The First National Study of Neighborhood Parks

Implications for Physical Activity

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Introduction: An extensive infrastructure of neighborhood parks supports leisure time physical activity in most U.S. cities; yet, most Americans do not meet national guidelines for physical activity. Neighborhood parks have never been assessed nationally to identify their role in physical activity.

Methods: Using a stratified multistage sampling strategy, a representative sample of 174 neighborhood parks in 25 major cities (population >100,000) across the U.S. was selected. Park use, park-based physical activity, and park conditions were observed during a typical week using systematic direct observation during spring/summer of 2014. Park administrators were interviewed to assess policies and practices. Data were analyzed in 2014–2015 using repeated-measure negative binomial regressions to estimate weekly park use and park-based physical activity.

Results: Nationwide, the average neighborhood park of 8.8 acres averaged 20 users/hour or an estimated 1,533 person hours of weekly use. Walking loops and gymnasia each generated 221 hours/week of moderate to vigorous physical activity. Seniors represented 4% of park users, but 20% of the general population. Parks were used less in low-income than in high-income neighborhoods, largely explained by fewer supervised activities and marketing/outreach efforts. Programming and marketing were associated with 37% and 63% more hours of moderate to vigorous physical activity/week in parks, respectively.

Conclusions: The findings establish national benchmarks for park use, which can guide future park investments and management practices to improve population health. Offering more programming, using marketing tools like banners and posters, and installing facilities like walking loops, may help currently underutilized parks increase population physical activity.

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Introduction

Neighborhood parks with large open spaces constitute infrastructure to support adherence to national recommendations for moderate to vigorous physical activity (MVPA)—at least 60 minutes/day for youth and 150 minutes/week for adults.[1] Because fewer than half of Americans meet these guidelines,[2] physicians are being encouraged to routinely counsel patients about physical activity and to offer "park prescriptions," identifying nearby parks and recommending regular visits.[3,4] Yet, the degree to which parks are designed or managed to optimize physical activity for all age groups and genders has not been examined at the national level.[5,6] Many urban parks were created before climate-controlled indoor spaces and electronic visual media existed, when work required more physical activity and labor-saving devices were less available. Parks were originally designed for leisure, recreation, and a chance to make contact with nature, not to specifically promote physical activity.[7] Given high levels of inactivity and associated chronic diseases, like heart disease, diabetes, and cancer,[1] it is timely to

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reconsider parks and their potential to improve the nation's health.

Across the U.S., more than 9,000 local park and recreation departments and organizations manage more than 108,000 public park facilities and 65,000 indoor facilities.[8] Parks have been categorized by size and facilities into different types, including very small parks (under 2 acres, also called mini-parks, pocket parks, or parklets), neighborhood parks, community and large urban parks, sports complexes, and natural resource areas.[9] Neighborhood parks are considered the backbone of park systems. They often contain multiple diverse facilities—playgrounds, picnic tables, basketball courts, green spaces, and shade trees—allowing residents of all ages to recreate there on a routine basis. Neighborhood parks are usually between 2 and 20 acres, have more facilities than mini-parks, and are intended to serve local residents living within a 1-mile radius around parks.[9]

Funding for park programming, maintenance, and capital improvements is typically allocated from city budgets, which also vary across jurisdictions. Many cities employ staff to develop, monitor, and market programs for parks, including classes and special events. It is plausible that local park management practices and policies could influence population-level physical activity.

Prior studies indicate that sociodemographics, size, facilities, aesthetics, and proximity are all important factors contributing to park use,[10–19] but most studies are local and have limited generalizability.[20] To that end, the authors conducted a national observational study of 174 parks from 25 cities in the U.S. with a population of more than 100,000. The goals were to determine how neighborhood park systems support population-level physical activity; to identify factors associated with park use and park activities, including facilities, management practices, and disparities between parks in high- and low-income neighborhoods; and to understand how park administrators currently measure park use and the potential usefulness of such measures.[21]

Methods

Study Design

A two-stage stratified sampling strategy was used to select a representative sample of neighborhood parks in the U.S. cities with a population 100,000 or more according to the 2010 Census. The total 289 cities were divided into nine strata, with eight strata based on population (200,000–1,000,000 and 100,000–200,000) and region (West, Northeast, Midwest, and South), and the ninth stratum comprising cities with a population of more than 1 million. In the first sampling stage, 25 cities were randomly drawn from the nine strata (Appendix Figure 1, available online; Tables 1 and 2). All states were in the sampling frame and, by chance, all sampled cities were in the 48 contiguous states. In each of the 25 selected cities, a list of public parks was retrieved, either supplied directly by the city's Department of Recreation and Parks or from their website. The selection was restricted to avoid parks in close proximity (<1 mile from each other) and to ensure distributions of chosen parks were similar with regard to sizes and local poverty rates for all neighborhood parks within each city. Parks between 3 and 20 acres were initially targeted,[9] but in nearly half the cities, large numbers of neighborhood parks were slightly less than 3 acres or just more than 20 acres. As a result, the selection criteria were relaxed to include ten parks less than 3 acres (between 2.2 and 2.9 acres) in eight cities and five parks more than 20 acres (between 20.1 and 23.0 acres) in five cities.

One hundred and seventy-four parks were included, representing an approximately 10% sample of all eligible neighborhood parks in the sampled cities. Excluded parks were located in a Census tract with no or very few residents (e.g., airport, prison, military base, hospital, industry facility), pocket parks (<2 or 3 acres), regional parks (>20 or 23 acres in some cities), parks used as school fields during business hours, and parks serving special purposes only (e.g., parkways, boxing gyms). Two parks were replaced because police said they were unsafe for staff to visit.

Measurement Protocol

Data collection was conducted on clement days between April and August 2014 using the System of Observing Play and Recreation in Communities (SOPARC), a validated observational tool.[22] SOPARC uses momentary time sampling and direct observation methods to assess aggregated physical activity levels, demographic characteristics of park users, and contextual information. From each selected city, two to four local field staff were recruited and trained.

Each park was mapped and divided into subareas called target areas that could be observed in one scan and typically included one type of facility (e.g., play equipment, basketball court, lawn) or supported only one type of activity (e.g., tennis). All of the target areas were numbered so that every single observation occurred in exactly the same order. Observations generally took <1 hour to cover the entire park. Based upon a previous study indicating that 12 observations selected on different days and different times of day were sufficient to reliably estimating weekly park use,[23,24] each park was observed according to the following schedule: Tuesday, 8 AM, 11 AM, and 2 PM; Thursday, 12 PM, 3 PM, and 6 PM; Saturday, 9 AM, 12 PM, and 3 PM; and Sunday, 11 AM, 2 PM, and 5 PM. During each hourly observation, all target areas were assessed for specific characteristics, including whether it was accessible, usable, or supervised (i.e., a person was in charge to manage and direct activities like a lifeguard, park staff, or coach). Staff tried to observe a park during a single week, but when the weather was inclement, the observation was rescheduled for the next available day (same time of day and day of week) that was not raining.

Each park user in a target area was categorized into one of 24 groups defined by gender (male, female), age group, (child, teen, adult, senior), and physical activity level (sedentary [e.g., seated, standing], moderate [e.g., walking], vigorous [e.g., running, climbing]). At the end of each day, staff completed an assessment of the park conditions, including weather, noise, marketing materials (e.g., banners, posters), amount of litter and graffiti,