

# Perceived exertion of sensorimotor training in childhood cancer survivors

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Figure 1: Child performing one-leg stand

## Background

To determine the perceived exertion of sensorimotor training (SMT) in childhood cancer survivors.

## Methods

6 childhood cancer survivors (mixed diagnoses, 7-15 years) participated in a 4-week SMT intervention. Training was performed 3x/week (1x supervised, 2x home-based) and consisted of 5 sensorimotor exercises (5 reps à 10s with 20s rest, 1min rest between exercises). Exercise intensity was set by combining various positions, surfaces and dual tasks resulting in overall exercise intensity levels from 3 (low) to 12 (high). Perceived exertion was determined (1) per RPE-scale (6-20) after each training session and (2) per 5-point-likert scale after the intervention.

## Results

Participants mostly chose the overall exercise intensity levels 8 or 9. Mean RPE-value was  $11.43 \pm 0.91$ . 2/6 children rated SMT as *somewhat physical demanding* and 4/6 chose the answer *cannot decide*.



Figure 3: Child during exercise selection (Otten et al. 2022, p. 33)<sup>1</sup>

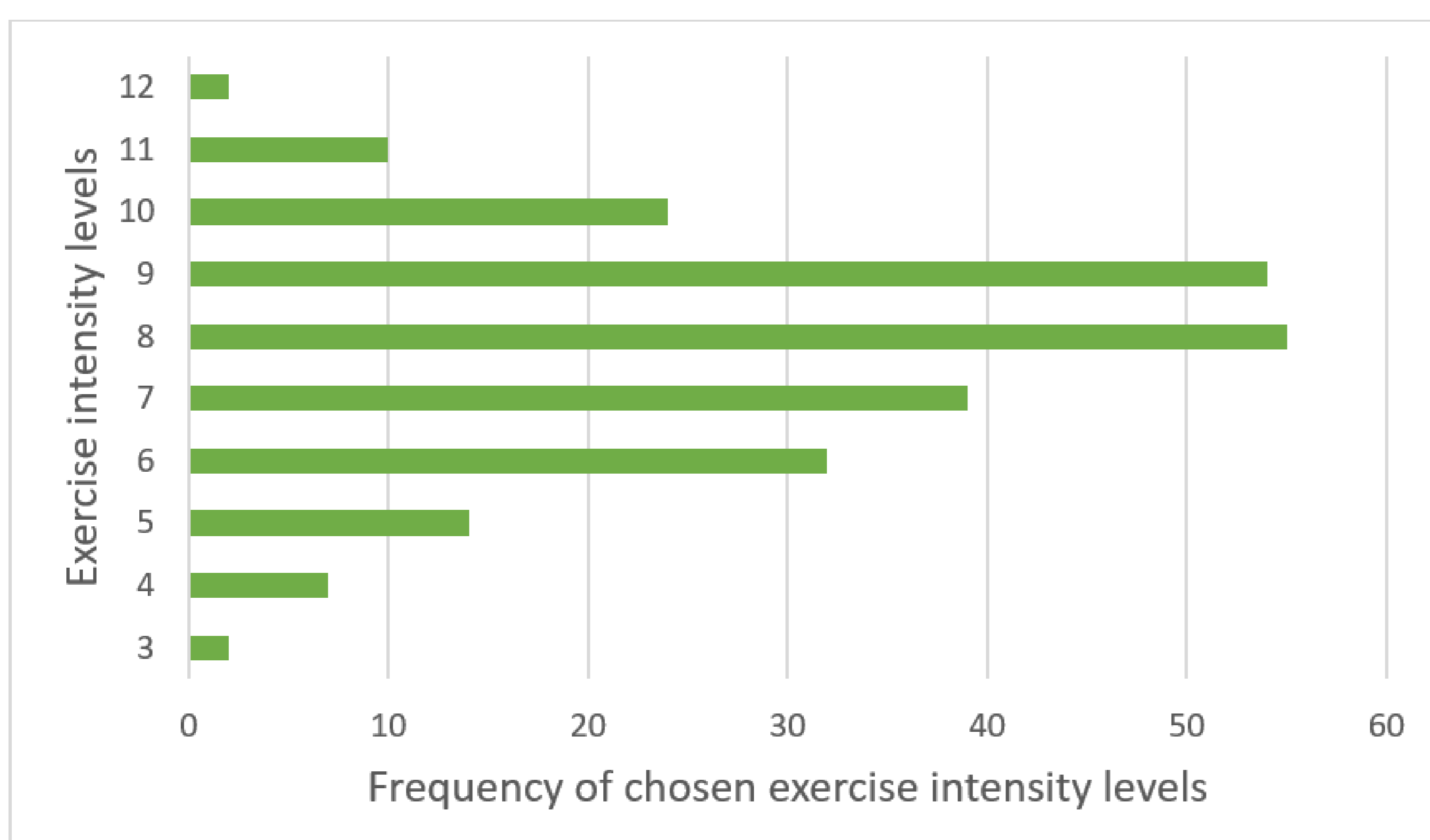


Figure 2: Chosen exercise intensity levels

## Discussion

While most SMT sessions were performed at medium intensity, participants perceived SMT as less intensive. Many children had difficulties in assessing intensity. This may be due to the fact that they compared their physical exertion during SMT with their experiences of general strength and endurance exercises. However, in cancer patients SMT is not applied to promote strength, but primarily to improve for example balance control and proprioception by inducing neuronal adaption<sup>2</sup>. Thus, SMT requires specific training strategies such as short exercise durations and sufficient time for recovery to prevent neuronal fatigue<sup>2</sup>.

## Conclusions

In order to successfully apply SMT in childhood cancer survivors to achieve improvements in areas such as balance control and proprioception, children need to be sensitized to SMT, its potential mechanisms and especially to its specific training strategies.

## Literature

1 Otten, S., Bischoff, C., Oswald, V., Prokop, A., Maas, V., Bloch, W., Streckmann, F., Däggelmann, J. (2022). Sensomotoriktraining in der Kinderonkologie – Umsetzung eines kindgerechten und spielerischen Trainingskonzepts. *Bewegungstherapie und Gesundheitssport*, 38(01), 30-35. <https://doi.org/10.1055/a-1714-3644>

2 Streckmann F, Rittweger J, Bloch W, Baumann FT (2014) Bewegungsempfehlungen bei Chemotherapie-induzierter peripherer Polyneuropathie. *Bewegungstherapie und Gesundheitssport* 30:179-182