Active Living Research
Using Evidence to Prevent Childhood Obesity and Create Active Communities

ARTICLE SUMMARY
March 2012

Children Are More Physically Active in Greener Areas

Introduction

Physical activity promotes health and reduces obesity risk, and earlier research suggests that high levels of "greenness" (defined by the amount of nearby vegetation), may promote physical activity. In residential neighborhoods, greenness levels are generally higher for tree-lined walkways and parks than for sparsely-landscaped streets. This study examined associations between greenness and children's physical activity using portable global positioning system (GPS) units, accelerometers (activity monitors), and satellite imagery data.

Key Findings

Children were more active when they were in greener areas of their neighborhoods, and this association was stronger for children living in a smart-growth community (characterized by more walkable streets with housing closer to shops, commercial services, parks and recreation areas) than for children in nearby conventional communities.

In the smart-growth community, children were 39 percent more likely to engage in physical activity during time spent in greener areas (areas greater than 90th percentile greenness) than when they were in less green areas. Children from nearby conventional communities were 34 percent more likely to be active when they were in greener areas. The amount of time spent engaged in physical activity was nearly five times higher among children who spent more than 20 minutes per day in greener areas than children who spent fewer than 90 seconds per day in such areas. Half the children in this study spent fewer than 90 seconds per day in greener areas.

Methodology

The study sample included 208 children ages 8 to 14 representing a wide range of socioeconomic backgrounds, and included children from multiple ethnic groups (42% were Hispanic). Approximately one-third of children lived in a smart-growth community in Chino, Calif. and the rest were from nearby conventional communities.

SOURCE

Almanza, E., Jerrett, M., Dunton, G., Seto, E., Pentz, M.A. (2012). A study of community design, greenness, and physical activity in children using satellite, GPS and accelerometer data. *Health & Place*, 18(1), 46-54.

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Children wore a belt with portable GPS and accelerometer units (activity monitors) that recorded their location and physical activity level every 30 seconds for seven days (Figure 1). The level of greenness for the locations of each 30-second measure was calculated from satellite imagery data. Children's physical activity within 500 meters of home was examined to assess associations with greenness.

Other Findings

Children's physical activity levels varied during different periods of time spent outside of school. During the school year, children were less likely to be active during weekends than weekdays before and after school. The likelihood of being active during summer days was similar to the likelihood of being active before and after school on weekdays during the school year. Boys were more likely to engage in physical activity than girls.

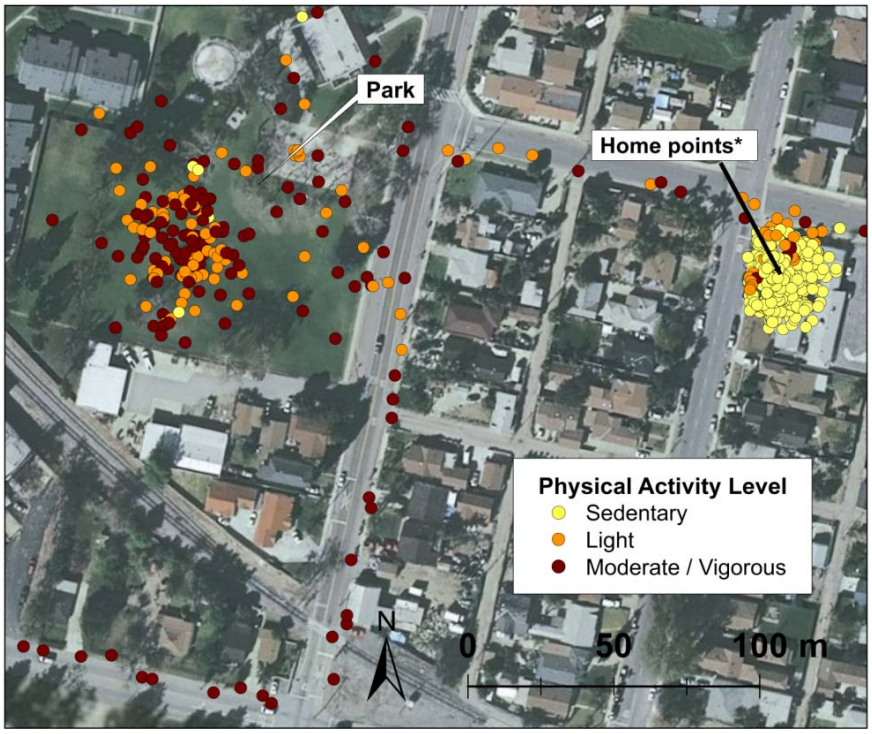

Figure 1: GPS-physical activity measures show a child engaging in various intensities of physical activity within a green area and during active transport (* home points shifted for confidentiality).

Implications

Study results suggest green areas within residential neighborhoods encourage children to be more active. This finding is likely due to the programmed sports and unstructured play that often occur in open green areas. Additionally, shade and aesthetics provided by tree-lined sidewalks may encourage walking and other outdoor activities.

These findings provide support for the integration of green elements into community design as a way to promote physical activity. Although the effects of greenness on individual behavior were somewhat modest, greener neighborhoods could have a substantial impact at the population-level. Results also indicate that smart-growth communities encourage greater use of green spaces for physical activity. This is consistent with previous research.

Future research should examine which features (e.g., trees, playgrounds, safety) and types of green areas (e.g., open spaces versus walkways) are most closely associated with increasing physical activity among children. Additional research is also needed to show how other elements of community design may interact with greenness to shape activity behavior of residents. Understanding these relationships will allow urban planners to create neighborhood environments that promote active living, and contribute to reducing childhood obesity.