

# A physical activity program to improve cardio-respiratory fitness in children and adolescents following acute cancer treatment (POWER): status of a randomized controlled trial

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## Background

Medical treatment of pediatric cancer leads to

- reduced physical activity and physical performance (e.g.  $VO_2$  peak, Nielsen et al., 2020),
- increased risk to develop chronic health conditions.

Supervised exercise interventions during cancer treatment are feasible and safe (Gauß et al., 2021).

**Primary aim of the POWER-RCT is to evaluate the effectiveness of a partially supervised 12-week physical activity program on cardiorespiratory fitness ( $VO_2$  peak) in pediatric cancer patients who have recently completed acute treatment.**

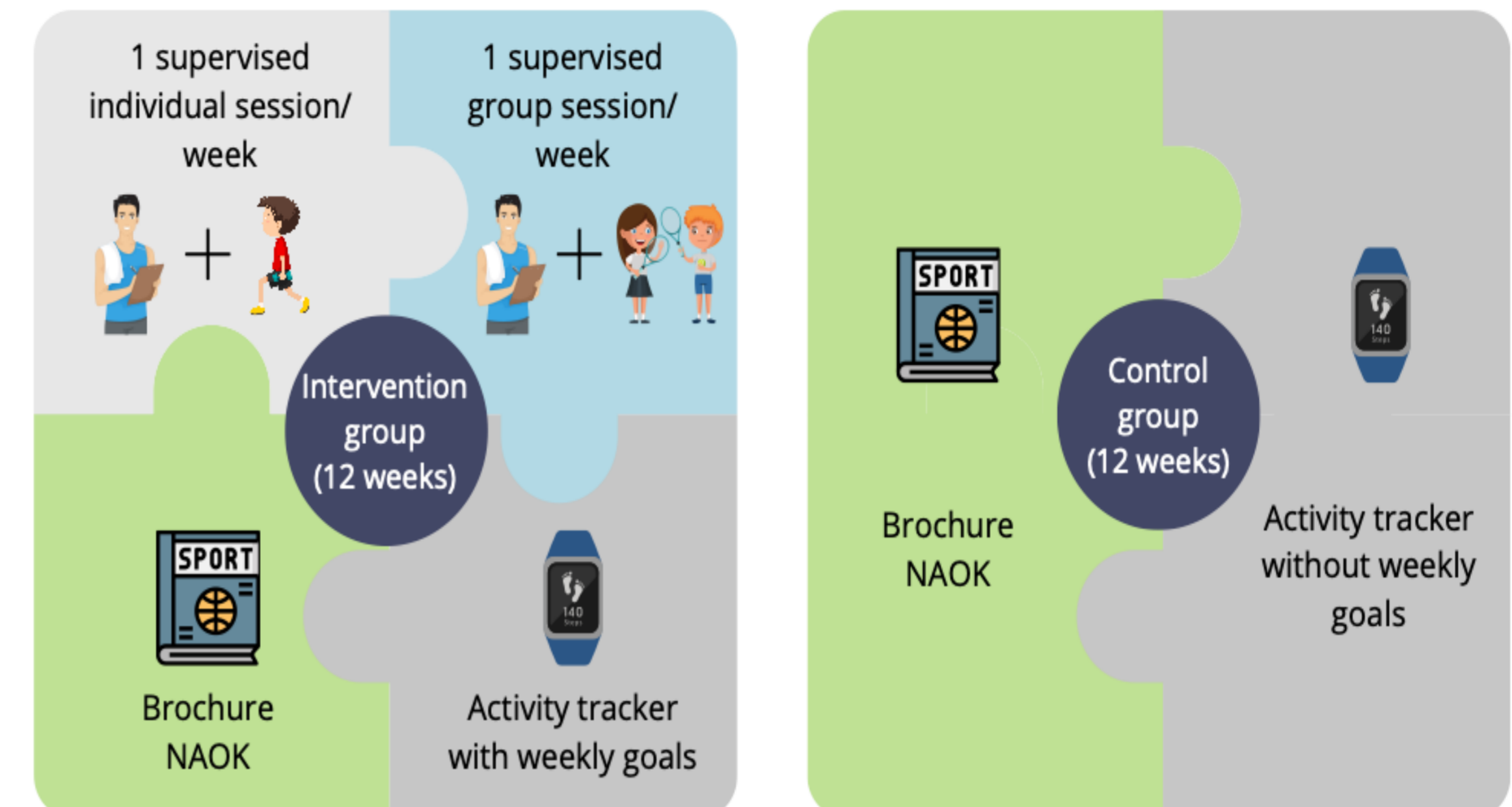
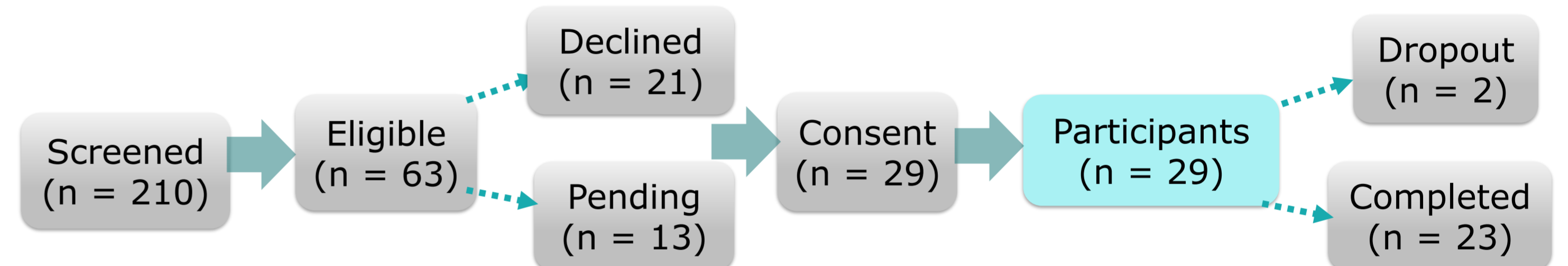


Figure 3. Contents of the intervention (left) and control group (right)

## Status

- Start: June 2021
- Ongoing recruitment
- Reasons for non-participation: time, need for detachment



## Results

- 34.5% Leukemia, 27.6% Hodgkin Lymphoma, 10.4% Brain tumor
- $VO_2$  peak assessments were successfully completed in 28 patients
- No adverse events occurred during any assessment
- Cognitive testing showed low completion rates due to separate appointment

### Feasibility of assessments across outcome measures

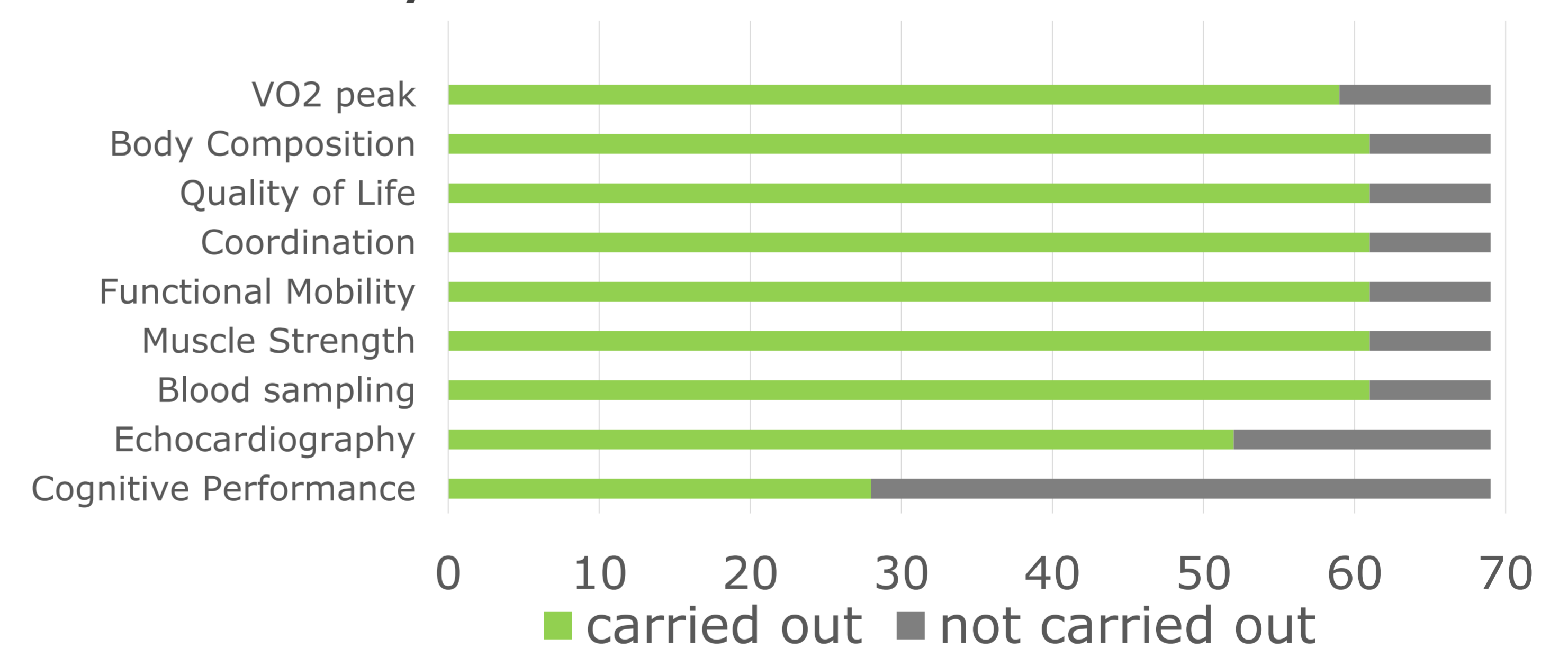


Figure 4. Feasibility of different assessments across outcome measures



Figure 1. Primary and secondary outcomes. (Figure generated with AI ChatGPT, OpenAI, 2026)

## Methods

- Recruitment at Helios Hospital Krefeld
- N=56 pediatric cancer patients aged  $\geq 7$  and  $< 23$  years
- Inclusion 6 weeks post cancer therapy + Randomization 1:1 (Fig. 2)
- IG: multimodal partially supervised 12-week exercise program consisting of individual and group training sessions (Fig. 3)
- CG: brochure + physical activity tracker to measure the minutes of moderate to vigorous physical activities (Fig. 3)

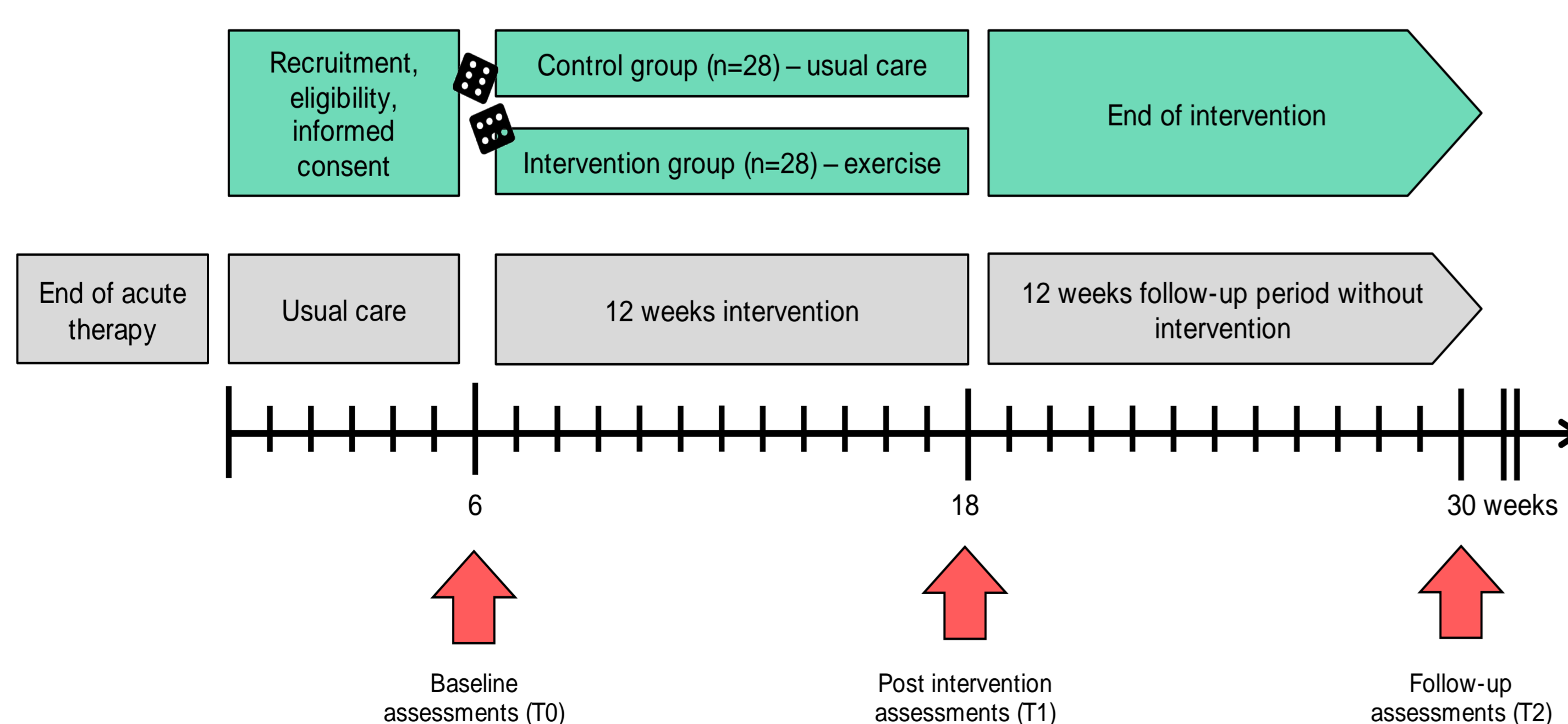


Figure 2. Study scheme

## Discussion

- $VO_2$  peak testing appears feasible in pediatric oncology sample.
- A reduced number of assessments might probably increase motivation to participate.
- Flexible, home-based approaches show potential to enhance recruitment.
- Study results might indicate potential benefits of exercise to reduce long-term treatment effects.

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**References:** Nielsen, M.K.F., Christensen, J.F., Frandsen, T.L., et al. (2020). Effects of a physical activity program from diagnosis on cardiorespiratory fitness in children with cancer: a national non-randomized controlled trial. BMC Med. Jul 6; 18(1):175. doi: 10.1186/s12916-020-01634-6. Gauß, G., Beller, R., Boos, J., et al (2021). Adverse Events During Supervised Exercise Interventions in Pediatric Oncology – A Nationwide Survey. Front Pediatr, Aug, 19;9:682496. doi: 10.3389/fped.2021.682496.