Promoting Health in Low-Wealth Communities: Physical Activity

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Large Health Disparities Exist Among Low Income Communities

- Higher prevalence of overweight and obesity
- Higher rates of diabetes, heart disease, violence
- Higher rates of mortality and premature mortality

- Is this only due to income?
- How are low-income communities different?
- What can be done to improve health?
Differences in mortality are not merely due to income

• Income explains only part of the problem
• Race explains only part of the problem
• Genetics explains some
• The most important, remediable component is **lifestyle**, which explains up to 50% of mortality in general
Traditional Prevention Has Focused on Modifying Individuals’ Lifestyles

- Housing
- Street design
- Mass transit
- Land use
- Parks
- Media/Marketing
- Social support

Built and social environment

- Diet
- Physical activity
- Substance use
- Sexual activity
- Violence

Lifestyle

- Obesity
- Diabetes
- Heart disease
- Cancer
- STD/HIV
- Injury

Health
Parks and Physical Activity in Low-Wealth Communities

• Parks are venues for physical activity

• Does having a neighborhood park matter in determining how physically active a person is?

• What are the important features of parks? Size? Features? Facilities? Programming?
Study of Physical Activity in 12 Los Angeles Neighborhood Parks

• Most parks in Latino and African-American neighborhoods

• Low-income neighborhoods serving an average of 67,000 people in 1 mile radius and 210,000 people in 2 mile radius

• Size ranges from 3.4 to 16 acres, with an average of 8 acres. Active parks, mostly with gymnasiums, baseball diamonds, playground areas, picnic areas, fields
## SES of 12 Park Neighborhoods

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Mean (range)</th>
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</thead>
<tbody>
<tr>
<td>% Individuals in poverty</td>
<td>30% (10%-55%)</td>
</tr>
<tr>
<td>% Renters</td>
<td>66% (24%-95%)</td>
</tr>
<tr>
<td>% Hispanic/Latino</td>
<td>57% (11%-95%)</td>
</tr>
<tr>
<td>% African American</td>
<td>20% (0%-88%)</td>
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</table>
Observation Methods

• Park activity was observed four times per day
  • 7:30 - 8:30am
  • 12:30 - 1:30pm
  • 3:30 - 4:30pm
  • 6:30 - 7:30pm

• Park activity was observed for each day of the week and primary and secondary activities in each target area recorded, including being a spectator.

• Individuals were counted and recorded by:
  • Gender (female or male)
  • Age group (child, teen, adult, or senior)
  • Race/ethnicity (Latino, black, white, or other)
  • Activity level (sedentary, walking, or vigorous)
Survey Methods

• Park users were surveyed based on:
  • Target Area (busy and quiet areas)
  • Activity Level (sedentary, walking, or vigorous)
  • Gender (50% male, 50% female)

• Neighborhood residents were surveyed based on random selection of households in specified increments from the park:
  • 1/4 mile
  • 1/2 mile
  • One mile
  • Two miles
Promotoras
Counter
More Males than Females Use the Parks
(63% vs. 37%)

Average of 2000 persons observed per park over 7 days
Children and Teens Use Parks More than Adults

Ratio to Population

Male  Female

Children  Teens  Adults  Seniors
Most Park Users Live Within 1 Mile of the Park

- 23% live within 1/4 Mile
- 27% live within 1/2 Mile
- 31% live within One Mile
- 13% live within Two Miles
- 6% live over Two Miles
Residential Proximity Associated with Frequency of Park Use

- People living within one mile of the park were four times as likely to visit the park once a week or more.
- Those living within one mile had an average of 38% more exercise sessions per week than those living farther away.
People Exercise in Parks

People who live closer to parks are more likely to exercise.
Parks Used Most on Weekends

- Sunday: 19%
- Monday: 11%
- Tuesday: 14%
- Wednesday: 13%
- Thursday: 12%
- Friday: 12%
- Saturday: 19%
Parks Used Least in the Morning

- Morning: 9%
- Lunch: 29%
- Afternoon: 29%
- Evening: 34%

% of Park Users
Many Target Areas in the Parks were Empty

An average of 54% of park areas were empty during 28 observations/week.
Supervised Activities Draw More Park Users

- Gymnasium: Supervised - 24, Unsupervised - 8
- Outdoor Basketball Court: Supervised - 35, Unsupervised - 5
- Multi-purpose Field: Supervised - 61, Unsupervised - 6
- Baseball Field: Supervised - 68, Unsupervised - 4
Percentage Walking Among Those Not Engaged in Specific Activities

*Park has track*

*Park has walking path*
Males Are More Vigorously Active than Females

- **Sedentary**
  - Male: 58%
  - Female: 65%

- **Walking**
  - Male: 23%
  - Female: 24%

- **Vigorous**
  - Male: 19%
  - Female: 12%
Walking and Sitting Are the Most Common Self Reported Activities

- Walking
- Sitting
- Playground
- Celebrations
- Meet Friends
- Outdoor Basketball
- Other
- Walk Dog
- Soccer
- Indoor Basketball

Residents vs. Park Users

% Respondents

0% 10% 20% 30% 40% 50% 60% 70%

February 2006
Observed Activities Reflect Self-Report

- Sitting: Male 17%, Female 22%
- Walking: Male 15%, Female 12%
- Playground: Male 7%, Female 14%
- Standing: Male 11%, Female 9%
- Basketball: Male 16%, Female 6%
- Picnicking: Male 3%, Female 6%
- Baseball: Male 6%, Female 4%
- Soccer: Male 10%, Female 2%
- Tennis: Male 2%, Female 2%

% of Park Users
Respondents Rarely Visit Other Neighborhood Parks

- Daily: 0% Residents, 1% Park Users
- At Least Weekly: 13% Residents, 11% Park Users
- At Least Monthly: 16% Residents, 20% Park Users
- Yearly: 32% Residents, 30% Park Users
- Never: 39% Residents, 39% Park Users
Respondents Report Long Visits to the Parks

![Bar chart showing the percentage of residents and park users who spend different amounts of time in the parks.]

- **1 - 30 Minutes**:
  - Residents: 8%
  - Park Users: 9%
- **30 - 60 Minutes**:
  - Residents: 26%
  - Park Users: 18%
- **1 - 2 Hours**:
  - Residents: 33%
  - Park Users: 31%
- **2 - 3 Hours**:
  - Residents: 23%
  - Park Users: 25%
- **3 - 5 Hours**:
  - Residents: 8%
  - Park Users: 12%
- **5+ Hours**:
  - Residents: 2%
  - Park Users: 6%
Most Park Users Walk to the Park

Bar chart showing the percentage of respondents who used different modes to get to the park.

- **Walk**: 35% (Residents) vs. 49% (Park Users)
- **Bike**: 1% (Residents) vs. 3% (Park Users)
- **Car**: 47% (Residents) vs. 37% (Park Users)
- **Bus**: 1% (Residents) vs. 1% (Park Users)
- **More than one mode**: 16% (Residents) vs. 10% (Park Users)
Parks Are Social Venues

How often do you meet people you know?

<table>
<thead>
<tr>
<th></th>
<th>Residents</th>
<th>Park Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often</td>
<td>21%</td>
<td>34%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>52%</td>
<td>44%</td>
</tr>
<tr>
<td>Rarely</td>
<td>18%</td>
<td>15%</td>
</tr>
<tr>
<td>Not at All</td>
<td>9%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Most Thought Parks Are Safe

Perceptions of safety did not predict park use.
More Users Correlates with Greater Energy Expenditure per Park
Summary

- Residential proximity to parks is a critical determinant of park use and leisure exercise – Size may be less important than the number of parks close by.

- Males use parks more than females

- Children and teens use parks more than adults and seniors

- Most people in the parks are sedentary
Summary

• People report using parks frequently, yet we observed many areas in the park to be largely unused during substantial portions of the week

• Supervised activities draw more people to the park

• Walking paths associated with more walking

• More park users correlated with more energy expended
Findings from The Trial of Activity Among Adolescent Girls

- National study to reduce the decline in physical activity among adolescent girls as they mature

- Girls wore accelerometers for 6 days to objectively measure physical activity- outcome was MW-MVPA (intensity-weighted)

Types of Parks Visited
(definition from Mertes & Hall, 1996, NRPA)

97  Mini parks
234  Neighborhood parks
139  Community parks
 24  Large urban parks
 25  Sports complexes
136  Natural resource areas
 52  Special use facilities
 707  Total
Average number of parks near girls’ homes

Number of parks

1/2 mile radius

1 mile radius

Baltimore
S. Carolina
Minneapolis
New Orleans
San Diego
Tucson

February 2006
Total Parks Associated with MET-Weighted MVPA/6 days

For every park in:

1/2 mile radius

Extra minutes of MW-MVPA

17.2 min

½ -1 mile radius

6.7 min
Number of parks in 1 mile radius associated with MW-MVPA over 6 days

Minutes of MET-weighted MVPA

1 park  2 parks  3 parks  4 parks  5 parks  6 parks  7 parks  >=8 parks

Plot showing the estimated minutes of MET-weighted MVPA associated with different numbers of parks within a 1 mile radius.
# Type of Park Associated with PA

Neighborhood Park and Community parks:

<table>
<thead>
<tr>
<th>Effect Size</th>
<th>½ mile buffer</th>
<th>½ - 1 mile</th>
</tr>
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<tr>
<td></td>
<td>24.2 minutes/6 days</td>
<td>18.6 minutes/6 days</td>
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Park features in ½ mile radius
Associated with Physical Activity

Extra minutes of MW-MVPA/6 days

- Multi-purpose room: 13
- Walking path: 13
- Playgrounds: 28
- Basketball courts: 30
- Swimming area: 32
- Track: 82
Other Park Amenities and PA

<table>
<thead>
<tr>
<th>Amenities</th>
<th>Minutes of MW-MVPA/6 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaded area</td>
<td>14</td>
</tr>
<tr>
<td>Drinking fountain</td>
<td>14</td>
</tr>
<tr>
<td>Streetlights</td>
<td>18</td>
</tr>
<tr>
<td>Floodlights</td>
<td>22</td>
</tr>
</tbody>
</table>
Commercial PA Supports and MW-MVPA

• Identified PA supports within 1 mile of girls’ homes
  - Any facility: 68%
  - Dance/ gymnastics studio: 29%
  - Martial arts: 28%
  - Exercise/health club: 26%
  - Swimming: 23%
  - Golf: 11%
  - Youth organizations: 10%
  - Bowling: 5%
  - Stables: 4%
  - Racquet club: 3%
  - Yoga: 3%
Findings

1 or more PA supports associated with additional 28 minutes MW-MVPA/6 days

(Regression controls for BMI, Age, race, friends support, family support, ease of transportation, SES index, % free lunch)
Weekend Accessibility of Schoolyards

Visited 407 schools on Saturday

309 Public
88 private
10 college/university

Documented facilities and accessibility
Findings

57% accessible
34% locked
15% no active amenities

Large variation by site:
62% locked in New Orleans,
39% in Maryland and Tucson,
   2% in Minneapolis

San Diego schools had average of 7.5 active amenities, only 2.4 in South Carolina
School Accessibility on Weekends

More locked in schools in neighborhoods with higher poverty, unemployment, lower education, higher population density.

Girls with locked schools in neighborhood have higher BMIs, (.5 units higher for average girls)

Girls with any accessible schools in ½ mile show a trend in higher MW-MVPA (+16 min/weekend)
Few girls live in walking distance to middle school

Distance from school

Number of girls

0-0.5 miles
>1.0-2.0 miles
>3.0-4.0 miles
>5.0-6.0 miles
>7.0-8.0 miles
>9.0-10.0 miles
## Distance to school and MW-MVPA

<table>
<thead>
<tr>
<th>Distance to School</th>
<th>Weekly Minutes of MW-MVPA (C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; ½ mile</td>
<td>633</td>
</tr>
<tr>
<td>½-5 mile</td>
<td>550 (480, 631)</td>
</tr>
<tr>
<td>5-10 miles</td>
<td>512 (441, 594)</td>
</tr>
<tr>
<td>&gt;10 miles</td>
<td>342 (248, 470)</td>
</tr>
</tbody>
</table>
Summary

• Greater density of parks associated with more MW-MVPA
• Park facilities (basketball, playgrounds, etc.) appear important to MVPA
• Commercial PA supports associated with MW-MVPA
• Accessible schoolyards associated with MVPA and BMI
• Greater distance from school associated with less MW-MVPA
Limitations

• Cannot rule out selection bias:

Active families may choose to live near parks, PA supports, and schools.
Collective Efficacy and Obesity

Collective efficacy is willingness of people to help out for the common good

Prior studies indicate that collective efficacy associated with:
- lower rates of crime,
- lower total premature mortality
- lower premature mortality from heart disease
- lower homicide
Low Collective Efficacy Associated with Higher Risk of Overweight in Adolescents

<table>
<thead>
<tr>
<th>Collective efficacy</th>
<th>Risk of adolescent overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>2.32</td>
</tr>
<tr>
<td>Medium</td>
<td>1.52</td>
</tr>
<tr>
<td>High</td>
<td>1.0</td>
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Possible Explanations

• Stress (allostatic load)

• Youth more likely to have healthy behaviors if can trust neighbors (?less shut in; adults provide informal controls on diet)

• Land use/access to healthy foods, recreational facilities
How do we increase collective efficacy?

- Positively related the presence of parks
- Negatively related to presence of alcohol outlets
Conclusion

• These studies add to the growing body of evidence that suggests that specific community/neighborhood structural features may be important contributors to physical activity and a variety of health behaviors and health outcomes.

• Although the mission of public health is to assure conditions in which people can be healthy, those responsibilities are increasingly left to urban planners, developers, elected officials and the private sector.
Prescription for a Healthy Nation

A New Approach to Improving Our Lives by Fixing Our Everyday World

Tom Farley, M.D.
and
Deborah A. Cohen, M.D.