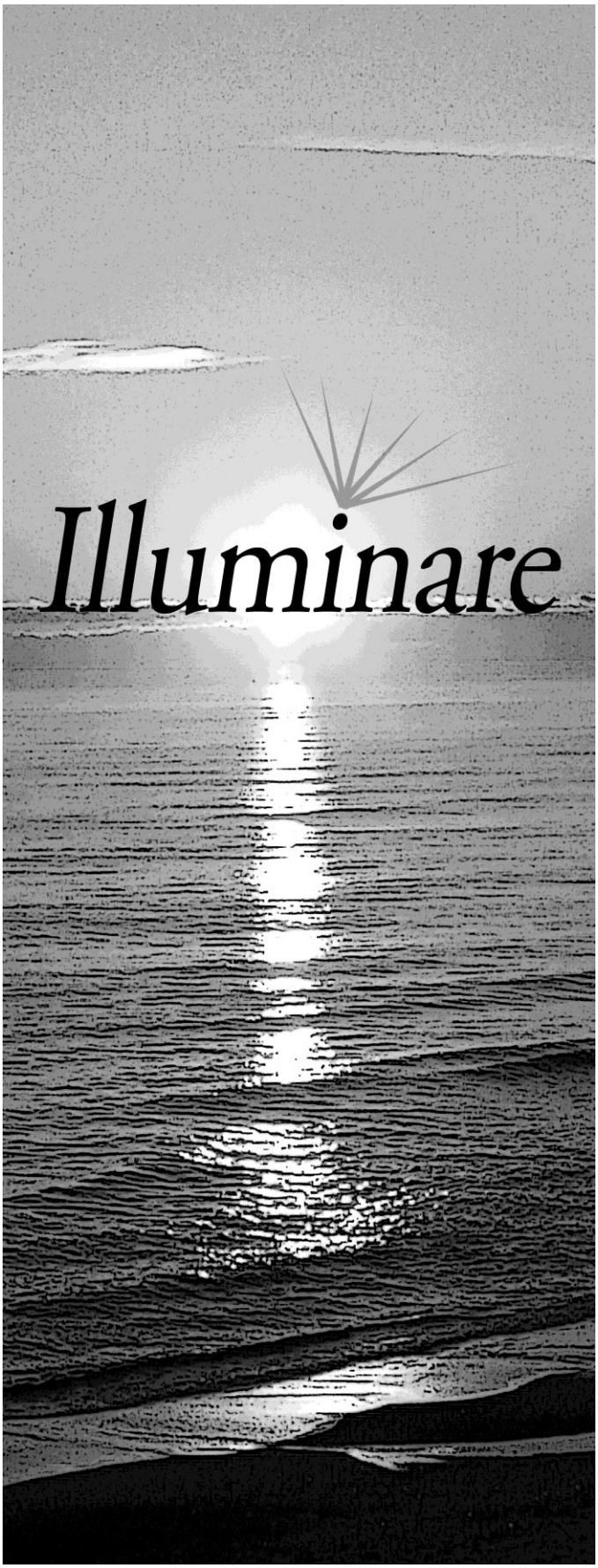

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The Role of Outdoor Recreation in Promoting Human Health

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The Role of Outdoor Recreation in Promoting Human Health

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Abstract

This literature review demonstrates how outdoor recreation in urban, backcountry, and program settings can enhance human health. This study begins with a discussion about sedentary lifestyles and constraints hidden behind three nationwide surveys, which implies that outdoor recreation is a common life experience enjoyed by Americans. Benefits and opportunities are subsequently explored, including factors affecting increases in park use, as well as health promotion through interaction with nature and related outcomes of outdoor adventure programs.

Keywords: sedentary lifestyles, urban and neighborhood parks, nature, organized adventure activities

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Introduction

The National Survey on Recreation and the Environment (NSRE; 2000-2002) reveals that significant numbers of people (about 202 million people aged 16 or more) had attended at least one outdoor event during the previous 12 months. In addition, the fifty activities, classified as land-based, water-based and snow/ice-based, show diversity of activity. According to these findings, outdoor recreation is a standard life experience. Nonetheless, although Americans participate in a number of outdoor recreational activities, the frequencies and proportions of participation are not balanced (Cordell et al., 1999). For instance, walking is the most frequent activity (i.e. 108 days per person) due to low cost and convenience, such as its ability to provide travel to work places. Participation in other activities, on the other hand, may be limited by travel distance or financial capacity. Moreover, walking enthusiasts, who only represent 21.4% of the population according to NSRE 1994-1995, comprise 76% of total walking days, indicating that a large portion of the population's walking days are below average.

The Outdoor Foundation (The Outdoor Foundation, 2009) reports on issues and trends of outdoor recreation. Approximately 48.6 % of Americans aged 6 or more participate in outdoor recreation, taking 11.16 billion outings. However, 43% of 135.9 million participants[i] attended outdoor recreation activities less than once every two weeks in 2008, and the percentage of participation for youth aged 6 to 17 years old dropped 16.7% in total over a three year period. This decline indicates a trend of physical inactivity. This report also indicates that outdoor recreation participation can be constrained by the same factors found in NSRE. Another distinctive factor worth further research is the association between an individual's life stage and leisure constraints (Son, Mowen, & Kerstetter, 2008). For example, an adolescent may be encouraged to participate in an activity alongside his peers. When reaching early adulthood, this individual may have to consider whether outdoor recreation is affordable.

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Fish and Wildlife Service & U.S. Census Bureau, 2006) presents information on participation in wildlife-related recreation. As in the other two surveys, wildlife-related recreation also reports massive numbers of participants (87.5 million people) and economic impacts. In 2006, $122.3 billion was spent on wild-life recreation. Participation has grown by approximately 5 million people since 2001, possibly because of a noticeable increase in wildlife watching. Despite this specific increase, the overall population, participation days, and expenditures of fishing and hunting have been on a gradual decline since 1996 (Fish and Wildlife Service & U.S. Census Bureau, 2006). One study indicates that anti-hunting attitudes and preferences, costs, commitments to life necessities, and accessibility to hunting grounds are possible constraints of hunting (Wright, Rodgers, & Backman, 2001).

As shown in the above discussion, these three nationwide surveys present similar issues First, types of and places for outdoor recreation are diverse, and federal and state lands reserved for recreation use support such diversity (Ibrahim & Cordes, 2002). Second, outdoor recreation attracts a great number of participants and carries impressive economic influence. Third, even if opportunities for recreation seem sufficient, some people or communities will still face inequity of accessibility and quality (Floyd, Taylor, & Whitt-Glover, 2009).

Benefits and Opportunities

The reports discussed above also provide information in terms of enhancing outdoor recreation participation. First, human ecological systems (Bronfenbrenner, 1977; Gobster, 2005) can become protective factors facilitating outdoor recreation participation. According to the Outdoor Foundation, parents are the most influential factor in children's participation, compared to other factors such as

school and peers. In addition, participation in certain gateway activities, such as fishing, hiking, jogging, camping, and mountain biking, may lead to learning fundamental skills in outdoor recreation and further participation (The Outdoor Foundation, 2009). Outdoor recreation enables participants to discover intrinsic rewards such as pleasure, interest and skill development, encouraging them to pursue more challenges (Csikszentmihalyi, 1990).

Studies in outdoor recreation show that both the environment, whether urban parks or backcountries (Henderson & Bialeschki, 2005; Ho, Payne, Orsega-Smith, & Godbey, 2003), and organized programs provide numerous health benefits through careful consideration of participant needs (Hattie, Marsh, Neill, & Richards, 1997; McAvoy, 2001). Therefore, the health benefits and opportunities offered by outdoor recreation should be further discussed.

Urban and Neighborhood Parks

The presence of a city park or trail can be beneficial to the overall health of residents. Orsega-Smith, Mowen, Payne, and Godbey (2004) found that the interaction of stress and park use is associated with body mass index (BMI) and systolic blood pressure. For people with high stress levels, awareness of the healthy benefits of a park may direct them toward healthier behaviors (Walker, 2009). Moreover, the presence of neighborhood parks is also related to the level of physical activity for children (Floyd, Spengler, Maddock, Gobster, & Suau, 2008b).

Urban and neighborhood parks facilitate psychological and social health. According to Tinsley, Tinsley, and Croskeys (2002), urban parks promote positive outcomes rooted in catharsis, pleasure seeking, exercising, gaining a sense of familiarity, interacting with others, self-enhancement, and altruism for senior adults. Similar psycho-social benefits have also been determined, stemming from experiences in solitude and an improved appreciation of nature (Hung & Crompton, 2006). For female users, a safe park provides social and emotional support, leading to increased physical activities. In addition, an urban park allows females the choice to connect with or be away from family to care for themselves (Krenichyn, 2004).

Besides psycho-social benefits, urban parks also serve environmental and educational purposes. For example, park users gain knowledge about wildlife and have more positive environmental attitudes than non-users (Randler, Höllwarth, & Schaal, 2007). Wolch and Zhang (2004) suggest that attitudes toward nature are linked with time spent in a natural environment such as an urban beach. Individual, social, and environmental factors all affect frequencies and intensities of park use and physical activities there. For individual factors, people with high stress levels tend to stay longer than their counterparts with low stress levels (Orsega-Smith et al., 2004). Age and gender also influence the intensity of physical activities (Floyd et al., 2008a). Gender accounts for varied perceptions on the importance of specific characteristics of a park. For example, females consider a traditional park landscape, the presence safety and maintenance facilities, and ethnicity sensitivity (e.g. bi-lingual signs) as critical indicators for park use (Ho et al., 2005). Environmental factors such as shade, type or structure of activities (Floyd et al., 2008a), temperature (Gobster, 2005) are associated with levels of physical activities. These criteria provide park managers and designers solid evidence of how to build and integrate a park into a neighborhood effectively and efficiently (Godbey, Caldwell, Floyd, & Payne, 2005).

Nature

Incorporating natural elements into a recreational environment can be mentally restorative for human beings. Two primary theories, Attention Restoration Theory (ART; Kaplan, 2001) and Psycho-evolutionary Theory (PET; Ulrich, Simons, & Miles, 2003), have been applied broadly to examine positive impacts of greenness on residents, park users, and patients. ART emphasizes that direct attention is

a limited resource used to process information and other cognitive works. A prolonged use of direct attention leads to fatigue; thus, a restorative experience is needed to regain capacity (Kaplan, 1995). Nature is mentally restorative because of four characteristics: being away, fascination, extent, and compatibility. The assumption is that an individual visiting nature is able to escape from needs requiring direct attention. Nature itself is interesting and thus does not require effort to attract attention. In addition, a restorative environment must contain the individual and fit his behaviors (Kaplan, 1995; Scopelliti & Giuliani, 2004). PET emphasizes the effect of nature on stress reduction. This theory has been established on the assumption that human beings have a genetic tendency to affiliate with nature, while they do not have such a connection with urban environments, which are full of stimulation and uncontrollable issues that cause stress (Ulrich, 1984; Ulrich et al., 2003).

By employing these two theories, scholars use actual (e.g., through a window or in the physical environment) or simulated (e.g., slides) natural scenes to examine people's responses. General benefits, including attention restoration and stress reduction, have been supported (Berto, 2005; Chang, Chen, Hammitt, & Machnik, 2007; Kaplan, 2001; Hartig, Mang, & Evans, 1991; Ulrich, 1984). Viewing natural scenes also indicated improvement in physiological responses such as muscle tension, brain waves, pulse, and heart rate (Chang et al., 2007; Ulrich, 1984) and cognitive performances (Berto, 2005; Bodin & Hartig, 2003; Hartig et al., 1991). With regard to psychological and social benefits, viewing natural scenes enhances psychological well-being (Kaplan, 2001), satisfaction with neighborhoods (Coley, Sullivan, & Kuo, 1997; Kaplan, 2001), and emotional regulation (Korpela, Hartig, Kaiser, & Fuhrer, 2001) and reduces aggression (Kuo & Sullivan, 2001) and anger (Kweon, Ulrich, Walker, & Tassinary, 2008). In addition, greenness is also associated with alleviation of symptoms of attention deficit disorder or ADD (Faber Taylor, Kuo, & Sullivan, 2001) and achievement of transcendent experiences (Williams & Harvey, 2001).

Reviewing studies regarding environmental psychology and behavior prompts several inspirations. First, aside from the restorative effects of nature, Kaplan (2001) suggests that nature-based activities such as hiking or biking are associated with effective functioning, and gardening provides opportunities to interact with neighbors. Faber Taylor et al. (2001), moreover, find that a green play setting may encourage a more positive influence on the severity of ADD than an indoor setting. Parents in this study reported greater student involvement in school work and activities requiring high levels of attention such as fishing after green play. In addition, nature-based activity may have therapeutic effects (Ewert, Hollenhorst, McAvoy, & Russell, 2003). Nature provides an unfamiliar and isolated environment that challenges its users, forcing them to master skills and work together to satisfy a variety of needs. During this process, users may gain a variety of positive outcomes such as improved fitness, intrapersonal and interpersonal skills, and hardiness. These outcomes may be great assets when facing adversity and stress in reality as well as provide meaningful experience and build life-long interest (Delle Fave et al., 2003; Ewert & Hollenhorst, 1989).

Second, as nature presents its effects on mental restoration, how to incorporate natural elements into recreation areas may need to be considered. For example, a savannah or traditional park landscape is highly preferred because of its levels of tranquility (Herzog & Chernick, 2000). Tranquility refers to openness of space and a well-maintained environment, providing a sense of safety. In fact, a study conducted by Ho and colleagues shows that females view a traditional park landscape and logistics as important characteristics that attract them to urban parks (Ho et al., 2005). Also, other

natural elements can carry great significance to human beings. The presence of trees may offer both a sense of peace (Kaplan, 2001) and a location for social gathering (Coley et al., 1997). In addition, a water scene is considered highly mentally restorative (Felsten, 2009; Purcell, Peron, & Berto, 2001). In fact, natural settings with trees and water are the most favored facilities for senior park users regardless of ethnicity (Tinsley et al., 2002).

Third, objective measures are often introduced into these studies, providing solid evidence of the effect of nature instead of merely offering subjective perceptions. In Ulrich's study (1981), he examined whether natural scenes ease arousal or heart rates by performing EEGs and EKGs. In another study, Ulrich (1984) found that a patient in a room with a window viewing nature used fewer painkillers than a patient in a room with an urban view. Physiological response is also used to examine Attention Restoration Theory. As mentioned above, Chang and colleagues (2007) tested the effects of nature scenes on muscle tension (i.e., electromyography, electroencephalography, and pulse). In addition, scholars also test memory, reaction time (Berman, Jonides, & Kaplan, 2008), and proofreading performance (Hartig et al., 1991). As Ulrich (1981) asserts, objective measures are more likely to draw attention from the government and public. The study conducted by Orsega-Smith et al. (2004) may be a good model for considering how to introduce objective measures in research on outdoor recreation.

Organized Activities/Program

From the mid-1990s to the early 2000s, a number of meta-analysis studies were conducted to summarize the outcomes and attributes of outdoor adventure programs (Cason & Gillis, 1994; Hans, 2000; Hattie et al., 1997; Wilson & Lipsey, 2000). These studies collected comprehensive empirical evidence and related outcomes to components of programs (Cason & Gillis, 1994). In addition, effect size can be an alternative to disclose program effects failed to be detected by significance tests due to challenges such as sample sizes.

Most outcomes in these studies focus on psychological and social health aspects such as personality, self-concept, interpersonal skills, leadership, behavioral correction, and academic attainment and achievement. Nonetheless, these studies also present issues with assessing outdoor adventure programs. First, even though the effect size of a follow-up phase can be impressive, relatively few programs incorporate one (Hattie et al., 1997). Moreover, few outdoor education programs use standard tests for evaluation, increasing the difficulty of obtaining solid evidence on the effects (Neill & Richards, 1998).

The components of programs and characteristics of participants and their outcome associations are also investigated in these meta-analyses. Length, duration, goals, and types of outdoor adventure programs, as well as age, gender, and population all influence outcome. Hattie and his colleagues (1997) suggest that long-term and Outward Bound programs are more effective than others. Hans (2000) suggests that using outdoor programs as therapeutic intervention may be effective with regard to participants' locus of control when compared to other programs. In addition, Wilson and Lipsey (2000) claim that the intensity of physical activities and therapeutic components are effective ways to reduce delinquent behaviors.

Besides the investigation of program components conducted by meta-analyses, a number of articles attempt to clarify the relationship between individual characteristics and the mechanisms of outdoor programs with regard to outcomes (Sibthorp, 2003; Sibthorp, Paisley, & Gookin, 2007). In a study examining associations between the Outward Bound model and self-efficacy, two course components, personal empowerment and learning relevance, account for changes in self-efficacy (Sibthorp, 2003). In a study exploring the National Outdoor Leadership School, personal empowerment

and previous outdoor experience proved relevant to six outcomes regarding interpersonal skills, metacognitive skills, environmental awareness, and outdoor skills. Other personal characteristics such as gender and age also predict changes in outcomes. In another study, Russell & Phillips-Miller (2002) summarize a number of components in wilderness therapy that promote behavioral correction of youth. A trusting relationship with caring adults, a positive peer dynamic, time for reflection, and opportunities to be challenged are considered important. In general, future research may focus on identifying the characteristics of participants and programs, understanding the impacts of these variables, and conceptualizing the associations between process and outcomes.

Outdoor adventure programs can provide diverse opportunities for people to enhance their health (Ewert & McAvoy, 2000). These populations include people with disabilities and specialized groups such as all female, youth, and senior programs. In a study by Thomas (2004), an outdoor experiential program served as adjunct therapy for people with acquired brain injuries to improve their quality of life. Participants who finished a series of interventions perceived a higher and more prolonged improvement in quality of life than the comparison group. In addition, outdoor adventure programs focus on the positivity instead of the deficiency of the participants; therefore, concepts such as positive psychology (Sheard & Golby, 2006) and positive youth development (Larson, 2000; Sklars, Anderson, & Autry, 2007) easily fit into the curriculum and help participants build resilience and social capital.

Conclusions and Suggestions

This study discusses the benefits and opportunities of outdoor recreation environments and activities promoting human health. Nature and outdoor recreation do not only take place in backcountry environments, which may be difficult for some populations to access, but also in urban and residential areas. To include diverse populations in outdoor recreation, practitioners should consider multiple factors affecting land use, such as trail accessibility for populations with disabilities, safety devices (e.g., light, emergency radio), shady places in hot areas, and visual/audio assistance in multiple languages. In addition, green spaces and natural scenery should be considered to help the public restore mental health, especially given that the amount of stress and attention exhaustion that frequently occur in urban settings and at hospitals.

In addition to more discussions regarding factors enhancing park use, the recent research trend in outdoor recreation pays significant attention to exploring program components that facilitate desired outcomes. The research indicates that learning is effective when participants are able to control their environment and transfer learning outcomes back to real life. How instructors create and facilitate this empowered learning atmosphere should be further investigated; Russell & Phillips-Miller's study (2002) offers a reference for discussing the mechanisms of outdoor adventure programs. Although this study has introduced factors regarding increasing park use and enhancing health, as a whole, the academic field should synthesize these factors into reports ready for practical uses.

The theories of outdoor recreation programs that highlight the importance of natural scenes to human health, such as attention restoration theory and psychoevolutionary theory, need to be considered. To apply these theories to the field, scholars should focus on human-nature interaction. As previous studies (Kaplan, 2001) have shown the benefits of nature-based activities (i.e., personal recreation), future studies may also consider how organized programs incorporate nature into their course components and explore its impact.

Finally, the outcomes of outdoor recreation should be continuously explored. Currently, outcomes measured by brain activity and other physical indices are relatively less used in the field of leisure and recreation when compared to

subjective outcomes, such as perception and attitudes. Including both types of outcomes in studies would better serve to persuade and inform the general public and policy makers about the effectiveness of outdoor recreation.

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[i] Depending upon the definition of outdoor recreation, the NSRE 2000 and ORP 2008 have different bases to estimate populations. For example, walking and sight-seeing are included in the NSRE but not in the ORP. The NSRE has a broader scope of definition.