

Key Questions: Physical Activity



Version 2.0.

DESIGN FOR HEALTH is a collaboration between the University of Minnesota and Blue Cross and Blue Shield of Minnesota that serves to bridge the gap between the emerging research base on community design and healthy living with the every-day realities of local government planning. This Physical Activity Key Question is part of a series with a focus on identifying and interpreting evidence-based research linking public health with planning.

Design for Health
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The following people were involved in the development of the Key Questions Series:

Series Editor: Dr. Ann Forsyth

Contributors: Dr. Ann Forsyth, Dr. Kevin Krizek, Dr. Carissa Schively, Laura Baum, Amanda Johnson, Aly Pennucci,

Copy Editor: Bonnie Hayskar

Layout Designers: Anna Christiansen, Tom Hilde, Kristen Raab, Jorge Salcedo, Katie Thering, Luke Van Sistine

Website Managers: Whitney Parks, Joanne Richardson

Thanks to Active Living by Design for helpful comments.

Suggested Citation: Design for Health. 2007. Key Questions: Physical Activity. Version 2.0. www.designforhealth.net

Overview

The most rapidly evolving aspect of the literature relating public health and planning focuses on the link between physical activity and the built environment. The relationship has been the subject of considerable study since 2000 due in large part to significant amounts of funding that have become available. The research has examined these issues at a variety of scales, including entire regions, census tracts, various levels of “neighborhood,” and studies at the individual-facility level.

The spotlight on physical activity has been the subject of considerable interest, at least since the first Surgeon General’s Report on Physical Activity and Health was released on July 11, 1996. The report suggested that Americans are not getting the exercise they need and that as many as 250,000 deaths per year in the United States are attributable to a lack of regular physical activity (US Public Health Service, 1996). This report identified physical inactivity as an important risk factor (independent of weight status) and legitimized route moderate activity (e.g., walking and bicycling) for reducing risk of chronic diseases. At the same time, research on time spent in recreational and leisure-time activities found that, in spite of educational and promotional campaigns, people were not exercising at “sufficient” levels as suggested by most medical professionals (King et al. 1995). Large studies of the U.S. population found obesity was increasing and weight is a function of energy in (eating) minus energy out (physical activity) (Mokdad et al. 2003). A long tradition of transportation research found people walked for travel in some places more than others, even controlling for major factors such as income (Ewing and Cervero 2001). Some hoped that by creating environments that increased travel walking and cycling, total physical activity would increase. This would have direct health benefits and also help reduce people’s weight. It is important that from a public-health standpoint, total physical activity is what matters as well as, to some extent, its intensity.



Utrecht, Netherlands

Rather than finding answers, continued research examining the relationship between physical activity and community design is raising more questions. One reason for this complexity is that physical activity is pursued in four purpose-related activity categories: work-related, household-related, recreational or leisure-time, and transportation-related. According to a home interview survey of over 3000 Twin Cities residents, of total physical activity reported (e.g., yardwork, cleaning, plus recreational time physical activity), for example, 60 percent and 70 percent of energy expended for men and women, respectively, was spent pursuing recreational-time physical activity alone (Steffen et al. 2006). The Design for Health project is primarily concerned with walking and/or cycling pursued outdoors for recreation or travel (as opposed to physical activity indoors in health clubs or on a treadmill or for job-related purposes).

There are a number of reasons people choose to be physically active. Public health and planning practitioners and researchers have experimented with better information about the benefits of physical activity (e.g., campaigns, advocacy efforts); small environmental cues (e.g., signs next to elevators, interior design, placement of stairs); social and policy approaches (e.g., school-based programs, laws, regulations); and environmental design approaches (e.g., neighborhood urban-design changes). Again, the Design for Health project is primarily concerned with the last of these. Its focus, therefore, lies in understanding how land-use, transportation, and urban-design elements of the built environment can

lead to increases in physical activity, primarily walking (and/or cycling), for recreational or transportation-related purposes. This may or may not be related to increased overall physical activity.

Given the reams of research available, readers may be interested in a half dozen or so review pieces (Frank and Engelke 2001; Bauman et al. 2002; Saelens et al. 2003; Lee and Moudon 2004; Transportation Research Board and Institute of Medicine 2005; Heath et al. 2006).

However, it is important that very few studies to date have examined the important outcome of total physical activity, and most of these have relied on surveys rather than more objective measures (such as motion detectors). Even those using motion detectors have done so only for periods of one to two days that might not be reliable (Masse et al. 2005). Studies tend to examine just part of the picture, therefore, such as travel walking or exercise. Part of the reason that there is some confusion about the overall research findings is that people are measuring different kinds of physical activity in the different studies.

Things for certain (or semi-certain)

- Social, economic and lifestyle factors are key in decisions to walk (Giles-Corti and Donovan 2003; Rodriguez et al. 2006).
- The closer a non-motorized facility, the greater the likelihood nearby residents will use it for cycling (Giles-Corti et al. 2005; Krizek and Johnson 2006; Krizek et al. 2007).

Example: A mail-out/mail back survey in Minneapolis and its western suburbs asked 900 people to record the last time they cycled. They found that those who lived within 600 m (roughly a third of a mile) of facilities were more likely to use it for any type of cycling than those living further away.

- More people walk for transportation purposes in environments with higher-density and mixed-use development (relative to environments that are more spread out and with fewer destinations and more circuitous road patterns) (Ewing and Cervero 2001; Handy et al. 2006).
- Access to attractive, large public open space is associated with higher levels of walking.

Example: Personal interviews from 1803 individuals found that, after controlling for distance, attractiveness and size of open space, those with very good access to large, attractive public open space were 50 percent more likely to achieve high levels of walking (Giles-Corti et al. 2005).

- The built environment can severely constrain routine avenues of physical activity. It is less attractive to walk or bike in areas with no facilities, high traffic or long distances between origins and destinations. An individual may drive or take transit, however, to somewhere better suited to such activities.
- The built environment should facilitate access to, enhance the attractiveness of, and ensure the safety and security of places where people can be physically active.



Pedestrian Street, Stockholm, Sweden

Things up in the air

- Heightened total amounts of walking or cycling—perhaps aided in part by the built environments—do not necessarily lead to more total physical activity for the population at large. In terms of health, it is primarily the latter that counts. People not walking or cycling a lot may be getting physical activity in other environments (i.e., their home, work place or health club).
- Features of the built environment that support heightened leisure-time physical activity (e.g., off-street paths) rarely coincide with those that support transportation-related physical activity (e.g., proximity of destinations). Different types of non-motorized facilities have different drawing power for different types of uses. Less experienced cyclists prefer off-street facilities, for example, whereas faster and more experienced cyclists appreciate on-street bicycle facilities and wide curb lanes (Tilahun et al. 2005).
- Because most people travel between a number of different places in a day and a week, it is difficult to know which places affect physical activity the most. People who are captive in one place may be more affected by their environments, but they are also more likely to have specific social characteristics that also affect physical activity—they are young, old and/or unemployed.
- There is no consensus on the best way to measure physical activity.
- There is no consensus on the most important urban form features for initiating physical activity (or how to measure them for that matter).

Working thresholds for HIA

In terms of health, what matters the most is total physical activity, and for many benefits at least part of it needs to be at a moderate or vigorous level. This is the area, however, with the least firm information.

A lot is known, instead, about creating walkable environments for transportation-related walking, defined by the following characteristics:

- Retail or other viable destinations within two-thirds of a mile from primary trip origins, such as residences or workplaces (Krizek and Johnson 2006; Krizek et al. 2007),
- Maximum travel speeds of 35 mph (56 km/h), with 20 mph (32 km/h) strongly encouraged (Appleyard and Lintell 1972; Appleyard 1981).

Environments for recreational walking likely may have some of the similar elements but are less affected by the immediate environment and would more heavily prioritize minimal travel speeds (or no traffic for that matter) (Forsyth et al 2007). These lists are by no means exclusive of other elements; they merely point to matters where there is greatest consensus.

At issue is what can be expected from walkable environments of all kinds. They certainly can provide options for physical activity for the general population and such environments should be made available where possible. They do little harm and have only marginal additional costs associated with them.

In terms of meaningfully contributing to physical activity, however, walkable environments are likely to have their most notable impact among populations who must walk due to circumstance, age or ability. These populations consist of:

- children prior to driving age
- elderly who no longer drive
- those who do not own or choose not to use a car, or
- those without access to attractive or convenient public transit.

For these populations, the factors mentioned above are likely to have increased importance for contributing to physical activity.

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United States Public Health Service. Office of the Surgeon General, National Center for Chronic Disease Prevention and Health Promotion, President's Council on Physical Fitness and Sports (this might need additional cite information) <http://www.cdc.gov/nccdphp/sgr/sgr.htm>