

# Active Living Research

Building Evidence to Prevent Childhood Obesity and Support Active Communities  
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RESEARCH BRIEF | February 2011



## The Potential of Safe, Secure and Accessible Playgrounds to Increase Children's Physical Activity

### INTRODUCTION

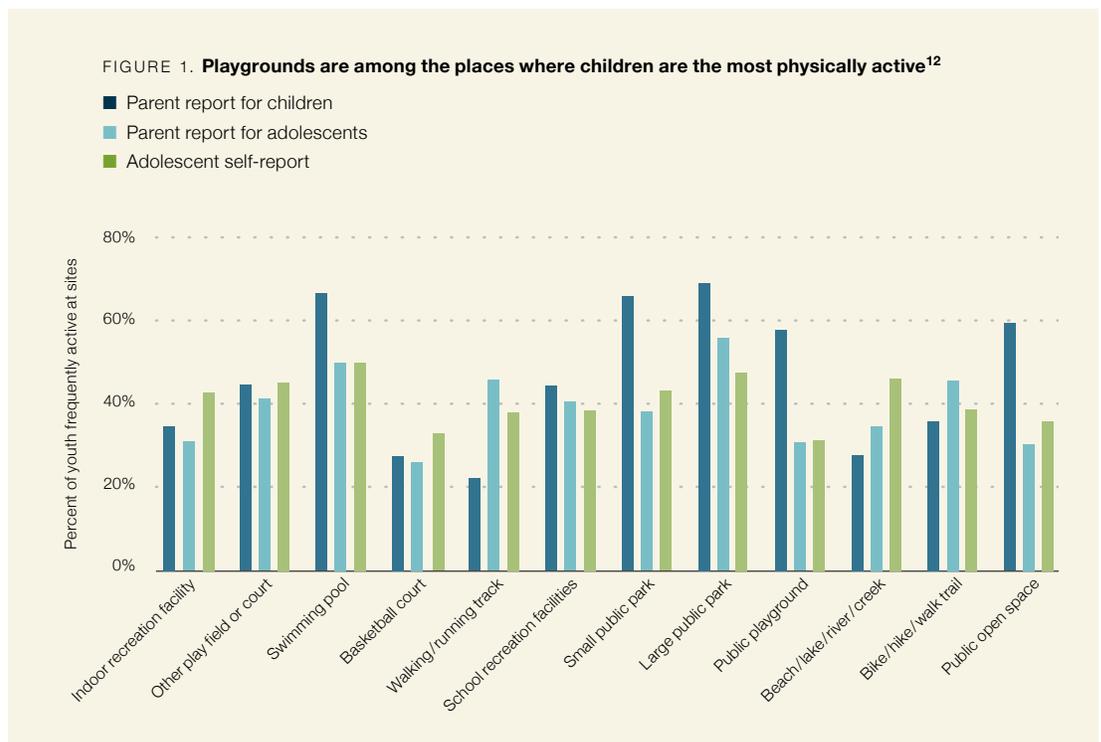
The United States is confronting an epidemic of childhood obesity. During the past four decades, the obesity rate for children ages 6 to 11 has more than quadrupled, and it has more than tripled among ages 12 to 19.<sup>1,2</sup> Currently, more than 23 million young people are overweight or obese.<sup>3,4</sup>

There is no single cause underlying this epidemic, and addressing it will require a broad spectrum of approaches to reduce calorie consumption and increase physical activity. The benefits of physical activity for children include decreased risk of obesity and diabetes, improved bone health, better self-esteem and, at least in the short term, improved academic performance.<sup>5,6,7</sup> The federal government recommends that every child and adolescent be physically active for at least one hour daily.<sup>8</sup> To help young people meet this guideline, multiple opportunities for activity must be provided.<sup>9</sup>



Along with neighborhood sidewalks and bike paths, safe routes to and from school, and physical education and recess in school, playgrounds play an important role in supporting physical activity for younger children.<sup>10</sup> Playgrounds are one of the few places specifically intended for use by children, so research that can help improve their design should have direct effects on children’s physical activity. Proximity, safety (including both the presence or absence of crime and the potential for injuries), climate and time of day all influence how parks and playgrounds are used, and though the literature on where children play is limited, a study of Australian children ages 8 to 12 found that 17 percent of playtime occurred in parks and playgrounds.<sup>11</sup>

This brief summarizes research on playgrounds and how playgrounds impact physical activity among children. For the purposes of this brief, a playground is defined as a small, publicly owned, outdoor area that features play equipment and provides recreational physical activity for younger children.



## Proximity, Access, Security and Use of Playgrounds

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### Locating and designing playgrounds so they are easy to access and safe to use can ensure that they contribute optimally to children's physical activity.

- A study of children and adolescents in San Diego, Boston and Cincinnati found that neighborhoods that were generally supportive of physical activity for young people also appeared to have more playgrounds. Researchers examined the relationship between certain neighborhood characteristics and the number of playgrounds in that neighborhood and found that neighborhoods with higher street connectivity, lower traffic, less crime and better aesthetics were more likely to have at least five playgrounds than were neighborhoods without such characteristics.<sup>13</sup> Street connectivity was 13.5 percent higher in neighborhoods with at least five playgrounds, traffic was 7 percent lower, crime was 9.6 percent lower and the aesthetics were 15 percent better.
- A study in Waterloo, Ontario found that children who had a playground less than two-thirds of a mile from their house were five times more likely to have a healthy weight than children who did not. However, this study did not control for income or other factors that might have influenced the outcome.<sup>14</sup>
- There are socioeconomic and racial/ethnic disparities in access to physical activity facilities such as gyms, health clubs and YMCAs. One national study found that areas with lower median incomes or higher percentages of people of color (individuals who self report as Blacks, Hispanics, Asians, etc.) were less likely to have such facilities. Disparities in access to such membership-based facilities can make access to free facilities such as playgrounds much more important for these populations.<sup>15</sup>
- There are also inequities related to playground safety, defined as both having well maintained and designed equipment as well as having features related to security and crime. A study in Boston found that playgrounds in areas with a greater proportion of Blacks and youth living in poverty tended to be less safe than those in other neighborhoods.<sup>16</sup>
- Some research has shown that playgrounds can be the site of high levels of physical activity in diverse neighborhoods. A study examining parks in Tampa, Fla., and Chicago found that playgrounds supported high levels of physical activity in minority neighborhoods in both cities. In Tampa, children at playgrounds in predominantly Hispanic neighborhoods were the most active of children at any playground, while in Chicago, playgrounds in African-American neighborhoods had the highest levels of active use.<sup>17</sup>
- There is an unmet demand for safe playgrounds in inner cities. When a schoolyard in New Orleans remained open and supervised after school and on weekends, the number of children who were outside and active in the intervention neighborhood and schoolyard was 84 percent higher than in a comparison neighborhood with an older playground that did not have ongoing adult supervision. Children in the intervention neighborhood also reported reduced time spent watching television or playing video games relative to children in the comparison community.<sup>18</sup>

## Design and Quality of Playgrounds

### **Properly maintaining playgrounds and providing varied playground equipment can increase children's physical activity.**

- The quality of play spaces influences their use. A Cleveland study found that renovated school playgrounds were associated with use by more children and more vigorous physical activity among children, particularly boys, than were older playgrounds that were not recently renovated.<sup>19</sup>
- Renovated play spaces may be associated with improvements in children's academic performance. A study in Boston found that fourth-grade students attending schools where playgrounds had been renovated were 25 percent more likely to pass the state's standardized math test. However, the results of this study should be interpreted with caution because it is not clear how individual students used the playgrounds or whether increased physical activity was responsible for the improved test scores.<sup>20</sup>
- The benefits of playgrounds with supportive play environments extend to preschool children. In daycare centers with playgrounds that provide increased opportunities for active play; offer more fixed play equipment and more portable equipment such as balls and jump ropes; and have trained staff and policies that support physical activity, children were more likely to participate in moderate and vigorous physical activity than those in centers without such environments. Fifteen percent of observed children were active in the supportive play environments, compared with only 9 percent in the non-supportive ones.<sup>21</sup>
- Simply providing equipment such as balls and jump ropes can increase the number of children who are physically active on playgrounds by 15 percent.<sup>22</sup>
- Children appear to be attracted to playground equipment. One study found that the density of children around play equipment was three to 12 times greater than that on grass fields after adjusting for the size of each area.<sup>23</sup>
- A study in Norway suggested that incorporating natural environmental features into play spaces, such as vegetation and changes in topography, can result in improved motor skills among younger elementary school students.<sup>24</sup>
- Playground renovations and improvements do not have to be extensive to be effective. A study in Great Britain found that enhancing school playgrounds with multicolor markings and providing equipment (basketball hoops, soccer goal posts, etc.) increased children's physical activity by about 18 minutes per day for at least six months.<sup>25</sup>

## Playground Safety and Injuries

### **Safe places to play are essential for children. Safety encourages physical activity and promotes greater use of playgrounds.**

- Playground injuries can be a concern, but a review paper concluded that the risk of serious injuries can be reduced by designing age—and developmentally—appropriate play areas, providing soft surfaces under and around playground equipment, maintaining equipment and surfaces and ensuring adult supervision.<sup>26</sup>
- Playgrounds can be designed to help keep children safe. The U.S. Consumer Product Safety Commission has issued guidelines and standards for play equipment and surfaces.<sup>27</sup> These guidelines represent current knowledge about how the design of playgrounds, and the materials and equipment used in playgrounds, can support both activity and safety.
- Identifying potential safety risks, and utilizing the power of community coalitions to address them and foster playground safety, can result in long-term improvements in children's play environments.<sup>28</sup> Involving parents and children in playground design, encouraging communities to work with playground construction and management experts, and including families and neighbors in the maintenance and supervision of playgrounds can help keep them safe for children and increase their use. Such efforts also may extend a playground's useful lifetime.

### Conclusions

Playgrounds present an opportunity for children and adolescents to be physically active. By developing publicly accessible neighborhood playgrounds, designing them to maximize active uses and maintaining their spaces and equipment to ensure safety and reduce the risk of injury, playgrounds can be a benefit to children and communities. Well designed and maintained playgrounds can support more physical activity, better health and greater social involvement for children, families and the community. Low-income and mostly minority communities tend to have less access to playgrounds and parks, but renovating school playgrounds, maintaining parks and recreational spaces, and developing new resources for play are promising remedies.

## Policy Implications

**Joint Use Agreements:** Policy-makers and advocates can collaborate with schools and districts to establish joint use of facility agreements allowing playing fields, playgrounds and recreation centers to be used by community residents when schools are closed.<sup>29</sup>

■ Local governments and school officials should enter into cost-sharing agreements to ensure that costs (utilities, supplies, etc.) incurred from the use of a facility are shared appropriately.<sup>30</sup>

**City Planning and Design:** City planners and local officials can work to build and maintain parks and playgrounds that are safe and attractive for playing, and in close proximity to residential areas.<sup>31</sup>

■ Local policy-makers should work with community members to activate alternative policing strategies, such as neighborhood watch groups and foot patrols, which improve safety and security for park use, especially in high-crime neighborhoods.<sup>32</sup>

**Child-Care Licensing Standards:** State officials should ensure that state child-care licensing agencies adopt regulations and guidelines that promote safe and adequate play spaces for child-care settings.<sup>33</sup>

■ Model physical activity regulations<sup>34</sup> can be used by state officials, local agencies and child-care facilities to promote physical activity in the child-care setting. Such model regulations include: providing children with 60 minutes of physical activity per day, limiting screen time, providing outdoor play at least twice each day and ensuring interaction between providers and children during play.

**Public Involvement:** Taking steps to include the public in the planning, design, development and maintenance of playgrounds can help improve playground design and reduce long term maintenance needs.

■ Local governments and providers should try to use open processes and encourage public participation whenever possible.<sup>35</sup>

For more information about policy options related to increasing physical activity among children, please refer to:

**Local Government Action to Prevent Childhood Obesity, Institute of Medicine:** The Institute of Medicine convened its Committee on Childhood Obesity Prevention Actions for Local Governments to identify promising actions that local governments can take to curb obesity among children. This report covers a variety of interventions, including those that can support physical activity.<sup>36</sup>

**Leadership for Healthy Communities Action Strategies Toolkit:** *Leadership for Healthy Communities*, a national program of the Robert Wood Johnson Foundation, created this toolkit to support local and state leaders nationwide in their efforts to promote healthy, active communities and access to affordable healthy foods. The strategies in this toolkit include promising and evidence-based practices that advance these goals and build upon the work in which policy-makers are already engaged.<sup>37</sup>

**Preventing Obesity in the Child-Care Setting: Evaluating State Regulations:** A Duke University report, funded by the Robert Wood Johnson Foundation through its national program *Healthy Eating Research*, examines healthy eating and physical activity regulations in child-care settings, and rates states according to model regulations.<sup>38</sup>

**Model Physical Activity Standards for Child-Care Providers** (For Infants Through School-Age Children): Few states have addressed regulating physical activity for young children supervised in child-care settings. These sample standards, produced by the National Policy and Legal Analysis Network to Prevent Childhood Obesity, provide a model for doing so.<sup>39</sup>

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For updates and a Web-based version of this synthesis, visit [www.activelivingresearch.org](http://www.activelivingresearch.org).

*Active Living Research*, a national program of the Robert Wood Johnson Foundation, stimulates and supports research to identify environmental factors and policies that influence physical activity for children and families to inform effective childhood obesity prevention strategies, particularly in low-income and racial/ethnic communities at highest risk. Active Living Research wants solid research to be part of the public debate about active living.

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## References

- 1 Ogden CL, Carroll MD, Curtin LR, Lamb MM and Flegal KM. "Prevalence of High Body Mass Index in US Children and Adolescents, 2007–2008." *Journal of the American Medical Association*, 303(3): 242–249, 2010.
- 2 Ogden CL, Flegal KM, Carroll MD and Johnson CL. "Prevalence and Trends in Overweight Among US Children and Adolescents, 1999–2000." *Journal of the American Medical Association*, 288(14): 1728-1732, 2002.
- 3 Ogden CL, et al., 2010.
- 4 Statistical Abstract of the United States: 2006. Washington: U.S. Census Bureau, 2005, [www.census.gov/prod/2005pubs/06statab/pop.pdf](http://www.census.gov/prod/2005pubs/06statab/pop.pdf) (accessed May 2009) (No authors given.)
- 5 Budd GM and Hayman LL. "Addressing the Childhood Obesity Crisis: A Call to Action." *MCN The American Journal of Maternal and Child Nursing*, 33(2):111-118, 2008.
- 6 Schmalz DL, Deane GD, Birch LL, et al. "A Longitudinal Assessment of the Links Between Physical Activity and Self-esteem in Early Adolescent Non-Hispanic Females." *Journal of Adolescent Health*, 41(6): 559-565, 2007.
- 7 Taras H. "Physical Activity and Student Performance at School." *Journal of School Health*, 75(6): 214-218, 2005.
- 8 *Physical Activity Guidelines for Americans*. 2008, Washington: Department of Health and Human Services, 2008, (No authors given.)
- 9 *Preventing Childhood Obesity: Health in the Balance*. Washington: Institute of Medicine, 2004, (No authors given.)
- 10 Floriani V and Kennedy C. "Promotion of Physical Activity in Children." *Current Opinion in Pediatrics*, 20(1): 90-95, 2008.
- 11 Cunningham C, Jones M and Barlow M. *Town Planning and Children: A Case Study of Lismore, New South Wales, Australia*. Armidale, New South Wales: Department of Geography and Planning, University of New England, 1996.
- 12 Grow HM, Saelens BE, Kerr J, et al. "Where are Youth Active? Roles of Proximity, Active Transport, and Built Environment." *Medicine and Science in Sports and Exercise*, 40(12): 2071-2079, 2008.
- 13 Grow, et al. 2008.
- 14 Potwarka LR, Kaczynski AT and Flack AL. "Places to Play: Association of Park Space and Facilities with Healthy Weight Status among Children" *Journal of Community Health*, 33(5): 344-350, 2008.
- 15 Gordon-Larsen P, Nelson MC, Page P, et al. "Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity." *Pediatrics*, 117(2): 417-424, 2006.
- 16 Cradock AL, Kawachi I, Colditz GA, et al. "Playground Safety and Access in Boston Neighborhoods." *American Journal of Preventive Medicine*, 28(4): 357-363, 2005.
- 17 Floyd MF, Spengler JO, Maddock JE, et al. "Park-based Physical Activity in Diverse Communities of Two U.S. Cities. An Observational Study." *American Journal of Preventive Medicine*, 34(4): 299-305, 2008.
- 18 Farley TA, Meriwether RA, Baker ET, et al. "Safe Play Spaces To Promote Physical Activity in Inner-City Children: Results from a Pilot Study of an Environmental Intervention." *American Journal of Public Health*, 97(9): 1625-1631, 2007.
- 19 Colabianchi N, Kinsella AE, Coulton CJ, et al. "Utilization and Physical Activity Levels at Renovated and Unrenovated School Playgrounds." *Preventive Medicine*, 48(2): 140-143, 2009.
- 20 Lopez R, Jennings J and Campbell R. *Schoolyard Improvements and Standardized Test Scores: An Ecologic Analysis*. Boston: Mauricio Gaston Institute, 2008.
- 21 Bower JK, Hales DP, Tate DF, et al. "The Childcare Environment and Children's Physical Activity." *American Journal of Preventive Medicine*, 34(1): 23-29, 2008.
- 22 Willenberg LJ, Ashbolt R, Holland D, et al. "Increasing School Playground Physical Activity: A Mixed Methods Study Combining Environmental Measures and Children's Perspectives." *Journal of Science and Medicine in Sport*, 13(2): 210-216, 2009.
- 23 Farley T, Meriwether R, Baker E, et al. "Where Do the Children Play? The Influence of Playground Equipment on Physical Activity of Children in Free Play." *Journal of Physical Activity and Health*, 5(2): 319-331, 2008.
- 24 Fjortoft I. "Landscape as Playscape: The Effects of Natural Environments on Children's Play and Motor Development." *Children, Youth and the Environment*, 14(2): 21-44, 2004.
- 25 Ridgers ND, Stratton G, Fairclough SJ, et al. "Long-term Effects of a Playground Markings and Physical Structures on Children's Recess Physical Activity Levels." *Preventive Medicine*, 44(5): 393-397, 2007.
- 26 Purvis JM and Hirsch SA. "Playground Injury Prevention." *Clinical Orthopaedics and Related Research*, (409): 11-19, 2003.
- 27 *Public Playground Safety Handbook*. Washington: U.S. Consumer Product Safety Commission, 2008, (No authors given.)
- 28 Pressley JC, Barlow B, Durkin M, et al. "A National Program for Injury Prevention in Children and Adolescents: The Injury Free Coalition for Kids." *Journal of Urban Health*, 82(3): 389-402, 2005.
- 29 *Local Government Action to Prevent Childhood Obesity*. Washington: Institute of Medicine, 2009, (No authors given.)
- 30 *Action Strategies Toolkit*. Washington: Leadership for Healthy Communities, 2009, (No authors given.)
- 31 *Local Government Action to Prevent Childhood Obesity*.
- 32 *Action Strategies Toolkit*.
- 33 *Local Government Action to Prevent Childhood Obesity*.
- 34 Benjamin S. Preventing Obesity in the Child Care Setting: Evaluating State Regulations. Durham, NC: Duke University School of Medicine, 2009, [http://cfm.mc.duke.edu/modules/cfm\\_ehs\\_resrch/index.php?id=6](http://cfm.mc.duke.edu/modules/cfm_ehs_resrch/index.php?id=6) (accessed December 2010).
- 35 Lopez, Campbell and Jennings. "The Boston Schoolyard Initiative: A Public Private Partnership for Rebuilding Urban Play Spaces." *Journal of Health Politics, Policy and Law*, 33(3): 617-638, 2008.
- 36 *Local Government Action to Prevent Childhood Obesity*.
- 37 *Action Strategies Toolkit*.
- 38 Benjamin S. *Preventing Obesity in the Child Care Setting: Evaluating State Regulations*.
- 39 *Model Physical Activity Standards for Child-Care Providers (For Infant Through Preschool-Age Children)*. Oakland, CA: National Policy and Legal Analysis Network to Prevent Childhood Obesity, 2010, [www.nplanonline.org/nplan/products/model-child-care-physical-activity-standards](http://www.nplanonline.org/nplan/products/model-child-care-physical-activity-standards) (accessed December 2010). (No authors given.)