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# Exercise can improve physical self perceptions in adolescents with low motor competence



Fleur McIntyre<sup>a,\*</sup>, Paola Chivers<sup>b</sup>, Dawne Larkin<sup>c</sup>, Elizabeth Rose<sup>b</sup>,  
Beth Hands<sup>b</sup>

<sup>a</sup> School of Health Science, The University of Notre Dame Australia, Fremantle, Australia

<sup>b</sup> Institute for Health Research, The University of Notre Dame Australia, Fremantle, Australia

<sup>c</sup> School of Sport Science, Exercise and Health, The University of Western Australia, Crawley, Australia

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### ABSTRACT

Adolescents with low motor competence have diminished perceptions of their physical self and tend to avoid physical activities. This study examined the outcomes of an exercise intervention that focused on improving aerobic fitness, strength, and self-perceptions in the physical domain in adolescents with poor motor coordination. The sample included 35 adolescents with low motor competence, comprising boys ( $n = 25$ ) and girls ( $n = 10$ ) ranging in age from 13 to 17 years, who attended two sessions per week in the 13 week exercise intervention study (AMP it up). Physical self-perceptions were measured before and after the intervention using the Physical Self Perception Profile and Perceived Importance Profile. Significant improvements in perceived Physical Condition, Attractive Body and Physical Strength sub domain scores were identified between pre and post-test. Adjusting for age, gender, BMI and attendance, regression analyses revealed that Attractive Body was the strongest predictor of Physical Self Worth at pre-test, joined by Physical Condition at post-test. This exercise intervention had a positive impact on adolescent physical self-perceptions, in particular males, with improvements in those sub domains specifically related to the exercise program. Changes in specific aspects of Physical Self Worth can be facilitated by exercise interventions, after a relatively short period of time, in adolescents with poor motor coordination.

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\* Corresponding author at: School of Health Sciences, The University of Notre Dame Australia, 19 Mouat Street (PO Box 1225), Fremantle, WA 6959, Australia. Tel.: +61 8 9433 0296; fax: +61 8 9433 0210.

E-mail address: [fleur.mcintyre@nd.edu.au](mailto:fleur.mcintyre@nd.edu.au) (F. McIntyre).

## 1. Introduction

Young people's perceptions and self worth of their physical competence are important correlates of physical activity participation (Crocker, Eklund, & Kowalski, 2000). Children and adolescents with more positive physical self perceptions are more likely to be motivated to participate in a physically active lifestyle (Raudsepp, Liblik, & Hannus, 2002). Furthermore, an individual's perceived competence in physical domains is a key component of intrinsic motivation including choosing to participate, sustaining effort and continuing interest in task or activities (Duda, Chi, Newton, Walling, & Catley, 1995). Adolescents with low motor competence sufficient to influence performance across daily tasks, may be at particular risk of low physical self-perceptions and self-worth. The term DCD (Cairney, Hay, Faught, & Hawes, 2005; Piek, Barrett, Allen, Jones, & Louise, 2005) may be used to define this particular group, even though all criteria for the disorder (APA, 2013) are not measured. Due to the frequency of co-occurring conditions and difficulty with measuring all criteria for the disorder (APA, 2013), we have chosen to use the term low motor competence to describe the sample in this paper.

Competence in the physical domain is positively associated with physical activity and sport participation and is important for social status and peer acceptance, particularly in adolescence (Cratty, 1994; Mandich, Polatajko, & Rodger, 2003). In order to buffer the impact of poor motor competence in their lives, individuals with low motor competence are likely to discount physical activity and exercise as an area of importance in their lives and avoid participation in physical activities (Skinner & Piek, 2001).

Numerous studies have found that children and adolescents with low motor competence have poorer physical health outcomes such as lower physical fitness (Hands & Larkin, 2006), and many experience secondary difficulties and additional stressors such as less social support and friendships (Skinner & Piek, 2001; Smyth & Anderson, 2000) which may lead to anxiety, depression and emotional problems (Cairney, Rigoli, & Piek, 2013; Piek et al., 2007; Sigurdsson, Os, & Fombonne, 2002; Skinner & Piek, 2001), lower self-perceptions, self worth and poor perceived competences (Cantell, Smyth, & Ahonen, 1994; Rose, Larkin, & Berger, 1997). These studies mostly involved primary school aged children. The experience of adolescents with low motor competence is largely under researched as in the past it was believed they would outgrow their problems (Missiuna, Gaines, Soucie, & McLean, 2006). It is now recognized from longitudinal studies that motor coordination problems continue into adolescence and beyond (Cantell et al., 1994; Losse et al., 1991) and some evidence suggests that problems in the psychosocial domain become more evident in adolescence (Skinner & Piek, 2001).

Consistent with the multi-dimensional and hierarchical model of self-esteem (Harter, 1999; Marsh, 1990; Shavelson, Hubner, & Stanton, 1976), Fox and Corbin (1989) developed a model to describe the physical self. This model considers that the domain of Physical Self Worth is formed through the contribution of four sub domains of physical self perceptions, including perceptions of Physical Condition, Sport Competence, Attractive Body and Physical Strength. The Physical Self-Perception Profile (PSPP) was developed to measure this domain (Fox & Corbin, 1989). Physical Self Worth is affected by physical activity participation (Fox, 1997a, 1997b) and is particularly important during adolescence (Eklund & Bianco, 2000). The relative importance an individual places on each of the sub domains will impact overall Physical Self Worth and this appears to differ between males and females (Harter, 1999; Whitehead, 1995). Previous studies have consistently found that boys report higher self perceptions and Physical Self Worth than girls (Crocker et al., 2000; Daley, 2002; Hayes, Crocker, & Kowalski, 1999). Both Crocker et al. (2000) and Daley (2002) found that boys also had significantly greater sport competence, physical strength, and attractive body sub domain scores than girls.

Studies designed to examine the effect of exercise programs on physical self-perceptions in typically-developing adolescents have found some significant, positive effects (Burgess, Grogan, & Burwitz, 2006; Lindwall & Lindgren, 2005), whereas others did not (Schneider, Dunton, & Cooper, 2008). For example, after a 6 month exercise intervention involving adolescent girls, Lindwall and Lindgren (2005) identified improved scores in three of the five sub domains measured by the PSPP; Sport Competence, Physical Condition, and Physical Self Worth. Burgess et al. (2006) found that a 6 week aerobic dance intervention resulted in enhanced self-perceptions in 50 adolescent girls for

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