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Age, social engagement, and physical activity in children with autism spectrum disorders

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ABSTRACT

Although engagement in social interactions is one of the key diagnostic features of autism spectrum disorders (ASDs), few studies have examined if social engagement related to physical activity of children with ASD. Age is another variable of interest to researchers studying behaviors, but has not been explored in physical activity and social engagement in this population. The purpose of this study was to examine the associations of age, social engagement and physical activity in children with ASD. Twenty-five children with ASD participated. Each child's physical activity and social engagement was assessed using a uniaxial accelerometer and the direct observational assessment. Pearson product-moment correlation coefficients and multiple regression analysis were used to evaluate the associations and influences of selected variables. Age had somewhat positive influences on both physical activity and social engagement, and children with frequent social engagement with adults had displayed higher levels of physical activity. No evidence was found to support the notion that children with ASD become more inactive and more isolate as they age; however, limitations and directions for future research in this area are discussed.

Infrequent or no engagement in social interactions and stereotypic behaviors are two overt and defining characteristics of autism spectrum disorder (ASD) (American Psychiatric Association, 1994). To date, motor impairments observed in individuals with ASD have been categorized as associated symptoms (Ming, Brimacombe, & Wagner, 2007). These characteristics create severe limitations. Stereotypic behavior, for some children, interferes with learning and may alienate peers and adults

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because of its highly unusual and stigmatizing nature. Social isolation from peers prevents the formation of social relationships, which are essential for early social development. Poor motor coordination could limit opportunities for this population to successfully participate in physical activity and place them at risk for developing sedentary lifestyle associated diseases (U.S. Department of Health and Human Services, 1996). It is not surprising, therefore, that children with ASD tend to withdraw from participation in physical activity due to the negative social and behavioral outcomes associated with the symptom. While it appears that the presence of an ASD affects opportunities for physical activity participation, this issue has received relatively little attention in the literature. Since ASD is the fastest growing developmental disability and there has been an 85% increase in the number of school age Taiwanese children being diagnosed with ASD in the last 10 years (Ministry of Education, 2006a), there is a need to better understand how disability-related symptoms such as social engagement affect certain health behaviors, including physical activity.

Studies that specifically investigate social engagement in children with ASD in inclusive and natural settings are still relatively sparse. McGee, Feldman, and Morrier (1997) studied the naturally occurring levels of social behavior of both children with ASD and typically developing children in inclusive preschool settings, and found that children with ASD spent less time in the proximity of other children, showed less focus on adults and peers as interactive partners, received fewer social initiations from peers, used less verbalization towards other children, and engaged in more atypical behavior. Sigman and Ruskin (1999) found that in comparison with children with other disabilities, children with ASD spent a larger proportion of time engaged in nonsocial play and a smaller proportion of time in direct social play with others. Children with ASD were also found to make less initiation and show less responsiveness to peer initiations compared to controls. In a recent study by Jahr, Eikeseth, Eldevik, and Aase (2007), the frequency and latency of social interaction with typically developing children and those with ASD in inclusive kindergarten settings were compared. The results showed a significant difference in frequency of social interaction between the typical children and those with ASD and no difference between the groups on latency to initiate interaction.

There is relatively little information regarding accelerometer-determined physical activity in children with ASD. Rosser-Sandt and Frey (2005) found that physical activity levels were similar in children with and without ASD and both groups acquired a majority of daily moderate physical activity during recess. Pan and Frey (2006) examined physical activity patterns in youth with ASD and observed that this group met minimum activity recommendations, but were less active than previous reports on peers without ASD using similar methodology (Mota, Santos, Guerra, Ribeiro, & Duarte, 2003; Trost et al., 2002). In addition, physical activity levels were higher among participants in elementary school compared to those in middle and high school. Pan (in press) compared the percentage of time children with and without ASD spent in moderate-to-vigorous physical activity (MVPA) during inclusive recess settings in Taiwan, and found that children with ASD were less active during overall recess, lunchtime, first and second morning recess compared to those without disabilities. All children also fell below 40% of recess time engaged in physical activity. The inconsistent findings in the literature highlight the difficulty of generalization from the previous studies using different methodologies. Additional studies are need in various national and international populations to determine physical activity differs between children with and without ASD.

Age is one variable of interest to researchers studying individual's behavior. However, to date, very few studies have examined whether age exerts an influence on the impact of ASD in the daily life of children. Several researchers have suggested that children with movement problems will increase as children's play becomes more complex and rule-bound (Cairney, Hay, Faught, Corna, & Flouris, 2006; Wall, 2004). This is of concern, particularly in children with ASD who have difficulties understanding social cues. They are unable to follow the typical course of development in the acquisition and application of complex physical skills as they age. They will not be able to learn the higher-order strategic skills required for participation in complex play activities when they are getting older. Despite the lack of research in the potential age influences on social engagement and physical activity of children with ASD, it is reasonable to assume that the general age impact would also extend to individuals with ASD since ASD is considered to be uncured and the long-term consequences of ASD may not be favorable.