

Preliminary experiences of a 6-week bicycle ergometer training for children and adolescents during hospitalization for acute cancer therapy: Two case studies

Vivien Lösse^{1,2}, Meinolf Siepermann², Vanessa Oswald¹, Volker Maas², Wilhelm Bloch¹, Julia Däggelmann¹

¹ Institute of Cardiovascular Research and Sports Medicine, Department of Molecular and Cellular Sports Medicine, German Sport University, Cologne, Germany

² Children's Hospital Amsterdamer Straße, Cologne; Clinic for Children and Youth Medicine; Department for pediatric hematology/oncology

Background

To describe preliminarily experiences of bicycle ergometer training for children and adolescents during hospitalization for acute cancer therapy.

Methods

A supervised 6-week bicycle ergometer training (3x/week) was offered to pediatric cancer patients during hospitalization for acute cancer treatment. Training protocol comprised continuous cycling for at least 10min (max. 40min) at constant speed (cadence: 60-80rpm); workload was initially set at 0watt and progressively increased if the patient succeeded to cycle 10 continuous minutes without interruption. Training attendance, reasons for non-attendance, training duration and achieved workload were documented.



Figure 1: Patient during ergometer training

Results

Patient A (female, 10 years, lymphoma) attended 9/18 sessions. Reasons for non-attendance were: not hospitalized on the day of training (8x), medical issues (1x). Training duration ranged from 5-16min. Only cycling without resistance was possible. Patient B (female, 18 years, lymphoma) participated in 9/18 sessions. Reasons for non-attendance were: not hospitalized on the day of training (5x), medical issues (4x). Training duration ranged from 10-35min. Workload was increased in one session up to 25watt.



Figure 2: Duration of training sessions

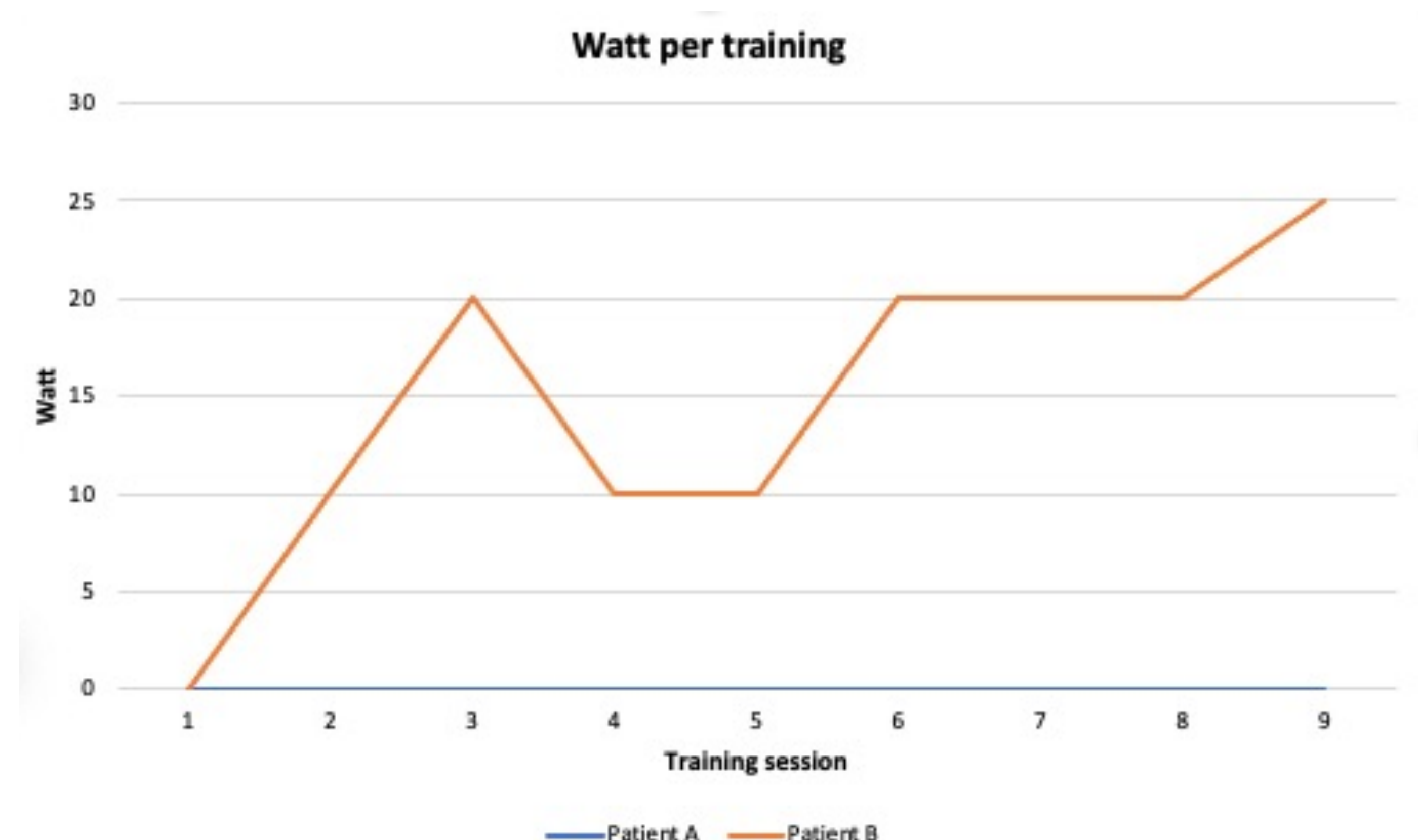


Figure 3: Intensity of training sessions

Discussion

Both patients could participate in the intervention. However, attendance rate was relatively low, as the patients were often not hospitalized on the day of training. If admitted, patients could participate in most of the offered sessions for at least a few minutes. Workload remained low.

Conclusions

Low-intensity bicycle ergometer training seems feasible during hospitalization for acute pediatric cancer therapy. To improve attendance and overall exercise time, an individualized and flexibly scheduled training (e.g. even twice per day) needs to be offered. Due to fluctuating patient abilities and low exercise capacity, training should be supervised.