Introduction
The ‘self’ is an important concept in making sense of exercise behaviour. Involvement in exercise that improves skill, knowledge, fitness, and health is linked to enhanced self-perception (Fox, 1997). These changes then generalize to favourable views about the self, leading to an improved sense of well-being (Berger & McInman, 1993).

This finding has implications for continued exercise participation. If people improve their self-perceptions as a result of physical activity, this should lead to more participation (Sonstroem, 1998). Understanding this connection is important, because despite the health benefits of regular exercise, 63% of Canadian adults are not active enough to gain these benefits (Craig, Russell, Cameron, & Beaulieu, 1999).

Exercise and Self-Esteem
What is self-esteem? Self-esteem is global (i.e., how one feels about one’s self overall) and/or specific (i.e., body esteem, strength esteem). This division of self-esteem into specific or “mini components” is the basis of Sonstroem and Morgan’s (1989) multi-dimensional exercise and self-esteem model (EXSEM).

This model places global self-esteem at the top, physical self-competence and physical acceptance in the middle, and physical competence at the lower level. The lower level elements feed into and affect global elements, but are related to the specific situation/context. Changes in physical fitness therefore lead to enhanced self-efficacy, bolstering physical competence and resulting in increased global self-esteem.

Enhanced global self-esteem is assumed to be an automatic outcome of regular exercise participation. However, focusing on self-esteem as solely global has not given researchers much understanding of psychological and social functioning in specific behavioural or situational contexts.

Sonstroem & Morgan’s (1989) EXSEM can help us understand the exercise and self-esteem relationship. In addition, using the EXSEM allows researchers to examine processes and pathways related to self-esteem change. If we understand the factors that lead to changes in self-esteem in the physical domain, we can better deal with (and eventually solve) the exercise participation problem.

One way to better understand the exercise and self-esteem relationship is to use meta-analysis (i.e., a systematic approach to evaluating findings across studies by exploring the significance of findings). To date, only one published meta-analysis has examined the effect of exercise on self-concept in adults (McDonald & Hodgdon, 1991). However, this study has limitations (the study explored only global self-esteem and aerobic exercise and only included published studies).

Purpose of Our Study
The purpose of our meta-analysis was to consider the limitations of previous research and to carry out a more comprehensive meta-analysis to explore the effect of exercise on self-esteem.

To accomplish this, our meta-analysis:
- included published and unpublished studies (e.g., dissertations, theses);
- explored domain-specific measures of self-esteem (e.g., physical self-esteem) and global measures;
- dealt with the effects of multiple forms of exercise (e.g., weight training, aerobic exercise).

Method
We identified studies through database searches (e.g., PsychLit, MedLine, SportDiscus) and reference sections of major reviews. The studies we included used experimental and control groups in a repeated measures design. We also coded for moderator effects and estimated the treatment effect using Cohen’s $d$—the most common indicator used in meta-analyses.

Results
Our meta-analysis included data from 119 studies. As the EXSEM would predict, exercise participation leads to
Conclusions

Participation in physical activity results in small, significant improvements in global self-esteem. While these improvements are small statistically, the clinical/practical significance of such changes still needs to be determined. We suggest, as others have (e.g., McAuley, Mihalko, & Bane, 1997; McAuley, Blissmer, Katula, Duncan, & Mihalko, 2000), that the link between global self-esteem and exercise participation has been somewhat overstated. Our findings reinforce that we need more research on the domain-specific components of self-esteem to identify the ways in which self-esteem affects exercise participation and vice versa.

Kerry R. McGannon, PhD and John C. Spence, PhD

References