup> Forma 3D LTD, Ljubljana (Slovenia) <sup>3</sup> Pediatric Oncology Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan (Italy) <sup>4</sup> Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Mainz (Germany) <sup>5</sup> Universidad Europea de Madrid Sau, Madrid (Spain) <sup>6</sup> Università degli Studi di Milano Bicocca, School of Medicine and Surgery, Milan (Italy) <sup>7</sup> Fondazione IRCCS San Gerardo dei Tintori, Monza (Italy)

### Introduction

Children, adolescents and young adults with cancer (CAYA-C) often have reduced exercise tolerance, which can have a negative impact on their quality of life. The European FORTEe\* research project, 'Get Strong to Fight Childhood Cancer: An Exercise Intervention for Children and Adolescents Undergoing Anti-Cancer Treatment', promotes precision-based exercise (PEX) as part of cancer treatment. Ten clinical centres recruited CAYA-C patients from eight European countries, with more than 450 patients taking part in the study<sup>1</sup>.



### Methods

A multidisciplinary, multicentre team of sports medicine physicians and exercise professionals selected and adapted cardiorespiratory, strength, balance and stretching exercises over the course of a year via video call consultations. The coordinator and/or clinical trial leader teams conducted in situ visits to ensure standardisation of the precision-based exercise protocols. The booklet included sections to encourage adherence to the protocols and to personalise exercise according to specific clinical conditions (e.g. respiratory inefficiency, cardiac failure, osteonecrosis and neuromuscular disease).

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### Results

The exercise booklet included 98 exercises and their adapted versions:

- 22 **cardiorespiratory**;
- 15 for leg and hip **strength**; 7 for back ; 3 for chest ; 7 for shoulder ; 7 for arm ; 10 for core;
- 17 for **balance**;
- 10 for **flexibility**.

The booklet was launched in May 2025 at the European Society for Paediatric Oncology (SIOP) conference in Budapest, and in October 2025 at the SIOP International Congress in Amsterdam. Copies of the precision-based exercise protocols were distributed to professionals and associations in 50 countries worldwide.

### Conclusion

The FORTEe booklet, developed within the FORTEe project, is a promising tool for promoting PEX in paediatric oncology centres. Thanks to its clear structure and adaptability to various clinical conditions, it could form the basis for the next guidelines on exercise in paediatric oncology.



#### 1 CARDIORESPIRATORY EXERCISE

##### MINI TRAMPOLINE WALK

**STARTING POSITION**  
Standing in the centre of trampoline.

**ACTION**  
Raise left and right legs alternately. The arms should be raised and flexed at 90°. Movement should be right arm with left leg and left arm with right leg.

30-40 sec exercise; 30-40 sec recovery; total time from 2 to 20 min.

Exhaling when you raise your legs.

Stabilize by:  
- maintaining your spine in a neutral position;  
- keeping your chest high and tightening your navel.

#### 1 CARDIORESPIRATORY EXERCISE

##### MINI TRAMPOLINE WALK / ALTERNATIVE

WITH THE HELP OF AN EXERCISE PROFESSIONAL

AVOID!  
- Rotating your torso.  
- Bending your head down.  
- Holding your breath.

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#### 1 TRAININGS FOR SPECIFIC CLINICAL CONDITIONS

##### WHEN THE RESPIRATORY SYSTEM IS NOT EFFICIENT

**WHY?**  
Acute conditions: infection, fluid overload, cytokine release syndrome, acute graft-versus-host disease pulmonary.  
Chronic conditions: chronic graft-versus-host disease pulmonary.

**OUR FEAR**  
Hypoxia, Fatigue.

**ADAPTATION**  
Small skeletal muscle groups exercises are allowed in all conditions, moderate cardiorespiratory exercise allowed in chronic conditions.

**RECOMMENDED**  
Use the saturimeter during the training. Seated position.

Step up eyes open alternative 20 sec exercise and 40 sec recovery, in total 5 min.

Calf raise 6-8 reps for 3 sets

#### 1 TRAININGS FOR SPECIFIC CLINICAL CONDITIONS

##### WHEN THE RESPIRATORY SYSTEM IS NOT EFFICIENT

Adduction 6-8 reps for 3 sets

Clamshell 6-8 reps for 3 sets

Elastic band rear raise 6-8 reps for 3 sets

Bench press 6-8 reps for 3 sets

Shoulder external rotation 6-8 reps for 3 sets

Bipedal posture on balance disc 10 sec exercise for 4 sets

Chandelier 45 sec

Padlock 30 sec each leg

### Bibliography

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