



Neighborhood poverty, park use, and park-based physical activity in a Southern California city

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ABSTRACT

A rich literature indicates that individuals of lower socio-economic status engage in less leisure time physical activity than individuals of higher socio-economic status. However, the source of the difference is believed to be, in part, due to differential access to resources that support physical activity. However, it has not been shown as to whether equal access to parks can mitigate differences in leisure time physical activity. Using systematic direct observation, we quantified physical activity in neighborhood parks in a large Southern California city located in areas with high, medium, and a low percentage of households in poverty. We documented how neighborhood parks are managed and programmed and also interviewed both a sample of park users and a random sample of households within a mile radius of the parks. We found that parks are used less in high-poverty areas compared to medium- and low-poverty area parks, even after accounting for differences in size, staffing, and programming. The strongest correlates of park use were the number of part time staff, the number of supervised and organized programs, and knowing the park staff. Perceptions of safety were not relevant to park use among those interviewed in the park, however it had a small relationship with reported frequency of park use among local residents. Among park users, time spent watching electronic media was negatively correlated with the frequency of visiting the park. Future research should test whether increasing park staffing and programming will lead to increased park use in high-poverty neighborhoods.

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Introduction

Among a wide variety of health risk factors, including diet, obesity, smoking, hypertension, high cholesterol, and diabetes, the largest attributable fraction for all-cause mortality is due to physical inactivity, accounting for 16% of all-cause deaths (Blair, 2009). This is somewhat surprising, because compared with most other health behaviors, physical activity requires minimal financial cost, since people can walk, jog, or run in the streets and recreate in public parks without charge. Nonetheless, many studies document substantial disparities in leisure time physical activity between low- and high income groups (Boone-Heinonen et al., 2010; Cerin & Leslie, 2008; Drenowatz et al., 2010; Kamphuis et al., 2009; McNeill, Kreuter et al., 2006; McNeill, Wyrwich et al., 2006; Wilson et al., 2004).

The urban public parks movement was born partly in response to the crowded and substandard housing and working conditions of the urban poor in the late 19th century. This was in the midst of the Sanitary Revolution, a time when it became increasingly clear that the conditions in which people lived explained disparities in morbidity and mortality between the rich and the poor. New legislation mandated systems for clean water, disposal of sewage, and upgrades of substandard housing. As an adjunct to these efforts, parks were intended for people of all classes, so they could breathe air purified by sun and trees (Olmstead, 1870). Frederick Olmstead, the designer of New York City's Central Park, wrote extensively about the benefits of parks and envisioned them as oases in the midst of the industrialized urban landscape in which the lower classes, in particular, might find respite from the crowding, filth, and incivilities of city life.

Olmstead's belief that parks would ameliorate health problems was prescient, as we now understand that a variety of chronic diseases are associated with a lack of time spent outdoors. Heart disease and diabetes, for example, are associated with insufficient

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physical activity (Lee et al., 1997; Oldridge, 2008; Yu et al., 2003). Additionally, deficits of Vitamin D, manufactured by the body as a byproduct of sun exposure, are associated with poor health; in African Americans lower levels of Vitamin D have been associated with higher rates of cardiovascular disease (Fiscella & Franks, 2010; Harris, 2011), kidney disease (Diaz et al., 2009; Williams et al., 2009), low birth-weight (Bodnar & Simhan, 2010; Leffelaar et al., 2010), and pediatric asthma (Hill et al., 2011). Indeed, beyond having reduced exposure to the sun, staying indoors has been found to exacerbate asthma from exposure to indoor pollution (Ahluwalia & Matsui, 2011; Rabito et al., 2011). Moreover, high levels of television viewing are associated with obesity (Crespo et al., 2001; Robinson, 1999).

In the 1950's, as American society prospered after WWII and cities expanded beyond their core, more parks were built with facilities for sports, especially because land on the periphery was less expensive. City departments of recreation and parks were created to staff, manage, and run these facilities for the benefit of local citizenry. Today, parks throughout the US are extensively supported with infrastructure and are a major venue for physical activity. According to the National Recreation and Parks Association (NRPA), approximately 75% of all Americans live within two miles of a park (ICMA & NACO, 2006).

Although parks have become a standard infrastructure in most American cities and populations have unfettered access, many obstacles to park use have developed. The development of rigorous housing standards has led to the building of attractive indoor home environments, reducing the motivation for many to spend time outdoors. As well, low-income groups often hold unpleasant perceptions of neighborhood conditions, high perceptions of crime, and unleashed dogs (Cerin & Leslie, 2008; Kamphuis et al., 2009; Wilson et al., 2004) naming them as factors reducing their park use. Individual factors have also been identified as restricting park use, including low self-efficacy for physical activity and limited perceived benefits and social support for physical activity. In one study, these subjective factors were shown to be key mediators that explained virtually all the differences in leisure time physical activity between persons of higher and lower socio-economic status (Cerin & Leslie, 2008). However, a limitation of these studies of leisure time physical activity has been the reliance on self-reported physical activity, which has been shown to have poor validity when compared to more objective measures (Fogelholm et al., 2006; Hagströmer et al., 2006).

Park facilities and scheduled, supervised activities are important resources for physical activity, particularly in urban, minority communities (Babey et al., 2005). Parks are also destinations to which people can walk – even though they may be sedentary after arriving there (MacDonald et al., 2010). In some states, parks have been found to be more equitably distributed across neighborhoods of different socioeconomic status and racial–ethnic composition than commercial recreational facilities (Moore et al., 2008). What is not known, however, is to what extent parks are used equitably across various communities, particularly for physical activity.

The mere existence of a park does not guarantee its use. Jane Jacobs recognized that parks could be harmful to safety and well-being as well as being helpful and that they did not automatically confer a boon on deprived urban populations (Jacobs, 1961, pp. 116–145). In her view, parks would only be well used if they were located in areas that supported heavy traffic and multiple uses. They would also more likely attract users if they provided “demand goods,” specialized features such as facilities like baseball fields and events such as concerts that draw people with unique interests. Jacobs noted that magnificent views and handsome landscaping alone are seldom sufficient to capture people's leisure time, but they could be adjuncts to unique and attractive activities that add excitement and variety to an otherwise dull or inconvenient location.

This paper examines the use of 50 community parks, which we documented using systematic, direct observation and by surveying park users and local residents in neighborhoods of diverse socioeconomic status and race/ethnicity. We conceptualized three different sets of factors affecting park use and park-based physical activity, including individual, park, and neighborhood characteristics. We examined the importance of neighborhood poverty in relationship to park-based physical activity.

Methods

We selected a sample of 50 neighborhood parks (27%) from 183 of those eligible in a large Southern California city. Eligible parks included those with recreation centers, at least one full time staff member and no excessive security concerns that limited park use, such as the local police precinct placing it under a gang injunction. (We excluded 3 for this reason.) Parks were selected to represent varied geographic areas in the city, and we sorted them based on the race/ethnicity composition of neighborhood census tracts (2000 US Census). Leisure time activities are likely influenced by cultural backgrounds and acculturation (Abraido-Lanza et al., 2005), and we wanted to observe park based activities among the diverse populations in the city. Given a predominantly Latino and non-Hispanic white populace, we oversampled parks in neighborhoods with higher percentages of Asians and African Americans. We also included parks where the population was diverse, where neither Whites, Latinos, African American, nor Asians constituted a majority. We calculated the percentage of households living under the poverty level within a 1-mile radius around the park, interpolating block group data from the 2000 US Census. The percentage of households in poverty was calculated by the US Census Bureau, based upon the Federal poverty level. We also categorized the location of a park as commercial if it had a 4 lane commercial street and/or bordered on at least one retail establishment; other parks were categorized as residential.

Observation instrument

We inventoried park facilities and directly observed park use using the System for Observing Play and Recreation in Communities (SOPARC) for 7 days, 4 times/day in each park over a two-year period, between April 2008 and March 2010. If weather was inclement, we rescheduled park visits during the same time on the next matching clement day to ensure observations were conducted on each day of the week. SOPARC provides data on each individual (i.e., gender, age-grouping; race/ethnicity grouping, and physical activity) observed in a park activity area. During an area scan (i.e., an observation sweep moving from left to right) of the area, the physical activity of each individual present is coded using momentary time sampling as sedentary (i.e., lying down, sitting, or standing), walking, or vigorous (e.g., jogging, running). These activity codes have been validated using heart rate monitoring and by accelerometry in physical education classes and leisure time with children and youths in kindergarten through twelfth grade. (McKenzie et al., 1991; Sallis et al., 2003) We counted females and males (all ages) during separate scans and recorded the predominant activity for each gender.

In addition to recording information on people in an activity area, during each visit to an activity area entries were made to describe whether the space was accessible, usable, equipped, supervised, and provided organized activities. An area was coded as accessible when there were no locked doors, gates, or fences to impede entry. It was coded as supervised when park or adjunct personnel (e.g., park rangers, playground supervisors, volunteers, sport officials, teachers) were present and appeared to be available

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