Promoting self-regulation and executive functions in children: Evaluating the effectiveness of a brief physical activity intervention

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**BACKGROUND**

- Self-regulation and executive functions are critical for successful transition from kindergarten to school (Suchodoletz et al., 2014).
- Physical activity interventions have been shown to improve executive functions in studies with adult samples (Barenberg, Berse, & Duke, 2011), probably driven by neurophysiological and affective mechanisms.
- Qualitative (e.g., coordinative) and quantitative (e.g., intensity level) demands of the specific type of physical activity influence the activity effects on executive functions (Best, 2010).
- Combining coordinative and intense physical activities may foster executive functions most effectively.

**RESEARCH QUESTION**

Does a brief physical activity intervention enhance executive function performance in children compared to a control condition?

**DESIGN**

Between-person randomized trial

\[ N = 100 \text{ children, } 4-7 \text{ y} \]

- **Rabbit**
  - Coordination and moderate-intense activity
- **Control**
  - Sitting activity

**Parent report**

- **Executive functions**
  - Brief self-control scale (Rauch et al., 2014)
- **ADHD symptoms**
  - Conners 3 (Lidzba et al., 2013)
- **Physical activity**
- **Social functioning**
  - Strengths and difficulties questionnaire (Goodman, 1997)
- **Body mass index**
  - Demographics

**FIRST RESULTS**

**Sample descriptors**

- **N = 61 participants (24 female)**
- **Age:** Mean (SD) = 67.93 (11.72) months
- **BMI:** Mean (SD) = 15.05 (1.45)
- **Condition:** (Rabbit, n = 30 Rabbit, n = 31 Control)
- **Kindergarten:** n = 52 participants
- **Primary school:** n = 8 participants

**Manipulation checks**

**Figure 1.** "How much did you enjoy the tasks with rabbit and hedgehog?" - intervention condition (red) and control condition (blue).

**Heart rate (bpm)**

**Figure 2.** Time course of mean heart rate in the intervention condition (red) and in the control condition (blue).

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**References**