Psychological interventions to increase physical activity in children and young people living with and beyond cancer: a systematic review

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BACKGROUND

- Despite significant evidence for the psychological (reduced anxiety, depression, fatigue and emotional distress) and physical health (preserving cardiovascular fitness, reduced side effects, improved cancer survival, reduced risk of recurrence), benefits of physical activity for children and young people living with and beyond cancer, many still do not meet the recommended levels of physical activity (PA)(San Juan, Wolin, &Lucia, 2011; Stolley, Restrepo, & Sharp, 2010; Winter, Muller, Hoffmann, Boos, &Rosenbaum, 2010).
- Little is currently known about which behaviour change techniques and intervention components successfully promote PA for children and young people living with and beyond cancer.

AIMS

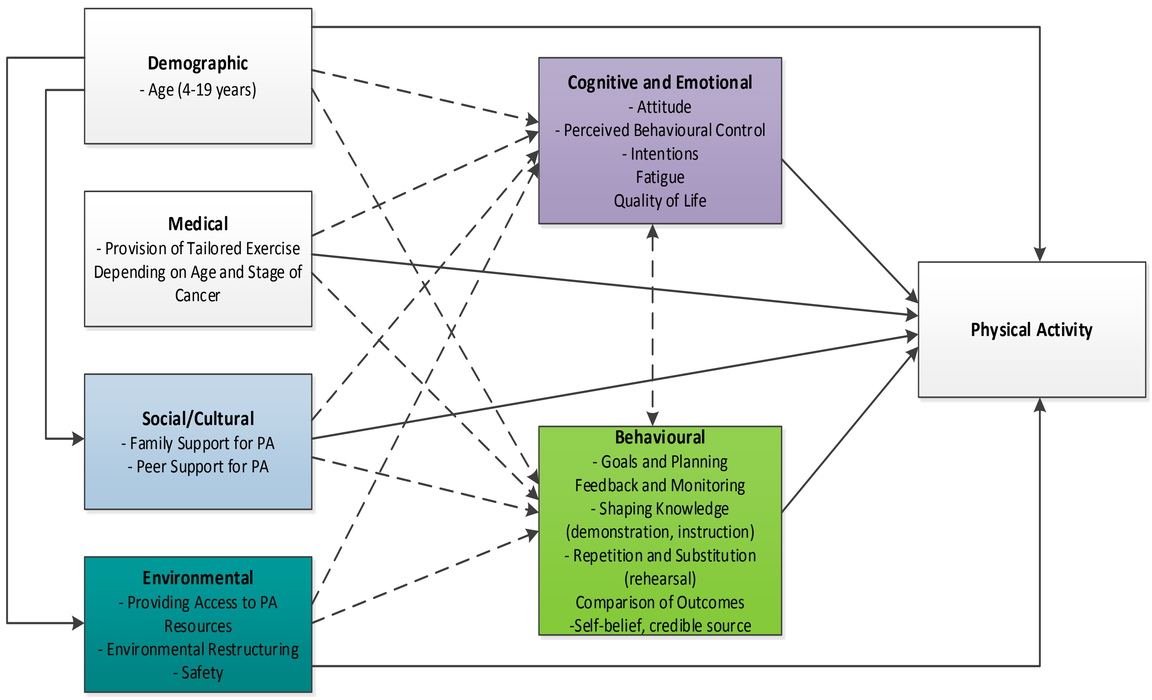
What are the most commonly used BCTs in RCTs of behavioural interventions for the promotion of physical activity in children and young people during and after cancer treatment?

How can we conceptualise the intervention features?

METHODS

- Systematic review registered on PROSPERO (CRD42017064591)
- EMBASE, CINAHL, Scopus, PsycINFO, PsycARTICLES, Web of Science, the Cochrane Central Register of Controlled Trials (CENTRAL), Google Scholar, PubMed and SPORTDiscus = 1540 articles retrieved
- 12 studies included in the review; 8 studies evaluated interventions to increase physical activity during cancer treatment, 4 after cancer treatment. Most of the studies were feasibility, exploratory studies with sample sizes ranging from 4 (Takken et al., 2009) to 150 (Muller et al., 2016) participants.
- Stage/type of cancer: ALL acute lymphoblastic leukaemia, lymphoma, sarcoma (undergoing chemo, radio, adjuvant or surgical therapies)
- Stage of survivorship: study means ranged between 17 months -10 years.

Fig 1. Conceptual model of the interrelationship of intervention components known to predict physical activity for young people living with and beyond cancer (Gilliam & Schwebel, 2011)



→ = reflects empirically-documented pathways
-------> = reflects hypothesised interactions

Behaviour change techniques (BCTs)

- ***Number of BCTs per intervention:*** mean 6.4, range 3-12**.** Across all studies, 19 out of the 93 BCTs were used.
- ***Most utilised BCTs***: ***Instruction on how to perform the behaviour*** (all 12 studies), ***demonstration of the behaviour*** (*k*= 9), ***behavioural practice/rehearsal*** (*k* = 9), and ***credible source*** (*k* = 9).
- ***Least utilised BCTs:*** *Feedback on behaviour (k = 1), social support (unspecified) (one study), information about emotional consequences* (*k* = 1), *habit formation* (*k* = 1), and *verbal persuasion about capability* (*k* = 1).

Cognitive-emotional factors

Cognitive-emotional intervention features: One intervention based on the Theory of Planned Behaviour used educational sessions targeted the core variables of ***attitude, perceived behavioural control, subjective norms and intentions***. Delivery methods included ***information, teaching and rehearsal of skills, modelling, planning and social support*** (Kulos-Reed, 2009).
Cognitive-emotional outcome measures: *Intention:* (*r* = .46), controllability (*r* = .75) and self-efficacy (*r* = .69) were moderately or strongly correlated with PA at 3 month follow up (Kulos-Reed, 2009). *Fatigue*: three studies reported a significant reduction in fatigue at follow up (Yeh et al., 2011; Takken et al., 2012; Vallet et al., 2016) also reported significant increases in *global self-esteem, perceived sport competence and perceived physical strength. Quality of Life:* one study reported a significant increase at follow up (Muller et al., 2015), two studies reported no significant differences (Fiuza-Luces, et al., 2016 Tanir et al., 2012).

Environmental factors

Delivery: fitness instructors, exercise psychologists, physiotherapists, and sport therapists.
Duration: 4 weeks -12 months, with the frequency of prescribed exercise ranging from once a week for 60 mins to three times per day for 5 days per week.
Setting: a hospital *(k = 5),* home based *(k = 4),* a university (*k* = 1), physiotherapy (*k* = 1), and a mixture of hospital, home, and a winter sports trip (*k* = 1).
Content: tailored mixture of aerobic (e.g. walking, cycling, treadmill) and strength-based (e.g. focused on legs, chest, shoulders, back) exercises which often built gradually in intensity, duration and/or frequency based on the participant's capacity.

Take home messages

- Interventions for improving physical activity participation and adherence during and beyond cancer treatment for young people should focus on integrating the known predictors of PA for this group: ***psychosocial*** (behavioural, cognitive-emotional, social), ***environmental*** and ***medical*** intervention components
- Our conceptual model can be used to inform the development of empirically supported clinical interventions, as well as guiding future research objectives and priorities.
- Future priorities: 1) The development of ***theory-based psychosocial interventions*** . 2) ***Embedding health psychology strategies***

Applying the findings to health psychology practice

MOVE provides tailored support young people living with and beyond cancer to become more physically active:

- Mental contrasting with implementation intentions, motivational interviewing, behavioural contract, imagery strategies for self-regulation, integrating friend and family goals and planning.