



# Motivating children with developmental coordination disorder in school physical education: The self-determination theory approach

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## ABSTRACT

The purpose of the current article is to highlight the potential of self-determination theory (SDT) to inform the teaching practices of physical education (PE) teachers. Such practices may enhance motivational levels for participation in physical activity (PA) for children with developmental coordination disorder (DCD). First, we review the research in PE demonstrating links between teachers' interpersonal style, teaching methods, and outcomes relating to both students' motivation and motor skill improvement. Second, we outline the SDT mechanism through which the practices employed by PE teachers to support students' psychological needs for autonomy, competence, and relatedness may effect positive changes in the motivation and the physical activity behaviour of children with DCD. Third, we present an overview of findings on the effectiveness of need-supporting practices used by PE teachers. Fourth, we provide directions for future motivational research using the SDT principles in school physical education for children with DCD.

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Health benefits that may accrue from increased physical activity (PA) and energy expenditure in youth include the reduction of obesity (Janssen & LeBlanc, 2010), while longer-term gains include the prevention of chronic diseases, such as diabetes and cardiovascular disease (Warburton, Nicol, & Bredin, 2006). Possible long-term links have been identified between current and future physical activity behaviours such that physically active adolescents are more likely to lead an active lifestyle during adulthood (Conroy, Cook, Manson, Buring, & Lee, 2005; Telama et al., 2005; Vanreusel et al., 1997). Despite the aforementioned benefits, 65% of European adolescents between 11 and 15 years old are physically inactive (Cavill, Kahlmeier, & Racioppi, 2006), while 60% of children in the U.S. between the ages of 9 and 13 years do not participate in any organized PA during non-school hours. Further more, 22.6% of U.S. children do not engage in any extracurricular PA (Rosamond et al., 2008). Thus, an understanding of the psychological and social predictors of physical activity behaviours is essential to promoting active lifestyles (Stuntz & Weiss, 2010).

## 1. Developmental coordination disorder

Children with developmental coordination disorder (DCD: Cermack & Larkin, 2002) represent a distinct population that is especially at risk for developing a negative attitude toward PA and thus leading an inactive lifestyle as adults. Developmental coordination disorder refers to childhood difficulties in motor skills that are not attributed primarily to general intellectual, primary sensory or motor neurological impairment (Gubbay, 1985; Hall, 1988). According to DSM-IV (APA, 1994) the

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essential defining feature of a DCD is “a marked impairment in the development of motor coordination” (APA, 1994, p. 53) that (a) must significantly interfere with academic achievement or daily activities, (b) is “not due to a general medical condition (e.g., cerebral palsy, hemiplegia, or muscular dystrophy)” and does not meet the criteria of a pervasive developmental disorder, and (c) “if mental retardation is present, the motor difficulties must be in excess of those usually associated with it” (APA, 1994, p. 53). Central to the DCD condition is difficulty in learning and performing everyday tasks in the home, school, and play environments (Cermak, Gubbay, & Larkin, 2002).

Recent research studying children with DCD and their regularly developing peers has revealed that body composition, cardio-respiratory fitness, muscle strength and endurance, anaerobic capacity, power, and physical activity have all, to varying degrees, been negatively associated with poor motor proficiency (Rivilis et al., 2011). These findings underpin the concern that children with DCD are at risk for poor cardiovascular health (Rivilis et al., 2011). Research has also revealed that children 15 years of age with persistent DCD had lower IQ levels and school grades and showed a preference for less challenging educational choices (Cantell, Smyth, & Ahonen, 1994). In addition, a number of studies showed that children with DCD reported lower perceptions of their own physical competence than children without motor coordination difficulties, while no differences emerged for levels of global self-worth (Cantell & Kooistra, 2002). Children with DCD have been rated as being less confident (Schoemaker & Kalverboer, 1994), more embarrassed or anxious while being observed (Smyth & Anderson, 1999), less sociable and more passive (Cantell, 1998), and possessing less developed social contacts and friendships (Geuze & Borger, 1993). According to Hands and Larkin (2002), the feelings of inadequacy accompanying poor motor coordination may be constantly reinforced through interaction with peers in school. The long-term consequences of DCD include reduced motivation for participation in physical activity and reduced opportunities for the development of motor skills and fitness. The children’s desire to withdraw from physical activities may also be reinforced by negative judgments about their overall motor performance by their parents, teachers, and peers. However, the positive influences of family, friends, and community may contribute to breaking this negative cycle (Hands & Larkin, 2002) that elsewhere has been referred to as the “cycle of failure” (Smoll, 1974) (Fig. 1). Motor competence has been recognized as a factor that may determine the social status of children among their peers (McMath, 1980). Children with DCD tend to have low social status that may become evident through situations such as not being selected or being the last one to be selected to participate in sports teams by their peers. As a result, they tend to avoid participating in team games and physical activities. Avoiding sport participation may lead not only to a decrease in children’s perceived competence but also to a deterioration of motor performance due to a lack of practice. This negative cycle may lead children to social isolation and failure to develop the skills necessary for successful interpersonal relationships (Smoll, 1974). This cycle of failure may also have negative consequences in terms of children’s physical fitness. That is, most young children develop physical fitness through their daily activities while performing fundamental movements such as running, walking, skipping, climbing, hanging, and rolling. Because movement is difficult for children with DCD, they are less likely to participate in physical activities, and thus the development of their physical fitness and skills may be compromised. Also, there are a number of other factors, either of a physical nature (such as genetic predisposition) or a psychological nature (such as children’s self-perception and motivation for participation in physical activity), that may influence the development of physical fitness in children with DCD through their effects on children’s involvement in PA. If these influences are negative, the negative cycle of low motor competence, physical inactivity, and low physical fitness may be reinforced (Cermack & Larkin, 2002); that is, poor motor coordination and the accompanying feelings of inadequacy may reinforce this negative cycle, which in turn may lead to reduced levels of participation in PA and physical fitness. This hypothesis has initially been supported by the limited research evidence, which

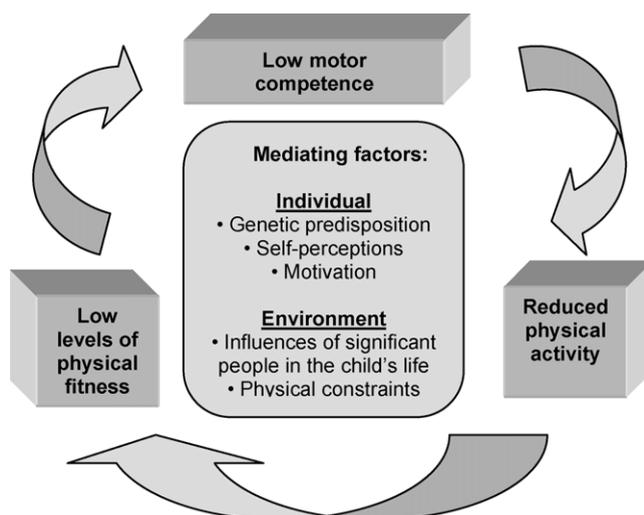


Fig. 1. The negative cycle of physical fitness in children with DCD depicting the interaction between low motor competence, reduced physical activity participation, and lowered physical fitness. The mediating factors may modify PA involvement in children with DCD.

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