





An environmental scan of places designed for children to be active



Active Living NETWORK Building a national coalition for active communities

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INTRODUCTION



I. INTRODUCTION

A growing body of research reveals that the places where we live have a significant influence on our ability to be physically active. Efforts in communities across the country are testing these theories in practice by creating places to promote healthy behaviors among children. While there is currently limited empirical evidence to predict the impact these projects will have on the health of children, there is growing demand to share the lessons learned to date.

This report examines eight efforts to make changes to the built environment that create opportunities for children to be more physically active in their daily lives, such as:

- Completing sidewalks for safe routes to school
- Building parks conducive to children's play
- Planting urban gardens to promote regular exercise and healthy eating

The goal of this report is to learn from projects that promote healthy behaviors among children by creating safe and convenient opportunities for routine activity. The projects described in this report represent promising approaches, based on feedback from people in the communities where projects are located. Because of the limited research, it is too early to call them "best practices." However, as these projects are developed around the country, the research base will grow.

The Problem of Childhood Obesity

Instilling lifelong physical activity habits in America's youth has never been more urgent. The surge in obesity, diabetes and other health problems related to lack of activity among children and adolescents is alarming:

- In the last 20 years, the percentage of children and teens who are overweight has tripled.¹
- Minorities and children who live in low-income communities are disproportionately affected: Black and Latino children are 14 percent more likely to be overweight than their white peers.²
- Overweight adolescents have an estimated 70 percent chance of becoming overweight adults.³

¹ Centers for Disease Control (CDC). *Prevalence of Overweight and Obesity Among Adolescents: United States*, 1999-2002. http://www.cdc.gov/nchs/pressroom/04facts/obesity.htm

² Ibid.

³ U.S. Department of Health and Human Services. The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity: Overweight in Children and Adolescents.

http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm

Barriers to routine physical activity have sprung up nearly everywhere in children's daily lives. Opportunities for walking and biking to school have diminished as a result of design trends favoring expressways and cul-de-sacs without sidewalks. Today only 20 percent of students live within a mile of their school, compared with 35 percent in 1969.^{4,5} And only one-third who live less than a mile away walk to school, compared with 87 percent in 1969.⁶ Technology also has made recreation choices more sedentary: Video games have usurped backyard games and PlayStations[®] are more popular than playgrounds. Kids today spend more time watching television than in school.⁷ Currently, 35 percent of children do not participate in regular vigorous physical activity at all.⁸

While a complex range of factors contribute to obesity, increasing attention is being given to the connection between the built environment and health. "Active Living"—an effort to integrate physical activity into daily routines—is gaining momentum around the country. As a response to the epidemic of obesity in the U.S., The Robert Wood Johnson Foundation has established a suite of programs to promote active living through community design, recognizing that creating safe and accessible places for people to walk, bike and play is vital for encouraging healthier lifestyles.

In an era when children's physical activity is increasingly scheduled, supervised and limited to organized sports, the need for activity-friendly community spaces that support healthier behaviors for all children throughout the day is more important than ever.

4 Dellinger, AM and CE Staunton. "Barriers to Children Walking and Bicycling to School—United States, 1999," Centers for Disease Control. MMWR, August 16, 2002/51(32); 701-704.

5 U.S. Department of Transportation/Federal Highway Administration. July 1972. *Nationwide Personal Transportation Study:* Transportation Characteristics of School Children. Report No. 4. pp. 9-11.

8 CDC. KidsWalk to School: Resource Materials: Fact Sheet, 12/16/2004.

http://www.cdc.gov/nccdphp/dnpa/kidswalk/fact_sheet.htm

⁶ lbid, reference to footnotes 4 and 5.

⁷ Gorely, Trish, Simon J. Marshall, Stuart J. H. Biddle. "Couch Kids: Correlates of Television Viewing Among Youth," International Journal of Behavioral Medicine, 2004, Vol. 11, No. 3. pp. 152-163

Map of Projects

Eight projects illustrating changes to the built environment that promote children's physical activity are briefly described in this report:



METHODOLOGY



The Active Living Network seeks to identify promising efforts around the country where changes to the built environment are creating opportunities for children to be more physically active in their daily lives.

This investigation initially tapped into Active Living Network's diverse partners, scanning approximately 50 organizational Web sites for case statements and relevant news items. It then expanded into a thorough Internet search of active living efforts and health initiatives across the country. Finding little of substance relevant to children in our online search, we identified and contacted key players who are creating change both locally and nationally.

The initial list included leaders of organizations and community initiatives, as well as researchers and academics. Additional leads were gleaned from publications and news articles, as well as from conversations during the subsequent interview process. The list grew to encompass organizational program officers, advocates and local community members, who were often more knowledgeable about specific projects because of their on-the-ground involvement.

Informational conversations were held with more than 50 individuals, and formal interviews were conducted by telephone with 12. Individuals designated for formal interviews were directly involved with the genesis or leadership of a project or initiative. Individuals who agreed to a formal interview were provided with a short description of the report's scope, and most were given questions in advance by e-mail.

This report highlights eight of the most promising efforts that emerged as a result of the research conducted between September and November 2004.

FINDINGS AND RECOMMENDATIONS



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III. FINDINGS AND RECOMMENDATIONS

The following findings and recommendations are based on evidence gathered primarily from firsthand accounts of promising practices throughout the U.S., as well as informational calls with experts and advocates in the field.

In addition to the strategies, methods and insights that emerged during the research, individuals involved with each project were asked about "lessons learned" from their experiences. These lessons are summarized at the bottom of each project description in the next section and were used to inform the findings and recommendations.

Findings and Recommendations

Finding

Attractive, safe and convenient parks, sidewalks, bike paths, community gardens and playgrounds encourage physical activity among people of all ages.

Recommendation: Consider the needs of people of all ages when planning changes to the built environment to encourage active living. Design all such projects to appeal to children to help them develop the habit of being physically active, which can reduce the prevalence of childhood obesity.

Finding

Parks, playgrounds, gardens, infrastructure for safe walking and bicycling to school and other community design efforts that help children be physically active are being created independently around the country.

Recommendation: Widely disseminate information about successful projects to inspire and share strategies with others who are concerned about the lack of physical activity opportunities for children. Educate decision-makers including mayors, governors, legislators, educators, transportation agencies, parks and recreation departments, planners and others through their national and regional professional organizations so they will support and/or lead changes that encourage children to be more active.

Finding

Successful efforts to provide places for children to be active are often spearheaded by one champion who brings together the community's organizational, financial and governmental resources for the project.

Recommendation: Identify, cultivate and support champions to lead activity-friendly design projects for kids in their communities.

Finding

The number of children walking and biking to and from school has declined precipitously since 1969.⁹ Increased vehicle traffic associated with taking kids to and from school makes it more dangerous for those children who might otherwise choose to walk or bike.

Recommendation: Start with projects that make it safer and easier for kids to walk and bike to and from school and then encourage parents to let their children do so. These are opportune starting points for communities to begin making changes that promote children's physical activity.

Finding

Safe Routes to School programs and International Walk to School Day are effective ways to raise awareness about the lack of safe ways for kids to walk and bike to school, and spark infrastructure improvements that promote physical activity among kids.

Recommendation: Support these programs and use them to raise awareness and rally community support. Utilize them as a necessary first step to making infrastructure improvements, such as safe sidewalks and bike paths for children to get to and from school.

Finding

Community gardens that engage the participation of children and their families have additional health benefits in low-income neighborhoods, where access to affordable fresh fruits and vegetables can be very limited.

Recommendation: If access to affordable fresh produce and outdoor recreation is lacking in a neighborhood, consider establishing a community garden in tandem with a program to teach gardening and fruit and vegetable preparation to children and their families.

Finding

Multiple sources of funding and in-kind contributions are often used creatively in projects to build places for kids to be active.

Recommendation: Seek financial and in-kind support from every possible source:

- Local and national foundations
- Parks and recreation departments
- School districts
- City councils
- Local hospitals and clinics

- Relevant nonprofit organizations
- Transportation departments
- State legislatures
- Local businesses
- Insurance companies

9 U.S. Environmental Protection Agency. *Travel and Environmental Implications of School Siting*, October 2003. EPA 231-R-03-004

Finding

Very few projects make any effort to establish baseline measurements of children's physical activity or use of infrastructure before project implementation, making it impossible to measure the impact of the project.

Recommendation: Establish a quantitative measurement that can be used to compare activity levels before and after the built environment change; the number of children walking and bicycling to school, for example.

Finding

Every community has unique needs and preferences. If those needs are successfully met through broad community input and involvement from the beginning, the project is more likely to be well utilized. The community also is more likely to feel ownership of the project and to take care of and sustain it.

Recommendation: Actively seek leadership, input, advice, feedback and involvement from every possible interest in the community, <u>including the kids</u>. The community should "own" the project long before it is built so that residents will take on the role of stewardship after it is completed.

Finding

People in a given community may have issues such as homeowner opposition to sidewalks or neighborhood concerns about gentrification that can derail or delay building places for kids to be active. Projects that successfully involve the broad community to plan, resolve conflicts, ensure community ownership, address all issues, and fund and build places for kids to be active have the added benefit of strengthening community ties.

Recommendation: Be prepared to deal early on with any and all issues the project brings to the surface. Time spent on resolving such issues in the planning stages will save time and money. Recognize that changing the built environment to encourage physical activity can break down many barriers to community-building and developing a strong sense of place among residents. Bringing people together to build a better environment for children is also a way to build community in the long run.

PROJECTS THAT HIGHLIGHT PROMISING PRACTICES



IV. PROJECTS THAT HIGHLIGHT PROMISING PRACTICES

Awareness is growing about how the built environment can influence daily physical activity and health. For example, the Institute of Medicine, a group of the nation's leading scientific and public health professionals and scholars, recently urged: "Local governments, private developers, and community groups should expand opportunities for physical activity including recreational facilities, parks, playgrounds, sidewalks, bike paths, routes for walking or biking to school, and safe streets and neighborhoods, especially for populations at high risk of childhood obesity."¹⁰

Though the problem of childhood obesity receives daily media attention, creating activity-friendly places specifically for kids remains a relatively new concept. When places for kids to be active are built, safety is typically the primary motivator, while fighting obesity is often secondary or implicit.

In the course of this research, three primary types of changes to the built environment that encourage childhood activity emerged:

- A. Parks and playgrounds
- B. Community gardens
- C. Sidewalks and traffic calming measures for safe routes to school

This section highlights eight exceptional examples of activity-friendly places for kids, categorized in the above sections. Each example outlines:

- Background
- Changes to the built environment
- Key players
- Funding sources
- Outcomes
- Challenges
- Lessons learned
- Contact

A. Parks and Playgrounds

Parks and playgrounds are probably the most obvious ingredients in creating activityfriendly opportunities for kids, yet there is a dearth of safe outdoor recreational spaces for kids in urban and suburban neighborhoods. A staggering number of schools lack playgrounds or equipment, forcing kids to have recess on uninviting asphalt or dirt lots. Stark inequities of access to parks and playgrounds are apparent in low-income and minority communities.

While building—and maintaining—safe and accessible places for kids to play is no small task, pioneering efforts are underway. National organizations, such as the National Recreation and Park Association (NRPA) and Trust for Public Land (TPL), as well as local ones, such as ParkWorks in Cleveland, Ohio, have launched massive efforts to create healthy places for children and families to have fun and be physically active. TPL, for example, has helped complete more than 420 park projects in some 190 cities across the country, and recently announced a park-building initiative in Los Angeles, where two-thirds of the city's children do not live near a park or playground.¹¹

These and other coordinated efforts are establishing everyday recreational opportunities, promoting healthy behaviors in kids and revitalizing communities. Following are promising approaches that offer unique insights into building healthy parks and playgrounds for children.

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Orchard Schoolyard: before

Background

Cleveland's 82 elementary schools serve more than 45,000 students ages 4-13. Yet the majority lack appropriate playgrounds, and 75 percent have no such facilities within a quarter-mile radius. Acknowledging the urgent need for safe places for kids to play, Cleveland Mayor Michael R. White sought the help of Parkworks, a local organization dedicated to building



Orchard Schoolyard: after

community through park and greenspace development.

With the ultimate goal of serving each elementary school, ParkWorks identified priority sites based on schools with the highest poverty levels. Among them was Orchard School, which was designated as a model for the organization's "School Grounds as Community Parks" initiative.

Changes to the Built Environment

The original goal of the project was to convert a dirt lot into a dynamic and safe place for both school and neighborhood children to play. The result is a playground and learning environment that includes the following features:

- Two expansive playgrounds that reflect the school's partner, NASA, including a "space-aged" structure with a climbing wall and curving ladders
- Fanciful, artist-designed wrought iron fence surrounding the site
- Vegetable garden, flower garden and wetlands
- Outdoor classroom with theater-style benches
- Gazebo, the setting for most educational programming
- Benches and tables
- Sports field for baseball, kickball or other activities
- Enhancement of an existing handball court—a neighborhood tradition

Key Players

ParkWorks served as a nonprofit entrepreneurial partner and managed the entire project—including raising the money, overseeing the bidding and building process, enlisting volunteers, and ensuring the parks are properly utilized and teachers have educational programming.

According to Ann Zoller, executive director of ParkWorks, a true public-private partnership was forged to garner funding and local resources. ParkWorks involved the city's parks department, local businesses, several foundations, local botanical groups, city council members, a community development corporation, the Cleveland School District, a public art group, the local carpenter's union, local residents and many others. Robin Moore, a professor of landscape architecture at North Carolina State University's College of Design and an expert in the design of play and educational environments, was enlisted to help design the project. He is the director of the Natural Learning Initiative, which offers design consultation services to organizations that provide formal and

informal educational and cultural services to children. Moore directed 14 community forums and brought together children, parents and neighbors to create a vision for their park.

Funding Sources

ParkWorks raised a combination of private, foundation and public funding for Orchard School. Their "School Grounds as Community Parks" program uses a formula of 75 percent private and 25 percent public funds to be Teachers report that kids are more focused in class now that they have a place to play.

raised for each playground. The public funding often goes to infrastructure improvements so kids can safely access the park. The St. Ann's Foundation will provide funding for ongoing programs and events, such as handball tournaments, garden activities and concerts.

Outcomes

The process of building the park and playground served to bring together the community, create a safer neighborhood and provide the neighborhood's children with a place to play. "Thanks for letting us be kids again," says a girl in an unscripted video at Orchard School.

Since the ParkWorks program began, 19 school playgrounds, primarily in low-income neighborhoods, have been completed. Teachers report that kids are more focused in class now that they have a place to play. But to Zoller it's not just about play—it's about creating critical places for kids to be healthy. It's also about initiating a cycle of well-being: the kids feel better about being at the school, so the teachers do too; and the community feels more positive about the school and their neighborhood.

In addition, property values are on the rise in the Orchard School neighborhood, says Zoller, who sees the project as simultaneously revitalizing neighborhoods and improving the quality of life for local residents. She describes the striking wrought iron fence by artist Brinsley Terrell as a "stunning piece of public art in an underserved neighborhood."

Challenges

The primary challenge during this project was dealing with competing interests of various community members. The neighborhood was beginning to experience gentrification when ParkWorks and Robin Moore began working directly with local residents. At community meetings, locals often wanted to discuss larger community issues. ParkWorks found it imperative to be sensitive to these community issues and to reach out to those who might feel disenfranchised while staying on course with the project.

Lessons Learned

Zoller believes the Orchard School project benefited from ParkWorks' political approach to the work, which includes building alliances for every project it carries out. "We don't try to be all things to all people," says Zoller. "We bring in the people who can contribute skills and resources."

While playground building isn't politics, there are political realities that exist when working with a broad array of partners. "Your partners' challenges are yours," Zoller says. "We did this very professionally, brought in existing resources and did not do everything ourselves. That was really critical."

Contact

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Adventure Island Playground Clay County, North Carolina



Background

Clay County is located on the western border of North Carolina near Georgia. It's a small, rural county with 9,300 residents and three schools all located on one campus. For many years the county lacked a community park or playground. With the intention of increasing physical activity and creating a place for kids to learn through play, a team of organizations and community members came together to build Adventure Island playground. This playground now provides yearround opportunities for physical activity for kids and their families.

Changes to the Built Environment

Adventure Island playground was designed by and for Clay County children. This project began with the Clay County Smart Start team, a group focused on early learning issues. The Smart Start team initially held a design day during which local kids were asked to draw what they wanted in a playground. The result was a Caribbean-themed park, with play equipment that includes:

- Small rock-climbing structure
- Slides
- Teeter-totter
- Large globe that can be spun around
- Stationary boat
- Artificial palm trees
- Swings, including one for handicapped children

The county manager helped the team identify a site within walking distance of the school campus, after

A small rural community comes together to create a place for its kids to play and be physically active.

which the playground layout was developed. To cut costs, the team enlisted community volunteers to put together the playground over a four-day weekend and contracted a building supervisor through a playground company to help out.

Key Players

The project was spearheaded by the Clay County Smart Start team, which included representatives from local government and community-based organizations such as the Clay County Health Department, Family Resource Center, Communities in Schools and the Department of Social Services, as well as local childcare directors and community volunteers. The team set its sights on building a centrally located playground that would be open year round. As the effort progressed, an increasing number of community members, including parents, construction workers, county government workers and employees from the Clay County school campus, volunteered their time on some aspect of the project.

Funding Sources

The Smart Start team raised approximately \$60,000 for the development of Adventure Island playground. It was primarily a grassroots effort funded by small, community fundraisers and two grants, including one from the Clay County Health Department.



Outcomes

The Adventure Island playground has increased opportunities for children of all abilities to engage in physical activity that facilitates a variety of motor skills for developmental play. According to Terri Parr of the Clay County Health Department, "there's definitely a lot more activity" since the completion of the playground. During the school year, younger kids come to play during their siblings' sports practice and, once practice is

over, the older kids join them. During the summer, there are always kids at the playground, either playing or involved in summer programs that are held there.

In addition to these outcomes, the process of creating the playground served to bring together community organizations, parents and local businesses.

Challenges

Project logistics, particularly around the actual building of the playground, were the biggest challenges on this project. The team did not involve a contractor from day one and made a number of logistical assumptions that complicated the project. Rather than building it over a four-day weekend as planned, the playground was built over a longer period of time because of a lack of volunteers and bad weather. A second challenge was getting funding for the project. Although the project team was successful at raising \$60,000, it was difficult.

Lessons Learned

Involving the community from the start, having organized committees to get the work done and conducting a media campaign are three elements the team believes were crucial to the success of this project. Community involvement and media coverage can result in more effective fundraising efforts at the local level.

If the Smart Start team were to do this project again, they would involve a playground contractor from the beginning. Had they done so for Adventure Island, they would have saved money and time.

The team also feels that compromise was a key element to the completion of the project. During the playground siting process, the county manager had to change the location originally offered, which involved redesigning the playground layout. There was little choice in the matter since the county was donating the land for the playground.

Contact

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Mildred Helms Park Newark, New Jersey



Background

There is an overwhelming need for outdoor recreational opportunities for children in Newark, New Jersey. Only 5.3 percent of the city's space is park land—second lowest among high-density cities in the nation—and 34 percent of Newark's children under age 14 do not live within onequarter mile of a park.¹²

The demand for safe play areas is so high that

some 2,400 children in the Clinton Hill neighborhood continue to frequent Mildred Helms Park, where custodians from the adjacent elementary school conduct morning sweeps for discarded needles and drug vials, and kids report

encounters with addicts and armed strangers.

The Trust for Public Land (TPL) spearheaded an effort to reclaim and revitalize the 3.5-acre park in this predominantly African-American and Hispanic neighborhood.

Changes to the Built Environment

The new Mildred Helms Park is poised to break ground in 2005, following an extensive design process that involved both neighborhood school children and community residents. Before the recent revitalization The Trust for Public Land cultivated community ownership by bringing local parents, pastors, teachers and elementary school children into the design process from the beginning.

effort, all that remained of the original park, built in the 1970s, was an old shuffleboard court and some concrete tables. Stripped vehicles were often abandoned on the grounds.



The new park is envisioned to be a vibrant neighborhood landmark and community destination. New landscaping will improve visibility and accessibility at street entrances and throughout the park, while additional lighting will address safety concerns. There will be a paved exercise path, plaza with gazebo, picnic area with tables, and a playground with features designed for different age groups. Key features in the playground include:

- Outdoor classroom
- Teaching garden
- Water play area
- Separate play structures for 2-5 and 5-12 year olds
- Junior basketball hoop, game tables and painted games
- Synthetic turf

Key Players

TPL cultivated community ownership by bringing local parents, pastors, teachers and the elementary school children themselves into the design process from the beginning. Partnerships were also forged with several city agencies, including the police and parks



and recreation departments. The Mildred Helms Resurrection Committee, composed of representatives from local churches, volunteer groups and community development corporations, is helping to steer the effort.

Funding Sources

The Mildred Helms Park project is an example of successful private and public funding. TPL worked with the city to win part of a \$1 million National Park Service grant from the Urban Park and Recreation Recovery program, along with a

\$175,000 grant from New Jersey's Green Acres program. Several private organizations provided funding, including the Prudential and Victoria foundations, For All Kids and the Health Care Foundation of New Jersey.

Outcomes

Mildred Helms Park is on track to break ground in 2005, and the effect it will have on children's activity levels remains to be seen. Between 1995 and 2003, however, TPL's Newark office created six parks near local schools, with an additional three sites in various stages of completion. While there have been no empirical measurements in terms of health, these new parks and playgrounds are creating opportunities for local children to be active that didn't exist before.

"The facilities that much of Newark's children had were nothing but asphalt," says Leigh Rae, executive director of TPL's Newark office. "More than physical fitness we see changes in spirit. It is stimulating routine activity, and more organized activity."

Carl Haefner, TPL program director, recalls how one neighborhood park has become a venue for frequent community barbeques. "Even a playground at a school can be a center for the community," says Haefner, who sees certain new playgrounds creating a neighborhood sense of place.

Challenges

"The biggest challenge really has to do with working in this kind of urban setting where there's a pure lack of resources for this type of work," says Haefner. The more obvious challenge of funding design and construction is compounded by the need for ongoing stewardship in a place where resources for maintenance are scarce. "You can't just build something and expect it to take care of itself," says Haefner. "If resources aren't there to create, we have to acknowledge they're not necessarily there to help maintain them...you kind of have to step back and plan for the end before you start to build."

Lessons Learned

While places for children to play are vital to encouraging routine physical activity, a park's existence doesn't automatically translate to safe outdoor recreation. TPL recognized that creating a vibrant everyday destination hinges on:

- Cultivating a sense of stewardship within the community by creating community ownership through diverse partnerships
- Engaging the primary users-local school children-in the design process
- Designating the adjacent school as an anchor and primary steward
- Developing a strategic plan to build funding partnerships among the local community, city and private sectors

Contact

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Leigh Rae Executive Director, Parks for People – Newark The Trust for Public Land

Photos by Simone Magili and Ken Sherman/The Trust for Public Land

B. Community Gardens

Community gardens have great potential to be health-promoting places for kids. Fruit and vegetable gardens can provide opportunities for routine physical activity, as well as access to healthy food, particularly in low-income communities where fresh produce is often hard to buy and opportunities for safe and spontaneous play are lacking. From tilling and digging to raking, weeding and harvesting, the spectrum of garden work itself offers varied opportunities for kids to be physically active.

Community gardens are cropping up as a creative approach to building healthy communities, from a 14-acre vegetable garden in a predominantly Latino area of South Central Los Angeles to a half-block section of mini gardens in Moses Lake, Washington.

The following example illuminates a particularly promising effort to bolster physical activity and healthy eating among children in a low-income neighborhood through active gardening.

Physical Fitness and Nutrition from the Ground Up Fort Wayne, Indiana



Background

Robin Robinson recalls when her town was declared the fourth least-fit city in America in the October 2001 issue of *Self* magazine. "Obesity has become an epidemic," says the special events coordinator for the Fort Wayne Parks and Recreation Department. The Parks and Recreation Department resolved to take action and first initiated a free, citywide family-oriented fitness and nutrition program called Move to Improve.

Next, the department developed a Junior Master Gardener program, "Physical Fitness and Nutrition from the Ground Up," to address childhood obesity in Fort

Wayne's most underserved communities. The largest gardening project completed its pilot phase in 2004. It engaged 15 African American and Latino kids in a middle and low-income community. The intention, says Robinson, is to teach children and their parents the health benefits and physical rewards of active gardening.

"Physical Fitness and Nutrition from the Ground Up" is an example of an organized program, created around a change in the built environment that promotes physical activity among children. "A lot of these kids didn't know what vegetables were," says Robinson. "Now they request vegetables. It's not as difficult to get them to eat healthy because now they know what healthy looks like."



Changes to the Built Environment

The program's primary garden plot is no mere pea-patch: It spans roughly 1.5 acres on land donated by the Come As You Are Community Church, at the rear of its property. While the parks department helped take up sod and do some initial tilling, the kids themselves, along with local volunteers, created the garden from scratch.

The organic vegetable garden is an interactive setting where basic tasks, such as watering the vegetables, are turned into fitness-oriented activities. Since there is no hose, children haul buckets of water from the adjacent

church, traversing the many rows to water crops. Because of the garden's massive size, other routine maintenance, such as weeding, is labor-intensive (especially since the plot is chemical-free). A plow fashioned out of an old bicycle also increases physical activity.

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Gardening activities are framed within an approach to routine exercise and healthy eating through the free Junior Master Gardener program, which runs three evenings a week, for two to three hours each evening. Typical gardening activities such as weeding, watering, planting and harvesting crops are complemented by stretching and warm-up exercises to encourage healthier lifestyles. Robinson treats the garden as a kind of playground, challenging the children to race each other up and down the rows and organizing active group games.

Healthy eating is another central component, and Robinson strives to teach the kids about both ordinary and unusual vegetables and the importance of good nutrition. "A lot of kids had no idea about the veggies they were growing—most saw lettuce just in a sandwich," says Robinson, who introduces them to new vegetables such as summer squash and bok choy. She also sends them home with fresh vegetables, cooking suggestions and recipes to share with their parents.

Key Players

Robinson executed this garden project under the aegis of the Fort Wayne Parks and Recreation Department. The department's maintenance staff helped with initial tilling, while parents and community members, such as veteran gardener Ephraim Smiley, volunteered and participated alongside the children.

Funding Sources

While the Move to Improve program at large has 27 partners, they weren't a source of any funding. Starting with a small grant from Health Visions of Fort Wayne, Robinson went on a crusade to find creative ways to get what she needed. When the garden ran out of fertilizer, Robinson called the local zoo and rounded up the kids for a trip to collect manure and straw from the giraffe pen. She elicited other donations of materials, including a portable toilet, sunscreen from the American Cancer Society, and land for the garden from the pastor at the neighborhood church.

Outcomes

Robinson reports that participating children are getting more exercise, eating healthier and developing new, healthier habits now that there's a place for them to be active. "A lot of these kids didn't know what vegetables were," says Robinson. "Now they request vegetables. It's not as difficult to get them to eat healthy because now they know what healthy looks like."

Kids and parents alike return to the gardening sessions reporting on what they made with the vegetables and how they liked them. One mother regularly turned out with her five children, ranging in age from 8 to 14 years old. The garden evolved into a fun and active venue for all ages, allowing children and teenagers to work alongside adults. A compelling success story comes from volunteer gardener Ephraim Smiley, who lost 15 pounds and was able to lower his diabetes medications due to his participation in the project.

Challenges

The sheer amount of work involved in creating and maintaining a 1.5-acre garden was Robinson's biggest challenge. "We were out there when the kids weren't," she says, noting that seven volunteers helped her to weed and water the plot during the program's off-days. "We had no idea how much work it was going to be when we first started."

Robinson's ingenuity overcame many potential obstacles, from crafting a plow out of old bicycle parts to getting fertilizer from the local zoo. Still, lack of funding remains a major hurdle to expanding the program from its pilot phase. Robinson also sees great potential for establishing a curriculum around the garden, making the program more intellectually challenging and integrating garden-based nutrition and exercise activities into the school setting.

Lessons Learned

Gardening is a creative solution to fighting obesity and instilling healthy habits in kids. Engaging children in the process of growing their own food gives them a sense of accomplishment, Robinson says, and boosts their enthusiasm for eating what they harvested themselves.

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C. Sidewalks and Traffic Calming Measures

Walking and bicycling are basic means for kids to get essential physical activity while getting from place to place, either in their neighborhood or on the way to school. Yet unlike 20 years ago, walking and bicycling to school are more the exception than the norm in many places.¹³ Many neighborhoods lack sidewalks, bike lanes and safe paths, or have dangerously fast traffic. There is growing recognition that the community-planning model favoring wide, rapid thruways and streets with no sidewalks creates unsafe conditions for children and inhibits regular physical activity.

A variety of efforts are underway to build new sidewalks and paths and implement traffic calming measures so that children, as well as their families, can safely enjoy walking and biking on a daily basis. Successful initiatives, such as Safe Routes to School programs and International Walk to School Day, are bringing national attention to how built environment changes can positively affect children's health and well-being.

California, for example, has made Safe Routes to School programs a legislative priority. Since the program's inception in 1999, it has funded \$90 million worth of traffic safety projects near schools in almost all of the state's 58 counties. Results have been dramatic: Route improvements, put in place along with Safe Routes to School programs in Marin County, California, increased the number of children walking to school by 64 percent in two years.¹⁴ Safe Routes to School programs are active in at least 18 states across the U.S., while many more communities are developing their own similar strategies.

Following are four examples of compelling projects that are taking place around the country.

¹³ U.S. Department of Transportation/Federal Highway Administration. July 1972. *Nationwide Personal Transportation Study:* Transportation Characteristics of School Children. Report No. 4. pp. 9-11.

¹⁴ Marin County Bicycle Coalition. Safe Routes to school demonstration project, final report, prepared for the National Highway Traffic Safety Administration. 2001.

Completing Streets with Walk to School Day Challenge Hinsdale, Illinois



Background

The Village of Hinsdale, Illinois is less than five square miles in area and has just fewer than 18,000 residents. This upper-middle-class town is a suburb of Chicago. While most children live within one mile of school, Maryann Romanelli, a nurse and local resident, noticed that few were walking or biking. "Way too many parents were driving their kids to school," she says. "[Hinsdale] just doesn't have any reasons why people shouldn't be walking—except for lack of sidewalks."

To bring attention to the need for safe routes to school and sidewalks, Romanelli spearheaded a school-district-wide Walk to School Day in October 2000. The event became a catalyst that paved the way for new sidewalks and street improvements, changing both the village's physical landscape and the physical activity habits of neighborhood children and residents.

"Way too many parents were driving their kids to school," says Maryann Romanelli. "[Hinsdale] just doesn't have any reasons why people shouldn't be walking—except for lack of sidewalks."

Changes to the Built Environment

Today, five years after Hinsdale's first annual Walk to School Day, an estimated 2.5 miles of sidewalk have been completed. Nearly seven miles of new

sidewalk are slated for construction throughout the Village and surrounding area.

The first few miles of new sidewalks connected public schools to parks, neighborhoods and other activity centers. "It came to the forefront because of the walk," says Romanelli. "It's why Walk to School Day is so effective—people are actually out there."

Hinsdale's multi-faceted efforts to create safe routes to school, as well as a more pedestrian-friendly community in general, may be categorized as a "complete streets" initiative. The process of building complete streets in Hinsdale included:

- Identifying dangerous gaps or missing segments of sidewalk
- Surveying parents about where sidewalks and improvements were needed
- Educating residents about safety issues and soliciting support for traffic calming strategies
- Forming a pedestrian task force, including educators, parents, police, village transportation engineers and others, to designate responsibilities and discuss issues

- Developing a policy that prioritized construction and reconstruction projects at schools and parks
- Soliciting feedback from schools about where students walked and where they wished to walk
- Directing funding to the areas of greatest need

Key Players

Romanelli felt like a lone voice when she began her campaign for better sidewalks and safe routes to schools. Through Internet research she heard about International Walk to School Day and began organizing one in Hinsdale to bring visibility to the cause. She lobbied both the Village of Hinsdale and the school board to participate. "I worked for three months making signs, getting fliers, finding information, organizing the schools," she says. "They said if I could pull it off, they would come."

Over time, she was successful in recruiting many others who contributed to the success of building safe routes to school. The school district became an important partner, while the Village president, transportation engineer, deputy chief of police and many individual board members became champions for creating a more walkable Hinsdale. "Our village has gone on record [to say] that they believe in sidewalks, that they are a sign of progress," says Dan Schoenberg, Village engineer and director of public services.

In the last few years, Romanelli has received additional support from pedestrian-friendly organizations such as Chicago Area Transportation Study and the Center for Neighborhood Technology.

Funding Sources

In October 2002, Hinsdale approved a new \$1.2 million sidewalk policy addressing roughly seven miles of the Village's "sidewalk network" to fill in a series of missing links identified for sidewalk construction district-wide.¹⁵ According to Schoenberg, the Village spends between \$100,000-\$120,000 constructing between one-half to one mile of new sidewalk each year. Depending on how much support may be gathered from residents on the block, the Village pays up to 100 percent of sidewalk implementation or reconstruction costs.

Outcomes

"More kids are walking and biking than ever," says Romanelli, although no empirical evidence is available. One milestone of success is that individual schools are taking a more proactive approach to promoting physical activity among students. To amplify the impact of safe routes to school measures taken by the Village, principals, physical education teachers and other educators are striving to create long-term change by incorporating walking into the school curriculum. At Oak Elementary School, students are walking at recess, calculating their mileage and learning about the benefits of exercise and healthy eating in class. "They took the idea of Walk to School Day and had the kids

¹⁵ Chicago Area Transportation Study. Soles and Spokes Plan: Task 3 Best Practices. Part I, June 24, 2004.

figure out mileage and steps," says Romanelli of the school's educators. "They have made this fun, and incorporated walking into every subject."

There is now a strong commitment from the Village Board to create a healthier, walkable community. Organized committees have emerged to streamline initiatives and stimulate change. "Everything was kind of adversarial at first. It's such a nice relationship now with the people in the Village, with the [school] board, with the police," says Romanelli. "It's changed so much in so many positive ways."

Challenges

The biggest barrier to sidewalk construction continues to come from property owners, who don't necessarily want sidewalks fronting their property or more pedestrian traffic passing their house. There's even opposition when the right-of-way for a new sidewalk is opposite a school. Having a responsive village engineer solves many disputes, says Romanelli, who says that Schoenberg has gone to great length to consult neighbors and build creative, attractive pathways that still meet construction standards.

Financial constraints are always a challenge, says Romanelli, underscoring the importance of building consensus among policy-makers and residents alike.

Lessons Learned

Romanelli found that organizing a community-wide event to bring visibility to the issue of walkability and safe routes to school was a potent mechanism for change. Hinsdale's first Walk to School Day rallied students and families, police and firefighters, teachers and administrators, and local, state and federal political leaders. The first change to sweep the Village was people's mindsets. "There was barely a car out there. It was such a different scene, it was amazing to everybody," says Romanelli. Kids experienced the freedom of walking to school, while officials with decision-making authority to fund complete streets witnessed the poor street conditions first hand. Until people saw for themselves how bad conditions were, says Romanelli, the idea of creating new sidewalks was "falling on deaf ears."

It was also essential to harness support from both the school district and municipality to establish a reciprocal commitment to making physical changes and promoting healthier behaviors. "You have to work together," says Romanelli. "This is the only way we are going to get change."

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Building Safe Routes to School With New Sidewalks Arlington, Virginia

Background

As a child growing up in Arlington, the smallest county in the Commonwealth of Virginia, Charlie Denney walked to school. "At some schools, everyone really lives within walking distance," says Denney, bicycle and pedestrian program manager at Arlington County's Division of Transportation and Planning. "I walked to school, and my kids were getting ready and I wanted them to walk to school." Yet safety concerns due to lack of sidewalks and safe crossings had become a major obstacle, and "a couple of crashes involving kids walking to school" made local parents nervous.

"People's perceived fears of their child being abducted are one of the more difficult things to overcome," says Charlie Denney. "How do you change that perception? Yet if...more kids are out there walking it's actually safer."



In 1997, the county adopted its first stand-alone pedestrian plan, which opened the door for discussion about improving conditions for kids to walk and bicycle to school. Arlington County has roughly 200,000 people and 30 public schools. The idea of developing a Safe Routes to School initiative started from people in the community, and took shape when the county board and school board teamed up to form a plan of action.

Changes to the Built Environment

Throughout the fall, winter and spring of 1999 and 2000, Denney and committee members visited every school in the county. They created a list of things that could be done within a quarter mile of each school to make it easier for kids to walk, from building sidewalks to improving crosswalks and drop off zones. The next steps were drafting a targeted list, and identifying and prioritizing construction projects. Construction projects and traffic calming measures included:

- New sidewalks-the most widespread change
- Intersection improvements
- Curb extensions
- New, high-visibility crosswalks
- Countdown pedestrian signals
- School flashing beacons
- Island of safety in the center roads
- Theft-resistant bike racks



The schools were involved in the initial planning stages, helping to identify construction needs, reconfiguring school grounds and creating maps of conditions around schools. Changes were aimed at improving safety, boosting children's physical activity levels and having fewer cars on the road. "And the main goal was to get kids to walk more," says Denney.

Key Players



The county board and school board joined forces to create a Safe Routes to School initiative, with the help of local citizens and the county's pedestrian advisory committee. Next they formed a "team" that included the Public Works, Traffic Engineering and Police departments.

During this time a coalition of professionals, advocates and city departments called WALKArlington was formed. It serves as an umbrella organization combining all of the county's

pedestrian-oriented efforts into one program. The small, dedicated staff includes a transportation and urban planner and a landscape architect, who steer walkability projects to create a more vibrant, healthy community. WALKArlington is now managing the Safe Routes to School initiative.

Funding Sources

A \$900,000 county bond for building Safe Routes to Schools was approved in the 1999-2000 budget, and another \$500,000 was approved for 2002-2003. The second round of funding was part of Arlington County's transportation and neighborhood improvements, and covered an estimated 20 projects. Many projects have been completed, while others are planned or in construction. WALKArlington keeps tabs on the status of each project on its Web site (www.walkarlington.com), including the location of each and which school it benefits.

Outcomes

Arlington County doesn't have any baseline information on how many children were walking and hasn't been measuring since the changes were made. While Denney recognizes that it will take more than an annual Walk to School Day to get more kids walking and biking everyday, he sees change happening gradually and inevitably. "I've started to eyeball how many bikes are parked at schools," says Denney. "I've been out there and seen a lot of kids walking."

Challenges

Among the biggest challenges is opposition to sidewalks from property owners. "One [sidewalk] is half-a-block away from a school and the entire street is opposed to the project," says Denney. "That's the biggest thing I've run up against." And while the county board has been generous with funding, there is a lack of staff resources to get projects built.

"Also, people's perceived fears of their child being abducted are one of the more difficult things to overcome," says Denney. "How do you change that perception? Yet if...more kids are out there walking it's actually safer." The difficulty, he admits, is communicating the diverse benefits of more kids walking to school which, in turn, will reduce traffic and make walking and biking safer. "People need to think about how that works," says Denney.

Lessons Learned

"Safety was the hook that got people involved," says Denney. Once people were on board with the project, the broader agenda could encompass physical activity and health.

"It has to be a coalition, in our case, between municipal officials as well as school officials," says Denney. "There needs to be support and buy-in from both sides." This includes rallying support from parents, as well as school leaders who are vocal about making changes to both the built environment and to student behavior.

And while built environment changes are crucial for creating safe places to be active, a proactive approach to changing children's behavior is equally important. "Some people are disappointed in the lack of follow through from the schools to get kids walking," says Denney. While the school district promotes an annual Walk to School Day event and sends out walking maps once a year, Denney thinks schools should take a more proactive position to get kids walking and biking every day. Now that sidewalks and safe crossings are being built, says Denney, "we need to think about how do you try to build in programs to get people to use new changes."

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The Evergreen Cemetery Jogging Path Boyle Heights Neighborhood, Los Angeles, California



Background

Boyle Heights is a small, densely populated urban neighborhood east of downtown Los Angeles. Its 91,000 residents are primarily low-income Latinos, the majority of whom were born outside the U.S. A city of asphalt, there are no nearby parks where people can exercise, play or gather.

With the lack of options, the most common place for residents and families to exercise was an old and treacherous sidewalk that encircled the Evergreen

Cemetery. With the help of the Latino Urban Forum, the Evergreen Jogging Path Coalition (EJPC) was formed with local residents and advocates to help drive an improvement project that addressed the real needs and preferences of the community.

The resulting path offers safe exercise opportunities for children, families and the community at large, and is the first public sidewalk in the country to be designated a recreational public space.

Changes to the Built Environment

The EJPC first sought the support of Los Angeles City Councilmember Nick Pacheco and began documenting the conditions of the sidewalk system. Poor conditions included holes that measured more than half-a-foot deep, root systems that caused the sidewalk to buckle, trash strewn along adjacent dirt paths and few pedestrian crosswalks or traffic stops on the perimeter streets.

Since the path was built, daily use has increased from about 200 to more than 1,000 people who use the path for jogging, walking and socializing.

Rather than replace the sidewalk with new cement, the

group decided on a path made of recycled, rubberized asphalt. The rationale was that it would hold up for a long period of time and be safe for everyone to walk on, whether in high heels, boots or running shoes.

Key Players

The project was the result of alliances among residents, community activists and government agencies. James Rojas, co-founder of the Latino Urban Forum, spearheaded the effort. He, along with resident Diana Terrango and several community leaders formed the EJPC and collaborated with Councilmember Pacheco, the Department of Parks and Recreation, the Metropolitan Transit Authority and the city council.

Funding Sources

The Evergreen Cemetery jogging path improvements were entirely funded with public dollars. The EJPC delivered a proposal for the new path, which also outlined the treacherous conditions of the existing one, to Councilmember Pacheco. Aware of the community support for the project, Pacheco secured \$800,000 from the city's Department of Parks and Recreation for the construction of the jogging path around the Evergreen Cemetery. The Metropolitan Transit Authority and the city council provided money and in-kind resources to clean and maintain the path.

Outcomes

This project is an example of how a simple improvement to a sidewalk can increase physical activity in a community. Since the path was built, daily use has increased from about 200 to more than 1,000 people who use the path for jogging, walking and socializing. Not only are there more joggers, there are more families taking walks. The community has an increased sense of ownership, which has resulted in a decrease in the area's crime rate.

Challenges

The greatest challenge was simply convincing the city government of the need for the path. This was overcome by providing the city council with documentation of the problem and a demonstration of community support.

Lessons Learned

Taking the time to assess, envision and then mobilize makes a substantial difference in the final outcome, according to James Rojas. The EJPC took the time to assess and document the problem, which helped to generate political and financial support, as well as demonstrate the community's commitment to solving the problem. The involvement of the community increased its sense of ownership and guaranteed use of the path once it was completed.

It also helps to have a vision that everyone can agree upon. The process is made significantly smoother when community members and local stakeholders are on the same page.

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Parkmead Neighborhood Path Walnut Creek, California

Background

In 1993, a Parkmead Elementary School parent concerned about the lack of sidewalks in the neighborhood decided to take action. He called Bruce Appleyard, a transportation and community planning expert who conducts research on neighborhood walkability based on "cognitive maps" drawn by local children. Having worked with other communities on this same issue, he viewed this as another opportunity to do what he loves: increase the opportunities for kids to safely get to school and understand how



neighborhood mobility increases well-being. With the participation of school children and the community, Appleyard helped lead an effort to build a path for kids to safely walk or bike to their elementary school.

The schoolchildren were asked to draw a map of their neighborhood, citing their home, school, friends' houses, danger zones and the places they liked to play, producing a cognitive map of their walking routes.



Changes to the Built Environment

Appleyard began the project by doing an inventory of the neighborhood. He became familiar with its streets, noting that nearly all of them lacked sidewalks. The route to Parkmead Elementary School was particularly treacherous, with no room for kids to walk along the streets. Roads were inundated by traffic in the mornings, signaling a need for some form of traffic calming. Curious as to why no sidewalks were built when the subdivision was developed, Appleyard reviewed city planning documents from the 1940s and 50s. When he discovered plans for sidewalks that were never built. he questioned retired city workers who had approved the subdivision. They described powerful developers who dismissed the need for sidewalks in order to build less for more. One argument voiced was that sidewalks seemed too urban.

Appleyard then met with Parkmead Elementary School kids and asked them to draw maps of their neighborhood. The students were asked to cite their home, school, friends' houses, danger zones and the

places they liked to play, producing a cognitive map of their walking routes. He then culled their renderings into a single cognitive map that was used to illustrate which improvements were necessary and advocate for funding. After this initial phase of research, Appleyard and the community decided to build a raised, crushed-granite path of along a quarter mile of the busiest, most dangerous street leading to the elementary school. Plans for a new stop sign at the crosswalk were included. Working with the city and county governments, as well as property owners along the street, the path was completed in 1996.

Key Players

Appleyard worked with community members and the county government to complete the path. The parent who originally approached him, along with a woman who was passionate about the issue, was an integral part of the effort. In addition, Parkmead Elementary School, neighborhood residents and property owners, the school children, and the county and city governments were also involved at various levels of the project.

Funding Sources

The funding source for Parkmead's path was ultimately the state government. Appleyard helped the neighborhood apply for a \$40,000 California Transit Development Act grant from Contra Costa County. However, the original source of this money actually resided at the state level—it was from a fund of state gasoline taxes that was allocated for transit-related development grants to county governments around California.

Outcomes

In 1997, after the path had been used for some time, Appleyard re-engaged the children in the mapping exercise to see how the new path and crosswalk improvements changed their perceptions. Results showed that the kids had a much stronger feeling of wellbeing; their perception of danger was cut in half. Their drawings also reflected a significantly stronger connection with their neighborhood—there was more detail and more places they liked. Drawings often included the crosswalk, stop sign and path. And more children walked and biked to school than before the path was put in place.

Challenges

The biggest challenge was to raise sufficient funds for the project, which was only enough to pay for a crushed-granite path—not a sidewalk. However, had they had more money, the property owners might have been resistant to greater changes. Working with the property owners required envisioning a path that both would suit their tastes and work for the children, gaining the support from city and county governments was also a hurdle.

Lessons Learned

Cooperation with all stakeholders is important to the success of any infrastructure project such as this one. Collaboration with traffic departments, schools, property owners and parents is crucial. Appleyard believes schools can serve an important role as educators, engaging parents and distributing information to them.

There are a lot of experts who can provide options when funding is plentiful or scarce. It is important to draw on that expertise to make the most of the funding and develop truly walkable environments for kids.

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CONCLUSION



V. CONCLUSION

Awareness is growing that far too many American children are at risk for a battery of chronic diseases and shortened lifespan because of inactivity and obesity.

Parents, communities, foundations, nonprofit organizations and governments are asking what can be done, and answering the question by making a wide range of community changes. Along with new physical education requirements and improved nutrition environments in schools, changes to the built environment are being undertaken; some in response to the epidemic of childhood obesity and others to improve children's safety while playing outdoors or getting to and from school.

Changing the built environment to encourage greater daily physical activity is a key long-term solution to the obesity epidemic among Americans of all ages. But communities are already identifying changes they can make at relatively low costs that will help children be more physically active. Focusing on changes that affect children makes sense. It's an effective way to rally policy-makers and concerned community members, and it's easier to instill healthy habits in the young than it is to change adult behaviors. Children have little control over their physical environment; it's an adult responsibility to provide a safe and healthy environment for children.

A scan of child-oriented changes to the physical environment reveals a pattern of projects to improve or build parks, playgrounds, community gardens and children's routes to schools. The most successful projects tap deeply into community needs, desires, resources, involvement and potential stewardship of the improvements. The outcomes benefit not only children, but the larger community in which they live.

The lifetime health benefits for this generation of children and the positive effects of an increased sense of community among them and their elders are, as yet, unknown. But the positive impact on children's perceptions is amply demonstrated by the before and after cognitive maps that Walnut Creek kids drew and remarks such as "Thanks for letting us be kids again" in Cleveland.

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RESOURCES



VII. RESOURCES

The Active Living Network Web site, www.activeliving.org, is a gateway to tools and resources to promote active living and healthy communities. Visit us online to view more stories of active living around the country, or to find facts, presentations, reports and other materials to promote healthy community design.

The Active Living Network is a national project supported by The Robert Wood Johnson Foundation, www.rwjf.org. Additional information and resources on active living may be found at the following Web sites:

Active Living by Design http://www.activelivingbydesign.org Active Living Leadership http://www.activelivingleadership.org

Active Living Research http://www.activelivingresearch.org Active Living Resource Center http://www.activelivingresources.org

Active Living Blueprint http://www.agingblueprint.org

Active for Life http://www.activeforlife.info

Other useful Web sites include:

Rails-to-Trails Conservancy http://www.railtrails.org	National Coalition for Promoting Physical Activity
	http://www.ncppa.org
National Recreation and Park Association	
http://www.nrpa.org	American Trails – Trails for Health programs http://www.americantrails.org/resources/he
Prevention Institute	alth/index.html
http://www.preventioninstitute.org	
	Smart Growth America
Centers for Disease Control and Prevention	http://www.smartgrowthamerica.com
Healthy Places Site	
http://www.cdc.gov/healthyplaces	

For a comprehensive list of Web resources, visit the Active Living Network, www.activeliving.org.

APPENDIX



APPENDIX

The body of peer-reviewed research about the relationship between the built environment and children's health continues to grow. The following is a partial list of research articles. For additional references, including summaries, fact sheets and literature citations, visit www.activelivingresearch.org.

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