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Psychosocial factors and their association with physical activity and exercise capacity in childhood cancer survivors compared to healthy controls: a cross-sectional study

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Background: Childhood cancer survivors (CCS) often experience long-term adverse effects that may compromise physical activity (PA) and cardiorespiratory fitness (CRF), with potential implications for psychosocial outcomes including depression, affect and distress. This study explored associations between physical- and psychosocial outcomes in CCS.

Methods: 84 CCS (42% male, 0.5-10 years after chemo- and/or radiotherapy, median age at diagnosis: 14.1 years(IQR:5.1)) and 84 matched healthy controls were included. Participants performed a cardiopulmonary exercise test on a treadmill to assess peak oxygen uptake (VO₂peak) and completed the Beck Depression Inventory (BDI-II), Distress Thermometer (practical-, social-, emotional-, religious- and physical subscales), and positive- and negative affect scales (PANAS). PA was measured through daily steps using a Fitbit Sense for 14 days. Subgroup analyses were performed for diagnosis type, treatment type, treatment duration and time since diagnosis.

Results: CCS had a lower VO₂peak compared to controls (34.8±7.2 vs 44.0±7.0 ml/kg/min,p<.001) and fewer daily steps (8800±2994 vs 11441±4009,p<.001). There were no significant associations between physical and psychosocial variables in CCS or controls. However, in CCS with hematological malignancies (n=42), BDI-II scores correlated moderately with PA and VO₂peak (r=-.346,p=.033;r=-.525,p=.002) and emotional problems correlated moderately with VO₂peak (ρ=-.369,p=.027). Among CCS treated with only chemotherapy, PA correlated moderately with BDI-II scores and positive affect (n=54, r=-.336,p=.011;ρ=.308,p=.033). In this group, VO₂peak correlated moderately with BDI-II scores and emotional problems (r=-.402,p=.009;ρ=-.345,p=.019). CCS with treatment duration above the median (n=44,>0.69 years) showed a moderate correlation between PA and positive affect (r=.404,p=.012). CCS with time since cancer diagnosis below the median (n=42,<4.97 years), VO₂peak correlated moderately with emotional problems and physical problems (r=-.428,p=.012;r=-.379,p=.027).

Conclusions: CCS demonstrated lower CRF and PA than matched controls. Stronger associations between physical and psychosocial outcomes were present among CCS after hematological malignancies, treatment with only chemotherapy, longer treatment duration and shorter time since cancer diagnosis.

Keywords

childhood cancer survivor, cardiorespiratory fitness, physical activity, psychosocial questionnaires

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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