Report of an Experts' Meeting
November 27–28, 2000
Washington, D.C.

Healthy Places, Healthy People

Promoting Public Health & Physical Activity Through Community Design

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Preface

The United States has the best health care in the world yet it ranks only 37th in the recent World Health Report on quality of life and functional health status. This is an alarming statistic—all the more so when one considers that to a great extent the conditions that undermine our health status could be avoided.

Despite the clear health benefits of physical activity, two-thirds of American adults do not meet The Centers for Disease Control and Prevention's (CDC) recommendations, which suggest that adults engage in physical activity at least five days a week, for 30 minutes or more. Some 25 percent of Americans do not engage in any regular sustained physical activity.

The impact of physical inactivity and increased chronic and long-term health risks have created a growing demand for public health intervention programs among health care and education associations and organizations. Efforts to address the issue of physical inactivity have included promotions and programs generally targeted to individuals. These individual level programs encourage behavior change—exercise more and eat better. However, individually targeted health promotion and behavior change interventions are not enough, especially in a highly technological society that encourages sedentary behavior.

To comprehensively address the problem of physical inactivity, interventions need to target both the individual *and* the environments in which people live and work.

Regular moderate physical activity can reduce the risk of a wide range of chronic conditions. Studies show that those who engage in regular moderate physical activity for just 30 minutes a day on most days are at lower risk for coronary artery disease, hypertension, colon cancer, osteoporosis, arthritis, and non-insulin dependent diabetes than are sedentary people. Physical activity also improves mental health by reducing depression and anxiety and enhancing the ability to perform daily tasks throughout the life span.

One challenge confronting people's efforts to engage in physical activity is that often the environments in which people live do not support physical activity. Urban and suburban environments in the United States often lack adequate open spaces, safe walkways, trails and bicycle paths. Home, work, schools, shopping and service areas are often not connected in a manner that enables walking or bicycling as a method of transportation.

Americans' dependence on automobile transportation curtails opportunities to engage in physical activity. For many people, physical activity has been relegated to an infrequent leisure time activity, rather than an element of routine daily life.

Community design movements are now addressing a wide range of issues related to quality of life. These include the livability of communities, "smart growth," land use, public safety, environmental health, and economic development. In many cases, these efforts have successfully revived communities and engaged citizens. But these community design efforts rarely address health and chronic disease issues. The groups that often lead these community design efforts, such as architects, plan-

ners, designers, and transportation professionals have worked in isolation from public health professionals, lacking the benefit of shared knowledge or ongoing evaluation of the impact of design on health.

Over the last year, The Robert Wood Johnson Foundation® has explored the feasibility of a major national initiative aimed at improving public health through strategies and environmental changes that encourage active living. The initiative would identify and document successful program models that incorporate activity-friendly community design as a means for improving health outcomes. Toward this end, the Foundation commissioned a White Paper and convened 26 leaders representing community design organizations and interest groups for a two-day meeting, *Promoting Physical Activity Through Community Design*. The experts' meeting was held November 27–28, 2000 in Washington, D.C. Experts exchanged information, identified barriers and formulated possible strategies for reintegrating physical activity into community design. Recognizing that many of the organizations that work to create healthier communities share common values and goals, participants began to envision how they might "partner" to create projects aimed at increasing physical activity through supportive community design.

The broad goal of reintegrating opportunities for physical activity into community design comes at an opportune time. The U.S. economy, despite the current slowdown, remains vital.

1. Many states have funding to spend on community development projects.
2. Traffic congestion in many parts of the country has increased to the point that citizens and policymakers are demanding alternatives.
3. Outdated community planning statutes cry out for revision around a new set of policy goals.
4. New homebuyers increasingly expect the amenities of open spaces, sidewalks and bicycle facilities in their neighborhoods.
5. Pedestrians are asserting their right to walkable communities and safe streets. Safe routes to school programs are being implemented to help children become active again.

Promoting physical activity through community design provides a watershed opportunity for communities to address disease prevention and health promotion as a key outcome of their overall community design and development. Efforts in community design that also address health issues carry the potential for broad and lasting impact on the health and welfare of all Americans.

Active Living Through Community Design: White Paper Summary

How are health and community design linked?

The following information is a summary of some of the key points in Active Living through Community Design, A White Paper, *prepared by The Robert Wood Johnson Foundation and the Health Research and the Educational Trust.* Active Living through Community Design *was used to stimulate discussion at the November 27–28, 2000 Experts' Meeting. (The full text of the white paper is attached at the end of this document.)*

The healthy communities concept is a product of the general trend in public health to take into account how environmental characteristics can impact general population health. This can be accomplished by incorporating health-specific elements, such as physical activity, into community design strategies. For example, when planners are designing neighborhood traffic patterns they should include accessible and safe sidewalks or paths, and safe crosswalks.

Historically, environmental interventions played a major role in public health and led to declines in mortality rates. In the 19th century, poor sanitation, food and water quality, and overcrowding in urban centers caused widespread infectious disease. City planners and engineers altered our physical environments and separated incompatible land uses and created improved systems for water and sewage treatment, attacking the root causes of health threats. In the 20th century there was a disjoining of the planning professions. This paper suggests that these professions need to begin to work together again to advance the health of the public.

Physical environments are the product of *natural* and *built* environments and provide the necessary infrastructure for physical activity. Natural environments determine basic factors such as weather conditions, waterways, elevations and scenery. Built environments consist of buildings, roadways, and transportation systems and can affect natural environments. Sometimes the effects of built environments are detrimental to promoting and supporting physically active lifestyles.

For example, suburban community design that separates residential, commercial, and industrial areas at substantial distances can discourage or altogether eliminate opportunities for walking and bicycling as a means of transportation. Additionally, such design can make construction and maintenance of public transit expensive. The result is that suburban residents drive twice as far, walk and bicycle one-third less often, consume twice as much energy, and produce twice as much air pollution as their urban counterparts where land use tends to be mixed. Other by-products of built environments are noise pollution, fewer open and green spaces, and motor vehicle-related injury and death.

However, built environments can also complement the natural environment and encourage physical activity when designed to do so. Access, convenience, and safety are consistently important factors influencing exercise. Studies of physical activity in young children report that safety, availability of toilets, drinking water, lighting, and shade are more important to parents than specific activity equipment when they decide to take their children to outdoor play environments.

An overarching, long-term plan to develop infrastructure to support sustainable increases in routine, non-motorized transportation- or task-oriented forms of physical activity is needed. Legislation can be implemented at the community, state, and federal levels to support environments for active living. Rather than starting this effort anew, quality of life movements, specifically those addressing community design, are natural launching points for pursuing active living goals.

Locally based community movements conceive quality of life as a direct result of the physical and social features of a community. Sustainable development practices, economics, land use decisions, public safety, civic engagement, environmental protection, and social health all contribute to the pleasure and satisfaction people have living in their communities.

Some of the key planning sectors and issues involved in community design include transportation, environmental protection, architecture, public health, land use development, and city planning.

Some of the approaches to community design include:

Smart growth: Concerned with revitalizing neighborhoods and promoting economic development without the negative effects of sprawl. Strategies vary for each community, but they generally favor pedestrians and public transit, emphasize a dense mix of residential, commercial and retail land uses, and seek to preserve open space.

Healthy communities: Takes a broad view of health and seek ways to employ various community resources to improve health status and quality of life through population-based interventions. Medical care addresses the physical component of health, but other resources contribute to building a healthier community: cultural norms that support behavior and lifestyle choices; education and skill building; safe and adequate housing; recreation and culture; public safety; jobs that pay a living wage; health promotion and preventive services; and transportation.

Sustainable development: Enables people to meet present needs without compromising the ability of future generations to meet their own needs.

Livable communities: Looks at the physical design of the built environment and how it affects how people live, move, and perceive the world around them. This approach seeks to promote economic growth while preserving open space, historic structures, and the natural environment.

New urbanism: Seeks to "reintegrate the components of modern life—housing, workplace, shopping, and recreation—into compact, pedestrian-friendly, mixed use neighborhoods linked by transit and set in a larger regional open space framework."

These movements have a common vision: To support communities where amenities are accessible to all residents; where automobiles are not the only means of transportation; and where daily living and economic prosperity do not necessarily conflict with environmental quality. All acknowledge a connection between community environments and quality of life, and advocate that changing the environment via policy and practice is the key to create long-term improvements in

quality of life. Including the community-at-large ensures that the development and implementation of programs and policies are in line with community priorities.

One challenge to collaboration between health and community design is that the community design movements—smart growth, sustainable communities, livable communities, and new urbanism—can be broadly distinguished from the healthy communities movement, or public health in general, by virtue of the unit of analysis they use in their approach to quality of life. Community design focuses on the features of "places" or environments, while healthy communities tend to focus on the impact of places on people, specifically on people's health status.

This distinction is subtle but important. While the movements may claim to have similar goals and visions, their different approaches, and the lack of common language or understanding about the respective approaches can cause a breakdown in collaborative efforts for policy and practice change.

What is required is a concentrated effort designed to make public health objectives and outcomes an integral element of community design.

Experts' Meeting Process

Participants at the November 27–28, 2000 Experts' Meeting were asked to review and discuss the White Paper, *Active Living Through Community Design* (pages A–3–A–28), as well as to participate in group dialogue addressing questions posed by The Robert Wood Johnson Foundation.

The following questions were posed to the participants:

1. What are the incentives and strategies for assisting communities to include physical activity into community design?
2. What are the barriers?
3. What are the decision-making factors for intervention in community design?
4. What is the role of partnerships?
5. Who should engage as partners?
6. What are the communications issues that need to be considered?
7. How do you talk about the issue?
8. What resources are needed?
9. What role can the Foundation play?
10. Should specific "at risk" groups be targeted?
11. How do advocacy activities relate to the idea of funding community-based activities?

The next three sections of this report, **Community Design Barriers to Physical Activity** (pages 9–10), **Expert's Meeting Participant Recommendations** (pages 11–14), and a brief environmental scan (pages 15–18) recap the discussions and identify resources as well as draw from some of the content presented in the White Paper.

Community Design Barriers to Physical Activity

Community design barriers to physical activity are complex and usually multi-faceted. Approaches to addressing barriers need to take into account a myriad of social, community, environmental, transportation, government, and health systems.

Community infrastructure

- "It is the environment that discourages routine physical activity as opposed to what many of us are calling volitional activity—that is, voluntarily going out to exercise. Environmental change is the missing piece now in terms of effecting long-term population level change. The public health community has focused on the individual and maybe the group, but has done relatively little to try to move physical activity promotion up to the community and public policy levels." (Mark Fenton, Editor-at-Large, *Walking Magazine*)
- Lack of sidewalks, streetlights, and appealing scenery are related to low activity levels among adults.

Disconnected organizations/agencies/fragmentation

- Organizations and individuals interested in, and engaged in, community design are often disconnected, fragmented, and lacking adequate resources. Health organizations interested in community design as it relates to supporting physical activity are often not engaged with other community development groups. In addition, the decision-makers in the health sector are not the decision-makers in the community design sector.
- Agencies and organizations in community planning, design, architecture, transportation, health, and disease prevention often use differing professional terms (languages). Communicating across areas of expertise can at times be difficult.
- There is a lot of "light technical assistance" available to organizations and individuals interested in engaging in and supporting activity-friendly communities, but more in-depth and integrated support is needed at the community level.

Personal

- Consistent influencers on physical activity patterns among adults and young people include: confidence in the ability to engage in regular physical activity; enjoyment of physical activity; support from others; positive beliefs concerning the benefits of physical activity; and lack of perceived barriers to being physically active.
- Lack of time is often cited as a barrier. Work, school, family, and caregiving responsibilities contribute to this issue.
- Safety can be understood in two contexts: prevention of crashes and injuries, and prevention of crime. In general, safety issues disproportionately affect racial and ethnic minorities, the elderly, and lower income groups.

Societal influencers

- American society is dominated by automobile transportation. Road and highway systems, shopping areas, and service centers are designed for automobile accessibility, and consequently often limit or eliminate safe access for pedestrians and bicyclists. This negatively impacts opportunities for physical activity as part of routine daily tasks.

- Automated conveniences have enhanced our lives, but have also engineered a good deal of physical activity out of activities such as lawn mowing, house cleaning, laundry, and other normal chores of everyday life.

Perceived value of activity-friendly environments and competing community needs

- "In the county where my 80-year-old father lives, a recent ballot initiative to create bike paths and green spaces failed to pass. When I asked my father why, he said he thought people saw the initiative as a luxury. If you want to exercise, you can go do it on your own and pay for it. We may think the issue of increasing opportunities for physical activity in our communities is a no-brainer, but when people are asked to pay extra for this, it is not universally embraced. We have to keep in mind the economics of physical activity. In the United States, the automobile is a $425 billion industry—four percent of the GDP. We have to take a look at whether health is, in fact, the organizing principle around which an initiative should be based or whether there are other areas for leverage and collaboration that we should be identifying." (Mary Pittman, Health Research and Educational Trust)

- Currently available information is insufficient, incomplete, conflicting, or non-existent on a number of fronts as it relates to physical activity and community design. As an example, we do not know the cost/benefit ratio of the relative health benefits of walking related to the investment required to support community infrastructure to enhance walkability.

Experts' Meeting Participant Recommendations

> Social marketing surveys conducted by the CDC—Healthstyles Survey, a consumer-based survey, and the Greenstyle Survey, conducted with the Environmental Protection Agency, found that about 75 million Americans are not doing any activity, but they would like to. They are in what we call the contemplation stage. Of these people: 65 percent are between 18 and 45 years of age; 70 percent are married; 60 percent have children; and 75 percent are employed. They want physical activity to be fun, upbeat, and practical. And the key here is they don't want to plan their physical activity. They want it to be a routine part of their life and they want to do it with their friends and family. So we have a population here of 75 million people for whom this message would resonate widely. We just need to craft it in a manner that allows people to understand and recognize that they can be physically active as a practical and routine part of the day.
>
> — Rich Killingsworth
> The Centers for Disease Control and Prevention

Recommendations that came out of the Experts' Meeting group dialog and the small group discussions are categorized under the following headings:

1. Community models
2. Communications tools
3. Overcoming fragmentation
4. Influencing critical decision makers

The concepts reflected in this document are numbered under the headings just listed to facilitate use of this report. The recommendations have not been prioritized.

Community models: Building and sustaining activity-friendly communities while dealing in an automobile-oriented society.

1. Support the development of activity-friendly communities with sound statistics.
2. Identify a process to assess a community in terms of walkability.
3. Understand the community design factors that impact individuals' behavior change with regard to physical activity.
4. Tie an asset-mapping activity to physical activity and health promotion to generate data that will help determine the types of approaches that might most effectively incorporate other community agendas.
5. Provide small grants (seed funding), which can be especially useful to assist community model development, and help develop a base of knowledge that can lead to long-term local funding.
6. Build on initiatives that are currently underway. In some cases additional resources in terms of technical assistance can be useful in expanding current community models. Build a learning network among current initiatives. This will enhance information sharing and support replication of "best practices."

7. Test differing scales of programs within communities. In some cases neighborhood projects can be effective while in other areas metropolitan-wide or community level initiatives may work better. Begin to understand the aspects of why particular approaches work in different areas and use this information in replication processes.

8. Build a "feedback loop" for policy development. Initiatives can identify and solve problems. Community level test sites can be useful learning tools. Information learned can be shared more broadly and assist in the development of comprehensive policies.

Communications tools: Effectively shaping and communicating information.

1. Develop a unified, cohesive message and frame the message to build and maintain the momentum over time.

2. Take into account communications and social marketing initiatives.
   - Clarify what active living means.
   - Frame the issue in a nonpartisan manner.
   - Provide a rationale that addresses economic issues.

3. Execute messages related to building and sustaining activity-friendly environments with a long-term approach in mind. This approach needs to consider identifying new models and interventions as well as reinforcing current effective models of communication. Lessons should be learned from the smoking cessation marketing efforts, particularly noting that when social marketing efforts are lessened, an increase in tobacco use is observed.

4. Address a sense of responsibility when framing issues related to activity-friendly communities.
   - Physical activity accessibility issues confront almost all people.
   - The livable communities agenda needs to integrate with health issues.
   - Social norms need to be redefined, creating a sense of individual and community responsibility as well as an attraction to the idea of developing and supporting a physical activity-friendly environment.

5. Determine the best methods to target specific population groups, for example, lower income as well as minority populations tend to engage in less physical activity. One strategy to consider to support increased physical activity among targeted population groups is community design.

Overcoming fragmentation: Building and sustaining alliances and partnerships. There is an array of potential partners who could be engaged in the process of incorporating active living into community design.

1. Develop partnerships at the national, state, and community level. A general direction needs to be set from a national perspective with involvement of health, design, planning, transportation, and government participation. The implementation generally will need to be carried out at the community level. Resources and support will need to be channeled through state structures and systems.

2. Begin with those groups already invested in the issue. Those involved in smart growth and livability efforts will immediately make the connection between physical activity and community design.

3. Form partnerships with the public housing community. Public housing has addressed health issues, such as lead-based paint. Opportunities may exist to integrate physical activity into the mix of public housing health issues.

4. Look for ways to coordinate with the "private sector." There is likely a critical mass of people in the private sector that have a potential tie to, or interest in, walkability and bikeability issues.
   - Involve the fitness clothing and apparel industry.
   - Involve the insurance industry.
   - Involve the construction and building industry.
   - Involve the real estate and land development industries.
   - Involve architects.

Influencing critical decision makers: Community leaders and decision makers need to understand and have access to information. In addition, the issue of activity-friendly communities needs to be framed in a manner that will engage the interest of decision makers.

1. Link individual behavior goals with societal goals. For example, if a person walks instead of drives, they are being more physically active, and have also contributed to a reduction in traffic congestion, air pollution, and ozone and carbon monoxide particulates in the air. There can be an impact on other issues including global climate change, crime reduction and an increase in community service.

2. Involving civic leaders such as mayors can be an effective tactic to help communicate the link between environmental health and the economic prosperity of a metropolitan region or area. Education and dialogue with elected officials will be critical to help policy leaders understand the importance of activity-friendly communities and support efforts in this field.

3. Address the numerous challenges faced by local, city, and state community planners. These include the burden of dealing with outdated zoning ordinances; a lack of awareness among community organizers, professional planners, developers, the building and finance industries about the possible health benefits of more livable communities; and the challenge of engaging citizens in community development.

4. Assist in the reform of municipal transportation planning. Help focus attention on walkability, bikeability, and other community design issues.

5. Build on what is already happening. Take advantage of knowledge and experience gained from communities that have already started to address physical activity environments. Look for opportunities to build on success.

6. Develop different scales of projects at the community level. Some new models could be achieved at the neighborhood level while others would work at the metropolitan/community level. It is important to have both kinds of projects.

7. Integrate physical activity into "community indicators" currently being developed.

8. Create a self-diagnostic workbook, or a physical activity audit, for assessing the *activity-friendliness* of neighborhoods or metropolitan regions.

9. Educate community leaders on the issue, engage local elected officials to take a leadership role in the issue, and involve them as community change agents.
10. Provide tools for capacity building. These might include training opportunities, a community toolbox, etc.

Summary

"There is a tremendous opportunity for cross-sectoral collaboration on critical improvements in health status and overall quality of life," notes the White Paper, *Active Living Through Community Design*.

The barriers identified by the participants of the Experts' Meeting, and related recommendations, indicate that a commitment to promoting physical activity through community design will require partnership and collaboration, adequate resources at the national, state and local level, and a need to educate individuals and groups related to multiple areas of professional and community expertise in order to achieve a nation in which we incorporate physical activity back into our daily routines. A long-term approach involving individual, community, corporate, professional group, and public policy initiatives will be required to achieve success.

Expert Participants Organizational Initiatives

The American Institute of Architects Center for Livable Communities addresses the loss of the people's ability to have the tools, language and knowledge to build and have control of their own communities.

The American Planning Association (APA), the trade association for urban and regional planners, is sponsoring a six-year effort called "Growing Smart," aimed at helping states modernize the statutes that govern planning at the local level. Under development are a guidebook and an information clearinghouse for state legislators and governors. (See *The City Parks Forum*.)

The Centers for Disease Control and Prevention is seeking funding for two national initiatives: *Kids Walk-to-School* and *Active Community Environments*. The Active Community Environments Team is exploring how policy and environmental interventions can be used to promote physical activity, especially walking and bicycling. The CDC has published various guides to promote physical activity, including *Promoting Physical Activity* and *Promoting Better Health for Young People Through Physical Activity and Sports*.

The City Parks Forum, a program of the American Planning Association, provides symposia, publications, and technical assistance aimed at inspiring mayors of mid-size cities (pop. 100,000 to 800,000) to create great urban parks. The City Parks Forum topics include the urban heat island effect and associated smog, water quality benefits of parks, and the connection of parks to economic development.

The Congress for New Urbanism, whose 2,500 members include developers, designers, public officials and activists, focuses on the importance of neighborhood as the essential core of community and on planning design and building for pedestrians and transit users.

The Development Community and Environmental Division (DCED) of the U.S. Environmental Protection Agency focuses on "smart growth," defined as development that serves the economy, the community, and the environment. DCED is working with seven Metropolitan Planning Organizations across the country to incorporate smart growth strategies (including pedestrian and bicycle friendliness) into the transportation planning process. DCED is currently piloting a Geographic Information System-based sketch-planning tool in 20 communities that allows communities to evaluate the relative impacts of alternative development and transportation scenarios. A goal of many of the communities is to create more walkable communities.

The Federal Transit Administration (FTA) of the U.S. Department of Transportation (U.S. DOT) is currently developing regulations on statewide and metropolitan planning. FTA requires 20-year plans at the metropolitan and state level that must include pedestrian and bicycle plans and provides about $60 million in planning funds annually to states and metropolitan planning organizations. FTA started its *Livable Communities Initiative* (LCI) in 1994 to develop more customer-friendly and community-oriented transit facilities and services and has supported 21 demonstration projects totaling $55 million. Ten to fifteen of these projects have been for pedestrian access. The U.S.

Department of Transportation and Community and System Preservation Project (TCSP) have funded some 200 innovative transportation and community preservation projects around the country. TCSP is administered by the Federal Highway Administration and involves participation by FTA and other agencies of U.S. DOT. The most recent request for proposals encouraged projects with health-based activities.

Health Research and Educational Trust (HRET), together with the CDC and other partners, began the *Coalition for Healthier Cities and Communities*, a coalition of about 400 organizations and about 1,200 communities that are trying to improve health and the quality of life in the community. HRET's publication, *A Message to America from America's Communities*, describes seven patterns of healthy communities. HRET also runs the *Community Care Network Program*, a demonstration project of 25 communities throughout the U.S. bringing together a broad group of stakeholders, including hospitals, health systems, schools, and environmental groups, to address the health care needs of their communities.

The International City/County Management Association, an association of about 8,000 local government managers, sponsors a *Smart Growth Program* as a part of its research and development program. The program links local government managers with other key players such as public works directors, county health officers, engineering departments, and planning departments. The goal is to create physical activity-friendly communities.

The Joint Center for Sustainable Communities, a partnership between the National Association of Counties and the U.S. Conference of Mayors, conducts seminars, forums and training, and provides technical assistance to encourage local governments to work collaboratively on sustainability issues. The Center includes health in its agenda because counties pay a significant portion of hospital and health care bills, and therefore regard preventive health measures as good economics.

The Local Government Commission, a membership organization of mayors, city council members, and county supervisors primarily from California, formed a group of architects (who later became "New Urbanists") and created a body of 15 principles for community and regional design focusing on compact, mixed-use, walkable, transit-oriented communities. Members focus on implementing policies and programs that make their communities more environmentally, socially, and economically healthy.

The National Association of Local Government Environmental Professionals, whose members represent approximately 150 cities and counties, has several programs aimed at improving health through community design. The Brownfield Showcase Communities brings together national experts in brownfields with brownfield community governments to share solutions and overcome barriers to redevelopment of brownfields. The *Smart Growth Business Partnership Project* develops partnership with local political leaders, environmental professionals, and local businesses to address the challenges of growth and development. The project produced a book entitled *Profiles of Business Leadership on Smart Growth*. The *Clean Air Partnership Project* focused on the importance of smart growth to improve air quality at the local level. A new project with the Trust for Public Land, called *Smart Growth Tools for Clean Water*, looks at how improved land use planning and community design can improve water quality.

The National Center for Bicycling and Walking works to make communities bicycle-friendly and walkable through advocacy, technical assistance, and policy development. Its *Safe Routes to School Program* (SR2S) encourages youth to take on the challenge of developing safe routes to school and works directly with local elected officials, engineers, planners, police and law enforcement people.

The National Crime Prevention Council (NCPC) conducts public service advertising (for example, the MacGruff campaign *Take a Bite Out of Crime*, and a recent series of ads on guns and the effects of gun violence on children); training and technical assistance; community mobilization, with a priority on lower-income communities; and bringing governments and local communities together to address crime and safety issues. NCPC has many publications ranging from comic books for children to policy documents for mayors and city managers including *Six Safer Cities on the Crest of the Crime Prevention Wave*. NCPC has undertaken a new initiative with teams from six states to imbed crime and delinquency prevention in state policies, regulations, and funding priorities.

The Rutgers Transportation Policy Institute, part of the Edward J. Bloustein School of Planning and Public Policy, is evaluating the *Transit Friendly Communities* initiative of New Jersey Transit, a U.S. Department of Transportation/Federal Transit Administration transportation system/community preservation grant which aims to create greater opportunities to walk to transit by increasing the density and improving walkability in all of New Jersey's 150 railroad stations.

The Smart Growth Network (www.smartgrowth.org), a leadership group of 25 organizations and government agencies, was developed jointly by the U.S. Environmental Protection Agency and the Sustainable Communities Network. The Sustainable Communities Network maintains the Web site. The Smart Growth Network provides information to individuals, communities and institutions to make their communities economically, environmentally, and socially healthy.

The State of Maryland, through the Department of Planning, is identifying ways to incorporate physical activity, health, and walkability into Maryland's *Smart Growth* initiative. Maryland has made the pedestrian the indicator species for smart growth and is formulating a statewide campaign to change Marylander's perceptions about what constitutes "the good life" to include walkable communities, physical activity, and livability.

The U.S. Department of Housing and Urban Development sponsors the program *HOPE VI*, which provides grants of up to $25 million for the revitalization of distressed public housing as compact, walkable, mixed-use, mixed-income communities. There are now 149 ongoing HOPE VI grants in over 90 U.S. cities.

Volpe National Transportation Systems Center, the research and development facility for U.S. Department of Transportation is undertaking a new initiative for the U.S. DOT's Center for Climate Change and Environmental Forecasting to look at how state and local agencies are bringing climate change into their local transportation decisions.

Walking Magazine, a women's health and fitness magazine owned by Reader's Digest (Circulation 650,000) bestows annual *Walkable Community* awards.

The White House Task Force on Livable Communities was created in August 1999 to coordinate smart growth and livable communities policies across the federal government. Eighteen federal agencies including the Environmental Protection Agency (EPA) and Housing and Urban Development, most domestic cabinet agencies, the Federal Emergency Management Administration, and the Small Business Administration participate.

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Active Living Through Community Design

A WHITE PAPER PREPARED FOR

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Introduction

Chronic diseases such as cardiovascular disease, diabetes, and obesity account for the majority of death, disability and health care costs in the United States today. For the most part, these chronic conditions are preventable by maintaining healthy lifestyles, which include regular physical activity. However, physical activity is declining, despite targeted efforts to educate Americans about the health risks associated with sedentary lifestyles.

A major impediment to the success of education efforts is that the environments in which people live do not support physical activity. Increasingly, we are dependent on automobile transportation and have fewer opportunities to engage in physical activity. Lack of open spaces, safe walkways and bicycle paths, inconvenient location of common destinations such as home, work, school and stores, decline of school-based physical education, reliance on leisure time for engaging in physical activity, and prevalence of electronic mechanized devices all contribute to a lack of exercise. Physical activity has been engineered out of daily life, and to change behavior on a broad scale, we need to address environmental reasons, in addition to those rooted in individual behavior, affecting why people are not more physically active.

Ever more, the health field is looking beyond its traditional medical model of health and well-being in favor of a social model. While a medical model focuses on the individual and interventions that are designed to treat disease, a social model examines health as an outcome of socioeconomic status, cultural norms, environmental conditions, employment, safety, and social justice. The World Health Organization (1) identifies the following areas as together comprising the social determinants of health.

1. policies to prevent people from falling into long-term disadvantage;
2. the social and psychological environment;
3. the importance of ensuring a good environment in early childhood;
4. the impact of work on health;
5. the problems of unemployment and job insecurity;
6. the role of friendship and social cohesion;
7. the dangers of social exclusion;
8. the effects of alcohol and other drugs;
9. access to healthy food supplies; and
10. healthier transportation systems.

The growing trend among health researchers and planners is to collaborate with experts in traditionally non-health fields to address these social dimensions of health status.

Health is not the only area that has adopted this multidisciplinary perspective. Communities throughout the United States are engaged in locally based movements to improve quality of life for their citizens. Quality of life in these movements is all encompassing. Concerns include the effects of sprawl, unsustainable and uneven economic growth, inequity, social isolation, and

the imbalance between work and family life. The broad range of quality of life issues has convened a diverse group of players to address them: transportation and land use planners, environmental activists, the faith community, local businesses, urban designers and architects, health care providers, community residents, and local officials, among many others.

One area that quality of life movements actively address is the design of communities. Specifically, they examine the way a community is designed, its effects on how people live and interact with one another, and the implications for this social organization.

Generally speaking, improved health status has not been an explicit design goal. However, health, and physical activity in particular, can be a natural by-product of design initiatives that include curbing sprawl, facilitating alternative transportation uses, creating more green spaces, and blending in with natural environments. Collaboration between public health and community design movements can augment efforts to incorporate physical activity back into daily life routines.

The purpose of this paper is to present the environmental implications for physical activity and the crosscutting and complementary principles, goals, and activities of quality of life movements that lay the groundwork for collaboration with health. Section I is an overview of the state of physical activity in the United States. Section II presents the limitations of an individual-focused model for physical activity promotion and the need for an ecological model that incorporates environmental dimensions. Section III examines the effects of social and physical environments on health and presents the evidence on environmental interventions for improved physical activity. Section IV is an overview of the goals and strategies of community design movements and their implications for quality of life in general. Section V offers four examples of areas in which community design can influence physical activity. Finally, section VI presents a theory of action, or strategy, for health and community design collaborative approaches for active living.

The intention of this paper is not to dictate whether and how this collaboration occurs. Rather, this paper presents the opportunity for collaboration by summarizing current knowledge on the environmental implications for physical activity. It provides a preliminary framework for understanding the intersections of quality of life movements and important issues for active living, with particular attention to how initiatives and practices underway might be leveraged to achieve the complementary goals of each of the movements. The hope is to stimulate dialogue among key players on the form and nature of collaboration and to consider the intended and unintended consequences of community design on physical activity.

I. Physical Inactivity in the United States

Behaviors that people do or do not practice as they go about the business of daily living have a direct impact on their experience of illness, disability, and premature death. Lack of exercise and poor diet together are responsible for approximately 14 percent of all deaths and contribute to lower quality of life for millions of Americans each year. This is second only to tobacco use and accounts for more deaths than alcohol, drugs, firearms, and motor vehicles combined (2).

Regular physical activity reduces the risk of coronary heart disease, hypertension, colon cancer, osteoporosis, arthritis, and non-insulin dependent diabetes. Additionally, physical activity improves mental health by reducing depression and anxiety and enhancing the ability to perform daily tasks throughout the life span (3). Physical activity need not be vigorous to achieve significant health benefits. The Centers for Disease Control and Prevention recommend 30 minutes or more of moderate intensity activities most days of the week. These can be recreational activities such as biking, jogging, and swimming or lifestyle activities such as walking to and from work and school, gardening, and climbing stairs. These physical activity goals are attainable for most Americans. Moderate activity is more readily adopted and maintained than vigorous activity and the benefits are similar when the same amount of activity occurs once during the day or when spread throughout the course of the day (3).

Despite the clear health benefits and easing of recommendations by the CDC, two-thirds of American adults do not meet the recommended levels of activity, and one-quarter does not engage in any regular physical activity. Physical inactivity is more prevalent among women, the elderly, and racial and ethnic minorities (3,4).

Physical inactivity is especially alarming in light of concomitant increases in the number of people who are overweight. Over one-third of American adults are overweight (5). The picture is especially bleak among youth. Ten percent of youth ages 12 to 21 are overweight and 16 percent are at risk for becoming so (6). Nearly half are not vigorously active and only 20 percent meet the moderate regular activity guidelines (7). As children enter adolescence, their levels of physical activity drop and continue to decline through adulthood. In 1999, only 56 percent of high school students were enrolled in physical education classes according to a survey by the President's Council on Physical Fitness and Sports (8). While physical education is declining, health problems that are not usually diagnosed in youth—such as non-insulin dependent diabetes, cardiovascular disorders, and osteoporosis—are on the rise.

II. Ecological Interventions: Environmental Focus, More Participants

The growth of physical inactivity and obesity has created greater demand for public intervention programs. These interventions are implemented in a variety of settings including the home, neighborhood, school, and work site, and strategies target different levels: the individual, a small group of individuals, or the whole community (9). Individual level programs target behavior change and decision-making skills, while community level programs tend to focus on

changing social norms for behavior and the environments in which behaviors occur. To date, most health promotion programs have been applied at the individual level (10). They are often designed to initiate behavior change among individuals who are already at high risk for disease and have not been successful in instigating sweeping behavior changes in the general population (11–13) or in affecting social norms and environments to help sustain behavior change.

Interventions at any level face the challenge of a highly technological society that encourages sedentary behavior in spite of high awareness of the health benefits of physical activity. For example, between 1977 and 1995, walking trips declined while driving trips increased, and while one-fourth of all trips are one mile or less, three-fourths are made by car (14).

> Most people in modern societies go to work in automobiles and drive door-to-door. Such sedentary daily habits are made possible for the majority of adults by massive societal investments in the manufacture of automobiles . . . as well as the construction of an extensive system of roads and highways . . .
>
> In past times, 'work' for most people required physical activity for extended periods. This is no longer the case in industrialized nations. Most work is sedentary and is becoming more so. Computers do much of the work for white-collar workers, and machinery does most of the work for blue-collar workers.
>
> In the suburbs, it is necessary to drive everywhere because most homes are out of easy walking distance to common destinations such as shops and workplaces. In many suburbs, the parks and open spaces are small and scattered, providing children and adults with limited facilities for physical activity outdoors. Suburbs are designed for automobile use, so it is inconvenient to use other forms of transportation such as walking and cycling.
>
> The large entertainment industries provide us with many ways to enjoy being sedentary. The average adult spends more than 25 hours each week watching television, videos, and movies. Newer interactive forms of entertainment, such as video games, CD-ROMs, and the Internet, still require the person to be sedentary. A long list of other inventions and mass-scale technological innovations are now part of daily environments designed to help us avoid physical activity, including elevators, escalators, riding lawn mowers, golf carts, food processors, electric can openers, and remote controls for televisions and stereo equipment (15).

Since innovations in technology and auto-oriented transportation have displaced regular physical activity from daily life and exercise is typically perceived as a leisure time activity, people are often forced to make the trade-off between physical activity and other free time activities. Among some, this may contribute to negative perceptions of physical activity, since they must "pay" to undertake physical activity by forgoing their leisure time (16).

Fewer opportunities to engage in regular physical activity highlight the importance of an expanded range of programs that include public education as well as policies and practices that facilitate active living in a variety of settings, during leisure time, and as part of daily life. Active living entails the weaving of physical activity back into daily routines and requires supportive environments where "people of all ages and abilities can easily enjoy walking, bicycling, and other forms of recreation. These areas:

- Support and promote physical activity,
- Have sidewalks, on-street bicycle facilities, multi-use paths and trails, parks, open space, and recreational facilities,

- Promote mixed-use development and a connected grid of streets, allowing homes, work, schools, and stores to be close together and accessible by walking and bicycling" (19).

To comprehensively address the problem of physical activity, interventions need to target individual level determinants and the environments that support active lifestyles (15,17,18). This ecological approach requires that more and different perspectives be brought to the table to collaborate with public health professionals on the design of interventions and on advocacy for policy issues that help increase support for active living.

III. Social and Physical Environments: Effects on Health

Environments can promote the possibility of disease and illness or can enhance prospects for disease prevention and health maintenance (20). Environments have physical, cultural, and socioeconomic dimensions that interact with genetics and behavior to produce health outcomes (21). They determine exposure to health hazards, provide opportunities to engage in healthful activities (11), and restrict the range of possible behavior by promoting or demanding certain actions and discouraging or prohibiting others (13). Sanitation and air pollution are examples of aspects of physical environments, and cultural beliefs, social equity and social norms are examples of aspects of social environments.

Historically, environmental interventions have played a major role in public health and the decline in mortality rates. In the 19th century, poor sanitation, food and water quality, and overcrowding in urban centers caused widespread infectious disease. City planners and engineers designed low-density housing in more dispersed, suburban communities and created systems for water and sewage treatment, attacking the root causes of health threats. In the 20th century, unhealthy lifestyles gave rise to chronic illness, which quickly surpassed infectious disease as a major cause of death and disability. A critical revelation as we enter the 21st century is that lifestyle is the product of individual behavior choices and the environments we collectively create (10). As a nation that touts the best health care in the world, the United States ranks only 37th in the recent World Health Report on quality of life and functional health status (22). Low scores on social, environmental, and other "non-health" attributes that affect personal health status contribute to this poor ranking. As it once did to combat infectious disease, the scope of public health must expand to include the environments that contribute to chronic disease and poor health status in general in order to improve health and quality of life.

Environmental and policy interventions are indirect approaches to physical activity promotion (11). Unlike interventions that attempt to change individuals' decision-making and behavior patterns, environmental interventions can influence society as a whole because they benefit all people exposed to the environment rather than focusing on changing the behavior of one person at a time (11,13,23). Examples include limiting downtown centers to foot and bicycle traffic, placing parking lots a suitable distance from buildings, making stairways more convenient and safe, building businesses and schools adjacent to residential neighborhoods and connected by walking and biking paths and public transportation (11). Environmental and policy interventions complement traditional health promotion programs by providing settings that are conducive to activity (13). They are less costly to implement per person affected and are

more enduring than behavioral interventions alone (11). Tobacco control is one area where an environmental strategy has had a great impact on health. Clean indoor air laws affected both the physical and social environments by making tobacco use in indoor public areas illegal and socially unacceptable.

When designing interventions for physical activity, it is helpful to think of environments as comprised of the settings in which activity occurs, such as neighborhoods, work sites, schools, and places of worship; facilities that are specifically designed for physical activity; and programs and policies that create a supportive context for activity (13). The specific physical and social features of these environments facilitate or prevent physical activity.

Physical Environments

Among physical environmental features are air pollution, food and water contaminants, radiation, toxic chemicals, wastes, disease vectors, safety hazards, and habitat alterations. Physical environments are estimated to contribute to about 20 percent of mortality in the United States (21). Physical environments are the product of our natural and built environments and provide the necessary infrastructure for physical activity. Natural environments determine basic factors such as weather conditions, air and water quality, elevations and scenery. Built environments consist of buildings, roadways, and transportation systems and can affect natural environments. Sometimes the effects are detrimental. For example, suburban land that is segregated by residential, commercial, or industrial use discourages walking and cycling as a means of transportation and makes construction and maintenance of public transit expensive. The result is that suburban residents drive twice as far, walk and cycle one-third as often, consume twice as much energy, and produce twice as much air pollution as their urban counterparts where land use tends to be mixed (24). Other by-products of built environments are noise pollution, fewer open and green spaces, and motor vehicle-related injury and death.

But, built environments can also complement the natural environment and encourage physical activity when designed to do so. Access, convenience, and safety are consistently important factors influencing exercise. Studies of physical activity in young children report that safety, availability of toilets, drinking water, lighting, and shade are more important to parents than specific activity equipment when they decide to take their children to outdoor play environments (15). Heavy traffic, and lack of sidewalks, streetlights, and appealing scenery are related to low activity levels among adults (18,25,26). Facilities such as parks and bike paths that are close to home and work (27) and simple amenities such as on-site showering and changing facilities (13) can all positively affect physical activity levels. Safety can be understood in two contexts: protection from accidents and injury and protection from crime. In general, safety issues disproportionately affect racial and ethnic minorities (18,28), the elderly (28), and lower income groups (25).

Social Environments

Social environments encompass economic components such as shelter, food, occupation, education, and income and cultural components such as societal values and cultural beliefs (21). Along with the physical features, social features create part of the external environment that

affects healthy practices and health outcomes. Social environments determine networks and norms that influence the availability of time and opportunity to engage in healthful activities, positive attitudes toward physical activity, and supportive partners. Consistent influences on physical activity patterns among adults and young people include confidence in one's ability to engage in regular physical activity, enjoyment of physical activity, support from others, positive beliefs concerning the benefits of physical activity, and lack of perceived barriers to being physically active (3).

Lack of time is a principal reason given for inactive lifestyles (9,17). One study reports that work and school commitments are the most common barrier to physical activity (29). Especially for women, care of children and elders are an important barrier to activity (18,29). Correspondingly, family participation and support are strong predictors of physical activity maintenance (17) as is seeing others exercising in the neighborhood (18). Furthermore, the U.S. workforce works more hours per week than most other industrialized countries. As a result, some businesses have made it easier for employees to exercise by providing facilities. There is evidence from Wellcoa that these business investments pay off in higher productivity, reduced absenteeism, and greater loyalty. The lesson from these examples is that barriers present in the social environment can be overcome through design interventions in the settings where people spend most of their time and where they are likely to come into contact with supportive models and partners for activity such as their neighborhoods, places of worship, work sites, and school.

The Evidence

The study of environmental determinants and interventions for physical activity is at an early stage, but effective programs have been carried out in a variety of settings and evaluated in the research literature. Evidence in controlled trials indicates that changes in the environment lead to increased activity levels.

- The design of walking trails in two rural communities increased walking behavior, especially among women and low-income groups. Trail characteristics most liked were scenic beauty, free place to exercise, convenient location, safe surface, and lighting (23).
- A review of evidence on school physical education programs demonstrates that they reliably increase physical activity during class time; however, building fitness facilities at work sites does not always increase physical activity of employees (13). The difference in effect may be that some work site facilities are built without allotting time during the day for employees to use the facilities, while children are allotted specific time to engage in physical activity during school.
- An early intervention occurred in a Philadelphia train station where stairs and escalators were adjacently located. After a sign was put up encouraging people to take the stairs because it is "better for your heart," the number of people who took the stairs tripled from baseline (30).
- When bicycle paths, extended hours at recreation facilities, new exercise equipment at gyms, basewide athletic events, a women's fitness center, marked running courses, and running and bicycle clubs were developed at a naval base, significant improvements in fitness levels

were reported. Fitness levels were higher than at a base where no environmental changes were made (31).

- Measures taken to influence walking or cycling to work such as signs throughout the work site, lotteries, and improvements in showers and changing facilities, resulted in modest increases in walking and cycling to work and leisure time physical activity (32).

Summary

It is increasingly clear that physical activity interventions need to target individuals and their environments. Impediments to physical activity need to be removed and resources need to be provided to facilitate activity so that individual level interventions do not promote unrealistic or impossible behavior goals (13). Policy facilitates the role of physical and social environments by providing funding and mandates for appropriate programs and infrastructure (13). Policy areas that can be targeted for intervention include litigation for injury associated with use of public facilities, zoning and land use to enhance greenways and outdoor recreational space, building codes to ensure attractive stairways, and incentives to promote alternative modes of transportation. These and other examples are listed in Tables 1 and 2 below.

TABLE 1: EXAMPLES OF ENVIRONMENTAL INTERVENTIONS TO PROMOTE PHYSICAL ACTIVITY

Establish well-lit walking, jogging, and bicycling paths
Make stairways open and accessible and safe
Separate parking lots from buildings with green space
Combine physical activity and environmental clean-up projects, such as “Adopt a Highway” and “Adopt a Beach” programs
Develop neighborhood shops and restaurants that are more accessible by foot or bicycle
Develop convenient methods for taking bicycles onto subways and buses
Install showers and changing rooms in buildings where people work
Create secure parking for bicycles
Develop more electronic games for children that require physical activity
Give awards for model programs in recreation, transportation, land use, etc.
Convert abandoned railroad right-of-ways to walking or jogging paths
Build bicycle boulevards or bicycle paths that are a safe distance from the road
Convert downtown centers into pedestrian malls
Develop parks or playgrounds in vacant lots or rooftops
Convert underused public space into parks and recreation facilities
Map out neighborhood walking paths and install mile markers along trails, beaches, neighborhoods, and city blocks

TABLE 2: EXAMPLES OF POLICY INTERVENTIONS TO PROMOTE PHYSICAL ACTIVITY

Use tax revenue to pay for pedestrian friendly modifications
Change traffic signals and crosswalk signage
Establish urban growth boundaries
Establish traffic calming measures such as lower speed limits, stop lights, narrower streets, alternative street surfaces
Impose ceilings on number of parking spaces developed
Establish community taskforces which support environments for physical activity promotion
Create liability legislation to protect users and producers of physical activity facilities and spaces
Advocate that a portion of highway and transportation funds be set aside to construct bicycle paths and foot paths
Advocate that zoning regulations permit development of recreation areas, sidewalks, and bicycle trails in new communities and business parks
Pass ordinances stipulating the type of street lighting necessary to improve safety along streets and paths
Work with the business community to support work site policies promoting "exercise flextime"
Create incentives for walk- or bike-to work programs
Link approval of building permits to assessments of impacts of design on physical activity

An overarching, long-term plan is needed to develop infrastructure to support sustainable increases in routine, transportation- or task-oriented forms of physical activity (33). This plan must also consider the barriers for minority, low-income, and other underserved groups. For example, neighborhood parks and recreational facilities are more plentiful in affluent communities than in less affluent urban centers. But, it is not enough to simply build more parks in urban areas to see an impact. Parks and facilities require ongoing maintenance and safety features that may not be available in some communities. Local ordinances and efforts by grassroots organizations can address these issues (11). Environmental engineering and supportive legislation can be implemented at the community, state, and federal levels to address barriers and to design supportive environments for active living (9). Rather than starting this effort anew, quality of life movements, specifically those addressing community design, are natural launching points for pursuing active living goals.

IV. Quality of Life through Community Movements: An Overview

Locally-based, community movements conceive quality of life as a direct result of the physical and social features of a community, where sustainable development practices, economics, land use decisions, public safety, civic engagement, environmental protection and social health, all contribute to making a community a desirable place to live. Movements that focus specifically on community design emerged largely in response to land use practices adopted after World War II. New community development plans took advantage of widespread access to the automobile, which resulted in land separated into homogenous single-use enclaves that were accessible primarily by automobile.

> Housing of similar types for similar income levels were grouped together. Retail stores were clustered into huge structures called malls, surrounded by endless acres of parking slots. Businesses imitated the mall—creating 'business parks,' usually without a park in sight, and with people working in clusters of similar buildings and parking spaces. At the same time, public squares, the corner store, main street, and all the places where people could meet and a sense of community could happen were replaced by the abyss of asphalt" (34).

This form of dispersed development has been attributed with the following consequences for quality of life:

- Concentration of poverty in urban centers and remote communities.
- Divestment and limited access to capital in urban and rural areas.
- Urban residents financing the lion's share of suburban infrastructure and services expansion yet disproportionately burdened with undesirable land uses, threats to public health, increasing job loss, abandonment, and neglect.
- Mismatch between where people work and where they live.
- Excessive reliance on automobile transportation, which contributes to traffic congestion, energy consumption, air pollution, and uncontrollable land consumption (35).

The current goal of community design movements is to reverse these social and economic effects and their causes by promoting alternative forms of development and changing expectations about the nature and form of future development.

Community design movements, and quality of life campaigns in general, are surfacing among diverse groups of citizens and private and public planning agencies and professionals. Some of the key planning sectors and issues involved include transportation, environmental protection, architecture, public health, land use development, and city planning. When taken as a whole, these movements appear quite similar in terms of their visions and goals. Following are some examples of quality of life movements currently underway and their missions.

- "Smart growth" is concerned with revitalizing neighborhoods and promoting economic development without the negative effects of sprawl. Strategies vary for each community, but they generally favor pedestrians and public transit; emphasize a dense mix of residential, commercial, and retail land uses; and seek to preserve open space (35).

- "Healthy communities" take a broad view of health and seek ways to employ various community resources to improve health status and quality of life. Medical care addresses the physical component of health and is only one resource that contributes to building a healthier community. Other resources include cultural norms that support behavior and lifestyle choices; education and skill building; safe and adequate housing; recreation and culture; public safety; jobs that pay a living wage; health promotion and preventive services; and transportation (36). These latter resources improve the socioeconomic and cultural determinants of health.
- "Sustainable development" enables people to meet present needs without compromising the ability of future generations to meet their own needs (37). Embracing this form of development, "sustainable communities" are concerned with balancing the three pillars of economic health, environmental quality and social equity.
- "Livable communities" look at the physical design of the built environment and how it affects how people live, move, and perceive the world around them. They seek to promote economic growth while preserving open space, historic structures, and the natural environment (38).
- "New Urbanism" seeks to "reintegrate the components of modern life—housing, workplace, shopping and recreation—into compact, pedestrian-friendly, mixed use neighborhoods linked by transit and set in a larger regional open space framework" (39).

The common vision of quality of life movements is of communities where amenities are accessible to all residents, cars are not the only means of transportation, and daily living and economic prosperity do not necessarily conflict with environmental quality. Their initiatives seek to remedy traffic congestion, environmental impacts, lost open spaces, and lack of safe environments. In addition to a common vision, the movements employ similar strategies. All acknowledge a connection between community environments and quality of life and advocate that changing this environment via policy and practice is the key to create long-term improvements in quality of life. The community-at-large factors prominently in this strategy, ensuring that the development and implementation of programs and policies are in line with stakeholders' priorities.

In addition to civic engagement, cross-professional collaboration is a process that many of the movements employ with the goal of incorporating the knowledge and technical skill of a diverse body of professionals to address quality of life. To date, the individual movements seem to represent small groups of planning professionals and their identities and targets for policy and practice change seem to revolve around the perspectives of the disciplines from which they emerged. For example, movements evolving from transportation sectors tend to focus on roads, highways, and transit. Those with city planning traditions are concerned with the composition and availability of services in towns and cities. Architectural movements examine physical structures and spaces of buildings. Public health movements focus on people's health status, particularly as it relates to their surroundings. Table 3 on page A–17 highlights each movement's sectoral roots and principles.

One challenge to collaboration is that the community design movements—smart growth, sustainable communities, livable communities, and new urbanism—can be broadly distinguished

from the healthy communities movement, or public health in general, by virtue of the unit of analysis they use in their approach to quality of life. Community design focuses on the features of "places" or environments, while healthy communities tend to focus on the impact of places on people, specifically on people's health status. The distinction is subtle, yet important because while the movements may claim to have similar goals and visions, their different approaches or a lack of common language or understanding about their respective approaches can cause a breakdown in collaborative efforts for policy and practice change.

Healthy communities is a product of the general trend in public health to incorporate environmental characteristics into the population health model. There is an opportunity for community design movements to adopt a similar approach that takes into account individual behavioral characteristics in design models. This can be accomplished by incorporating health-specific elements, such as physical activity, into quality of life design strategies. There are a few benefits to the movements that do so. A focus on health can bring to life a tangible rationale to the underlying ideals of quality of life movements. Improved health status and decreased health costs related to chronic disease management are concrete outcomes that are important to stakeholders across the board. If community design movements are able to link their efforts to some of these health-related goals, their basis of support, private and public, is broader. Collaboration that spans the traditional sectors of design movements as well as public health will ensure that the various components of quality of life will be comprehensively addressed at different levels—the individual, the building, the neighborhood, the metropolitan area, and the bioregion.

TABLE 3: SELECTED QUALITY OF LIFE MOVEMENTS AND PRINCIPLES

	SECTORAL ROOTS	PRINCIPLES
Smart Growth	Land Use Transportation Economic Development	• Mix land uses • Take advantage of compact building design • Create housing opportunities and choice • Create walkable communities • Foster distinctive, attractive communities with a strong sense of place • Preserve open space, farmland, natural beauty, and critical environmental areas • Strengthen and direct development toward existing communities • Provide a variety of transportation choices • Make development decisions predictable, fair, and cost-effective • Encourage community and stakeholder collaboration in development decisions (41)
Livable Communities	Architecture City Planning	• Creating better homes and communities • Creating community schools and civic places • Encouraging smart growth • Enhancing water resources • Empowering individuals and communities • Preserving open space and farmland • Promoting transportation choices • Reclaiming brownfields • Strengthening local economies (42)
Sustainable Communities	Environment	• Living sustainably • Creating community • Growing sustainable economy • Protecting natural resources • Smart growth • Governing community (43)
Healthy Communities	Public Health	• Broad definition of health • Broad definition of community • Shared vision from community values • Improved quality of life for everyone • Diverse citizen participation and widespread community ownership • Focus on systems change • Development of local assets and resources • Benchmarks and measures of progress and outcomes (36)
New Urbanism	Architecture Economic Development Urban Design	• Compact, walkable neighborhoods with clearly defined centers and edges • Interconnected network of streets • Neighborhoods and surrounding region connected by public transit • Diverse mix of activities (residences, shops, schools, workplaces, parks) occur in proximity • Wide spectrum of housing options should enable people of a broad range of incomes, ages, and family types to live within a single neighborhood (39)

V. Engaging Quality of Life Initiatives to Promote Active Living

This paper has proposed that moving away from sedentary lifestyles toward active living requires the creation of environments that facilitate physically active behavior. The goals and activities of community design movements help create the infrastructure for this active living environment through land use, transportation, building, and community planning efforts that are sensitive to air and water quality, safety, open space protection, accessibility and walkability concerns. This section presents four examples of design areas in which quality of life endeavors promote active living: greenways; compact communities; buildings; and sidewalks, streets, and trails. It concludes with highlights of international, national, and local initiatives currently underway.

Greenways

Greenways connect residential and commercial lands via bike trails and walkways. Greenways promote clean air by encouraging use of non-motorized transportation (44), and they facilitate activity by reducing barriers associated with safety, convenience, and accessibility. Foot and bike paths become a permanent feature of the community, encouraging maintenance of activity programs (23). It is important to note that while greenways are often thought of in urban contexts, walking trails and bike paths are also important in rural areas where leisure-time physical inactivity is more prevalent than in urban settings (45) and where places to walk such as sidewalks and malls are often absent.

Three events over the last 30 years have spurred demand for greenway development. First, environmental laws pushed highway construction out of urban areas and encouraged municipalities to clean up rivers and waterways and develop open recreation spaces along waterfronts. Second, the collapse of the railroad industry left 80,000 miles of unused rail. Third, the Intermodal Surface Transportation Efficiency Act and its successor TEA-21 created funding for greenway systems as well as other pedestrian-focused activities. In 2000, rails-trails and other greenways secured roughly $450 million for bike and pedestrian-oriented projects (44).

Abandoned and neglected urban land with linear, connective, and often historic properties is ready to be adapted for new uses consistent with quality of life and active living objectives. However, despite calls to action and ample funding, widespread greenways have been slow in coming to fruition. To date, there is no clear agreement on who owns the greenways and who is ultimately responsible for developing them. Many of these areas are privately owned and/or they span regional areas. A confounding factor is that until new language in the TEA-21 legislation directed government to collect travel information about bicycling and walking, non-motorized trips did not weigh in to transportation needs assessments (44,46).

Compact Community Design

Single use development along strips or large lots encourages long blocks, spread-out buildings, and isolated shopping districts, office buildings, schools, and recreational areas. Walking is inconvenient for pedestrians who want to travel efficiently and safely between these destinations.

Compact community design promotes walking because clustered mixed-use development offers diverse destinations at close distances within a neighborhood. When schools and recreational areas are isolated from neighborhoods, children must rely on car or bus transport. In a more compact community, children can be more active on their own, riding bicycles to schools and play areas. Adults will not have to rely on car transport to go to the store if they only need a few items or if they want to go out for lunch or run errands while at work.

Building Design

Specific building design features that promote physical activity encourage people to use stairs, walk along streets and pathways, and cycle to destinations. Stairways that are conveniently located, well ventilated, well lit, and attractive encourage their use. Additionally, signage that attests to the health benefits of taking the stairs can be effective in promoting their use. Windows that face the street make pedestrians feel safer when they walk by creating "eyes" on the street. Well lit, secure parking lots that are located some distance from buildings and connected by paths and green spaces also promote walking. Easy-to-use areas to secure bicycles promote bicycling to destinations.

Sidewalk, Street, and Trail Design

Safety is a major barrier to walking and bicycling. Thousands of pedestrians and cyclists are killed at crosswalks, sidewalks, median strips, and traffic islands each year. Pedestrians account for about 13 percent of all motor vehicle related deaths (47) and cyclists account for 2 percent (48). As many communities designed roadways with only automobiles in mind, safe roadways for non-motorized traffic require that sidewalks and trails be designed with pedestrian accessibility, convenience, and safety in mind and that streets be retrofit with traffic calming measures.

In many communities, streets are wide with no shade or scenery. Many lack medians and crosswalks and expose pedestrians to hazardous, high-speed traffic. They can be designed in a maze- or spaghetti-like fashion with no direct end destination. Grid-like and through street designs that connect to multiple destinations with well-marked crosswalks, mid-block crossings, and medians are pedestrian friendly. These measures make pedestrians feel safer when crossing the street and make walking convenient even when time is of the essence. Aesthetic improvements such as narrow streets, landscaping, and shade can slow down cars and be up to 10 degrees cooler than without.

The design elements of trails and sidewalks, such as grade, slope, passing space, changes in level, vertical clearance, width and surface, affect their accessibility and ease of use for transportation purposes, especially when the trails and walkways are used for multiple purposes. Additional amenities such as rest areas, drinking fountains and trail information can help users select appropriate trails and enhance their enjoyment.

Traffic calming includes a variety of changes in road design that slows or diverts vehicle traffic and separates pedestrian and bicycle pathways from vehicular traffic. Research shows that reducing vehicle speeds in residential neighborhoods reduces occurrence and severity of crashes by increasing braking distances and reaction time (49,50). Traffic calming designs

include medians or extended sidewalks that narrow the roadway, landscaped traffic circles, speed bumps, alternative pavement surfaces, and barriers or partial closures to divert through traffic.

Table 4 summarizes some design barriers to walking and some pedestrian friendly solutions.

TABLE 4: DESIGN BARRIERS TO WALKING AND PEDESTRIAN FRIENDLY SOLUTIONS

BARRIERS	SOLUTIONS
Maze-like paths with no direct destinations	Through streets or paths that connect to multiple destinations
Large-lot or strip development where buildings are too spread out	Compact development
Dead wall space—It doesn't feel safe to walk	Windows on the street are "eyes" that create a safe and pleasant way to walk
No crosswalks	Well-marked crosswalks
Long blocks	Short blocks or mid-block alleys and paths
Wide streets with no scenery or shade	Narrow streets with amenities such as landscaping and shade
Wide streets with no median extends pedestrians exposure to traffic hazards	Streets with medians
Large shopping malls require that shoppers drive	Downtown shopping fosters walking or transit use
Isolated schools	Neighborhood schools
Isolated recreational areas	Neighborhood parks
Isolated grocery stores	Neighborhood grocery stores
Isolated office buildings	Downtown or neighborhood office buildings

BENEFITS OF A BICYCLE-FRIENDLY CITY

Providing safe streets for bicyclists is like making an annual grant of $420 (a year's worth of bus passes) or more to thousands of people with limited incomes. This would improve the quality of life for the one-third of San Francisco households who do not have access to a car. Because bicyclists are more likely to shop locally, more bicycling means a healthier local economy, and therefore more local jobs and economic opportunity for a neighborhood's residents. Traffic congestion will be reduced, and the political pressure to build more parking spaces at the expense of housing will be lessened. A transportation system not reliant primarily on the car is absolutely essential to a sustainable development strategy that encourages infill development in order to save the suburban and rural fringe. More bicycling means that more people will enjoy the health benefits of exercise. The twenty minutes of gentle exercise bicycle commuters get twice each day is precisely the kind of workout that health professionals recommend for a longer and healthier life. Everyone's health will benefit from the improved air quality that will result from people switching from cars to bicycles for much of their transportation needs. The same conditions that attract more bicyclists will improve safety for pedestrians, and reduce the number of injuries and fatalities this city suffers. As street runoff is responsible for half of the region's water pollution, more bicycling will also benefit our water quality.

— San Francisco Bicycle Coalition

Current Initiatives

Several international, national, and local efforts have begun to make the connection between community design and health. The World Health Organization is in the third phase of its *Healthy Cities* project in which healthy and sustainable urban planning is a core work area. *Active Community Environments*, an initiative of the CDC, is one example of health and community design collaborating specifically to promote physical activity. Current programs include: *Kids Walk-to-School*, a guide to promote walking and bicycling to school; a partnership with National Park Service's Rivers, Trails and Conservation Assistance Program to promote the development and use of close-to-home parks and recreational facilities; collaboration on a study to review the relationships of land use, transportation, air quality and physical activity; and collaboration with the EPA on a national survey to study attitudes toward the environment, walking and bicycling. The National Highway Traffic Safety Administration works on Safe Communities, which addresses traffic-related safety and promotes alternatives to driving.

And many initiatives exist at the local level. A few select examples include:

- Portland, Oregon is considered one of the most bicycle friendly cities in the country. In the early 1970s, Oregon state law required that cities and counties spend a minimum of one percent of their transportation revenues on bikeways and walkways. Currently, Portland

spends up to 12 percent of its annual transportation budget on bicycle-related projects and maintenance. The city has installed over 200 miles of bicycle lanes, bicycle boulevards and off-street paths, and over 3,000 bicycle parking spaces. The city code was recently modified to require new and reconstructed buildings to install bicycle parking. Commuters can take advantage of five "Bike Central" stations that provide showers, changing facilities, and long-term bicycle storage (51).

- Twenty-five years ago, Arlington County, Virginia was a sleepy suburban community. Today it is a thriving diverse urban community. County planners concentrated intensive development around eleven new transit stations on the regional subway system and created a mix of office, retail, residence, and public uses. Residential neighborhoods more than one kilometer away from the stations were connected to new development with pedestrian walkways. Arlington became a walkable community by keeping distances short, making walking safer and more secure, and ensuring walking is comfortable and attractive (51).
- King County, Washington has one of the largest trail systems in the country. The regional trail system currently comprises some 200 miles of multipurpose trails with plans to expand to nearly 400 miles of facilities serving bicyclists, walkers, runners, equestrians, and other users. The regional trails connect urban areas with parks, valleys, mountains, and other communities. The trail system is also intended to provide routes for wildlife movement and buffer natural areas from development (51).

VI. Active Living Through Community Design: A Theory of Action

The previous sections laid the groundwork for understanding how community environments affect active living and provided a few examples of community design approaches that can promote physical activity. The objective for this final section is to propose a preliminary framework, a theory of action, for incorporating active living goals into the agenda of community design movements.

A theory of action (TOA) requires a strategy with a clearly stated end goal, indicators that track progress toward the end goal, and activities that logically advance movement on the selected indicators. Figure 1 (page A–23) outlines a TOA for incorporating physical activity into daily life. The proposed strategy is a cross-sectoral collaboration to effect changes in policies, development practices, and social attitudes that influence the environment for physical activity. The implementation of this strategy is a multifaceted approach which entails creating and retrofitting communities and infrastructure, conducting research and evaluation of practices and outcomes, and using social marketing and learning networks to shape attitudes and change social norms. The indicators of progress are both long-term and short-term. They include more activity-friendly design projects, more relevant grant funding, changes in norms, and policy changes in key areas. Activities that support movement of the indicators are strategic partnerships, data collection and outcome evaluation, social marketing and media advocacy, and sustainability via changes in financing and infrastructure policy. Figure 2 (page A–24) is a depiction of how many design activities and actors overlap and can be mutually supporting with targeted dollars and administrative support from key collaborators.

FIGURE 1: PROMOTING PHYSICAL ACTIVITY THROUGH COMMUNITY DESIGN: A THEORY OF ACTION

Strategy

Cross-sectoral collaboration to change policies, practices, and attitudes that affect opportunities to engage in physical activity

Implementation

1. Create/retrofit physical environments that support physical activity
2. Research, evaluate, and disseminate good practices
3. Shape attitudes toward physical activity as part of daily living and change norms of walking, biking, and transit as viable forms of transportation
4. Create a learning network of efforts currently underway to spread the word about what works and continually improve efforts

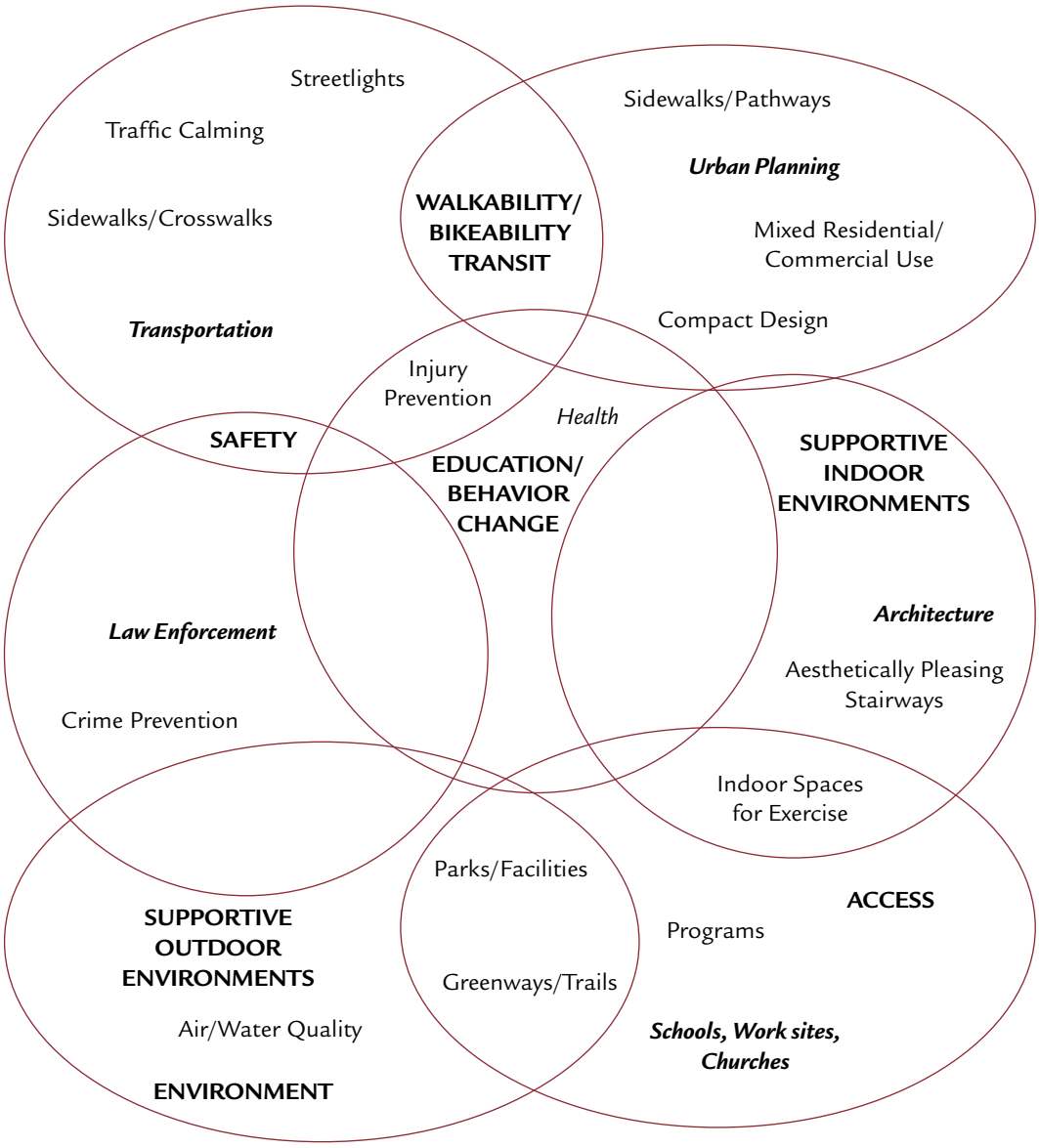
Indicators of Progress

Increase in	*More grant funding*	*Change in norms*	*Policy changes*
• new activity-friendly developments • more community, road and highway retrofitting projects	• research on intersections between design and public health • communication of good practices • new design/ retrofit projects	• compact, mixed use development • car is unnecessary • preferred modes of transport are walk/bike/transit • quality of life = walkability	• zoning/planning ordinances favor walkability and bikeability • financial and non-financial pro-transit activities and incentives

Activity Areas and Examples

Develop Strategic Partnerships	*Collect Data & Evaluate Outcomes*	*Use Social Marketing & Media Advocacy*	*Target Financing & Infrastructure Policy for Sustainability*
• QOL movements • CBOs • Schools • Work sites • Churches • Fitness • Real estate • Homebuilders • Health care • Public health • All levels of government	• Effects of changes in physical environment on long-term behavior • Link between physical activity and work/school productivity • Attitudes toward walking as form of transportation • What defines quality of life in communities	• Successful community models and outcomes • High profile champions/ spokespeople delivery messages to diverse audiences • Ad agencies to do *pro bono* work for issues important to the organization	• Lobby for highway trust funding for alternative transportation modes • Allocate same resources to pedestrian safety as auto safety • More funding for retrofitting existing infrastructure rather than new

FIGURE 2: ACTIVE LIVING—INTERSECTIONS AMONG COLLABORATORS AND ACTIVITIES



Collaborators
Transportation • Environment
Urban Planning • Architecture
Law Enforcement • Health • CBOs
Parks & Recreation • Research
Government • Foundations

Conclusion

The effectiveness of this theory of action in promoting physical activity relies on awareness across sectors and levels of government of the importance of environmental design on physical activity as well as the inclusion of physical activity promotion as an explicit design goal. While it may not be reasonable to expect that physical activity will supercede any other design goal, certainly its effects on the quality of life and general well-being warrant its consideration in planning and design efforts. Duhl and Sanchez (52) highlight four important questions that should be addressed to ensure healthy community planning:

- What are the potential unintended consequences of planning efforts?
- Are planning efforts addressing the symptoms of the problem or the root causes?
- Are planning efforts working on behalf of healthy public policy? A system must be in place that enforces checks and balances between policymakers, policies, and plans.
- What are the direct and indirect effects of planning decisions? How will these decisions affect the physical, social, political, and economic environments?

There is tremendous opportunity for cross-sectoral collaboration on critical improvements in health status and overall quality of life. Furthermore, efforts in one area can be leveraged to secure funding and legislative support in other areas. For example, local and state governments are very concerned with future economic growth and the cost of health care for their citizens, many of who suffer chronic conditions associated with sedentary lifestyles. Initiatives that tackle both problems have the advantage of "killing two birds with one stone." There is a broader base of support; scarce resource dollars go further and efforts already underway are strengthened. As stated at the outset, the intention of this paper is not to be prescriptive, but rather to present the case for cross-sectoral collaboration on active living. It is the hope that the ideas presented here and the proposed model will serve as a launching point for discussion and will be refined and expanded with the introduction of new information, insights, and ideas.

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