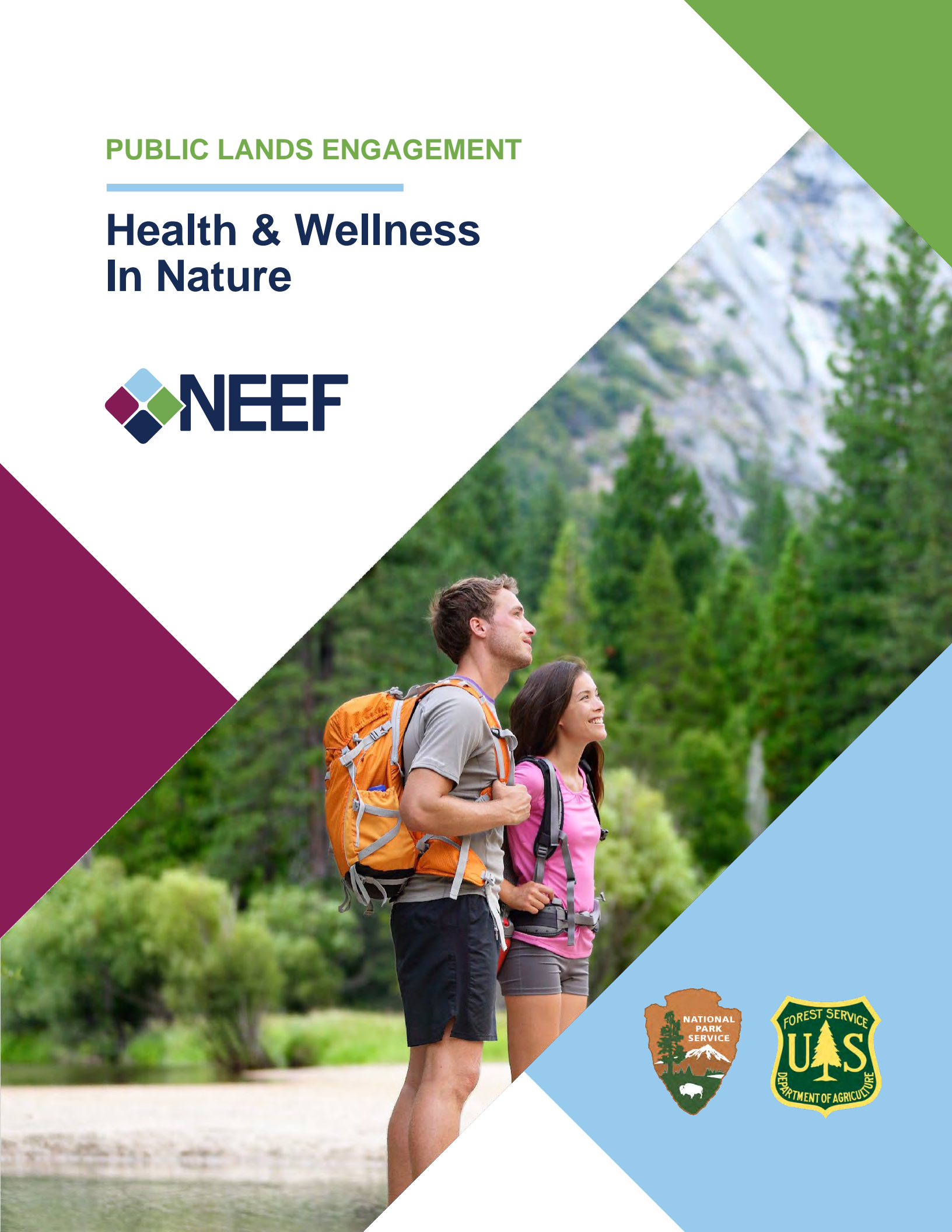


PUBLIC LANDS ENGAGEMENT

# Health & Wellness In Nature





# Contents

01 .....	Introduction	18.....	Community Gardening
03 .....	Acknowledgements	22.....	Open Streets (Cyclovia)
04 .....	How to Use this Guide	25.....	Gateway Activities
05 .....	Messaging the Health Benefits of Nature	29.....	Green Exercise
09 .....	Featured Health and Wellness Activities	33.....	SunWise
09 .....	Walk with a Doc	36.....	Art Therapy on Public Lands
11.....	Health Screenings in the Park	40.....	Community Restoration and Conservation Events
15 .....	Nature and Forest Therapy	43.....	Bibliography

# Introduction



**For centuries thought leaders have observed that nature experiences improve the mind, body and soul. In recent decades those intuitions have been confirmed by scientific studies that have been done all around the world. But modern lifestyles have removed us from nature. Studies also show that social support helps us to adopt positive behaviors. This report offers many opportunities for people to organize, have fun with others, and promote community wellness through contact with trees, parks, gardens and all of nature.”**

– Dr. Kathleen Wolf, Ph.D., Social Scientist, University of Washington, Seattle, Washington

## Purpose

To promote spending quality time in nature and green spaces for physical, mental, and spiritual well-being by making the environment more accessible, relatable, relevant, and connected to the daily lives of all Americans.

have found that spending time in the outdoors improves short-term memory, concentration and creativity, while reducing the effects of stress and anxiety.

## Overview

Green spaces make us happier and healthier! The connection between public green spaces and health is not a new idea. Nearly 40 years of scientific research demonstrates that experiences in nature contribute to our health and wellness. A growing body of research indicates that unstructured outdoor activities may improve physical and mental health by increasing physical activity, reducing stress, and serving as a support mechanism. Researchers

## Public Lands Are Good Medicine

Public lands include national parks, forests, as well as local parks and other open green spaces that are managed by federal, state, local, and regional governments—but that belong to and are enjoyed by all of us. From the water we drink, to the air we breathe, and the spaces and climates we live, work, and play in, public lands impact our daily well-being and long term physical, mental, emotional and spiritual health.



## Public Lands Engagement

Community engagement events on public lands provide a great opportunity for residents to spend time with family and friends while enjoying the many benefits that come from connecting with nature. Integrating health and wellness activities into a community engagement event will help residents gain a better understanding of the physical, mental, emotional, and spiritual health benefits that public lands promote.

Frederick Law Olmsted, designer of New York City's Central Park, wrote extensively about the mental health benefits of contact with nature. As early as 1865, he declared that time in nature provided "relief from ordinary cares, change of air and change of habits" and "increases the subsequent capacity for happiness and the means of securing happiness."

## Social Equity and Access to Nature

Many people, because of lack of access, transportation, or general familiarity, visit parks and green space rarely or not at all. Physical activity and frequency of park use depend on demographic, socioeconomic, and regional characteristics and reflect inequalities in park distribution or in the accessibility of parks and green space.

Access to green space can also treat and prevent other health conditions such as obesity, psychological trauma, and heat-related illnesses. For example, higher tree density in urban areas is associated with decreased risk of childhood obesity as well as depression and type 2 diabetes among low-income urban families.



# Acknowledgements

The Public Lands Engagement Guide: A Focus on Health & Wellness resource was developed by the National Environmental Education Foundation (NEEF), in collaboration with and with funding from the National Park Service (NPS) and the U.S. Forest Service (USFS).

## Development Team

Diana Allen, Chief, Healthy Parks  
Healthy People, Office of Public  
Health, NPS

Tamberly Conway,  
Partnerships, Diversity and  
Inclusion Specialist, USFS

Jennifer Queen, Resource  
Fellow Travel, Tourism and  
Recreation, USFS

Gwen Ruppert, Public Health  
Specialist, Office of Public  
Health, NPS

Tony Richardson, Program  
Director, Public Lands  
Engagement, NEEF

Vernessa Perry, Program  
Director, Health & Wellness,  
NEEF

Yomna Nassar, Health &  
Wellness Intern, NEEF

Allison Hannahs, NPLD  
Intern, NEEF

## NEEF would like to acknowledge the contributions of:

Dr. Kathleen Wolf, Research  
Social Scientist, University of  
Washington

Linda Fondren, Founder and  
CEO, Shape up Sisters

Clare Kelley, Founder of DC  
Forest Bathing

Ellen Speert, ATR-BC, REAT,  
California Center for Creative  
Renewal

Dr. Daniel Porter, Medical  
Director, Lone Star Family  
Health Center

Cynthia Young Woodruff, CAE,  
CEO American Art Therapy  
Association

Kyle Just, Park Ranger, NPS

Amy Jensen, Biologist and  
Water Quality Specialist, US  
Army Corp of Engineers

Ashlie Kozlowski, Outreach  
Coordinator, Assateague Island  
Alliance





# How to Use this Guide



**This engagement guide is intended to support high-quality health and wellness activities during community engagement events of all types and sizes. It includes descriptions, real-world examples, recommendations, and related resources for various health and wellness activities.**

This guide is intended as a tool for developing health and wellness initiatives for diverse communities. The activities in this guide can be used as a starting point for myriad health and wellness activities. This guide contains ten sections featuring different health activities. Each section begins with an overview, providing background information about the event, its

benefits, and potential applications. This is followed by real-world examples to showcase past events that have been successful and serve as a tool for inspiration when developing your own event. Tips for success are also provided, based off the success of past events. Lastly, each section contains featured resources to help you get started with planning your event.

# Messaging the Health Benefits of Nature

---

When introducing health activities at your community engagement event, it is important to ensure participants understand not only what they are doing, but also why. Community engagement events can be a useful avenue for promoting community health messages in addition to teaching the community about the environment. These events can be a great opportunity to encourage participants to create lasting lifestyle changes to incorporate nature and wellness in their daily lives.

Carefully crafted messaging can influence behaviors and have a great impact on the health of both individuals and communities. Listed below are scientific evidence that spending time in the outdoors improves health. Share these benefits at the event to reinforce the idea that participants are both having fun and getting healthy!

When developing health messages, engage community members to ensure their voices are heard. Create messaging that resonates with your audience and allows individuals to see themselves. Engage trusted messengers whenever possible to share important health information. When developing messages consider language that empowers, appeals to lay audiences, and is clear, to the point, and achievable.



## Healthy Parks Healthy People

Healthy Parks, Healthy People promotes the fact that parks are gateways to good health—for people and the planet.

- Parks contribute to a healthy, just, and sustainable world.
- Getting outdoors in nature makes you healthier, happier, and more fulfilled.
- Give yourself the gift of good health by spending time outdoors.

**#HealthyParksHealthyPeople**  
**#ActivePeople**

[www.nps.gov/hphp](http://www.nps.gov/hphp)

# Physical Wellness Messaging

- People exercise for longer periods of time and at greater intensities in natural environments.
- Children who spend time outdoors experience increased physical activity. For every hour a week a child spends outside, their physical activity increases by 27 minutes.
- Spending at least 120 minutes a week in nature is associated with good health and wellbeing.
- Children who are regularly exposed to nature have a lower risk of developing myopia, also known as shortsightedness.

**Physical exercise outdoors reduces blood pressure and improves mood.**

- When individuals exercise outdoors, they experience a greater reduction in blood pressure and improvement in mood than when exercising in indoor settings.
- Natural environments contain chemical and biological agents that can boost immune functions and promote human health.



# Mental Wellness Messaging

- Nature makes you more creative. Experiencing the wonder of nature can inspire people to solve problems more creatively and cooperatively.
- Nature has significant restorative properties; it can renew depleted cognitive functions and improve performance.
- Nature provides a place and an opportunity for play and physical activity. In children, play is critical to development and aids in the development of cognitive thinking and reasoning skills.
- Nature encourages exploration and building, which improves problem solving, decision making, and the ability to respond to changing contexts. In adults, incorporating exercise into time in nature can help increase the brain's cognitive capacity.
- Exposure to nature, even passive experiences such as looking out over a view of nature, can reduce stress levels. For those with high levels of stress, physical activity in nature can be beneficial for both physical and mental health.

**People living near parks and greenspace have less mental distress, are more physically active, and have extended life spans.**

- Especially in children, nature acts as a buffer for stress and can reduce overall stress levels.
- Contact with nature can provide relief and healing for those who suffer from acute and chronic mental illness, including depression, anxiety, mood disorders, and dementia.
- Nature can serve as a safe, inexpensive, and widely accessible tool for managing ADHD symptoms.
- Time in nature can help heal people with depression. After 90-minute nature walk, individuals reported fewer repetitive thoughts focused on negative features of the self and a decrease in neural activity in a part of the brain linked with sadness and self-reflection.

# Community Messaging

- Social relationships are important for health and well-being. Research has shown a positive relationship between social ties, cohesion, and green space.
- Older people especially benefit from social interaction in walkable green spaces. For the elderly, this interaction is correlated with greater longevity and lower rates of mortality, depression, and cognitive impairment.
- Nature makes you more generous to others. Viewing beautiful nature scenes can result in people being more cooperative and generous to others, even in the presence of strangers.
- Communities involved in the stewardship of local natural resources show increased civic engagement, ecological literacy, and social connections.
- People exercise for longer periods of time and at greater intensities in natural environments.
- Spending at least 120 minutes a week in nature is associated with good health and wellbeing.
- When individuals exercise outdoors, they experience a greater reduction in blood pressure and improvement in mood than when exercising in indoor settings.
- Natural environments contain chemical and biological agents that can boost immune functions and promote human health.



**Children who are regularly exposed to nature have a lower risk of developing myopia, also known as shortsightedness.**

## Activity #1

# Doctor-Led Activities in Nature

## Overview

Doctor-led activities inspire people to live a healthier lifestyle in nature with the support of a health professional. Physicians can lead a variety of activities, from walks and hikes to tree planting and more. During these events, physicians talk about how the activity improves people's health and facilitate discussions about health topics of choice. Participants benefit from exercise, health education, and social interaction during the activity. Doctors benefit by building meaningful connections with members of their community and promoting nature as an important health resource.

## Real-World Examples

### 'Walk with a Doc' Event at Vicksburg National Military Park

#### Vicksburg, MS

The Walk with a Doc chapter at Vicksburg National Military Park is unique, as it was formed as a walking club by a local gym owner, Linda Fondren. Linda created "Shape-up Vicksburg Get Healthy Walking Club" in hopes that people would be more inspired to be healthy and lose weight if there was a social experience. As the club grew, Linda invited physicians to walk with the group around the military park and talk casually about medical ailments such as high blood pressure and cholesterol. They found



## Tips for Success

- 1.) You must know your community—target the people that are not typically getting exercise. Give them something else to come for, such as socialization or free vegetables.
- 2.) Advertising is key! Considering making t-shirts with a catchy slogan. Volunteers will become walking advertisement for your health and wellness program!
- 3.) Pedometers are another great giveaway item. They allow participants to monitor their step count and track progress towards their exercise goals.
- 4.) Partnership and collaboration are very important. Try to find a local partner that is already working in the community.

## Featured Resources

- [Request a Guide to Getting Started with Walk with a Doc](#)
- [Find a Registered Walk with a Doc Health Care Provider in Your Area!](#)





that the more people could laugh and joke with each other and the doctors, the easier it was for wellness to be a focus in their lives. Together, the walking club has lost 15,000 pounds together and still continues to grow! After word spread throughout town about this social-fitness club, Linda's movement gained momentum and the club broadened its educational reach. Linda invited park rangers to walk with them and teach participants about the historical significance of the military park and families began joining in hopes of becoming healthier together. The club advocated for the parks to the local government and sought to improve them by adding lights for safety and more walking trails. They even have started community gardens on their local parks and have brought nutritionists out to educate the community on a healthy diet.

## 'Walk with a Doc' Event at Rock Creek Park

Washington, DC

In 2018, Rock Creek Park celebrated its 128th birthday by hosting an event designed to promote health for both the park and the surrounding community. To care for the park and contribute to its health, volunteers of all ages gathered to

remove non-native and invasive Beefsteak plant and Stiltgrass from the edges of trails all over the park. In addition to this volunteer project, the park hosted a variety of walks throughout the park to promote health and education. These walks were made possible with the support of many partners, including Park Rx America, Green Spaces for DC, USDA Forest Service, DC Department of Parks and Recreation, Rock Creek Conservancy, Latino Outdoors, Corazon Latino, Association of Forest and Nature Therapy Guides, and *Descubre el Bosque*. The walks ranged from 0.25-3.5 miles in length so that individuals of all ability level could participate. Walk with a Doc hikes occurred twice during the day and were led by local health care providers. Thanks to a grant and sponsorship from DC Parks and Recreation, Rock Creek Park was able to provide a stipend to healthcare providers who led Walk with a Doc hikes in the park. During these hikes, community members were given the opportunity to informally talk with doctors while enjoying nature and the health benefits that the park and forest offers.



Activity #2

# Health Screenings in the Park

## Overview

The purpose of health screenings in parks is straightforward: provide community members with a one-stop “neighborhood wellness hubs” to address preventive health needs. Providing health screenings in parks makes it easy for residents to access several health resources in one place. Parks and public spaces provide a way to naturally instill a culture of health into the community because they are free, always open, and all are welcome. Public spaces can be one of the only places where people are not limited by their income.



Health screenings improve an individual’s personal health awareness, understanding of risk factors, and ability to detect symptoms and prevent health risks. Screenings are especially beneficial in identifying health risks and getting early treatment.

Employee health screenings are good opportunities for companies to engage employees and their families in wellness programs. This allows employers to map healthful behaviors to their mission encouraging healthy mind, body, and spirit. Improving employee health can subsequently increase productivity and decrease product loss due to health-related absenteeism. Assisting employees in improving their lives while simultaneously controlling costs is the ultimate win-win

# Types of Health Screenings

**1 Blood Pressure** – Blood pressure is one of the most important screenings because high blood pressure usually has no symptoms, so it's important for people to know their numbers. High blood pressure greatly increases your risk of heart disease and stroke. High blood pressure can be controlled through lifestyle changes and/or medication.

**2 Body Mass Index (BMI)** - Body Mass Index is a simple calculation using a person's height and weight. BMI can help determine whether patients are underweight, normal weight, overweight or obese. BMI can be used as a screening tool but is not diagnostic of body size or health of an individual.

**3 Diabetes (Blood Glucose)** - Diabetes screening tests are a good preventative method for catching the development of diabetes at an early stage. Results from a diabetes screening test can be used to seek further medical advice from a doctor or medical professional. The screening test is not intended as a diagnosis, however, are becoming more commonly used as the prevalence of diabetes continues to grow.

## Real-World Example

Wilsonville Wellness Fair  
Wilsonville, Oregon

Wilsonville Parks and Recreation works to develop an annual interactive health and wellness fair to showcase local resources to members of their community. About 40 local health and wellness vendors set up across the park to provide community members with activities and information on how to maintain a healthy lifestyle.





By partnering with local health and wellness businesses, Wilsonville Parks and Recreation are able to feature various health and wellness providers.

The fair also features fun, free activities for all ages, including a bicycle helmet decorating station, kids bike rodeo, trolley rides, various musical performances, yoga in the park, Tai Chi, and fitness demonstrations. Fire and Rescue also provide a free, hands-only CPR training.

They also partner with the local transit provider, South Metro Area Regional Transit (SMART), to host a bike rodeo so children of all ages can participate in fun activities at the fair. The fair is interactive and fun for all ages! Wilsonville Parks and Recreation keep vendor fees low (only \$25 per vendor), and all proceeds go towards a local organization. This year, they raised \$1,180 to go to Wilsonville Community Seniors, Inc., a local non-profit that provides low cost day trips and activities to seniors.



## Tips for Success

- 1.) The key to success is a committed group of volunteers that are passionate about their community's health and wellness to head the event committee.
- 2.) Partner with local hospitals, physician practices, and departments of health to secure clinical staff and resources.
- 3.) Invite local community agencies and organizations, including public health programs such as Women, Infants, and Children (WIC) offices for various services and education.
- 4.) Include activities and demonstrations such as yoga, aerobic step demonstrations, or other health activities for a hands-on learning experience.
- 5.) Collaborate with volunteer organizations, which may be able to provide free educational or instructional resources.
- 6.) The venue for the event is typically donated by a sponsor, who also provides much of the manpower for set-up of the event.
- 7.) Before the event, introduce yourself to the health community by attending conferences, tabling at events, etc.

## Featured Resources

- [Carefirst: Guide to Worksite Screening](#) (cholesterol, blood pressure, BMI)
- [Health Fair Planning Guide](#)
- [Organizing Health Fairs for Physical Wellness](#)

Activity #3

# Nature and Forest Therapy (Forest Bathing)



## Overview

Nature and Forest Therapy (also known as Forest Bathing) typically involves meditative walks through the woods with the objective of reconnecting with nature, decreasing stress, elevating natural moods, and strengthening the immune system. Nature Therapy is rooted in practices that promote the experience of nature through all five senses.

Forest bathers spend time touching and smelling leaves, bark, and flowers. Some even bring essential oils along to enhance smells. Meditation is often part of the experience as well. The practice received recognition in Japan in the early 1980s when it was endorsed by the Forest Agency of Japan and has since been gaining ground in the United States and other locations around the world.





activism is draining and weighs on their mental wellness. Through this forest bathing event, they were able to see how spending time in nature grounded them and allowed them to refocus on their efforts. In order to show participants that you can connect with nature in any green space, the forest bathing event was held in a small park in a low-income area in the middle of the city. Many participants were surprised by how rejuvenated they felt, and especially appreciated part of the forest therapy session when they were encouraged to find a spot in the park by themselves and reflect on something important to them. To wrap up, participants planted native plants in the park, which gave them something tangible to remember the event.

## Real-World Examples

### Earth Day Reflections: Forest Bathing and Civic Engagement

Los Angeles, California

To celebrate Earth Day, Mi Familia Vota, a national civic engagement organization that unites Latino, immigrant, and allied communities to promote social and economic justice, partnered with Corazon Latino. The goal of their Earth Day celebration was to illustrate how connecting with nature is rejuvenating and beneficial to one's health—something that is particularly helpful to those involved with activism. Individuals often find that being a part of movements and being involved with



### Full Moon Forest Bathing at the US National Arboretum

Washington, DC

Full Moon Forest Bathing is a monthly event that gathers nature lovers from all walks of life in Washington, DC to enjoy a safe, relaxing time at the US National Arboretum. Clare Kelley, a certified nature and forest therapy guide, leads participants through invitations: sensory and

interactive experiences to reap the healing gifts of nature. Participants share what they're noticing, while creating a sense of empathy and camaraderie. Few people in an urban setting, like Washington, DC, have the chance to truly explore nature in a safe environment in the dark. The experiences that people have on the walk are truly special, connecting people back to a sense of their human nature. In addition to the traditional forest bathing experience, Friends of the National Arboretum (FONA) offers a Full Moon Hike for anyone that wants to experience the full moon Forest Bathing experience in a more active way. During the hike, participants take a moonlit hike among the forest, meadows, and gardens of the National Arboretum. Clare notes that Forest Bathing is special because "sharing this very human experience connects people back to the ties that bind us. It reconnects people from populations who have had an uneasy relationship with the natural world. We're often told how healing these walks are for people's sense of belonging, safety, and community."

## Featured Resources

- [Free Forest Therapy Starter Kit \(Association of Nature and Forest Therapy Guides and Programs\)](#)
- [The Association of Nature & Forest Therapy Member Guide Map & Directory](#)

## Tips for Success

- 1.) Bathing suits are not required! While the concept of Forest Bathing has been floating around for years, many folks are not familiar with it. It can be a rejuvenating experience—just make sure participants are well informed.
- 2.) Incorporate an activity that gives back to the environment, like planting, to illustrate the symbiotic relationship that we have with nature.
- 3.) Utilize local Forest Bathing chapters and the resources that they provide.
- 4.) Become certified as a Forest Bathing guide and serve as a resource to your community
- 5.) Choose a green space that is relevant and accessible to the participants of your event.
- 6.) The ideal location includes some open meadow space as well as forested areas, ideally contained one way or another.
- 7.) Prepare your team in advance. Have a rain date. Work closely with your guide to anticipate questions that new participants may have before the walk. Remind yourself that patience, kindness and empathy are the best ways for helping the new participants feel safe.
- 8.) Do not let participants come after the walk begins. Be strict about this. Communicate this clearly to participants in advance. Keeping everyone on time will ensure a fun, safe event.



## Activity #4

# Community Gardening

## Overview

A community garden is a shared space where people gather together to grow fruits, vegetables, and/or flowers, and raise small livestock. Community gardens vary widely in their structure, purpose and format. Community gardens can include working farms, kitchen gardens, learning gardens, and garden plots made available to community members for their own consumption. They can consist of collective plots, individual plots, or a combination of the two. Food may be grown for the garden's members, for a local organization such as a community kitchen or bulk buying club, or for the community at large.

Community gardens are opportunities for people to improve nutrition, increase physical activity, and socialize with neighbors. While providing food security is a main benefit to community gardens, it is not the only advantage. Gardens bring people together from diverse backgrounds. They offer opportunities to connect with others and build community by transforming public lands into beautiful and productive gardens. In cities all over America, community gardens are giving urban audiences a chance to enjoy the pleasures of gardening.







## Benefits of Community Gardens

Community gardens can improve nutrition, increase physical activity, and provide a location to socialize with neighbors. Community gardens can also provide a source of fresh fruits and vegetables that are often not readily available. Researchers found that adults were 3.5 times more likely to consume at least five servings of fruits or vegetables a day if someone in their household participated in a community gardening project within the last 12 months.

Studies also show a range of mental health benefits from gardening, including reduction in the severity of depression, heightened attention, and prevention of dementia. Gardening is effective in improving mobility and dexterity, increasing confidence, and improving social skills.

## Real-World Examples

### Little Rock Central High School National Historic Site

#### Little Rock, Arkansas

Since 2015, the southwest side of the Arkansas Children's Hospital (ACH) campus has been home to a 4,000 square foot community garden. This garden is a collaboration between ACH, Arkansas Children's Research Institute's Childhood Obesity Prevention Research Program (CORP), Arkansas GardenCorps, University of Arkansas for Medical Sciences (UAMS), and Little Rock Central High School National Historic Site. Funding is supplied by ACH, Arkansas Children's Research Institute, and the National Park Service. To jump-start this project, employees of the National Park Service built 10 raised beds for the garden. The garden is managed by two service members of the Arkansas GardenCorps and relies on community



volunteers to help tend the gardens. Neighbors are invited to volunteer their time on Community Garden Workdays and maintain the gardens. All produce grown is donated to the local food pantry, Helping Hands of Greater Little Rock, and feeds food-insecure families in the community. Last year, the garden produced over 4,000 lbs. of fresh fruits and vegetables including tomatoes, peppers, cucumbers, squash, eggplant, greens, potatoes, corn, peas, onions, carrots, beans, okra, watermelon, strawberries and blackberries. This community garden brings neighbors together with the support of local organizations to tackle food-insecurity and promote healthy eating and living.

### Pierre Community Orchard Project

Sioux Falls, South Dakota

The Girl Scout Troop under the direction of their troop leader, enlisted the support of several community organizations and government agencies to develop the Pierre Orchard Community project. Key community partners include the City of Pierre Arbor Board, Llamas

## Tips for Success

- 1.) Tap into neighborhood gardeners, master gardeners, agricultural extension offices, and local botanical garden experts in your area to provide expertise, donate materials, or donate labor.
- 2.) Seek out sponsors and others who can not only provide operating capital but can also provide political support for your project (e.g., businesses that contribute to community beautification and highway adoption projects).
- 3.) Look for an alignment with your mission and vision and those of the local agencies and groups supporting people in need. Alternatively, consider building your community garden mission around a community need.
- 4.) Contact your local network of farmers and growers. Participate in a farmers' market or food co-op.

Fencing, Pierre Young Professionals, South Dakota Discovery Center, East Pierre Landscape and Garden Center, and Rawlins Library. The project was undertaken in steps, beginning with the Community Planting Day. Thirty-six community members came together, ranging in age from 2 to 60+, to plant 23 bare root fruit trees (6 peach, 6 apple, 4 pear, 5 plum, 2 cherry). Volunteers reflected on their knowledge of healthful benefits of nature and what they experienced at the community planting day through a survey. Education was provided on planting day about the health benefits of sourcing food locally, getting exercise in nature with

family and friends, and how nature can provide a positive emotional experience.

An open house was held to increase public awareness of this highly successful project. The City of Pierre Arbor Board advertised the event, which attracted 30 visitors who received a brochure about the project and then took a tour. Some also taste tested local produce from

more mature trees in town. To wrap up the day, a librarian from the public library read books to the children about growing fruit. The Pierre Community Orchard Project has added a green space to the community that provides and encourages sourcing local produce, provides an outdoor campus for nature, nutrition and science education, and promotes environmental stewardship. Many participants liked the exercise they received while planting and tending to the orchard over the summer months while at the same time sharing in a common purpose. Funding for this project was supported by US Forest Service.

## Featured Resources

- [Building a Community Garden in Your Park: Opportunities for Health, Community, and Recreation](#)
- [Let's Move! Community Garden Checklist](#)





Activity #5

# Open Streets (Cyclovia)

## Overview

'Open Streets' are community-based programs that temporarily open selected streets to people by closing them to cars. Without the danger and noise of cars, people have the opportunity to recreate freely on roads. Open Streets are places where individuals of all ages, abilities, and backgrounds can come out and improve their

health. By encouraging walking, biking, running, and playing, Open Streets are a destination for physical activity and exercise as well as an opportunity for communities to come together and socialize. Through regular participation in Open Streets, people can begin to change their habits and a city can change its culture of health.





## Real-World Examples

### Ride the Rim at Crater Lake National Park

National Park in Klamath County, Oregon

The first vehicle-free days at Crater Lake were piloted in 2013 when the park closed the Rim Drive to motorized vehicle traffic. Despite an ice storm, about 500 people showed up to bike, run, and hike the road. The success of the first event prompted Crater Lake to offer vehicle-free days every year since 2013. On two consecutive Saturdays in September, the park hosts “Ride the Rim,” closing the 23 mile stretch of East Rim Drive to automobile traffic. The beautiful yet challenging route over steep grades and large elevation changes is popular among cyclists across the country.

Since the first year, the event has expanded to provide services (hydration, bike maintenance, first aid) along the route, and a shuttle to bring cyclists back to their parked cars. Ride the Rim attracts visitors from across the country who enjoy spectacular views of America’s deepest lake and surrounding forests without car traffic and noise. This annual National Park Service event is made possible through partnerships with Discover Klamath Visitor and Convention Bureau, a local tourism organization, and Friends of Crater Lake, a non-profit service organization. These organizations provide the funds, organizational skills, staffing, volunteers, and materials (snacks, hydration, bike maintenance, and basic first aid supplies) to run the event each year.



## Philly Free Streets

### Philadelphia, Pennsylvania

“Philly Free Streets” is an annual event in August that turns four miles of Philadelphia city streets into an open space for all people to enjoy. Since 2016, the city of Philadelphia has hosted Philly Free Streets, temporarily closing North Broad Street between City Hall and Butler Street, and inviting people to walk, bike, and play. Philly Free Streets encourages people from every neighborhood in Philadelphia to come together as a community. Along the route, attendees can enjoy activities such as chalk drawing, face painting, live music, and games. Since the first event, Philly Free Streets has welcomed over 120,000 people to recreate in car-free streets. The event in 2018 brought over 50,000 people into the streets. This event is led by the Managing Director’s Office of Transportation, Infrastructure, and Sustainability (oTIS) and sponsored by organizations such as Temple University, Knight Foundation, and AARP Pennsylvania, The North Broad Renaissance, Mural Arts Philadelphia, and more.

## Tips for Success

- 1.) Close roads to all motorized traffic including cars, self-propelled bikes, and electric scooters.
- 2.) Include safety messaging about cyclists wearing helmets, sun safety, and proper hydration.
- 3.) Host events in locations accessible by public transportation.

## Featured Resources

- [The Open Streets Toolkit](#)
- [The Open Streets Guide](#) (Includes case studies (real world examples and best practices overview))



At its core, Philly Free Streets promotes livable streets—streets that are safe and comfortable for people of all ages and physical abilities to walk, bike, and meet their neighbors”

— Mike Carroll, Philadelphia’s Deputy Managing Director for Transportation, Infrastructure, & Sustainability.



Activity #6

# Gateway Activities



## Overview

Getting Americans active often needs a spark, an outside force that will provide incentive to move off the couch and away from the television. That spark can come from a ‘gateway’ outdoor activity like fishing, running, camping, bicycling or hiking. Activities like these are popular, accessible and often lead to participation in other outdoor activities.

There’s also another, terrific benefit of gateway activities. Participants in those popular and accessible activities are much more likely to participate in another outdoor activity than they are likely to participate in one activity alone.

Eighty-eight percent of hikers participate in more than one outdoor activity. Their participation in these activities often leads to higher activity levels and a greater connection with the outdoors.

Public lands offer the perfect spaces to host these gateway activities, since most boast amenities such as trails, pavilions, and beaches that draw people in. Hosting gateway activities during community engagement events on these public lands can even further encourage participants to maintain healthy levels of physical fitness.



**Fishing**



**Biking**



**Walking**

**Examples of gateway activities**



**Camping**



**Hiking**



## Real-World Examples

### Campout for Public Lands at Newberry National Volcanic Monument

Deschutes County, Oregon

For its fourth year, the Campout for Public Lands was a National Public Lands Day event. The campout is planned by Discover your Forest, with the overall goal to encourage people to have a positive, fun experience in their local forest and learn about the importance of conservation and stewardship in the process. Participants buy tickets for this “grown-up campout” which includes catered meals, craft beers, a live concert under the stars, morning yoga, and more! Saturday morning, the campout kicks off with a service project to get people tangibly involved. Through this activity, participants learn why we should protect forests through conservation

catered food, relaxing and eating s’mores by a campfire, and dancing to a concert under the stars. The event ends with morning yoga and a hot breakfast. The Campout for Public Lands gave the community a place to unite in nature. Through having fun and falling in love with new activities, participants of the campout associate the surrounding forests with positivity and will seek out time in nature.



### Featured Resources

- [Outdoor Industry Association: 2018 OUTDOOR PARTICIPATION REPORT](#)
- [U.S. Forest Service: Outdoor Recreation Research and Ideas](#)

and stewardship. During the day, one of the event sponsors, REI brings mountain bikes, paddle boards, and kayaks so that even beginners can try out new activities. Discover your Forest has found that these demos are effective because people can get coaching to try something new, and they can try it for free. The rest of the weekend is spent eating delicious

### Bike with a Ranger, Mississippi River, National Recreation Area

St. Paul, Minnesota

The Mississippi River Visitor Center created the Bike with a Ranger program ten years ago as a way to connect people with their local national park site, which includes trails covering 72 miles along the Mississippi river. Participants quickly saw the benefits that this program created not only by educating local communities about the history of the area, but also by creating a fun and easy way to exercise!





The park offers regularly scheduled bike rides at different locations along the trails, each one highlighting the historical, cultural, and environmental history of that area. During the “Historical Hastings Riverfront” ride, bike riders learn about the natural, cultural, and historic resources of the Mississippi River. The “Bike with a Ranger at the Commons” ride interprets the river with a different lens, as participants hear about how attitudes and behaviors about water can affect the river’s character. Each trip is led by a park ranger and includes three or four stops, where the group stops and listens as the ranger explains the importance of the area.

## Tips for Success

- 1.) If you are a non-profit organization, look for partners to help with funding. Partners don’t need to be big name national companies; any mom and pop business could be great.
- 2.) Partner with local organizations that share the same dream, mission, and who care about the same things.
- 3.) Brainstorm activities by first thinking about what the community wants, and then consider how you can get them outside and engaged from there.
- 4.) Think about what you can do to make the world a better place during your event.
- 5.) Success depends on getting the word out—think Instagram, Twitter, and Facebook!
- 6.) Clearly communicate expectations and what people are going to be doing. For example: the Bike with a Ranger program does not have funds to provide bikes or helmets so they make sure to communicate very clearly that you need to bring your own helmet.

Activity #7

# Green Exercise



## Overview

Outdoor exercise, also known as “green exercise,” combines two health-enhancing activities: moving your body and getting outdoors. Green exercise can be a structured exercise program that takes advantage of natural terrain to get you in shape, or it can be as simple as a brisk walk through a park or forest. Outdoor fitness comes in many forms: light gardening or other yard work, for example,

is considered moderate physical activity, and a 154-pound man can burn approximately 330 calories an hour doing it, according to the United States Department of Agriculture (USDA).

When it’s a beautiful day, take advantage of the opportunity to exercise outside and experience the additional benefits of exercising in the great outdoors.

## Examples of “greenexercise”



### Bioblitz Dance

The Bioblitz Dance is a celebration of the outdoors, human diversity and biodiversity; and was created to honor the 100th anniversary of the National Park Service (NPS). The Bioblitz Dance has one rule: It must be done outdoors!



### Outdoor Zumba

Zumba Fitness combines Latin and International music with a fun and effective workout system.



### Outdoor Yoga

Yoga uses breathing techniques, exercise and meditation to improve health and happiness.



### Outdoor Tai Chi

Tai chi is an internal Chinese martial art practiced for its defense training, its health benefits and meditation.



## Real-World Examples

### Yoga on the Beach, Assateague Island Alliance

Worcester County, Maryland

To celebrate the National Parks Service centennial and Healthy Parks Healthy People campaign, the Assateague Island Alliance began hosting weekly yoga classes at the Assateague Island National Seashore. They decided yoga was the perfect activity because it promotes both physical and mental wellness, has low impact on the environment, and is something that anyone can do. Anywhere from 30 to 100 participants come out to these events. They have even created two moonlight yoga events, which are offered monthly and allow participants to come out and practice yoga under the stars and moon. Full Moon Yoga occurs during the full moon and Milky Way Yoga occurs on the new moon. The program coordinators cite Chrissy Earhart, the yoga instructor that leads the activity each week, as the reason for the program's great success. Chrissy is able to connect participants with the natural elements of the beach and ensures that the yoga session is inclusive of all types of people, no matter their age or ability level.



### Featured Resources

- [BioBlitz Dance - Official Tutorial Video](#)
- [Learn more about Zumba](#)
- [Find a Certified Outdoor Yoga Instructor in Your Area](#)



## Tips for Success

- 1.) Find an instructor that is able to connect the activity with the mission of the public land (i.e. bring in elements of the wind, breeze, waves, and sand to yoga on the beach).
- 2.) Ensure the program is accessible to anyone at any skill level.
- 3.) You need to have buy-in from the organization/ place that is hosting the event. Invite stakeholders to observe and participate in the event so they will understand its impact.

### 2018 NPLD Event: Championing Public Lands—Restoring Habitats and Ourselves

Denver, Colorado

In honor of National Public Lands Day, a group of youth volunteers from the neighborhoods surrounding a local wildlife refuge participated in stewardship activities focused on restoring area grasslands that were once the site of a weapon depository. With support from Promotores Verdes — a Latinx family-based youth program affiliated with the Woodsy Owl Conservation Corps — and United Cultures for Arts + Nature (U-CAN), volunteers learned about the history of the area, the wildlife that live there, and how to protect this land that has become a treasured resource for their community.

Youth volunteers were able to experience the health benefits of nature first-hand by participating in a nature walk through the area with naturalists and health professionals, and took part in some physical exercise by participating in a Zumba dance class and pedaling on bicycles to power the music and sound system for the outdoor event.

Volunteers also had the opportunity to learn about local pollinators by collecting pollinator seeds, which greatly aided area restoration efforts, and by partaking in a pollinator-inspired lunch.

Activity #8

# SunWise



## Overview

With one in five Americans developing skin cancer in their lifetime, education about sun safety is a vital step toward reducing risk and enjoying the outdoors safely. While some exposure to sunlight can be enjoyable, too much can be dangerous. Overexposure to ultraviolet (UV) radiation in sunlight can result in a painful sunburn; which can lead to more serious health effects, including skin cancer, premature aging of the skin and other skin problems; cataracts and other eye damage; and immune system suppression. The good news is that UV-related health effects are largely preventable by instituting sun-protection practices early and consistently.

NEEF's SunWise program raises sun safety awareness and fosters behavior change among all individuals. The SunWise Tool Kit provides adaptable activities for individuals of all ages to

explore, assess, and understand their natural environment and the factors that affect their health. It is a great way to encourage spending quality time in nature while protecting yourself from UV radiation.

SunWise isn't just for traditional educators—parents, caregivers, and other informal educators can join the Sunwise Program and receive the free tool kit with over 50 cross-cultural, standards-based activities. The program is a free environmental and health education program to teach individuals about sun safety, UV radiation, and stratospheric ozone. Read below to learn how your organization can incorporate SunWise activities into your next community, school, health fair, or corporate event and encourage individuals to be physically active, while protecting themselves from UV radiation at the same time.



## Real-World Examples

### 2019 Walk to Wellness

Washington, DC

The U.S. Environmental Protection Agency co-sponsored an annual Walk to Wellness to engage and energize federal agency employees to strive for healthier work-life balance. The Walk to Wellness is an outdoor event that includes fitness center class demonstrations such as Zumba and kickboxing; music; a walk around the neighborhood; and sports competitions such as hula hoop and football toss.

The National Environmental Education Foundation (NEEF) was invited to promote the SunWise program demonstrating the harmful effects of UV radiation and the effectiveness of different ways to block UV radiation by engaging

employees in various activities. One featured activity, UV Frisbee Science, demonstrated the effects of UV radiation and the effects of different materials on blocking out UV radiation. The activity used three UV Frisbees each covered with either baby oil, cotton cloth (t-shirt), or broad-spectrum sunscreen (with SPF 30 and above). Participants recorded observations after each frisbee was exposed to direct sunlight. After completing the activity, participants described ways they can protect themselves against harmful UV radiation and indicated behaviors they intend to change to be SunWise.



## Tips for Success

- 1.) If possible, make available giveaways and free samples of broad-spectrum sunscreens.
- 2.) Contact NEEF for information on procuring UV frisbees and beads.
- 3.) Partner with schools, local park and recreation agencies, community centers, and faith-based organizations.
- 4.) On overcast days carry on with activities. Remember UV rays are present even when there is limited or no sunlight.

## Family Science Night

Centreville, Virginia

Centreville Elementary School hosted Family Science Night, a program that introduces STEM learning by bringing fun hands-on activities to students, parents and caregivers. Through the family-learning exercises, children and their families participate in a variety of science-based activities and are encouraged to develop an interest in STEM subjects. NEEF was invited to host SunWise demonstrations to educate attendees on the importance of sun safety. Highlighted during the event was the Detecting UV Light Using Tonic Water activity that demonstrates the presence of UV light in sunlight. When a photon of UV energy is absorbed, it is re-emitted by quinine in tonic

water as a photon of visible light. This process is called fluorescence. The amount of fluorescence that occurs is influenced by the amount of UV. This reinforces the concept that UV light is always present in sunlight, although invisible to the naked eye.

Staff used tonic water and tap water to demonstrate the surfaces of the waters in two beakers. After completing the tonic water experiment, participants discussed the chemical reactions that were involved in the changes of the tonic and tap water. They observed that when light shines on an object, it is reflected, absorbed, or transmitted through the object depending on the objects' materials and the frequency (color) of the light.



### Featured Resources

- [FREE SunWise Activities](#)
- [Learn More About UV Radiation](#)
- [Action Steps for Sun Protection](#)



## Activity #9

# Art Therapy on Public Lands



## Overview

Art therapy is an integrative mental health and human services profession that enriches the lives of individuals, families, and communities through active art-making, creative process, applied psychological theory, and human experience within a psychotherapeutic relationship. It is

centered on the belief that creating art has therapeutic value. Art therapy can include paint, markers, colored pencils, clay, fabric, tissue paper, and more. No prior art experience is needed, everyone can benefit from art therapy





Art therapy, facilitated by a professional art therapist, effectively supports personal and relational treatment goals as well as community concerns.

Art therapy can help in seven ways!

- 1 Improve cognitive and sensorimotor functions**
- 2 Foster self-esteem and self-awareness**
- 3 Cultivate emotional resilience**
- 4 Promote insight**
- 5 Enhance social skills**
- 6 Reduce and resolve conflicts and stress**
- 7 Advance societal and ecological change**

## Real-World Examples

### WEFA Art Therapy Program

Wilton, Connecticut

Weir Farm National Historic Site (WEFA), in collaboration with Albertus Magnus College Masters of Arts in Art Therapy and Counseling (MAATC) Community Outreach Program, works to connect park visitors to nature through art, and to use the park as a place for wellness, rejuvenation, and healing.

Through this partnership, they offer art therapy workshops through the Art in the Park and Healthy Parks Healthy People programs. WEFA provides the use of an art studio at the park and has hosted art therapy sessions for various targeted audiences in the park since 2012, including an informational session for staff and volunteers to help them understand the importance of art therapy and the Healthy Parks Healthy People initiative.

WEFA's Art Therapy Program in Wilton, Connecticut, provides a space for people to explore art and nature in a non-traditional therapy setting in a public space. The art therapy sessions reach many different audiences, including cancer patients, at-risk youth, individuals in substance abuse recovery, and medically fragile children.

Data from self-reported surveys completed by participants in the program showed that on average, 96% of participants experienced reduced stress levels following the art therapy workshop, and participants reported about a 25% decrease in stress levels. About 15 workshops have been held thus far, and participants and their families often continue to use the park as a space for healing and wellness.

## Butte County Art Therapy Support Group- Northern California Art Therapy Association

### Northern California

The Northern California Art Therapy Association (NorCATA) provides free art therapy sessions for all to enjoy on the second Saturday of every month.

Art therapy is explored through a variety of media, including photography, painting, sculpture, textiles, mixed media, as well as both found and natural materials.

This art therapy group is a series of sessions developed to help individuals effected by the Butte County Camp Fire of November 8, 2018 to gradually work through their trauma and provide a space for healing that is safe, consistent, and connected to the community. At the start of each session, participants complete a PTSD screening for their personal reference and to track any progress they have been making.

After the art exercise, the group therapeutically delves into the art, the emotions it evokes, where it resides in the body and the shifting of the mind that occurs during its making. The group communicates throughout the session to help recreate a sense of community, which can often be scattered after a trauma. The sessions always incorporate nature into the healing process, and gradually allow participants to heal.

The scheduling of sessions is very mindful of the participants' trauma. These materials will be turned to ash and used to paint using the Japanese Sumi-e and Zen Shigajiku style of painting. Paintings are made with ink from fire cinders and are intended to focus on harmony with nature, allowing participants to both simultaneously explore and express themselves. The focus on such natural elements allows participants to work to establish a connection with nature and establish nature as a grounding place. In December, the group plans to produce knitting/crocheting textiles and go out into the community and wrap trees, mailboxes, houses that have survived the fire, etc. with knit materials.



Nature will come back. It pushes back. It is incredibly resilient. Humans have that resiliency too; we come from nature.”

- Dr. Cynthia Wilson, board-certified art therapist and facilitator of art therapy

The textile inspires a sense of being protected and safe, and helps participants engage with their community. The group is led by a certified art therapist alongside other health providers, which fosters a space for individuals to positively express themselves and self-reflect. Participants are also given tools to use on their own that they can do at home, allowing for a continuous healing process. Dr. Cynthia Wilson, registered and board-certified art therapist and facilitator of the art therapy support groups notes that the groups help participants heal by recognizing that nature fights back after trauma, as do humans. She notes “nature will come back. It pushes back. It is incredibly resilient. Humans have that resiliency too; we come from nature.”

## Tips for Success

- 1.) Focus on what emerges in the moment, allowing it to be a natural process and see where the process takes you.
- 2.) Allow participants to find a quiet place in nature with their sketchpad and take time to become familiar with the things surrounding them that intrigue them or attract them. Have participants note any elements that correspond to aspects of themselves, and then write a poem to the element.
- 3.) Have participants gather things that have fallen off or are no longer living (e.g. leaves, seashells, feathers, etc.) and use them to create a nest to protect the parts of them they feel are vulnerable.
- 4.) Engage the whole family by providing art therapy for adults and a children’s station with coloring, toys, games, and story time.
- 5.) Collaborate with a local art therapist to lead the art therapy session.
- 6.) Be flexible/adaptive: focus more on what emerges from the moment rather than following a rigid structure throughout the moment.

## Featured Resources

- [American Art Therapy Association \(AATA\): Certified Art Therapist Locator](#)
- [Art Therapy Resources: How to Begin and End an Art Therapy Session Effectively](#)



Activity #9

# Community Restoration and Conservation Events

## Overview

Engaging people in community clean-up initiatives can be a great way to engage the community with public lands while also taking part in a physical activity to get them moving. Community clean-up events get people outside and moving while benefitting the environment. Clean-up events can take on various forms and can even be a form of aerobic exercise, benefitting both your body and the Earth.

Community service also improves mental health. Research has found that giving back to the community and volunteering has many positive effects on mental health. Volunteering is predictive of better mental and physical health, life satisfaction, and social well-being. Those who volunteer regularly tend to have better well-being than those that do not.

Because volunteering often also takes the form of physical activity or labor, it is associated with a reduction in blood pressure and risk for cardiovascular disease. Individuals who volunteer on environmental issues are 2.6 times as likely to meet physical activity recommendations as those who do not volunteer



## Real-World Examples

### Healthy Parks Healthy People: Spring Invasive Species Removal

Reno, Nevada

Truckee Meadows Parks Foundation partnered with Keep Truckee Meadows Beautiful, a local nonprofit dedicated to creating a cleaner, more beautiful region through education and active community involvement. Truckee Meadows





Parks Foundation hosted a Great Community Cleanup event, which focused on the cleanup of illegal dump sites in open spaces surrounding the Truckee Meadows, as well as the removal of noxious weeds before they could bloom and spread. Truckee Meadows Parks Foundation worked with KTMB to make the Healthy Parks Healthy People: Spring Invasive Species Removal a site of the Great Community Cleanup, thereby fostering a unified sense of park stewardship in the community. Truckee Meadows Parks Foundation also partnered with Upstate Nevada, a local nonprofit cross fit gym that provides classes for individuals of

all abilities, impairments and/or ages. The program educated volunteers about health and provided them with a physical activity that improved public lands. The event kicked off with a community education segment sharing the importance of daily physical activity. Health education was incorporated into the event through an introductory lesson on the health benefits of being in nature and the correlation of human health to forest health. A certified CrossFit adaptive training coach led volunteers through warm-up and stretching exercises prior to the main activities. In addition, participants were informed of the





psychological and physical benefits associated with spending time in nature. Bilingual education and handouts were provided during the event. Following the health and wellness component, event activities included the removal of invasive species along the Truckee River in Idlewild Park. Funding for this event was supported by NEEF and the US Forest Service.



## Allegheny & Conewango River Clean-Up

Pennsylvania

The Conewango Creek Watershed Association held a series of clean-up projects along

Conewango Creek and the Allegheny River, giving individuals the opportunity to give back to their community while conducting an aerobic exercise activity. At the beginning of each day, participants were briefed on the safety procedures and the clean-up process and given equipment and clean-up gear. Volunteers were assigned to kayaks or canoes and spent most of the day paddling in the water collecting trash and loading it into their boats. The collected waste was then sorted into landfill garbage and recyclable scrap. A total of 2,688 volunteer hours were accumulated over the event, and 11,782 lbs. of metal, 92 tires, and 40 cubic yards of trash were removed from the water.

## Tips for Success

- 1.) Engage civic leaders to increase coverage of the event and attract more volunteers.
- 2.) Collaborate with public works department or public maintenance to ensure gathered waste is disposed of properly.

## Featured Resources

- [Resources for managers of NPLD events](#)
- [Planning a River Clean-Up: A Start to Finish Guide to Cleaning up your Local Waterway](#)



# Bibliography

---

- Olmsted, Frederick Law. *Yosemite and the Mariposa Grove: a Preliminary Report*, 1865. Yosemite Association, 1993.
- Blanck, Heidi M., et al. "Let's Go to the Park Today: The Role of Parks in Obesity Prevention and Improving the Public's Health." *Childhood Obesity*, vol. 8, no. 5, 2012, pp. 423–428., doi:10.1089/chi.2012.0085.blan.
- Sister, Chona, et al. "Got Green? Addressing Environmental Justice in Park Provision." *GeoJournal*, vol. 75, no. 3, 2009, pp. 229–248., doi:10.1007/s10708-009-9303-8.
- Comber, Alexis, et al. "Using a GIS-Based Network Analysis to Determine Urban Greenspace Accessibility for Different Ethnic and Religious Groups." *Landscape and Urban Planning*, vol. 86, no. 1, 2008, pp. 103–114., doi:10.1016/j.landurbplan.2008.01.002.
- Jennings, Viniece, and Cassandra Gaither. "Approaching Environmental Health Disparities and Green Spaces: An Ecosystem Services Perspective." *International Journal of Environmental Research and Public Health*, vol. 12, no. 2, 2015, pp. 1952–1968., doi:10.3390/ijerph120201952.
- Lovasi, Gina S., et al. "Neighborhood Safety and Green Space as Predictors of Obesity among Preschool Children from Low-Income Families in New York City." *Preventive Medicine*, vol. 57, no. 3, 2013, pp. 189–193., doi:10.1016/j.ypmed.2013.05.012.
- Astell-Burt, Thomas, et al. "Is Neighborhood Green Space Associated With a Lower Risk of Type 2 Diabetes? Evidence From 267,072 Australians." *Diabetes Care*, vol. 37, no. 1, 2013, pp. 197–201., doi:10.2337/dc13-1325.
- Bratman, Gregory N., et al. "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation." *Proceedings of the National Academy of Sciences*, vol. 112, no. 28, 2015, pp. 8567–8572., doi:10.1073/pnas.1510459112.
- Cox, Daniel, et al. "Doses of Nearby Nature Simultaneously Associated with Multiple Health Benefits." *International Journal of Environmental Research and Public Health*, vol. 14, no. 2, 2017, p. 172., doi:10.3390/ijerph14020172.
- Bratman, Gregory N., et al. "The Benefits of Nature Experience: Improved Affect and Cognition." *Landscape and Urban Planning*, vol. 138, 2015, pp. 41–50., doi:10.1016/j.landurbplan.2015.02.005.
- Haluza, Daniela, et al. "Green Perspectives for Public Health: A Narrative Review on the Physiological Effects of Experiencing Outdoor Nature." *International Journal of Environmental Research and Public Health*, vol. 11, no. 5, 2014, pp. 5445–5461., doi:10.3390/ijerph110505445.
- Duncan, Michael, et al. "The Effect of Green Exercise on Blood Pressure, Heart Rate and Mood State in Primary School Children." *International Journal of Environmental Research and Public Health*, vol. 11, no. 4, 2014, pp. 3678–3688., doi:10.3390/ijerph110403678.
- Lachowycz, Kate, and Andy P. Jones. "Does Walking Explain Associations between Access to Greenspace and Lower Mortality?" *Social Science & Medicine*, vol. 107, 2014, pp. 9–17., doi:10.1016/j.socscimed.2014.02.023.
- Mitchell, Richard, and Frank Popham. "Effect of Exposure to Natural Environment on Health Inequalities: an Observational Population Study." *The Lancet*, vol. 372, no. 9650, 2008, pp. 1655–1660., doi:10.1016/s0140-6736(08)61689-x.
- Maas, J. "Green Space, Urbanity, and Health: How Strong Is the Relation?" *Journal of Epidemiology & Community Health*, vol. 60, no. 7, 2006, pp. 587–592., doi:10.1136/jech.2005.043125.
- Wolch, Jennifer R., et al. "Urban Green Space, Public Health, and Environmental Justice: The Challenge of Making Cities 'Just Green Enough.'" *Landscape and Urban Planning*, vol. 125, 2014, pp. 234–244., doi:10.1016/j.landurbplan.2014.01.017.
- Vienneau, Danielle, et al. "More than Clean Air and Tranquillity: Residential Green Is Independently Associated with Decreasing Mortality." *Environment International*, vol. 108, 2017, pp. 176–184., doi:10.1016/j.envint.2017.08.012.
- Xu, Lixia, et al. "An Ecological Study of the Association between Area-Level Green Space and Adult Mortality in Hong Kong." *Climate*, vol. 5, no. 3, 2017, p. 55., doi:10.3390/cli5030055.

- James, Peter, et al. "Exposure to Greenness and Mortality in a Nationwide Prospective Cohort Study of Women." *Environmental Health Perspectives*, vol. 124, no. 9, 2016, pp. 1344–1352., doi:10.1289/ehp.1510363.
- Gascon, Mireia, et al. "Residential Green Spaces and Mortality: A Systematic Review." *Environment International*, vol. 86, 2016, pp. 60–67., doi:10.1016/j.envint.2015.10.013.
- Brown, Scott C., et al. "Neighborhood Greenness and Chronic Health Conditions in Medicare Beneficiaries." *American Journal of Preventive Medicine*, vol. 51, no. 1, 2016, pp. 78–89., doi:10.1016/j.amepre.2016.02.008.
- Cleland, V., et al. "A Prospective Examination of Children's Time Spent Outdoors, Objectively Measured Physical Activity and Overweight." *International Journal of Obesity*, vol. 32, no. 11, 2008, pp. 1685–1693., doi:10.1038/ijo.2008.171.
- Gladwell, Valerie F, et al. "The Great Outdoors: How a Green Exercise Environment Can Benefit All." *Extreme Physiology & Medicine*, vol. 2, no. 1, 2013, doi:10.1186/2046-7648-2-3.
- Gladwell, Valerie F, et al. "The Great Outdoors: How a Green Exercise Environment Can Benefit All." *Extreme Physiology & Medicine*, vol. 2, no. 1, 2013, doi:10.1186/2046-7648-2-3.
- White, Mathew P., et al. "Spending at Least 120 Minutes a Week in Nature Is Associated with Good Health and Wellbeing." *Scientific Reports*, vol. 9, 2019, doi:10.1038/s41598-019-44097-3.
- Deng, Li, and Yi Pang. "Effect of Outdoor Activities in Myopia Control: Meta-Analysis of Clinical Studies." *Optometry and Vision Science*, vol. 96, no. 4, 2019, pp. 276–282., doi:10.1097/oxp.0000000000001357.
- Pretty, Jules, et al. "Green Exercise: Complementary Roles of Nature, Exercise and Diet in Physical and Emotional Well-Being and Implications for Public Health Policy." CES Occasional Paper 2003-1, University of Essex, 2003.
- Kuo, Ming. "How Might Contact with Nature Promote Human Health? Promising Mechanisms and a Possible Central Pathway." *Frontiers in Psychology*, vol. 6, 2015, doi:10.3389/fpsyg.2015.01093.
- Braubach, Matthias, et al. "Effects of Urban Green Space on Environmental Health, Equity and Resilience." *Theory and Practice of Urban Sustainability Transitions Nature-Based Solutions to Climate Change Adaptation in Urban Areas*, 2017, pp. 187–205., doi:10.1007/978-3-319-56091-5\_11.
- Zhang, Jia Wei, et al. "An Occasion for Unselfing: Beautiful Nature Leads to Prosociality." *Journal of Environmental Psychology*, vol. 37, 2014, pp. 61–72., doi:10.1016/j.jenvp.2013.11.008.
- Kaplan, Rachel. "The Role of Nature in the Context of the Workplace." *Landscape and Urban Planning*, vol. 26, no. 1-4, 1993, pp. 193–201., doi:10.1016/0169-2046(93)90016-7.
- Kaplan, Stephen. "The Restorative Benefits of Nature: Toward an Integrative Framework." *Journal of Environmental Psychology*, vol. 15, no. 3, 1995, pp. 169–182., doi:10.1016/0272-4944(95)90001-2.
- Kirkby, Mary Ann. "Nature as Refuge in Children's Environments." *Children's Environments Quarterly*, vol. 6, no. 1, 1989, pp. 7–12.
- Colcombe, Stanley, and Arthur F. Kramer. "Fitness Effects on the Cognitive Function of Older Adults." *Psychological Science*, vol. 14, no. 2, 2003, pp. 125–130., doi:10.1111/1467-9280.t01-1-01430.
- Ulrich, Roger S. "Natural Versus Urban Scenes: Some Psychophysiological Effects." *Environment and Behavior*, vol. 13, no. 5, 1981, pp. 523–556., doi:10.1177/0013916581135001.
- Wells, Nancy M., and Gary W. Evans. "Nearby Nature: A Buffer of Life Stress among Rural Children." *Environment and Behavior*, vol. 35, no. 3, 2003, pp. 311–330., doi:10.1177/0013916503035003001.
- Berman, Marc G., et al. "Interacting with Nature Improves Cognition and Affect for Individuals with Depression." *Journal of Affective Disorders*, vol. 140, no. 3, 2012, pp. 300–305., doi:10.1016/j.jad.2012.03.012.
- Taylor, Andrea Faber, and Frances E. Kuo. "Children With Attention Deficits Concentrate Better After Walk in the Park." *Journal of Attention Disorders*, vol. 12, no. 5, 2009, pp. 402–409., doi:10.1177/1087054708323000.
- Bratman, Gregory N., et al. "Nature Experience Reduces Rumination and Subgenual Prefrontal Cortex Activation." *Proceedings of the National Academy of Sciences*, vol. 112, no. 28, 2015, pp. 8567–8572., doi:10.1073/pnas.1510459112.

- Vries, Sjerp De, et al. "Streetscape Greenery and Health: Stress, Social Cohesion and Physical Activity as Mediators." *Social Science & Medicine*, vol. 94, 2013, pp. 26–33., doi:10.1016/j.socscimed.2013.06.030.
- Francis, Jacinta, et al. "Creating Sense of Community: The Role of Public Space." *Journal of Environmental Psychology*, vol. 32, no. 4, 2012, pp. 401–409., doi:10.1016/j.jenvp.2012.07.002.
- J. Maas, et al. "Morbidity Is Related to a Green Living Environment." *Journal of Epidemiology & Community Health*, vol. 63, no. 12, 2009, pp. 967–973., doi:10.1136/jech.2008.079038.
- Takano, T. "Urban Residential Environments and Senior Citizens Longevity in Megacity Areas: the Importance of Walkable Green Spaces." *Journal of Epidemiology & Community Health*, vol. 56, no. 12, 2002, pp. 913–918., doi:10.1136/jech.56.12.913.
- Almedom, Astier M. "Social Capital and Mental Health: An Interdisciplinary Review of Primary Evidence." *Social Science & Medicine*, vol. 61, no. 5, 2005, pp. 943–964., doi:10.1016/j.socscimed.2004.12.025.
- Lubben, James E. "Assessing Social Networks among Elderly Populations." *Family & Community Health*, vol. 11, no. 3, 1988, pp. 42–52., doi:10.1097/00003727-198811000-00008.
- Maas, J. "Green Space, Urbanity, and Health: How Strong Is the Relation?" *Journal of Epidemiology & Community Health*, vol. 60, no. 7, 2006, pp. 587–592., doi:10.1136/jech.2005.043125.
- Zelenski, John M., et al. "Cooperation Is in Our Nature: Nature Exposure May Promote Cooperative and Environmentally Sustainable Behavior." *Journal of Environmental Psychology*, vol. 42, 2015, pp. 24–31., doi:10.1016/j.jenvp.2015.01.005.
- Fisher, Dana, et al. *Urban Environmental Stewardship and Civic Engagement: How Planting Trees Strengthens the Roots of Democracy*. Routledge, 2016.
- Alaimo, Katherine, et al. "Fruit and Vegetable Intake among Urban Community Gardeners." *Journal of Nutrition Education and Behavior*, vol. 40, no. 2, 2008, pp. 94–101., doi:10.1016/j.jneb.2006.12.003.
- Gonzalez, Marianne Thorsen, et al. "Therapeutic Horticulture in Clinical Depression: a Prospective Study of Active Components." *Journal of Advanced Nursing*, 2010, doi:10.1111/j.1365-2648.2010.05383.x.
- Fabrigoule, Colette, et al. "Social and Leisure Activities and Risk of Dementia: A Prospective Longitudinal Study." *Journal of the American Geriatrics Society*, vol. 43, no. 5, 1995, pp. 485–490., doi:10.1111/j.1532-5415.1995.tb06093.x.
- Rappe, Erja. "The Influence of a Green Environment and Horticultural Activities on the Subjective Well-Being of the Elderly Living in Long-Term Care." University of Helsinki, 2005.
- Ulrich, Roger S. *Health Benefits of Gardens in Hospitals. Plants for People International Exhibition, Floriade 2002*.
- Yeung, Jerf W. K., et al. "Volunteering and Health Benefits in General Adults: Cumulative Effects and Forms." *BMC Public Health*, vol. 18, no. 1, 2017, doi:10.1186/s12889-017-4561-8.
- Tabassum, Faiza, et al. "Association of Volunteering with Mental Well-Being: a Lifecourse Analysis of a National Population-Based Longitudinal Study in the UK." *BMJ Open*, vol. 6, no. 9, 2016, doi:10.1136/bmjopen-2016-011327.
- Burr, Jeffrey A., et al. "Volunteering and Cardiovascular Disease Risk: Does Helping Others Get 'Under the Skin?'" *The Gerontologist*, vol. 56, no. 5, 2016, pp. 937–947., doi:10.1093/geront/gnv032.
- Kuo, Frances E., and William C. Sullivan. "Environment and Crime in the Inner City." *Environment and Behavior*, vol. 33, no. 3, 2001, pp. 343–367., doi:10.1177/0013916501333002.



# National Environmental Education Foundation

4301 Connecticut Avenue NW  
Suite 160  
Washington, DC 20008-2326

202-833-2933

[neefusa.org](http://neefusa.org)

