

Childhood Cancer Survivors: Patient and Provider Influences on Physical Activity Participation

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Background: Childhood cancer treatment places adult survivors at significant risk of persistent fatigue, decreased physical function, and premature chronic illnesses. While physical activity can potentially modify these risks, 20%-52% of childhood cancer survivors are sedentary, and compared to the general population, more likely to be inactive (females: OR, 1.86; 95% CI, 1.50-2.31; males: OR, 1.84; 95% CI, 1.45-2.32). Identification of influences on survivors' physical activity participation will inform intervention strategies to positively modify treatment sequelae.

Methods: A health behavior model guided structural equation modeling of data derived from three surveys within the Childhood Cancer Survivors Study. The study sample comprised adults (N=868) who had survived five or more years after treatment for malignant disease diagnosed (before age 21) between 1970 and 1986 (current mean age = 24.92; mean years since diagnosis = 21.74; mean age at diagnosis = 9.0).

Results: A strong model (N=252; $\chi^2=64$, df=60, P=0.34, CFI=0.99, TLI=0.99, RMSEA=0.016, WRMR=0.78) explained 46% of the variance in males' physical activity participation. Direct influences included reports of: fears about future health (P=0.01), provider expertise (P=0.01), exercise history (P=<0.001), and education attainment (P=0.01); indirect influences included: not discussing cancer with a provider (P=0.01), less pain (P=0.01), increased intrinsic (P=0.01) and decreased extrinsic motivation (P=0.01). An equally strong

model (N=335; $X^2=86$, df=72, P=0.12, CFI=0.98, TLI=0.98, RMSEA=0.024, WRMR=0.77)

explained 31% of the variance in females' physical activity participation. Direct influences included: stamina (P=<0.001), fatigue (P=0.01), exercise history (P=0.01), and number of cancer related physician visits (P=0.05); indirect influences included fears about future health (P=0.01) and perceptions of the provider relationship (P=0.001).

Conclusions: Survivors' pain, fatigue, anxiety, and physical stamina moderate physical activity participation. Interpretation of these factors is gender-dependent, influenced by fear, motivation, affect, and perceptions of providers' competency and interaction.

Clinical Implications: Providers should consider multi-focal gender-tailored intervention strategies to support physical activity participation in childhood cancer survivors .

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