

Designing Parks for Human Health Benefits

Park health resources: Benefits, values, and implications

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OBESITY, CARDIOVASCULAR DISEASES, DIABETES, and mental illness have reached alarming proportions among children and adults in the United States. For example, approximately 36% of adults are considered obese, 10% have diabetes, and 25% suffer from some form of mental illness (CDC 2013). These chronic diseases reduce quality of life and cause early mortality (Hyde 2011). To combat these public health challenges, many health professionals promote developing additional recreational programs and infrastructure, such as parks, to increase physical activity (WHO 2008; NPC 2011) and as a form of preventive medicine (Frumkin and Louv 2007). Generally these parks are part of local communities' infrastructure, but all parks and public lands, no matter their location, potentially could serve as part of a unified system of health resources for the public.

One effort to enhance and promote the use of parks as health resources is the Healthy Parks Healthy People (HPHP) program, which promotes proactive and healthy activities as part of the public health and medical care delivery systems worldwide. In the United States, the Healthy Parks Healthy People movement also works to increase society's recognition of parks and protected areas (including state, local, and regional park systems) as places for the promotion of physical and mental health and social well-being. Aligned with these HPHP tenets, NPS director Jonathan Jarvis in the "Call to Action" emphasized the need to "expand the health community's use of parks as a healing tool and increase citizens' recognition of the value of parks to improve health and well-being and encourage park visitors to make healthy lifestyle choices" (NPS 2012). To address these needs, the National Park Service established the Health and Wellness Executive Steering Committee in 2010 to initiate steps for HPHP's integration in the United States and "for park lands to take their rightful place in creating a healthy and civil society" (NPS Health and Wellness Executive Steering Committee 2011, p. 8). The committee's objectives were twofold: (1) explore the role of the National Park Service in promoting the health and well-being of the nation, and (2) develop a strategy to support health promotion. To advance their role in enhancing public health, the National Park Service hosted the HPHP U.S. summit in 2011, developed a strategic action plan, will host the Second International HPHP Congress, and

Abstract

Society is faced with a range of mental and physical health issues. The Healthy Parks Healthy People movement seeks to increase society's recognition of parks and protected areas as places for the promotion of physical and mental health and social well-being. The diversity of park areas within the National Park System makes it impossible to have a single prescribed plan for managing park resources as health resources. However, there are some common themes that can be applied to all national park settings to maximize health promotion and benefits, which include (1) designing programs and infrastructure for multiple outcomes, (2) managing food and beverage services to deliver healthy food and activities, and (3) forming diverse short- and long-term partnerships. This article offers case studies from diverse park settings to illustrate how managers have applied the strategies to help achieve the goals of Healthy Parks Healthy People and the "Call to Action" initiatives.

Key words

health benefits, health resources, management strategies

will contribute to the Sixth World Parks Congress with a health and wellness component.

The NPS "Call to Action" and the HPHP U.S. movement illuminate the important role that national parks play in enhancing human health by offering recreational opportunities and by promoting healthier lifestyle choices. For nearly 100 years, society has assumed that national parks have contributed to human health and well-being by protecting these places that inspire physical activity and promote mental health (Wexler 2004). However, members in the health community are increasingly calling on parks to provide more tangible ways of increasing healthy activities and behaviors (Frumkin 2001; St Leger 2003). So what strategies can NPS managers use to maximize visitors' health benefits? This article seeks to answer this question and to provide a set of case studies and examples that illustrate how the National Park System can inspire the American public to enjoy resources of the national parks and derive health benefits.

Table 1. Physical and mental health benefits associated with parks and green space

Health Benefits	Research
<p><i>Physical</i></p> <ul style="list-style-type: none"> • Reductions in cardiovascular disease and diabetes • Reduced obesity • Reduced heart rate, muscle tension, blood pressure • Positive influences on immunity and cardiovascular function 	<p>Pretty et al. 2005; Lee 2011; Lee and Maheswaran 2010; Maller et al. 2002</p>
<p><i>Mental</i></p> <ul style="list-style-type: none"> • Improvements in cognitive functioning • Improved mood and self-esteem • Reduced depression, anxiety, and stress • Increased attention levels 	<p>Barton and Pretty 2010; Pretty et al. 2005; Thompson Coon et al. 2011; Fletcher et al. 1996; Taylor et al. 1985</p>

The link between parks and human health

Research generally supports the notion that parks, green space, and natural landscapes support physical and mental health (Godbey 2009; Lee and Maheswaran 2010; Maller et al. 2009; Bowler et al. 2010; Richardson and Parker 2011; Sallis et al. 2012; Frumkin 2001; Frumkin and Louv 2007; Abraham et al. 2010; St Leger 2003). The unique characteristics of many national park units make them ideal settings for promoting diverse outdoor recreational opportunities (Sallis et al. 2012). These activities, such as walking and bicycling, can deliver a range of physical and mental health benefits, as illustrated in table 1.

Though the literature supports the role that parks may play in supporting healthy outcomes, there is little research that specifically confirms that visitors to national parks receive health benefits (Maller et al. 2009). Though many national park visitors do participate in healthy activities while in parks, many may not. For example, national park experiences are often physically passive or are driving experiences (Hallo and Manning 2009) and in general most park visits result in sedentary instead of active behaviors (Mowen 2010; Cohen et al. 2007). So how can national park managers increase visitor participation in healthy activities that produce health benefits within their units?

Managing park resources as health resources

Parks, operating within a broader landscape, provide diverse resources for promoting healthy behaviors and lifestyles. *Park health resources* can be defined as programs, facilities, and environments (natural and cultural) that when used by visitors can provide demonstrable and often distinctive physical, mental, and

social health benefits. For example, a visit to a park can provide opportunities for physical activity through hiking, promote nutrition through purchase of healthy foods, encourage mental health and wellness through contact with nature, and further social well-being by providing educational opportunities and social interactions.

The 401 park areas managed by the National Park Service include 124 historical parks or sites, 79 national monuments, 59 national parks, 25 battlefields or military parks, 18 preserves, 18 recreation areas, 10 seashores, four parkways, four lakeshores, and two reserves. The diversity of these park areas makes it impossible to have a single prescribed plan for managing park resources as health resources. However, there are some common questions and themes that can be applied to all national park settings to maximize health promotion and benefits, which include (1) designing programs and infrastructure for multiple outcomes, (2) managing food and beverage services to deliver healthy food and activities, and (3) forming diverse short- and long-term partnerships. Many of the following case studies were submitted to the “Call to Action Success Stories” and are directly linked to specific action items (NPS 2013).

Designing programs for multiple outcomes

Developing programs and facilities that promote the delivery of multiple outcomes is possible with thoughtful planning and efficient use of resources. By viewing park resources as potential health resources, managers can adapt existing programs to enhance physical, mental, and social health outcomes. Not all programs need to be changed dramatically, but instead managers need to evaluate what potential health outcomes may be achieved in tandem with other desired outcomes. Some examples to illustrate how national parks can reevaluate existing programs to maximize health outcomes follow:

Zion National Park, located in Utah, implemented a mandatory shuttle system for visitor transportation during busy tourist

seasons. Visitors must leave their vehicle in a remote lot and use the shuttle system to view and interact with the park's resources (fig. 1). The shuttle system has expanded visitor access, improved the visitor experience, and reduced negative impacts on park resources (NPS 2008). It is also thought that the shuttle system promotes increased walking opportunities, improved air quality, and a quieter soundscape, all of which support positive health and mental outcomes. Managers at Zion (and elsewhere) could promote these health outcomes and enhance visitor opportunities through increased signage pertaining to walking opportunities and communication of its potential health benefits.

Great Smoky Mountains National Park, located in Tennessee and North Carolina, recently enhanced a trail that connects the Cherokee Nation and town to Oconoluftee Visitor Center. The interpretive trail was codeveloped in cooperation with the Cherokee Nation and incorporated signage that interpreted Cherokee legends and language. The trail extends over 2 miles (3.2 km) and has enhanced connectivity between the park and the local community. Local people now hike the trail on a regular basis, contributing to improved relations with park neighbors and promotion of physical activity.

Educational and interpretive programs offer another area for managers to achieve multiple outcomes. The National Park Service offers a variety of programs for visitors and students that can be effective venues for park staff to promote healthy choices for visitors within and outside the park. By providing active interpretive programs, parks may increase physical activity levels while also meeting educational goals (fig. 2). Some examples that illustrate how park units have designed educational and interpretive programs for multiple outcomes are as follows:

Minute Man National Historical Park, located in Massachusetts, has implemented the multiple outcomes approach through the development of a 5.5-mile (8.9 km) multiple-use pedestrian and bike trail that connects two historical sites. Guided ranger talks along the trail are a way for the park to promote physical activity, expose visitors to natural and cultural resources, and provide education to visitors in a safe and scenic venue (NPS 2009).

Timucuan Ecological and Historic Preserve, located in Florida, is an example of how cultural and historical parks have the opportunity to highlight connections between their site and past and present cultures through interactive visitor experiences. Timucuan and the National Park Foundation provided transportation costs for students to visit the park so that they may learn about history while also promoting healthier lifestyles. Students were able to compare their own physical activity through the use of pedometers to the physical activity of the 16th-century

Timucua people. Additionally, students learned about the Timucua diet and food options and made the connection to healthier food options for today.

North Cascades National Park, located in Washington, and the Wounded Warrior Project designed a program for wounded service members and veterans to improve physical and mental health. Over several days, the veterans hiked, canoed, and camped with the guidance of park rangers and volunteers. Through this therapeutic and specialized program, the group of service members and veterans overcame physical and mental obstacles while completing the challenging hikes and canoe trip and received many physical, mental, and social benefits.

Managing food and beverage services

Another opportunity for the National Park Service to improve public health outcomes is through the active management of food offerings in vending machines, stores, and restaurants within national parks. In 2011, the Centers for Disease Control and the National Park Service conducted a study of 47 parks in 33 states using adapted nutrition environment measures surveys (NEMS) to assess restaurants, snack shops, and vending machines for access, pricing, and promotion of healthful as opposed to less healthful foods and beverages (Wong et al. 2011). The preliminary results revealed that only 26% of beverage vending machine choices consisted of healthful drinks (including water), and only 19% of restaurants offered more than one entrée on the menu labeled as healthy.

Some of the recommendations of the 2011 National Prevention Council's National Prevention Strategy for improving health on which the National Park Service can focus its efforts are (1) increasing access to affordable and healthy foods, (2) implementing organizational nutritional standards and policies, (3) improving nutritional quality of the food supply, and (4) helping people recognize and make healthy food and beverage choices (NPC 2011). These efforts can be achieved in multiple ways by focusing on internal efforts with park staff and volunteers and on external efforts through concessionaire management. Some examples that illustrate how diverse park units have provided healthier food options include:

Wolf Trap National Park for the Performing Arts provides an example of park staff and volunteers taking the initiative to grow fresh produce that is used inside and outside of the park. Garden plots were established and maintained for the production of numerous herbs, fruits, and vegetables, which are used by concessionaires in food preparation for visitors (fig. 3). Any extra produce is donated to the local food bank. The garden also acts as an educational resource. The gardens are located along popular

NPS PHOTO



NPS PHOTO



Figure 1 (left). A shuttle bus service at Zion National Park has contributed to reductions in crowding and adverse environmental impacts while creating a quieter landscape and more positive visitor experience.

Figure 2 (above). A ranger leads a bike tour at the National Mall that integrates physical activity into an educational program for visitors.

NPS PHOTO



NPS PHOTO



Figure 3. A garden at Wolf Trap National Park for the Performing Arts demonstrates how to grow and integrate local foods into park concessions for visitors.

Figure 4. The Get Outdoors Under the Gateway Arch event illustrates how local partnerships can create events that can contribute to the physical, mental, and social health of a community.

pathways where interpreters regularly discuss the art and science of gardening and how visitors can start their own gardens.

Mount Rushmore National Memorial, located in South Dakota, illustrates a concessionaire's efforts to showcase the region's culture and history through the use of local produce, while also providing healthy food options. Carvers Café, operated by Xanterra, offers on its menu Lakota popcorn from the harvest of the Lower Brule Sioux Tribe and locally raised bison, antelope, elk, and venison. Carver's Café chefs also use produce from a local garden. Signage and displays explain to visitors where the food originated and other sustainable food options. Last, Xanterra has developed a composting operation, which diverts about 30,000 pounds (13,607 kg) of waste each year (Mills 2011).

Forming partnerships

Short- and long-term partnerships offer an opportunity for national parks to expand healthy opportunities for visitors inside and beyond park boundaries. One of the main pillars of the HPHP Strategic Action Plan is to build partnerships and leverage resources (NPS 2011). Partnerships can help support the National Park Service as it takes a more proactive role in contributing to human health and well-being. Short- and long-term partnerships with local businesses and area attractions can be used to create local events and ongoing opportunities that promote health. Following are several examples to illustrate how diverse national park areas have formed short- and long-term partnerships to provide healthier visits and options for park visitors:

Table 2. Information sources and strategies for managers to support park health resources

Source	Focus	Site URL
Healthy Parks Healthy People Central	International research, innovations, and programs of the HPHP initiative	http://www.hphpcentral.com/
Healthy Parks Healthy People U.S. Strategic Action Plan	The specific role of the United States and the National Park Service in the HPHP initiative	http://www.nps.gov/public_health/hp/hphp/press/1012-955-WASO.pdf
NPS Healthy Parks Healthy People Science Plan	The research and science needs linking the health of NPS areas to human health	http://www.nps.gov/public_health/hp/hphp.htm
Centers for Disease Control and Prevention: Division of Nutrition, Physical Activity, and Obesity	Guidelines, strategies, statistics addressing nutrition, physical activity, and obesity	http://www.cdc.gov/nccdphp/dnpao/
National Environmental Education Foundation's Children and Nature Initiative	Specific focus on interaction of children and adolescents and nature, and provides resources and publications	http://neefusa.org/health/children_nature.htm
Richard Louv's Children and Nature Network	Research, publications, recent news, and ways to get youth engaged with the natural world	http://www.childrenandnature.org
Active Living by Design	Strategies for creating healthier communities that support physical activity and nutrition by working with local, state, and national partners	http://www.activelivingbydesign.org/
Let's Move	Initiative led by Michelle Obama to increase physical activity and nutrition for youth throughout the nation	http://www.letsmove.gov/
Leadership for Healthy Communities	A guide for local and state leaders to create healthier communities, including an action strategies toolkit	http://www.leadershipforhealthycommunities.org/
Active Living Research	Translates research to advocates, decision makers, and practitioners with the goal of creating healthier communities	http://www.activelivingresearch.com
Guide to Community Preventive Services	Resources on a variety of topics to proactively address health issues in communities	http://www.thecommunityguide.org/index.html
National Recreation and Park Association (NRPA)	Strategies and resources found in six issues briefs and other publications for how NRPA has played an active role in creating healthy communities	http://www.nrpa.org/Grants-and-Partners/Recreation-and-Health/Healthy-Communities/
American Medical Association Public Health Resources	Medical-related resources and solutions to promote healthy lifestyles and reduce health disparities among diverse populations	http://www.ama-assn.org/ama/pub/physician-resources/public-health.page?
Food for the Parks	Case studies of sustainable food and roles of concessions in NPS efforts for healthier park visits	http://www.concessions.nps.gov/docs/concessioner%20tools/food-for-the-parks-report.pdf
NPS Pathways to Healthy Living	Strategies and examples of how the Rivers, Trails, and Conservation Assistance program has contributed to human and ecological health	http://www.nps.gov/nrcr/portals/health/healthprojects.htm
National Prevention Strategy: America's Plan for Better Health and Wellness	A comprehensive strategic plan developed by the National Prevention, Health Promotion, and Public Health Council	http://www.surgeongeneral.gov/initiatives/prevention/strategy/report.pdf
2008–2013 Action Plan for the global strategy for the prevention and control of noncommunicable diseases	Global strategies formulated by the World Health Organization to reduce cardiovascular disease, diabetes, cancers, and respiratory diseases by addressing specific risk factors	http://whqlibdoc.who.int/publications/2009/9789241597418_eng.pdf

Cuyahoga Valley National Park, located in Ohio, developed long-term partnerships to create healthier options for park visitors while also preserving the park's resources. The Countryside Initiative is a partnership among the national park, the Countryside Conservancy, and local farmers to connect local culture, resource conservation, and food production with the public. Partnerships with 11 local farmers produce locally grown fruits, vegetables, eggs, poultry, goats (for meat), and wine. Park staff also implemented educational programs focused on the farming operations, and the park wants to expand current efforts and form additional partnerships (Mills 2011).

Gulf Islands National Seashore, located in Mississippi and Florida, hosted a Healthy Parks Healthy People event, that highlights the use of short-term partnerships to promote health and well-being. Gulf Islands formed partnerships with health care and wellness providers, outdoor recreation providers, and environmental education professionals from the southeastern United States. During the event, visitors could take advantage of free health care screenings or participate in a blood drive. Partners also provided outdoor recreational activities such as bird walks, bike rides, and use of kayaks in addition to numerous types of exercise classes.

Jefferson National Expansion Memorial, located in Missouri, formed partnerships with the St. Louis Sports Commission, USA Gymnastics, VISA Championships, Girl Scouts, and the World Bird Sanctuary to host thousands of people at the Get Outdoors Under the Gateway Arch. The event promoted healthy activities and lifestyles by offering wildlife, fishing, gardening, bicycling, and other exercise programs in nearby green space and provided information on healthy lifestyles and foods for children and adults (fig. 4, page 33). Based on the event's success, the national park and its partners are planning a second event.

Pinnacles National Park, located in California, formed a partnership to provide programming inside and outside park boundaries. The park partnered with Central Coast YMCA for the Let's Move Outside program in the neighboring cities. As part of this program, park rangers visit surrounding local communities to engage low-income and at-risk youth from a nonprofit housing development in enjoyable physical activities. The park then invites youth and their families to come to the park to participate in guided moonlit hikes, which are offered in multiple languages.

Promoting healthier parks for healthier people

The NPS "Call to Action" goals and the HPHP U.S. movement illuminate the important role that national parks may play in enhancing human health by offering recreational opportunities and through the promotion of healthier lifestyle choices. The examples discussed in this article and the additional sources in table 2 offer managers a starting point for enhancing their resources and programs and designing future health initiatives that support park and human health in their respective parks. Through the use of multiple-outcome program design, food and beverage service management, and partnership formation, national parks can enhance health outcomes for visitors and NPS staff alike. The National Park Service has a special opportunity to act as a global role model for parks, protected areas, and public lands everywhere by managing the resources of the National Park System for healthy outcomes.

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