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The Role of the Outdoor Recreation Discipline in Public Health: Nature as Preventative Medicine

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The Role of the Outdoor Recreation Discipline in Public Health: Nature as Preventative Medicine

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Abstract

The natural environment is being increasingly recognized as an essential component of human health. This literature review explores this relationship as it occurs in the scholarly literature, with particular emphasis on the ways that outdoor recreation as an academic discipline facilitates human-natural environment interactions. Salient theories from a variety of disciplines are tied to parks, protected lands and wilderness, and global trends are discussed. Ultimately, it is suggested that outdoor recreation and its parent discipline of recreation and leisure studies can be viewed as integral pieces of the emerging wellness model, and that interaction with natural environments may foster stewardship and health.

Keywords: public health, wellness, natural environments, parks

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Introduction

In the past 20 years the United States has seen continued increases in chronic health conditions, many of which are primarily affected by sedentary lifestyle (National Environmental Education Foundation, 2008). In fact, the percentage of U.S. citizens with fair or poor self-rated health has been steadily increasing since 1993 (Centers for Disease Control, 2009a). These chronic diseases, which account for seven out of 10 American deaths, are the most common and costly, but are also the most preventable (CDC, 2009a). For example, the annual health care cost of obesity is estimated to be over 147 billion, and the annual costs of diabetes more than doubled between 1997 and 2002, jumping from \$44 billion to \$91.8 billion (U.S. Department of Health and Human Services, 2002). These are but two examples of high-cost diseases that are often preventable and lifestyle related. There is a clear need to change approaches toward preventative medicine, to lower health care costs, and to improve quality of life.

This movement towards preventative care encompasses that which recreation and leisure departments and professionals have espoused for decades (e.g. Godbey, 1997). While recreation and leisure services on the whole provide a wide range of health-related benefits, this paper specifically focuses on the benefits of outdoor recreation and contact with natural environments. For example, Ewert (2003) identifies several variables that have been identified as both outdoor recreation outcomes and well-being barriers to illness: hardiness, relaxation, self-determination, physical exercise, self-concept, social support and absence of pollution. In addition to the health-related outcomes of the activities themselves, outdoor and adventure recreation/education also plays a role in providing a linkage between human health and the natural environment. An abundance of research has made it clear that the natural environment is positively related to human health (Frumkin, 2001; Kimbell, Schuhmann, & Brown,

2009; Louv, 2005). This is an important consideration both in training future stewards of public lands and in creating programming and activities that take place in the outdoors—two key aspects of an outdoor recreation curriculum. Understanding the role of natural environments in human growth, development and well-being is a multi-disciplinary field of great importance, and is certainly an area in which the discipline of outdoor recreation can be a key player.

In an era of declining health, increasing health care costs, and increasing interest in preventative, alternative and complementary medicines and therapies, the utilization and protection of the natural environment as made possible by the parks and recreation discipline is essential. Using the natural environment as a means of improving health has the potential to cut health care costs while increasing overall wellness and enhancing healing (Poudyal, Hodges, Bowker, & Cordell, 2009). With this in mind, this paper strives to elucidate the role of outdoor recreation as a type of preventative medicine and a protective factor against chronic disease and illness. The paper begins by developing a working understanding of health and wellness, followed by a discussion of the role of the natural environment in human health, and finishes by considering global trends and recommendations for future practice.

Health: Moving towards a wellness model

The World Health Organization (WHO) defines health as “the state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (1948). This definition has been in use for more than half a century, yet for much of the recent history of the U.S., health has been mainly regarded in the allopathic tradition, based on the diagnosis and treatment of physical conditions, often resulting from disease or deficiency (Montes, 1996). While emphasis on promoting wellness over treating illness has become increasingly popular in recent decades, it is slow to gain traction in the medical community. In recent decades a

number of scholars have proposed wellness models ranging from Dunn's (1961) High Level Wellness Model, to the Wheel of Wellness Model (Hattie, Myers, & Sweeney, 2004; Myers, Sweeney, & Witmer, 2000). The Wheel of Wellness model was developed as a means of observing and measuring healthful behaviors as opposed to observing and measuring disease or dysfunction. It is within this framework that engagement in outdoor recreation may be viewed as a health-promoting activity. However, the Wheel of Wellness, like many other wellness models, pays little attention to one's environment in general, or to interaction with the natural environment specifically. Many scholars have traced connections between health and the environment back to Nightingale's Environmental Theory, which emphasizes the importance of fresh air, fresh water, effective drainage, cleanliness, and light (especially sunlight) to health and healing (Libster, 2008). While these recommendations seem to have been adopted within the confines of hospitals and medical complexes, to a large extent they have been adopted in artificial ways. In addition, the importance of fresh air, water and sunlight in day-to-day life seem to be increasingly neglected.

This may be an especially crucial consideration at a time when Americans are able to live lifestyles that involve little to no contact with the natural environment, in a culture that in many ways discourages time outdoors (Mitten, 2009). In developed nations worldwide, societies are trending towards decreased contact with nature and significantly less physical activity than was common 50 years ago. Pretty, Griffin, Sellens, & Pretty (2003) report that Europeans are expending an average of 500 kcal less per day, the equivalent of running a marathon each week.

The U.S. healthcare system needs to move towards a wellness model of health, based not only on prevention, but also on general aspects of well-being. Utilizing the natural environment can not only provide opportunities for a more physically fit and

psychologically well public, but the resultant changes in attitudes toward nature will create a synergistic and sustainable system of health and well-being for our citizens and our planet (Pretty, et al., 2003).

Recreation, Leisure and Health

The discipline of recreation and leisure studies has historically been focused on the well-being of the individual (Godbey, 1997). As the focus of the U.S. health care system changes, recreation and park services will continue to gain importance in terms of their contributions to a healthy lifestyle. Research has shown that recreation and leisure are related to both general health and psychological well-being (Caldwell & Smith, 1988; Iso-Ahola, 1988; Tinsley & Tinsley, 1986). Coleman and Iso-Ahola (1993) identified the role of leisure in creating social support networks and in generating dispositions reflecting self-determination as a means of buffering against life stress and resultant illness. Ewert and Kessler (1996) identified psychological and physiological benefits of recreation participation, including anxiety reduction, lessening of depression, improved psychological well-being, social interaction, self-confidence, stress reduction, self-determination, cardiovascular health, orthopedic health, and maintenance of weight. Driver, Brown and Peterson (1991) identified the benefits of outdoor recreation, specifically, as including psychological and physical benefits of exercise, social support and companionship, mental engagement, improved self-concept, value clarification, and creative engagement/expression. The medical community generally agrees that regular exercise, proper nutrition, social support, stress management, substance abuse avoidance, and economic security are behavioral components that lead to health promotion and maintenance (Montes, 1996). Of these, all but economic security have been linked to outdoor recreation and the use of natural environments (Coleman & Iso-Ahola, 1993; Pretty, et al., 2003; Ulrich, 1984).

Outdoor recreation is being increasingly looked to as a means of reconnecting youth with na-

ture and contributing to healthy, active lifestyles (National Outdoor Recreation Research and Education Steering Committee, 2007; Selin, Hunt, Blanche, & Thompson, 2009). More specifically, outdoor recreation may serve as the link between forests and other types of natural environments and public health, which may ultimately lead to increased well-being of both the general population and our public lands (Selin, et al.). Not only is outdoor recreation beneficial in these ways, but it has also emerged as a “significant economic stimulus for agencies, communities and regions struggling to chart their way in uncertain financial waters” (Selin, et al., p. 346). This makes the argument for outdoor recreation services even stronger and boosts the demand for trained professionals.

In a day and age of re-conceptualization of purpose in response to a changing society, and of increasing specialization in both careers and academic programs, the mission of many park and recreation departments has become fuzzy (Godbey, 1997). Godbey argues that the solution to this is that we need to think of park and recreation services as being primarily concerned with improving wellness. While this may not be a major paradigm shift for those directly related to the profession or the academic departments therein, it may require a change in the way we market and present our field to others.

As we look at the services provided through an outdoor recreation program—natural resource management, interpretation, outdoor recreation and adventure programming, camp management, etc.—it becomes clear that perhaps one of the most direct, but often overlooked, links to human health is that of the natural environment. Our programming focuses on the natural environment at every level, from preservation and protection to utilization and stewardship. The idea that the outdoors is beneficial is something that most people who serve in this profession or study in this major intuitively know, but in the last 20-30 years it has become an idea well-supported in the literature and scientific studies

(Ewert, 2003; Frumkin, 2001; S. Kaplan, 1995; Maller, Townsend, Pryor, Brown, & St Leger, 2006; National Outdoor Recreation Research and Education Steering Committee, 2007; Pretty, et al., 2003; Ulrich, Dimberg, & Driver, 1991). Further support for this idea is provided by the growing network of advocates, educators, writers and conservationists who have formed agencies and initiatives such as the Children and Nature Network, the Children and Nature Initiative, the U.S. Play Coalition and the No Child Left Inside Coalition, in an effort to get more children outside.

Natural Environment

Contact with the natural environment is good for health (Frumkin, 2001; Frumkin & Louv, 2007; Maller, et al., 2006; Pretty, et al., 2003; Ulrich, et al., 1991). For example, time spent in natural environments has been shown to have positive effects on childhood obesity (Bell, Wilson, & Liu, 2008; Committee on Public Education, 2001), hypertension (Pretty, Peacock, Sellens, & Griffin, 2005), Attention Deficit Disorder (ADD)/Attention Deficit Hyperactivity Disorder (ADHD) (Kuo & Taylor, 2004; Taylor, Kuo, & Sullivan, 2001), life stress (Wells & Evans, 2003), asthma (Lovasi, Quinn, Neckerman, Perzanowski, & Rundle, 2008), myopia (Ip, Rose, Morgan, Burlutsky, & Mitchell, 2008), recovery from surgery (Ulrich, 1984), pain reduction (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003), reduction of health inequalities (Mitchell & Popham, 2008), and increased life expectancy (Poudyal, et al., 2009).

Howard Frumkin, a medical doctor and the director of the National Center for Environmental Health and Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) at the CDC, is one of the leaders in the medical field in this area. He urges us to look beyond toxicity to the positive effects of the natural environment, which he divides into four categories: animals, plants, landscapes and wilderness (Frumkin, 2001). Frumkin has recently joined forces with Richard Louv, a well-known author

whose book, *Last Child in the Woods*, significantly raised public awareness of the growing disconnect between American children and nature. Louv and Frumkin argue for the value of protected lands such as forests and parks as a key element in health promotion and disease prevention (2007). The work in this area is both significant and varied. For the purposes of this paper this work is divided into two major categories: physical health and well-being, and psychological health and well-being, with the latter encompassing social and spiritual aspects.

The Natural Environment and Physical Well-being

The U.S. is currently facing an obesity epidemic. According to the CDC (2010), 35.7% of American Adults and 17% of children are obese. Additionally, 32% of children are overweight, largely because of a lack of physical activity, which is often affected by the environment in which children live (Committee on Environmental Health, 2009). The CDC (2009b) recognizes parks not only as a venue for physical activity, but also for the social, psychological and restorative effects of the natural environment. The American Academy of Pediatrics also calls for communities to include parks as a means of promoting free play for children, which can help promote more active lifestyles (Committee on Environmental Health, 2009).

While it is widely recognized that exercise is important to health and well-being, recent research has looked at the additional benefits that may be imbued by green exercise (Mackay & Neill, 2009; Pretty, et al., 2003). Green exercise is generally referred to as physical activity in natural settings, and while a relatively new research concept, it is something that has been going on for a very long time (Neill, 2009). It has been hypothesized that there is a synergistic benefit in exercising while being exposed to nature, thus resulting in greater benefits than either nature exposure or physical activity can instill individually (Pretty, et al., 2003).

The Natural Environment and Psychological Well-Being

Psychological well-being can encompass many things, including cognitive functioning, attention restoration, stress reduction, self-efficacy, self-esteem, spirituality, social networks, personal identity, motivations, and so forth. In terms of connection to the natural environment, the work in this realm has been driven theoretically in three major areas: attention restoration theory (ART; R. Kaplan & Kaplan, 1989; S. Kaplan, 1995), psycho-evolutionary theory (PET; Ulrich, 1984; Ulrich, et al., 1991), and the biophilia hypothesis (Kellert, 1993; Wilson, 1984).

ART focuses on directed attention, which requires mental effort and can be fatigued from overuse. Directed attention fatigue can lead to such negative consequences as inability to focus, performance errors, inability to plan, social incivility and irritability (Herzog & Strevey, 2008). Restorative settings enable the recovery of directed attention fatigue, with natural environments often thought to be the best example of restorative settings (R. Kaplan & Kaplan, 1989). In fact, studies utilizing attention restoration theory have shown better performance on attention demanding tasks by people exposed to natural settings (R. Kaplan, 2001; S. Kaplan, 1995; Taylor, et al., 2001). The importance of nature near the home has also been emphasized, with improved interpersonal relations, effectiveness at handling major life issues, and feelings of peacefulness for people who live near nature or have views of nature from the home (R. Kaplan, 2001; Taylor, Kuo, & Sullivan, 2002). The authors have also suggested that ART may be related to improved self-control, reduced ADD symptoms, mood and memory.

PET, on the other hand, emphasizes emotions and how nature reduces stress reactions. In this case, stress is considered a physiological response to situations that threaten well-being, and stress recovery occurs in settings that evoke interest, pleasant-

ness and calm, once again, most often natural environments (Ulrich, 1984). Studies utilizing PET suggest that nature may be therapeutic in part by providing positive distractions that reduce stress responses (Ulrich, et al., 1991). For example, an early study indicated that recovery time decreased for hospital patients who had rooms with natural views following gall bladder surgery (Ulrich, 1984).

PET is related to the biophilia hypothesis in that they both invoke human kind's historical relationship with the natural environment as creating an ingrained affinity that is key to our well-being. Biophilia was originally defined by Wilson as "an innate tendency to affiliate with natural things" (Kahn & Kellert, 2002, p. 1). Biophilia further suggests that contact with nature promotes well-being as well as an increased understanding of nature, which can lead to stewardship beliefs and behaviors. Conversely, disconnections from nature are harmful to the individual, as well as to societies and cultures (Pretty, et al., 2003). Kellert (1993) further links biophilia to quality of life in suggesting that "the human need for nature is linked not just to the material exploitations of the environment but also to the influence of the natural world on our emotional, cognitive, aesthetic and even spiritual development," (p. 42).

The idea of the natural environment being instrumental in attention restoration is not new. In the 1860's Frederick Law Olmstead, the landscape architect who was responsible for the planning of Central Park, was certainly aware of this phenomena, as evidenced in the following quote:

the enjoyment of scenery employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it; and thus, though the influence of the mind over the body, gives the effect of refreshing rest and reinvigoration to the whole system (Olmstead, 1865 as cited in Nash, 2001, p. 106).

These theories serve as the psychological underpinnings for understanding why natural environments are restorative. Further research has investigated how these theories are useful in a variety of settings, including gardening, adventure programs, camps, therapeutic outdoor programs, parks, and urban green spaces (e.g. Frumkin, 2001; Maller, Townsend, Brown, & St Leger, 2002).

Another idea worthy of attention is that of nature deficit disorder, first coined by Richard Louv in 2005. While not a scientific theory, nature deficit disorder encompasses the idea that children of today's generation are not spending nearly as much time playing outside as those of previous generations (Louv, 2005). This phenomenon has been created due to the convergence of several different societal trends, including more people in the cities, less access to green space, parental fears towards letting their children play outside alone, less recess time in schools, more specialty camps (i.e. computer camps or soccer camps instead of the traditional sleep-away camps of years past), and the lure of technology. Louv (2005) proposes that the only way to combat these phenomena and to get our children back into nature is to provide purposeful activities, ranging from family trips to the local parks to sleep-away camps and environmental education programs in the schools.

Furthermore, Louv cites a cadre of scientific studies (e.g. Clay, 2001; Kuo & Taylor, 2004; Taylor, et al., 2001, 2002; Wells & Evans, 2003) which have pointed to a relationship between green space and natural play and the reduction in ADD and ADHD symptoms. As the most common neurobehavioral disorder of childhood (American Academy of Pediatrics, 2000), this is certainly an area worthy of our attention. Kuo & Taylor (2004) found that green outdoor settings appeared to reduce ADD/ADHD symptoms, and proposed that daily doses of green time might supplement medications and behavioral approaches. As the natural environ-

ment is widely accessible, inexpensive, non-stigmatizing, and free of side effects, this could become a critical area for further inquiry (Kuo & Taylor). This area has been labeled a serious public health problem by the CDC (2007) and holds promise as something that can be addressed through the use of outdoor recreation services.

ADD/ADHD is but one of many practical applications for these theories. We are only beginning to fully understand the implications of utilizing the natural environment as a purposeful means of health promotion and disease prevention. Integral to these theories and to the associated outcomes is the existence and protection of the natural environments themselves—another essential role of the outdoor recreation department.

Parks and Protected Lands

The provision of parks is often the key to affording citizens contact with nature (Maller, et al., 2006). Parks have been shown to be important for a variety of reasons. West and Crompton (in Ewert, Hollenhorst, McAvoy, & Russell, 2003) suggest that parks can be therapeutic because (a) they represent something different, (b) using park lands demands initiative and action, (c) results are immediate, (d) users of park lands are often part of a team or group, and (e) the natural environment is both enticing and interesting.

Poudyal et al. (2009) found that the presence of state parks, outdoor recreation facilities, and federal wilderness and forests lands in counties contributed to higher life expectancies. According to these authors, life expectancy is a major indicator of the health and well-being of society, strengthening the argument that natural environments are good for health and quality of life. Because of the benefits afforded by parks and protected lands to the citizenry, professionals and academics from various disciplines are beginning to advocate conservation as a means of public health promotion (Frumkin & Louv, 2007; Maller, et al., 2006; Selin, et al., 2009).

Wilderness

According to the United Nations, 2008 marked the year that more people lived in cities than in rural areas worldwide (Martine & Marshall, 2007). The global population is quickly becoming an urban one, with increasing disconnection from the natural world that historically has been such an important component in human life. This makes the preservation of wilderness and other wild lands of utmost importance. The U.S. has an important history of wilderness preservation, perhaps marked most notably by the Wilderness Act of 1964, but reaching much further back into history.

For many years, people have been extolling the virtues of wilderness and the natural environment alike. According to Aldo Leopold, a wilderness setting, in theory, should be our best model of ecological perfection (Leopold, 1949). John Muir, a noted preservationist worked tirelessly to get people to see these values for themselves and ultimately to support setting aside areas of wild lands where they would remain undeveloped. Muir (1901) knew that these areas were worth more to civilization than simply their economic value in terms of the tangible resources they could provide:

thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life (p. 56).

With these accolades in mind, it is prudent to examine the psychological, spiritual and physical health benefits of natural environments in terms of a wilderness context.

A major contingent of wilderness users are those who participate in organized wilderness or adventure programs. These programs take paying clients into wilderness areas with the goal of personal

development, education, therapy or healing (Freise in Hendee & Dawson, 2002). Wilderness managers indicate that this type of use is increasing; a mixed blessing when one considers the increased environmental degradation as well as the increased opportunity for people to benefit from wilderness and protected lands. However, Ewert (2003) identified a connection between outdoor recreation experiences and stewardship. This relationship posits the alteration of attitudes and values towards stewardship as a result of direct experiences in wilderness type environments. In 1998 there were more than 230 personal-growth programs and 38 wilderness therapy programs that were identified as using wilderness lands, and this number is considered to be continuously growing (Dawson, Tangen-Foster, Friese, & Carpenter, 1998). This, of course, is in addition to the millions of visitors to wilderness who come on personal trips either solo or with friends and family.

One of the major questions raised in terms of wilderness experiences is what is the importance of doing activities versus simply being in the wilderness environment? Several researchers have proposed that a major factor in the efficacy of wilderness programs is simply the contact with the natural environment itself (Bardwell, 1992; Mitten, 1994). It has also been suggested that these programs work to focus the power of nature and that highlighting this relationship could work to further enhance outcomes (Mitten, 2009).

Theoretically, wilderness experiences may be especially beneficial because they entail entering the landscape rather than viewing it (Frumkin, 2001). This immersion may lead to a sense of “‘wilderness rapture,’ including feelings of awe, wonder, humility, comfort in and connection to nature, increased appreciation of others, and a feeling of renewal and vigor ” (Cumes, 1998 in Frumkin, 2001, p. 237). The idea of rapture is similar to the transcendent experience, as described by Williams and Harvey (2001) in relation to forest environments. Both of these concepts suggest a spiritual connection

that transpires in a wilderness setting. According to Williams and Harvey (2001), characteristics of a transcendent experience may include aspects such as a strong positive affect, overcoming limits, a sense of union with the universe, absorption in the moment and a sense of timelessness. This study ultimately identified six different types of forest experiences, two of which--diminutive and deep flow--can be classified as transcendent. All six classes of experience however, are posited to be related to other theories currently used to describe the outdoor recreation experience, including flow (Csikszentmihalyi & Csikszentmihalyi, 1990), restorative experience (R. Kaplan, 1984), and peak experience (Maslow, 1962).

Studies have also shown a number of psychological benefits to be connected with wilderness experiences (Davis, 2004; R. Kaplan, 1984; Miles, 1987; Scherl, 1989; Weinstein, Przybylski, & Ryan, 2009). Kaplan emphasizes the peace and simplicity of life, which allows for reflection and may ultimately transfer back to everyday life. Miles emphasizes the healing aspects of the wilderness environment, encompassing not only psychological benefits but spiritual, emotional and physical as well. More recent literature has focused on specific dimensions of psychological well-being, such as the connection between immersion in natural environments and intrinsic aspirations (Weinstein, et al., 2009).

Still, it is important to note that much of the existing research is difficult to interpret, primarily because of the quality of research design in existing studies and the number of confounding variables that occur when studying a phenomenon of this type (Frumkin, 2001). To combat this, Frumkin calls for a focused research agenda and collaboration amongst academics and professionals in varying fields.

Global Trends

While this paper has focused primarily on the U.S., many of our health problems are shared by other developed nations, many of whom have already begun to implement recreation and natural environment based initiatives to promote health and

decrease disease. In the United Kingdom, the Healthy Futures Programme and the Natural England program have incorporated the benefits of the natural environment into nation-wide health-promotion endeavors. Similarly, the Healthy Parks Healthy People initiative in Australia and New Zealand recognizes the social, cultural, environmental and economic value of parks (Parks Forum, 2008).

It is important for us to recognize global trends as well as changes in diversity and demography within our own country. Public land management has a historical base in a culture that may not be the majority within the next 40 years (Bruyere, Teel, & Newman, 2009). Thus, our understanding of the benefits of public lands and the ways in which the general public interacts with these spaces needs to continue to grow and change.

Recommendations

One of the simplest, but probably most profound ways of providing contact with the natural environment is through the utilization of urban green spaces, parks, and purposeful landscaping. However, as Louv (2005) points out, the existence of green spaces may not be enough to ensure their utilization. The provision of purposeful programming through entities such as camps, nature centers, environmental education programs, and schools will also help to create connections with the natural environment. This idea is supported by a number of prominent health agencies in the U.S., including the Robert Wood Johnson Foundation, which has currently allocated upwards of 15 million dollars for research on environmental factors that support active living (Robert Wood Johnson Foundation, 2009).

Research indicates that early life connections may lead to stronger connections over the lifespan and a greater propensity to spend time outdoors (Kahn & Kellert, 2002; Kellert, 2009). More time spent outdoors, especially engaged in free play, is thought to lead to a number of desirable health behaviors and outcomes, including not only physical activity, but also social, emotional, and cognitive

development (Burdette & Whitaker, 2005). Outdoor recreation, as both an academic discipline and a profession, has long encouraged this type of behavior. The incorporation of current research may help us to promote health while simultaneously attending to the various other goals of the profession, including environmental protection, education, and land management.

The outdoor recreation discipline will benefit from positioning itself as a health promotion entity. An enhanced understanding of health of wellness amongst professionals in the outdoor recreation fields will be a critical component to this mission. In addition to further research in this area, academic departments must purposefully educate their students in the connections between human health and the natural environment, and academics should continue to undertake research in this area, especially as it applies to parks and recreation. Ultimately, these steps represent a movement towards public education of the myriad benefits of outdoor recreation and increased effort to involve a diverse array of people.

Conclusion

It is clear that contact with nature is important and that recreation and leisure services can contribute to well-being, but what can we do as a profession to continue to contribute to this steadily growing and unquestionably important field of study? We can make our cities more livable by promoting human interaction with the natural environment, and integrating nature into everyday life. We can continue to promote active engagement in meaningful activities, and finally, we can better document the relationships between health and the natural environment and continue to add to the growing body of literature on this topic. As our need to interface with natural environments continues to diminish due to modern technology, our need to create purposeful human-natural environment interactions will increase.

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