

# Physical Activity, Physical Self-Concept, Self-Esteem, and Health-Related Quality of Life in Pediatric Cancer Survivors and Healthy Controls

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## 1. Background:

Due to improved treatment and diagnosis, survival rates in pediatric cancer have increased by up to 80% in recent last years. Despite this, pediatric cancer survivors (PCS) bear a high risk for cancer related late effects. Late effects include a decrease in physical activity (Ness et al., 2009) as well as lower health-related quality of life (HRQL) (Vetsch et al., 2018) compared to typically developing children. Since physical activity is a predictor for the physical self-concept in typically developed children (Biddle & Asare, 2011), and this seems central to psychological well-being, it is therefore likely that PCS are at risk for diminished physical self-concept.

## 2. Aim of the study:

- To Investigate group differences between PCS and controls
- To investigate associations between the physical activity level, the physical self-concept, self-esteem and HRQOL in PCS and controls

## 3. Methods:

### Inclusion criteria

#### Patients:

- Age: 7-16 years
- Cancer diagnosis (CNS±) within the last 10 years
- Termination of treatment at least 1 year prior to assessment
- Treatment including drugs, radiation, and/or surgery

#### Controls:

- Age: 7-16 years
- No previous cancer disease
- Neurologically healthy

### Assessment

#### Physical activity:

- “Bewegungs- und Sportaktivitätsfragebogen” (BSA-F)

#### Physical self-concept & self-esteem:

- Physical Self-Description Questionnaire – Shortform (PSDQ-S)

#### Health-related quality of life:

- Kidscreen-10 Index

### Characteristics of the study population

	Patients (n = 40)	Controls (n = 47)
Age (years)	11.59 (1.99)	11.70 (2.66)
Sex (% female)	43.90%	44.68%
Height (cm)	146.32 (13.05)	149.73 (17.20)
Weight (kg)	43.01 (14.12)	43.60 (17.41)
SES	6.46 (1.43)	6.88 (1.53)
Treatment termination (years ago)	4.81 (2.22)	
Age at diagnosis (years)	5.51 (3.22)	

### Data Analyses

#### Group comparisons:

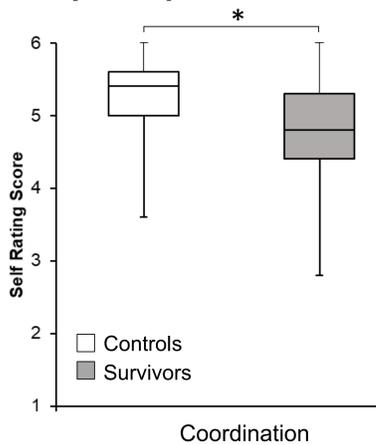
- Wilcoxon rank-sum tests

#### Regression analyses:

- Univariate linear regressions

## 4. Results:

### Group comparisons



- Diminished physical self-concept in the facet of coordination in PCS
- Comparable physical activity, self-esteem, HRQOL, and other facets of the physical self-concept between controls and PCS

Fig. 1. Coordination in PCS and controls. Boxes = interquartile range; error bars = range. Bonferroni correction for multiple testing was applied (\* $p < .004$ ).

### Regression analyses

- Physical self-concept predicts HRQOL

Controls:  $F(1, 35) = 28.086, p < .000, R^2_{adj} = .429$   
 PCS:  $F(1, 26) = 9.535, p = .005, R^2_{adj} = .240$

- Self-esteem predicts HRQOL

Controls:  $F(1, 36) = 15.086, p < .000, R^2_{adj} = .276$   
 PCS:  $F(1, 27) = 7.338, p = .012, R^2_{adj} = .185$

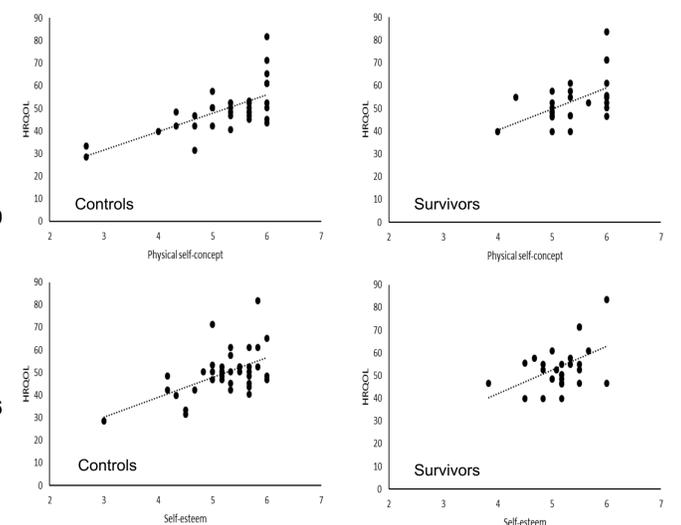


Fig. 2. Scatterplots and corresponding trend lines for controls and PCS  
 a) HRQOL and physical self-concept b) HRQOL and self-esteem.

## 5. Conclusion:

- Pediatric cancer and its treatment seems to negatively affect the physical self-concept, in particularly the facet of coordination.
  - No significant differences between controls and PCS regarding physical activity, other facets of the physical self-concept, self-esteem, and HRQOL could be detected.
  - Results show a strong positive relation between the physical self-concept and HRQOL as well as between self-esteem and HRQOL.
- Interventions targeting the promotion of physical abilities, the physical self-concept, and coordination are needed.

## 6. References and funding:

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