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Physical activity levels of adolescents with and without intellectual disabilities during physical education and recess

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ABSTRACT

To compare physical activity levels in adolescents with and without intellectual disabilities during physical education and recess. Forty adolescents diagnosed with intellectual disabilities (inclusive classrooms, $n = 20$; self-contained classrooms, $n = 20$) and 40 age-matched typically developing peers (general classrooms) participated. All participants wore an Actigraph GT1M accelerometer for 5 consecutive weekdays during school hours. Three groups of adolescents were similarly active during physical education; however, adolescents with intellectual disabilities in self-contained classrooms were less active during recess than did the other two groups. In addition, they spent less percentage of time in moderate-to-vigorous physical activity during recess than did the typically developing adolescents. An inclusive, structured, and supportive environment promotes physical activity engagement in adolescents with intellectual disabilities.

1. Introduction

The health benefits of regular physical activity are well established, and children and adolescents can gain substantial health benefits by engaging in moderate-to-vigorous physical activity (MVPA) for periods that add up to 60 min or more daily (US Department of Health and Human Services, 2008). However, national (Liou et al., 2005) and international (Eaton et al., 2010) data indicated that less than 40% of children and adolescents meet this guideline. Furthermore, the percentage of children and adolescents classified as being overweight and obese has increased (Liou & Chang, 2007; Troiano et al., 2007). To counter this problem, the Taiwan Ministry of Education has established guidelines for physical activity to promote healthy lifestyles for children and adolescents (Ministry of Education, 2007). The physical activity recommended by the Taiwan Ministry of Education is for exercise 3–5 times/week for 30 min each time to raise the heart rate to 130 beats per minute. Moreover, children and adolescents should engage in a minimum of 30 min of physical activity (Ministry of Education, 2007). Because the physical activity recommended by the Taiwan Ministry of Education may be not easily understood (i.e., 130 beats per minute; (Liou & Chiang, 2004) and physical activity can be carried out as part of active play and not regular exercise, emphasizing accumulating of moderate-intensity physical activity for 60 min or more daily could be a more practical approach to children and adolescents with intellectual disabilities.

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People with intellectual disabilities experienced considerably higher rates of morbidity (Krahn, Hammond, & Turner, 2006) and mortality (Gustavson, Umb-Carlsson, & Sonnander, 2005) than people in the general population. In terms of behavior and lifestyle, people with intellectual disabilities were more likely to engage in low levels of physical activity (Finlayson et al., 2009) and showed high rates of obesity (Melville et al., 2008). However, little is known about physical activity levels of children and adolescents with intellectual disabilities (Frey, Stanish, & Temple, 2008). The paucity of studies on this topic indicated that this research area was neglected, and only a few empirical studies measured objectively the physical activity levels of elementary school-aged children with intellectual disabilities. Foley, Bryan, and McCubbin (2008) used Actiwatch accelerometry to investigate physical activity levels of children with mild intellectual disabilities and of typically developing children under four conditions (inclusive physical education, inclusive recess, after school, and weekend), and their results indicated that physical activity levels of children with intellectual disabilities were substantially lower under all four conditions than those of typically developing children. Pitetti, Beets, and Combs (2009) evaluated physical activity by monitoring the heart rate in children with intellectual disabilities who were in a self-contained placement classroom during school (adapted physical education, classroom, and inclusive recess), and these researchers reported that children with intellectual disabilities could achieve recommended levels of daily MVPA for 60 min under regularly scheduled school settings. Lorenzi, Hovat, and Pellegrini (2000) monitored the physical activity of children with mild intellectual disabilities and of typically developing children during an inclusive recess setting by combining heart-rate measurement and Caltrac accelerometry and determined that children with intellectual disabilities were considerably more active than their peers without a disability. The aforementioned studies have obtained conflicting results when including children with intellectual disabilities, and literature searches have not yielded data on objectively measured physical activity levels in adolescents with intellectual disabilities.

The decline in physical activity of typically developing children during the transition from adolescence to early adulthood is worrying. The reduction in or elimination of time dedicated to physical education and recess in Taiwan emphasizes the requirement for promoting opportunities for adolescents to participate in physical activity. However, because of Taiwan's limited recreational market base and a small sports industry, few opportunities for physical activity are available outside of school for adolescents, and the physical activity opportunities for children and adolescents with intellectual disabilities are even rarer. Sun (2006) surveyed 142 adolescents with mild intellectual disabilities in general schools and reported that this population rarely engaged in physical activity during leisure time. Another survey indicated that 29.9% of adolescents with intellectual disabilities had regular physical activity habits, and that the main physical activity was walking (Lin et al., 2010). Only 8% of adolescents with intellectual disabilities met the national physical activity recommendation, which suggests exercising at least three times per week, 30 min each time. The potential lack of activity opportunities and perhaps walking is the main form of exercise for adolescents with intellectual disabilities are causes for concern, and indicates that school physical education and recess offer the primary opportunities for promoting physical activity in adolescents with intellectual disabilities.

In Taiwan, students with disabilities who are able to benefit fully from mainstream settings are placed into general schools. Physical education curriculum for students with disabilities is aimed toward developing their physical and motor skills as well as promoting their interests in physical activities. Recess is an unstructured environment, and it occurred for all adolescents at the same time. The spaces and areas of the school accessible to students with and without disabilities are the same, and students' physical activities are voluntary. Although the development of inclusive practices is being promoted, how physical activity could be provided most effectively to adolescents with intellectual disabilities remains to be established. To date, only one empirical study has measured objectively how inclusive or self-contained setting affects physical activity levels of elementary school-aged children with intellectual disabilities. Horvat and Franklin (2001) combined heart-rate monitoring and Tritrac-R3D accelerometry to compare the physical activity of children with mild intellectual disabilities across three conditions (classroom activity, inclusive recess with typically developing children, and non-inclusive recess), and determined that both recess groups demonstrated higher physical activity levels than the classroom group; no statistically significant differences were found between the two recess groups.

Physical education and recess should be considered separate settings for increasing students' physical activity levels in school because the goals and activities of these two periods are distinct. Little research has been conducted on physical activity levels in adolescents with intellectual disabilities in relation to the setting of physical activity during physical education and recess in general schools; however, such studies can help health professionals develop effective strategies to increase physical activity for adolescents with intellectual disabilities. Although no national consensus has been established on physical activity levels of students that should be promoted during physical education and recess, Taiwanese researchers could consider data collected in the USA and other countries that suggest that 50% of a student's time in physical education (Centers for Disease Control and Prevention, 2011) and 40% of a student's time in recess (Ridgers, Stratton, & Fairclough, 2005) should be devoted to MVPA. However, these studies have not fully explored physical activity levels related to adolescents with intellectual disabilities. This study was conducted to compare physical activity levels during physical education and recess in adolescents with intellectual disabilities (inclusive vs. self-contained classrooms) and typically developing adolescents. It was hypothesized that (a) adolescents with intellectual disabilities in self-contained placement classrooms were less active than adolescents with intellectual disabilities and typically developing adolescents in general classrooms during inclusive recess, and (b) activity levels of adolescents with intellectual disabilities in self-contained placement classrooms during adapted physical education classes were lower than adolescents with intellectual disabilities and typically developing adolescents in inclusive/general classrooms during inclusive/general physical education classes.