

Promoting Active Visits to Parks: Models and Strategies for Transdisciplinary Collaboration

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The purpose of this paper is to discuss the shared interest of the public health and parks and recreation sectors in promoting active visits to parks. At the institutional level, both sectors have missions to promote physical activity and view parks as key components in attaining physical activity goals. While some balancing among park goals may be necessary to avoid overuse and resource degradation, active visits more often complement park sustainability goals by reducing automobile and other motorized use impacts. The public health and parks and recreation sectors have each developed ecologic models to understand the determinants and outcomes of park-related physical activity. Transdisciplinary integration of these modeling efforts can lead to a better understanding of how active visits fit within the context of the overall recreational experience and the full range of benefits that parks provide. We conclude by identifying strategies for improving collaboration between the public health and parks and recreation sectors.

Key Words: physical activity, access, recreation opportunity, ecologic models, recreation experience

Regular physical activity reduces risk of premature mortality and many common diseases including cardiovascular disease, stroke, osteoporosis, and diabetes. Levels of physical activity are a leading health indicator in the United States.¹ However, fewer than half of US adults are sufficiently active.² Lack of physical activity in children is also a major public health problem as illustrated by steadily increasing rates of overweight and obesity in children.³

Systematic reviews of the scientific literature have helped identify effective approaches to increasing levels of physical activity. Systematic reviews by the *Guide to Community Preventive Services* (or the *Community Guide*) have identified eight population or "community" level strategies that are effective in increasing physical activity.^{4,5} These strategies include improving physical education programs in schools, designing streets that include features such as sidewalks, and increasing

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access to recreational facilities such as parks. Clearly, implementing such strategies requires collaboration between public health and other sectors including education, urban planning, transportation, and parks and recreation.

Among these sectors, the parks and recreation sector is notable for its long-standing mission of promoting physical activity as part of providing opportunities for play and leisure. The sector has developed models for understanding the determinants of recreation behavior that are highly relevant to increasing levels of physical activity in a community. Parks and recreation professionals also have expertise in implementing interventions to promote physical activity including designing facilities such as trails and exercise stations, managing youth sports programs, conducting adult exercise classes, and teaching outdoor skills such as kayaking and rock climbing.

The purpose of this paper is to discuss how the public health and parks and recreation sectors can collaborate to promote “active visits” in parks. Parks are defined here as publicly accessible open spaces of sufficient size to host active visits and can range from local parks and greenways to national parks and forests. An active visit is defined as one where a park visitor attains sufficient physical activity to meet current public health recommendations of either 1) at least 30 min of moderate-intensity activity such as a brisk walk, or 2) at least 20 min of vigorous-intensity activity such as running. While such activities usually imply in-park recreation, active transportation (e.g., walking) to or from a park can also be part of an active visit. In this paper, we first discuss the shared interest of both sectors in promoting active visits. After describing the breadth of opportunities for active visits, we discuss the promotion of active visits using transdisciplinary models and the need to tailor approaches to specific park circumstances. We conclude by summarizing important issues and identifying key opportunities for collaboration.

Historical Perspective and Shared Mission

The parks and recreation sector has been promoting physically active forms of recreation in the US for more than a century. Only recently, however, has physical activity become a major public health issue. The landmark Surgeon General’s report, *Physical Activity and Health*, was published in 1996.⁶ The public health recommendations of the *Community Guide* are even more recent—the recommendation to increase access to places (such as parks) for physical activity was published in 2001.⁴ Only recently have the public health and parks and recreation sectors begun to collaborate to promote physical activity.

Both sectors have missions related to promoting active visits to parks. Public health has a stake in promoting active visits as part of its mission to promote health-enhancing physical activity. Parks and recreation has a stake in promoting active visits as part of its mission to provide quality recreational and leisure experiences.

Achieving a balance between recreation and conservation missions is necessary. Parks and recreation includes many land holding institutions that have environmental conservation as a central part of their mission. Fortunately, the promotion of active visits is often compatible with this goal. For example, more focus on human-powered park touring can reduce the impacts caused by automobile traffic, pollution, and extensive asphalt surfacing. However, promoting active visits

may also conflict with the mission of environmental conservation. Increased active visits could lead to the overuse of resources, which could also make parks less attractive places for physical activity. Physical activity is best promoted by high quality, sustainable resources, so public health has an interest in supporting both conservation and recreation missions.

Many parks and recreation institutions also have a mission related to interpretation. For example, visitors may come to a historic park or arboretum for exercise much to the consternation of managers who see their park as an outdoor museum for learning. As we discuss later in more detail, focusing on a single activity in isolation from the overall visitor experience may lead to missed opportunities. In situations where a balance in missions can be successfully achieved, the active visit could provide a gateway to the interpretive mission of the institution, and vice versa. For example, a visitor who first comes to a park to jog for exercise might subsequently seek to learn more about its history or plants, while another whose initial goal may have been learning might be drawn to incorporate a higher level of physical activity.

Parks may also have a mission to promote sedentary visits, e.g., related to rest and relaxation; however, this mission is not necessarily in conflict with promoting active visits. Indeed, the most satisfied visitors may use a park for both active visits and sedentary activities such as relaxing in a natural environment.

The Public Health Recommendation to Promote Access and Informational Outreach

Public health approaches to promoting physical activity typically rely on ecologic models, notably the socio-ecologic model,⁷ which posits that interventions occur at five levels: individual, interpersonal, organization, community, and society. The model also posits that success in improving a health problem (e.g., lack of physical activity) requires interventions at many, if not all, of these levels. Table 1 illustrates possible interventions at each level to promote active visits in parks.

Table 1 Example of a Socio-Ecologic Approach to Promoting Physical Activity in and Around Parks

Intervention level	Example of an intervention
Society	State and federal funding programs to develop park and greenway trails as transportation alternatives
Community	Community policing strategy that helps ensure safe access to and safety within parks (e.g., improved lighting and surveillance)
Organization	Free fitness and outreach events that promote active visits to parks
Interpersonal	A program for older adults that builds social support networks to encourage regular active visits to a park
Individual	Health screening and instruction to build skills and confidence in park-related physical activity

The *Community Guide* identifies evidence-based interventions at the organization, community, and society levels of the socio-ecologic model. Of the eight population-level (or “community” level) interventions to promote physical activity identified as effective by the guide, the most relevant recommendation to promoting active park visits focuses on access. To increase physical activity levels in a community, the *Community Guide* strongly recommends creating or improving access to places for physical activity, combined with informational outreach.^{4,5} Interventions to create or improve access include building walking trails, building exercise facilities, or reducing constraints (barriers) to accessing existing facilities. In the 10 studies reviewed in the guide, improved access combined with information outreach increased community activity levels about 25%. For example, a study of rural walking trails reported that 55% of trail users had increased their amount of walking since they began using the trail.⁸

However, the factors that affect access are incompletely understood and only a few of the many possible interventions to increase access have been evaluated. A high priority area is translational research on how to interpret the general recommendation to improve access for specific interventions that match the resources and infrastructure of a wide variety of communities. It is logical and important that the parks and recreation sector work with public health on this research. To illustrate the need for research in this area, consider two epidemiologic studies. The first study, of the Minuteman Trail in Massachusetts, reported that busy streets, steep hills, and long distances between a residence and the bikeway were associated with lower rates of bikeway use.⁹ In contrast, measures of accessibility (e.g., distance, attractiveness, and size) of public space in Perth, Australia were *not* associated with levels of physical activity among residents living near the public space.¹⁰ Research is also needed on how the “micro-environment” of a public space affects physical activity levels. For example, levels of moderate or vigorous physical activity in middle school children were higher in playgrounds with supervision and more equipment and improvements.¹¹

Informational outreach is an important part of the access recommendation. Before people seek to use a facility, they need awareness and information about that facility. Many possible forms of outreach exist, ranging from simply providing information (e.g., on a web site) to social marketing campaigns that promote physical activity using the resources and programs of a community park. The parks and recreation and public health sectors should collaborate to determine effective forms of outreach.

The Breadth of Opportunities to Promote Active Visits

A visit to a park for a purpose other than exercise may still provide an opportunity for physical activity. For this reason, parks afford a wide range of opportunities to promote active visits. Some people visit parks for the primary purpose of engaging in physical activity including visits for unsupervised exercise (e.g., running on trails), for exercise classes sponsored by the park, and for sports events (e.g., soccer games). Although accommodating these visitors is important, offering opportunities for active visits when the primary purpose is not engaging in physical activity

is also essential. For example, people who visit parks for the primary purpose of bird watching can easily have an active visit by walking to various places in the park to observe birds. Parks can promote active visits by building or enhancing infrastructure in a park (e.g., mileage markers on trails). Approaches that emphasize policy interventions can also be effective. Two brief case studies illustrate these points.

The Old Faithful Geyser is a famous landmark in Yellowstone National Park. In the past, visitors could park their vehicles on the edge of the geyser and watch Old Faithful erupt while in their vehicles. However, the parking lots have since been relocated to about 0.1 to 0.25 miles from the loop trail around the geyser basin. Although the parking lots were presumably relocated to improve traffic flow, the relocation also protects the area around the geyser basin and improves the quality of the visit to the basin. Yet these changes also resulted in a public health intervention to promote active visits. Those visitors who walk from the parking lot and use the popular loop trail passing Old Faithful Geyser, Castle Geyser, and Grand Geyser now commonly walk 30 to 45 min or about 1.5 to 2.0 miles. That is, they have an active visit. In addition, a bike trail now allows bicycles access to the geyser basin. This intervention affects thousands of visitors to the geyser basin each week, yet probably few visitors have a *primary* purpose of engaging in physical activity.

In another example, wide sandy beaches such as those found in many places along the Oregon coast provide a popular place to walk. A natural unspoiled beach is highly attractive to many visitors, and such environments need no enhancements. In this case, the “public health interventions” to promote physical activity are the policies that promote conservation of and access to the beach. These policies include laws that ensure the beach is public space, requirements to provide free parking, zoning for high density in beach communities, and regulations that allow companion animals on a leash or under voice control.

The breadth of opportunities to promote active visits in parks involves exercise, sports, nature-based recreation, transportation, volunteer tasks, and occupational tasks. The following discussion briefly comments on each of these areas of opportunity.

Exercise

One obvious type of active visit to parks involves outdoor exercise such as walking, jogging, and biking on trails. The Cochran Shoals segment of the Chattahoochee National Recreation Area exemplifies how enhancements to the natural environment can support exercise. The park has flat loop trails of 2 or 3 miles in length, plus other trails. An adjacent road with bike lanes provides an additional loop of up to 5 miles. Water fountains, restrooms, distance markers, and a parcours further facilitate active use. Many parks also sponsor supervised exercise classes. Larger city and suburban parks often have substantial fitness facilities such as swimming pools and weight equipment. Even when these exercise options are housed indoors, their location within the park offers opportunities to link people with the natural environment in ways that many private health clubs and fitness centers cannot. More importantly, park exercise programs and facilities are often substantially lower in cost to users than private alternatives and thus can increase the accessibility to a broader spectrum of individuals.

Sports

Parks commonly provide opportunities for active visits by youth and adults through use of athletic fields and ball playing courts. The public health impact of athletic facilities is enhanced by striking a balance between the extremes of unlimited use (which can damage fields) and restriction of use to designated sports leagues (which prevents use by the general community).

Nature-Based Recreation

Many forms of recreation, such as canoeing, rock climbing, and bird watching, involve active visits to a park. Some types of recreation have both active and sedentary forms. For example, a picnic can occur 20 feet from a car lot or 2 miles away from a car during a hike in a national forest.

Transportation

A linear park such as a rail-to-trail conversion offers the opportunity for active transportation. A park also may be connected to roads that have bike lanes, which allows the opportunity for visitors to skate or bike to the park instead of driving to it.

Volunteer Tasks

Parks commonly rely on volunteers to provide the capacity to maintain parks, and many volunteer tasks are inherently active, such as gardening and trail maintenance. For volunteers who do sedentary tasks, there are often opportunities to restructure their volunteer experience to include a mix of active and sedentary tasks.

Occupational Tasks

Parks employees commonly have opportunities to get occupational physical activity. Park rangers may provide guided walking tours, and park police may use bicycles for patrolling. With exemptions for emergency and disabled personnel, removal of convenient employee parking lots would add walking to the daily routine of deskbound staff and increase green space around high public use areas of parks.

Improving the Promotion of Active Visits Through Transdisciplinary Models

Many of the ideas and examples mentioned above are anecdotal in nature. They derive from the experiences of parks and recreation practitioners who are looking for ways to improve active visits to their sites through adaptive management and program innovation. Some of this work has been aided by public health and parks and recreation research on evaluations and interventions. Until recently, however, few attempts have been made to develop broader transdisciplinary conceptual models or frameworks to study the determinants and outcomes of active park visits.

The bulk of these modeling efforts have been led by public health researchers working in transdisciplinary teams with researchers and practitioners from parks and recreation and other applied disciplines. Although these efforts have contributed to a better understanding of how to promote active visits to parks, models of recreation behavior developed over the past three decades can add to this understanding by describing how physical activity fits within the broader goals of people's desired recreation experiences. In this section, we contrast a public health model of park-based physical activity with a generalized model of recreation behavior from research in parks and recreation and draw implications for model integration.

Models That Focus on Determinants of Physical Activity

Ecologic models of health promotion recognize that people's transactions with the environment can have important health outcomes.⁷ These transactions operate at multiple scales and determinants affecting individual-to-societal levels; however, findings to date on the determinants have been mixed.¹² Public health researchers have long studied the roles that intrapersonal (e.g., knowledge, attitudes) and interpersonal (e.g., social support networks) determinants have in promoting healthy behavior, but have more recently become involved in transdisciplinary efforts to understand how the physical environment and policies affecting it might be better designed to improve the health of individuals and communities.¹³

Within this context ecologic models are being used to study how the characteristics of park and recreation settings can help increase active park visits. Studies have been conducted within the US, Europe, and Australia in recent years including many case studies of adult populations in urban areas. Kaczynski and Henderson¹⁴ identified 50 such studies published between 1999 and 2005 and reviewed the type and effectiveness of factors that have been used to link park and recreation settings with physical activity. The consideration of multiple scales is evident across the studies they reviewed, with access measures of distance to or frequency and distribution of parks and trails within people's neighborhoods related to physical activity measures such as frequency and intensity of walking or bicycling. At the neighborhood scale and within the park and recreation setting itself, other determinants such as safety, attractiveness, and facility development are often included within researchers' models. Kaczynski and Henderson, however, concluded that findings to date have been mixed.

Bedimo-Rung and colleagues¹⁵ captured much of the richness of these case studies in their conceptual ecologic model explicating the relationships between parks and physical activity (Figure 1). Their model is notable for its comprehensiveness and conceptual clarity. It is comprehensive by acknowledging the breadth of determinants associated with physical activity within parks and the benefits of outcomes that result, and clear in its emphasis on the structural park characteristics leading to park physical activity and resulting physical health benefits (see shaded areas in Figure 1). Recognizing that this model is informed by past research in the parks and recreation sector, we nonetheless consider it a good representation of a public health sector's model of how park environments can contribute to active visits.

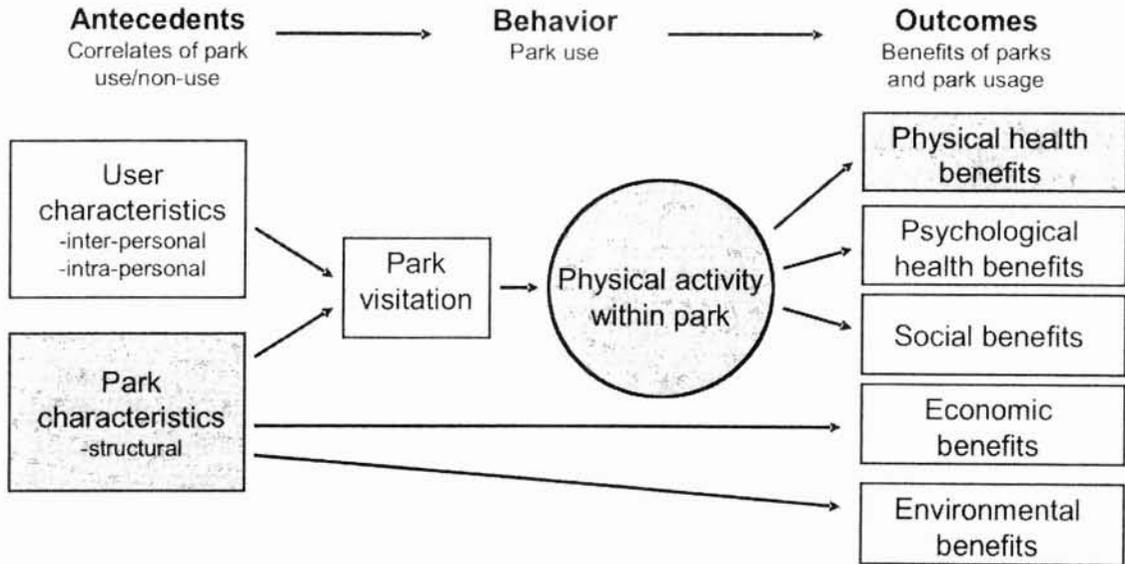


Figure 1—Public health research model of parks and physical activity adapted from Bedimo-Rung et al.¹⁵

Models That Focus on Determinants of a Quality Park Visit

Researchers in the parks and recreation sector have also applied ecologic models to the study of people-environment transactions.¹⁶ In contrast to the public health sector, however, the focus on physical activity has not been a major concern until recently. Nonetheless, examining the components of models developed within the parks and recreation sector is important to understand what implications such work may have toward strengthening the utility of modeling efforts in transdisciplinary collaborations.

Although we could find no single model comparable to Bedimo-Rung et al. for describing recreation behavior, a synthesis of often-discussed components can be seen in Figure 2. This synthesis draws on the work of many people but the basic structure and concepts can be traced to the efforts of Driver and colleagues,¹⁷⁻²⁰ who over a period of nearly three decades sought to understand recreation behavior within the context of large public land settings.

The basic form of this model is similar to that of Bedimo-Rung et al. with a few notable differences (see shaded areas in Figure 2). First, in drawing from models such as the Recreation Opportunity Spectrum,¹⁹ the determinants of recreation behavior include a separate category for management-related conditions and settings by recognizing that policies and management actions are a principal means for managers to manipulate recreational behavior. Physical determinants such as naturalness, preferred features, and facilities are to some extent also able to be manipulated by managers, as are access-related factors such as distance and intervening opportunities that affect how choices are made or how sites are managed across a system.

Second, the behavioral component of the model is conceived broadly in terms of recreation engagement as a process that may include how people perceive,

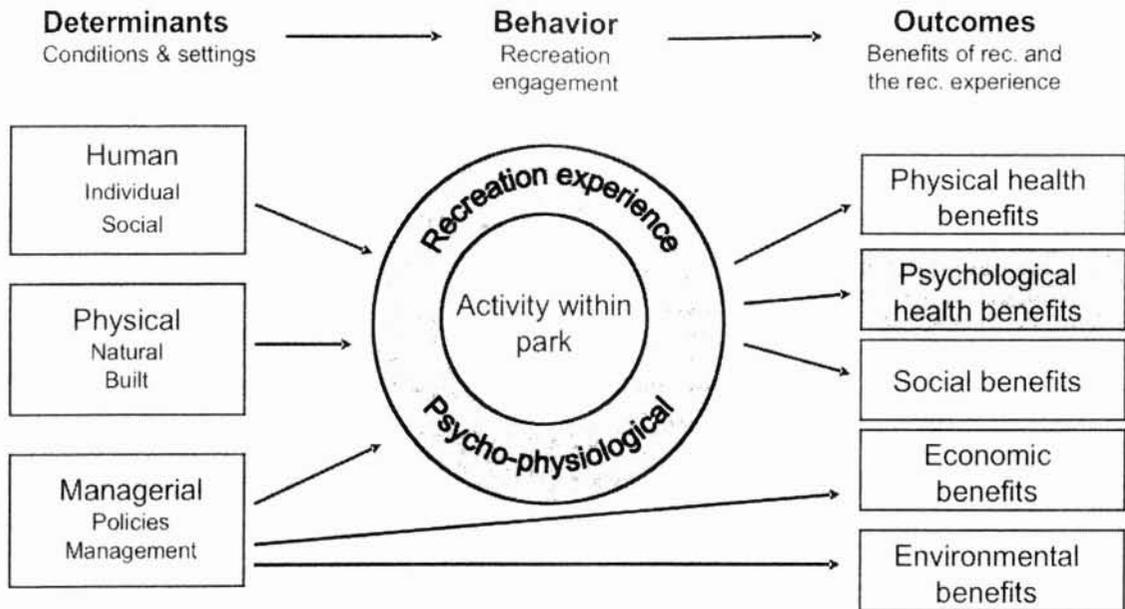


Figure 2—Leisure research model of parks and recreation behavior adapted from Driver and others.¹⁷⁻²⁰

choose among, and use sites as well as the more traditional concept of activity participation. These aspects of behavior, however, are secondary to the key idea of recreation as an *experience*—a voluntary, leisure-time engagement for psychological refreshment.²⁰ Over a series of studies, Driver and colleagues identified the major domains of recreation experience sought by people engaging in a particular activity within a particular setting.^{17,21} These domains included individual factors such as achievement, learning, and risk; social factors such as being with or escaping from peers and family; and environmental factors such as beauty and nature experience. Interestingly, although physical fitness was explored as a domain, it was not seen as helpful in discriminating among the wildland activities and settings they studied because it could be realized in many different ways.¹⁹

With the emphasis of the behavioral component on the psychological nature of the experience, the third major difference in the revised model is that the prime outcomes or benefits of the recreation experience tend to be psychological in nature. Physical health outcomes are of interest, but are mainly described in terms of psycho-physiological stress reduction. In the latter stages of his career, Driver worked with other leisure researchers to take a broader outlook on the benefits that recreation and leisure have for individuals and society. These researchers conceived the mix of physical, psychological, social, economic, and environmental benefits as more equal and interdependent.¹⁸

Model Integration

Contrasting these two models has implications for how future research and program development might help increase physical activity in parks. One set of implications stems from differences in how the two models conceive the relationship between physical/managerial determinants and recreation behavior. The park characteristics

Bedimo-Rung et al. and other public health researchers associate with physical activity (i.e., features, condition, access, aesthetics, safety; Figure 3) are in many cases the same ones that researchers in the parks and recreation sector have found to be important in determining more general measures of recreation behavior. For example, Gobster and Westphal²² found that compatible site features, cleanliness and maintenance, access, aesthetics, safety, and naturalness were important factors in making urban open space successful in the eyes of recreational users, nearby residents, and land managers. In other words, these factors make parks good for many types of visits including both active and sedentary uses.

These model differences suggest two strategies for how managers might increase physical activity in their parks. The first is simply to use this information to make the overall park and supporting neighborhood the best they can be by increasing the total number of park visitors and thereby the proportion who are active users. A second more targeted strategy is to focus on the specific activity areas within the park known to cater to predominantly active use, and then work to improve amenities such as facilities, condition, safety, and aesthetics. It is important to note that this more targeted micro-environment strategy may not succeed if the broader environment is not also sufficiently addressed. If the surrounding neighborhood is not safe or if the park is not reasonably accessible, few people will be motivated to visit regardless of what they intend to do there.

A second set of implications stems from the conception of an active park visit as an amalgamation of recreation experience preferences. Because of the earlier emphasis by Driver and others on wildland activities and settings, little work has been done within the parks and recreation sector to understand what experience preferences are sought by individuals whose primary motivation is to attain a recommended level of physical activity. To better understand this idea, envision activity in a park embedded within overlapping domains of recreation experience preferences (see Figure 4). If one were only interested in the experience of physical fitness, the park environment itself may be inconsequential and could be substituted for a sidewalk or treadmill. Park settings, however, provide experiences for tranquility, communion with nature, and beauty,²³ and evidence is mounting that these restorative qualities may contribute to the enjoyment of (and possibly longer-term adherence to) bouts of physical activity over environments that do not provide these qualities.²⁴ Thus, one strategy is to conduct further investigations into the “bundles” of recreation experiences preferred by different people to meet

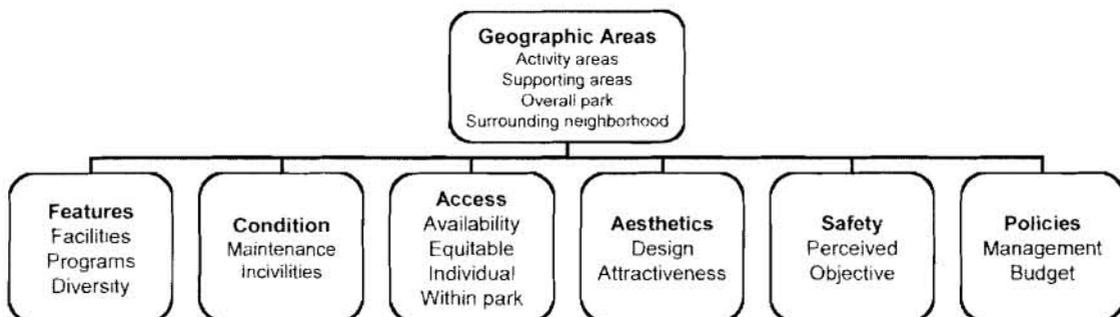


Figure 3—Park characteristics associated with physical activity (from Bedimo-Rung et al.¹⁵).

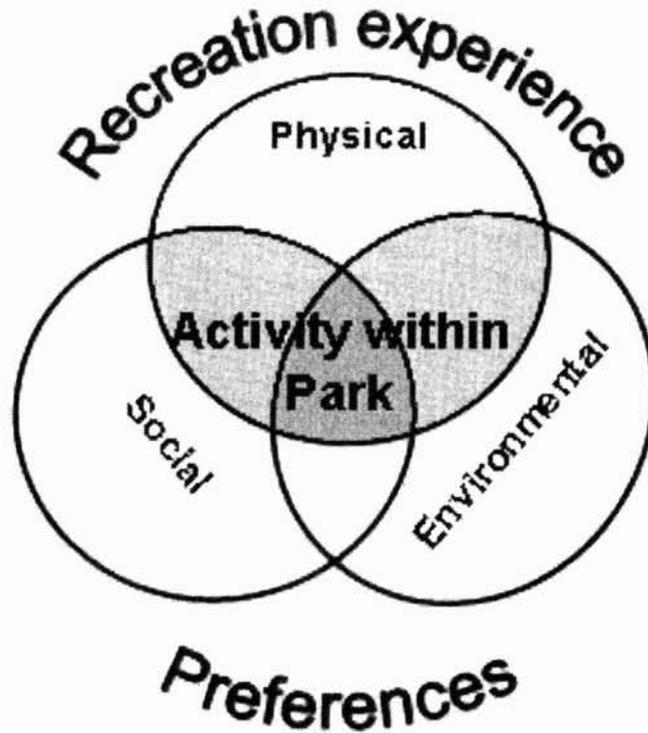


Figure 4—Venn diagram illustrating the overlap of recreation experience preferences in the context of park activity.

physical activity goals and through which types of activities and settings these bundles can be attained.

A second strategy is to examine recreation experiences sought by park visitors engaged in activities *not* commonly thought to have physical activity components to them such as bird watching or volunteering in the park. Here, park programming or site design might be used to build physical fitness experiences into predominantly sedentary activities. Although such a component may not be preferred by everyone, it may provide an attractive alternative to some who would not engage in running or walking around a park trail for its own sake. Purposive leisure experiences such as the UK-based “Green Gym” program²⁵ are increasing in popularity among seniors and others for whom physical activity goals may be secondary to other park use goals such as social and environmental experiences.

A final implication from contrasting the two models relates to how the public health and parks and recreation sectors have commonly viewed the outcomes and benefits of person-environment relationships. Ecologic models from both fields stress the transactive holistic nature of these relationships¹² yet they are often applied within a much narrower focus in emphasizing only the physical health or psychological health outcomes. A strategy that embraces the idea of health as an interaction among physical, psychological, social, economic, and environmental goals might help to spur transdisciplinary collaboration among researchers and practitioners. Thinking back to the Old Faithful example cited earlier, sustainable development plans to reduce air pollution and road paving costs incurred by auto-dominated visitation can also consciously incorporate ways to promote human-powered park touring.

Tailoring Intervention Strategies

Ultimately the success of interventions depends on matching and adapting them to community needs and the existing infrastructure. Some approaches to promoting physical activity may not need much tailoring. The Cochran Shoals example mentioned earlier seems to be a successful prototype for promoting active visits using loop trails and amenities that allow visitors choices among types of active visits and choice in the amount of physical activity during the visit. Understanding such prototypes may lead to relatively standardized approaches to providing active park facilities and programs.

On the other hand, some parks are created because of their uniqueness and so some interventions may require substantial adaptations to fit the special characteristics of a place. Consider a possible intervention to promote active visits to Sitka National Historical Park, which was built to commemorate an 1804 battle between the Tlingits and the Russians. In some months, Sitka receives thousands of cruise ship visitors daily, but few are aware that they can complete a walking tour of both the park and the city in a single day. The ferry that carries visitors from ship to shore provides an ideal situation to test different interventions to promote active visits. In one intervention (conducted in the first tourist season of study), a ranger can meet the ferry at the dock and provide information on the walking tour. The ranger intervention is done in some weeks and not in others, and trail counters monitor the use of park trails each week. In a second intervention (second tourist season), informational brochures can be distributed by the cruise ships and signs direct visitors to walking routes in Sitka. The effect of the informational outreach could be determined by comparing similar weeks in the first season with the second season.

Recommendations

The following recommendations summarize important issues and identify opportunities for collaboration between the public health and parks and recreation sectors to promote active visits:

1. The two sectors should use a common inclusive concept of an active visit that recognizes the wide range of opportunities available to achieve it. It is appropriate to sustain emphasis on the “traditional” type of active visit that involves exercise or sports, but also to increase the focus on “nontraditional” active visits such as those that involve transportation, active recreation, or volunteer work.
2. Transdisciplinary models should be developed that explain all types of recreation experiences in the same model (i.e., including both active and inactive visits), while at the same time provide insights in how to promote active visits in the context of the overall park experience.
3. The two sectors should develop coordinated outreach approaches to inform the public of opportunities for active visits to parks in their community. Collaborations to promote park resources could occur through park events such as charity walks and road races, advertisements in medical clinics, coordinated web sites, and informational outreach linked to National Trails Day. Campaign

slogans (e.g., along the lines of “take two walks in the park and call me in the morning”) could help convey to people the link between parks and physical and mental health.

4. The two sectors should draft a joint mission statement and position paper aimed at practitioners in both sectors that clarifies how promotion of active visits fulfills shared goals of promoting high quality park experiences and promoting health-enhancing forms of physical activity. Because of concerns that practitioners may not appreciate the value of such collaboration, the document could clarify, for example, how promotion of active visits involves striking a balance between conservation and recreation missions of parks and recreation. The document should include case studies and examples of successful interventions and collaborations.
5. For a variety of reasons, destinations in natural settings commonly can only be reached by active travel such as hiking on a trail. While the decision to limit access to active travel promotes physical activity, health promotion has seldom been a major factor in the decision. Having models or case studies where health promotion was a consideration in the decision would be useful. These decisions would be particularly important in urban natural settings, where the tendency is to provide convenient parking and minimize walking distances.
6. “Natural experiments” and other interventions that affect physical activity levels of visitors to parks occur commonly. More collaborative evaluations of natural experiments are needed. Evaluations should take into account the needs of all stakeholders in parks such as local businesses, sports leagues, and nearby residents.

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