

Environmental Interventions for Healthy Development of Young Children in the Outdoors

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Abstract

Early childhood environmental interventions are needed to counteract the health crisis caused by sedentary lifestyles. In the UK, 16% of children aged 2 to 15 are obese (Health Survey for England, 2002). In the US more than 10% 2-5 year olds are overweight (Ogden, et al., 2002). The widespread perception that young children are innately active and interventions are not needed is a barrier for creating appropriate modifications to children's routines and environments. The fact is that young children are only active for short periods each day (Reilly, 2004). Provision of recreational facilities that allow children and families to enjoy prolonged and engaging stays outdoors are critical because the outdoors is a strong correlate of physical activity (Baranowski, et al., 2000; Sallis, et al., 1993). Also, diverse natural environments support attention functioning, gross motor development, health, and richer play behaviors (Faber Taylor, et al., 2001; Grahn, et al., 1997). In addition, the childcare centre, an institution that millions of children attend everyday, is the highest predictor of activity (Finn, et al., 2002) and may become a critical environment for more systematic preventive measures. For this to happen, in-depth studies are needed to discover the characteristics and dynamics of early childhood outdoor play environments that afford physical activity.

Keywords: Early childhood development. Design. Health. Outdoor physical activity. Zoos. Botanical gardens. Childcare centres. Nursery schools.

1. Introduction

Even though most children experience a natural drive to stay active and play freely, nowadays the health of even the youngest children might be affected by sedentary lifestyles. This, combined with poor nutrition, is having a profoundly negative effect on children's physical health. In the UK, the situation is alarming: 16% percent of children aged two to fifteen are obese, above the BMI 95th percentile (2002 Health Survey for England). In the US, more than 10% of children two to five years old are overweight, and more than 20% of children of the same age are at risk of being overweight (Ogden et al., 2002).

Outdoor play is commonly associated with physical activity. It also supports social and cognitive development (Frost et al., 2001). For these reasons, play is key for healthy growth. Recent articles and US governmental websites show that free play has been re-discovered as a critical activity that can provide the necessary amount of daily exercise for children (Dowda et al., 2004; US Department of Agriculture (a) and (b)). Negating playtime for young children may bring serious health and developmental consequences (Dowda et al., 2004) although children will spontaneously compensate for the lack of play activity (Pellegrini & Smith, 1998) when social and physical environments allow for it.

2. Background literature summary

Being outdoors is the strongest correlate of physical activity for preschoolers (Baranowski et al., 1993; Sallis et al., 1993). Parents, teachers, and recreation professionals need to be aware of this opportunity and devote energy and sufficient resources to create welcoming outdoor play environments in institutions frequented by young children and their families.

Diverse natural environments support attention functioning of children, gross motor development, children's health, and richer play behavior (Faber Taylor et al., 2001; Fjørtoft, 2001;

Wells, 2000; Grahn, et al., 1997; Moore & Wong, 1997). Children that spend longer time outside achieve longer spans of concentration, are less sick, have better gross motor development, and their play activities are more diverse. These research findings strongly support programs that offer educational and recreational active outdoor alternatives for children and their families. This research should serve as justification for the enhancement of existing children's environments and the creation of new ones.

The majority of US children under age five with working parents (73%) is in some type of childcare arrangement (Sonenstein et al., 2002; Capizzano et al., 2000). From this percentage, 42% (3.6 million children) are in center-based and family childcare (28% and 14% respectively).

The childcare center is the highest individual predictor of physical activity of children 3-5 years old (Finn et al., 2002) and it should be considered a key institution to implement environmental changes that support more active lifestyles of young children.

Preschool physical activity tracks throughout childhood and has a protective effect against early adolescence adiposity. Researchers have concluded that the preschool years offer the best opportunity to establish active lifestyles (Moore et al., 2003).

3. Environmental interventions

What environmental interventions are possible to counteract the sedentary lifestyle trend in young children through play? Early childhood environments include a wide array of recreational and educational spaces that can offer a variety of opportunities for individual children or family groups to exercise and respond to the health crisis produced by overweight and obesity. These environments include those used by children on an everyday basis (childcare centres and neighborhood parks) and others such as botanical gardens and zoos.

Because the outdoors is a strong correlate of physical activity (Baranowski, et al., 2000; Sallis, et al., 1993), recreational facilities that allow for prolonged and engaging stays outdoors are critical. Zoos and botanical gardens have the potential for becoming appealing environments for family groups [willing to be in contact with nature](#) and exercise at the same time. However, such environments should be designed and programmed with children's needs in mind. This implies that play in all its forms (dramatic, physical activity play, games) should be considered as one of the main activities. As defined by Pellegrini and Smith (1998), these types of environments may offer "a playful context combined with a dimension of physical vigor." Some zoos, botanical gardens, and neighborhood parks are already offering environments and activities that support active lifestyles. The following three examples show how diverse and creative these initiatives can be:

The *Hammill Family Play Zoo* (near Chicago) is a model environment that promotes children's affective learning by hands-on and whole body experience of animals and plants habitats. Activities facilitated by "play partners" and free play are supported by naturally rich indoor and outdoor spaces. Repeat visits reinforce children's affection for animals and plants, and participation in active lifestyles (Figure 1).



Figure 1. The Hammill Family Play Zoo, Brookfield Zoo, Illinois, USA

The *North Carolina Botanical Garden* (NCBG, Chapel Hill, North Carolina) is a regional center for research, conservation, and interpretation of plants, particularly those native to the southeastern United States. In recent years, the staff has worked intensively to make the NCBG more child friendly and to attract non-traditional groups such as families with young children. Many attractive settings for children have been added to the existing herb garden such as a fairy house, dirt digging, and a blueberry house. A new Children's Garden is being designed as part of the future Education Center. The event "Discovering Magic in the Garden" has become an annual attraction for visitors of all ages (Figure 2).



Figure 2. "Discovering Magic in the Garden" annual event. Story telling chair. North Carolina Botanical Garden, Chapel Hill, NC, USA.

The *Kids Together Park*, Cary, North Carolina was designed to provide play opportunities for all children, regardless of their level of physical or mental ability. The park features areas for preschoolers, school age children, a fully accessible play structure, swings, picnic areas, and the popular KATAL (Kids Together At Last) climbable dragon sculpture. A system of ample paths serves as a connector for all areas and supports walking and strolling of families with young children. Visitors highly value the natural feel, the diversity of plants, and the art elements present in the park such as benches, bollards, dragon sculpture, and talking benches (Figure 3).



Figure 3. Kids Together Park, Cary, North Carolina, USA

Certainly, if we are committed to promoting a change in children's sedentary lifestyles, interventions are needed where children are every day. In 1999, the majority of US children under five years of age with employed parents were in some type of childcare arrangement (Capizzano, et al., 2000; Sonenstein et al., 2002). Surprisingly, researchers and governmental agencies have been slow to respond to the fact that millions of young children are in childcare. This highly regulated institution could be considered as a gateway for preventive health interventions through environmental change (Figure 4).



Figure 4. Bright Horizons Family Solutions Child Development Center, Research Triangulation

4. Needed research

Although the above-mentioned research findings support the notion that outdoor environments afford greater physical activity and support child development, they do not give specifics about the physical characteristics and properties of those environments. Research findings do not go beyond the mention of “green,” “natural,” and “lush” spaces and their positive impact in children’s lives. Assuming not all environments are equally effective, in-depth research of early childhood environments is imperative so that specific, environmental, evidence-based interventions can be implemented to counteract sedentary habits of young children.

Research findings are needed to promote and support informed design decisions, guide investments, promote health and educational programs, and inspire new policies.

The development of comprehensive environmental studies of children’s environments should be the first step towards understanding their dynamic and capacity to promote behavioral changes early in life. Because of the complex nature of the problem, multidisciplinary research teams composed of health professionals (pediatricians, epidemiologists, and public health professionals) and built environment experts (architects, landscape architects, and designers) will be more likely to succeed in the development of creative solutions to the problem.

5. Key Concluding Points

- Early childhood interventions appear as a one-time opportunity for preventing sedentary lifestyles.
- Designers, public health professionals, recreation specialists, and licensing agencies should join forces to research the impact of environmental interventions in early childhood sedentary lifestyles.
- Health professionals (pediatricians, epidemiologists, and public health professionals) in partnership with built environment experts (architects, landscape architects, and designers) may contribute creative solutions to the health crisis.
- Facilities such as zoos and botanical gardens may attract family groups to be in contact with nature combined with exercise.
- Improving childcare centre/nursery school outdoor environments alone seems to be a powerful intervention for promoting change in young children’s sedentary lifestyles, reaching millions of children every day, year-round.

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