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## Physical activity and physical self-concept among sedentary adolescent females: An intervention study

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### Abstract

**Objectives:** Physical activity (PA) has been promoted as a means of enhancing self-concept, yet the evidence for this connection is far from compelling. In particular, experimental research investigating this association during adolescence, a period during which many youth struggle to maintain a positive self-image, is noticeably lacking. This study investigates the impact on self-concept of a 9-month PA intervention among sedentary adolescent females.

**Design:** This study was a controlled trial, in which measures of self-concept were obtained before, during, and following a 9-month school-based intervention to promote physical activity in sedentary adolescent females. Changes among the intervention group were analyzed relative to changes among a non-random comparison group.

**Method:** Intervention participants engaged in supervised activity 4 times/week and received didactic instruction 1 day/week promoting activity outside of school. Self-concept, PA participation, and cardiovascular fitness were assessed before, mid-way through, and after the 9-month intervention.

**Results:** The intervention had a significant positive impact on participation in vigorous activity and cardiovascular fitness. The intervention did not significantly influence any of the self-concept dimensions overall. There was, however, a three-way interaction such that there was an increase in global physical self-concept among those intervention participants who increased cardiovascular fitness.

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*Conclusions:* These findings indicate that a PA intervention among sedentary adolescent females enhanced global physical self-concept for a subset of intervention participants who manifested positive changes in fitness.

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*Keywords:* Female; Intervention; Physical self-concept; Physical activity

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## **Introduction**

Over the last couple of decades, the critical role of physical activity (PA) in promoting health and preventing disease has become apparent. Strong evidence exists for PA as a factor in reducing the risk of heart disease (Thompson et al., 2003), diabetes (Kriska, 2003), osteoporosis (Todd & Robinson, 2003) and some forms of cancer (Friedenreich & Orenstein, 2002). Evidence for the role of PA in psychological well-being also has accumulated, with research indicating that PA may be effective in treating and/or reducing the risk of depression and anxiety (Hall, Ekkekakis, & Petruzzello, 2002).

Concern with the link between PA and psychological well-being has also brought attention to the role that PA may play in bolstering self-esteem, the value we place on our self, and self-concept, our perception of self (Ekeland, Heian, Hagen, Abbott, & Nordheim, 2004; Sonstroem, 1997). These two terms are often used interchangeably and, as self-concept is the broader concept from which self-esteem is derived, we will henceforth use the term self-concept. Evidence shows that self-concept is protective against depression and obesity (Park, 2003) as well as maladaptive behaviors such as substance abuse and violence (Kirkcaldy, Shephard, & Siefen, 2002; Nelson & Gordon-Larsen, 2006).

Correlational evidence suggests that PA is positively related to self-concept (Asci, Kosar, & Isler, 2001; Crocker, Sabiston, Forrester, Kowalski, & McDonough, 2003; Dishman et al., 2006; Nigg, Norman, Rossi, & Benisovich, 2001; Raustorp, Stahle, Gudasic, Kinnunen, & Mattsson, 2005), and a recent review of intervention studies among children and adolescents supported the hypothesis that increasing PA yields a short-term improvement in self-concept among youth (Ekeland et al., 2004). The authors of the review, however, note that many of the studies among youth have been subject to methodological limitations; only one of the 25 studies included in the review was judged to have a “low risk of bias,” and 14 had a “high risk of bias.” Similarly, a meta-analysis of interventions among adults (Spence, McGannon, & Poon, 2005) concluded that participation in PA results in small significant improvements in self-concept, yet issued a call for more studies of the PA–self-concept link that test for changes in actual physical fitness.

Interestingly, the studies reviewed by Ekeland et al. (2004) and those reviewed by Spence et al. (2005) uniformly employed global measures of self-concept, despite the fact that self-concept research has increasingly moved toward an approach that goes beyond assessing simply global self-concept. Based on a multi-dimensional and hierarchical model of self-concept (Fox & Corbin, 1989; Hagggar, Biddle, Chow, Stambulova, & Kavussanu, 2003; Marsh, Richards, Johnson, Roche, & Tremayne, 1994; Shavelson, Hubner, & Stanton, 1976), recent research in the field incorporates specific sub-domains of self-concept, including a dimension termed

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