Role of Parks and Public Spaces in Public Health

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Some Broad-Based Benefits of Parks & Green Space

• Protect the environment (reduced pollution, flood control, reduced urban heat island effect.)

• Enhance real estate values; attracting & retaining businesses

• Promote youth development

• Facilitate community pride, connectedness, social capital

• Promote individual mental & physical health
Contact with Nature: Mental & Physical Health Benefits

- Reducing Stress
- Restoring Attention
- Promoting Physical Activity
Contact with Nature: Mental & Physical Health Benefits

• Reducing Stress
• Restoring Attention
• Promoting Physical Activity
Stress

- Defined as the process used by individuals to respond psychologically and physiologically to situations that challenge or threaten well-being

- Although not all stress is bad, a major factor impacting health in modern day societies

Baum et al. 1985; Grahn & Stigsdotter 2003; Pretty 2004
Chronic stress has adverse health consequences

• Undermines the immune system
• Delayed wound healing
• Progression of cancer
• Linked with cardiovascular disease & type 2 diabetes
• Impacts mood and life satisfaction
• Headaches
• Poor sleep habits
• Cognitive function, anxiety disorders & depression

Webster & Glaser 2008; Godbout & Glaser 2006; Arranz et al 2007
What can nature contact do?  Stress

Reduction in stress & stress-related symptoms

- Lessens annoyance, anger, frustration, aggression
- Lowers blood pressure, heart rate & muscle tension
- Reduces risk of cardiovascular disease

Studies show that stress levels can fall within minutes of viewing green spaces

Frumkin & Fox, 2011; Nielsen & Hanson 2007; Lee et al. 2009; Derbyshire 2007
What can nature contact do?  

Workplace Stress

Multiple studies have identified the benefits of views of nature through a window and office plants for employees.

- Reduced stress
- Fewer ailments & sick leave
- Less frustration & more patience
- Higher job & life satisfaction
- Enhanced concentration & work performance
- Decreased intentions to quit

Kaplan 1993; Leather et al. 1998; Pretty 2004; Wells 2000
What can nature contact do? Driving Stress

- Drivers stuck in traffic with view of nature less stress compared to drivers stuck in densely built-up areas
- Driving to work in urban settings increased work stress; driving in green settings protective against work stress

Ulrich 1981; Parsons et al 1998
What can nature contact do? Surgery/Illness Recovery

Recovery of surgical patients with window views overlooking stand of trees compared to those looking onto a brick wall

- Faster recovery/shorter hospitalizations
- Less need for painkillers
- Lower levels of stress, fear & anger

- Another study showed viewing nature pictures (compared to abstract pictures or white panels) had similar results

Ulrich 1984; Ulrich et al 1993
What can nature contact do? Surgery/Illness Recovery

In other studies, contact with nature has been associated with:

- Fewer sick calls and stress symptoms among prisoners
- Better pain control in patients
- Improved health for people with chronic & terminal illnesses
- Improved immunity & cardiovascular function
- Lower blood pressure & anxiety among dental patients

What can nature contact do?  **Improves Mood**

Contact with nature (viewing images; walks in nature) has significant positive effects on mood.

- Reduce anxiety, depression, anger & aggression
- Increase positive feelings
- Feel more hopeful & less hopeless about confronting life issues

Comparing mood profiles for people active in natural settings vs. gyms showed that those in nature were significantly less depressed

Hartig et al 2003; Lindemuth 2007; Peacock et al 2007; Kuo 2001; Pretty et al. 2005; Morita et al. 2007
What can nature contact do? Importance of Parks

Mental health is significantly related to residential distance from parks: highest mental health scores for residents in short walking distances of parks.

High quality parks (attributes such as water features, shade, birdlife, trails) lowers psychological distress of neighborhood residents irrespective of whether or not they used the park.

Park visits associated with

- Improved mood
- Lower stress/anxiety
- Less sadness & depression

Orsega-Smith et al. 2004; Lawlor & Hopker 2001; Sturm & Cohen 2014; Hansmann et al., 2007; Francis et al. 2012
What can nature contact do?  Youth Stress

The stress-reducing potential of natural environments is applicable to children as well as to adults.

- Children exposed to nearby nature experience less stress and a faster recovery rate from stressful incidents
- Research suggests children may perform better throughout the day if provided breaks in green settings at school

Wells & Evans 2003; Dyment 2005
Contact with Nature: Mental & Physical Health Benefits

- Reducing Stress
- **Restoring Attention**
- Promoting Physical Activity
Attention fatigue

Two types of attention:

• **Effortless attention/fascination** (inherently interesting, such as observing wildlife)

• **Directed attention** (completing a work task, reading a textbook)

Directed attention subject to fatigue after sustained mental effort, making it difficult to concentrate.

Kaplan, 1995
Nature & Attention Restoration

• Numerous studies show viewing and spending time in nature reduces attention fatigue and improves ability to concentrate across all ages.

• Attention Restoration Theory (ART):

  - Natural environments inherently restorative
  - Allows directed attention to recover from fatigue
  - Better concentration

Cognitive functioning & directed attention

Studies across a variety of populations & settings show improved performance on cognitive tasks with exposure to nature:

- Residents living in greener environments
- Workplace offices with plants
- Natural views from windows
- Walks in nature (parks, forest)
- Contact with nature in nursing homes

Kuo, 2001; Lohr et al., 1996; Tennessen & Cimprich 1995; Berman et al., 2008; Taylor et al., 2002; Ottosson & Grahn, 2008
Attention fatigue & ADHD

Individuals with Attention Deficit Hyperactivity Disorder (ADHD) are particularly susceptible directed attention fatigue

- ADHD is one of the most commonly diagnosed behavioral disorders in childhood, affecting 1 in 20 children in the US
- Inattention & related impacts often persist into adolescence & adulthood

Nature & Attention Restoration

Compare ADHD symptoms & cognitive task performance before and after activities in nature vs urban environments

• Youth activities in nature settings yielded significantly greater improvements

• Performance boost similar to widely prescribed ADHD medications on similar task.

• Recent MU study showed similar findings in college students with ADHD

Faber Taylor et al 2001; Kuo & Faber Taylor 2004; Faber Taylor & Kuo 2008; Thal & Wilhelm Stanis 2014
Contact with Nature: Mental & Physical Health Benefits

- Reducing Stress
- Restoring Attention
- Promoting Physical Activity
Obesity* Trends Among U.S. Adults, 1985

*BMI ≥30, or ~ 30 lbs. overweight for 5’4” person

Source: Behavioral Risk Factor Surveillance System, CDC
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Source: Behavioral Risk Factor Surveillance System, CDC
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Obesity* Trends Among U.S. Adults, 2002

Source: Behavioral Risk Factor Surveillance System, CDC
Obesity* Trends Among U.S. Adults, 2003

*BMI ≥30, or ~ 30 lbs. overweight for 5’4” person

Source: Behavioral Risk Factor Surveillance System, CDC
Obesity* Trends Among U.S. Adults, 2004

*BMI $\geq 30$, or $\sim 30$ lbs. overweight for 5’4” person

Source: Behavioral Risk Factor Surveillance System, CDC
Obesity* Trends Among U.S. Adults, 2005

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Source: Behavioral Risk Factor Surveillance System, CDC
• **33%** youth in US overweight or obese

• Health-related issues (mental & physical)

• Staggering costs of medical care

• Overweight children are more likely to be overweight or obese as adults

Flegal et al. 2016; Ogden et al. 2016; CDC 2010; Franks et al. 2010; Yeung et al. 2010
Physical Activity (PA)

- PA can reduce risk of obesity & related diseases
- Also shown to have a beneficial effect on psychological health & well-being
- Most Americans (youth & adults) do not meet recommended PA guidelines

Parks provide important “behavior settings” in communities that can promote physical activity (PA).

Coupled with other motivations for park visits, park-based PA can be intrinsically enjoyable & satisfying, and help to achieve recommended levels.
Parks & Green Space as Important PA Resources

Evidence suggests that green spaces encourages PA in all age groups

• *Time outdoors & in parks* are powerful predictors of PA, particularly in children

Baranowski et al 1993; McCurdy et al 2010; Sallis et al. 2000; Wilhelm Stanis et al 2014
Parks & Green Space as Important PA Resources

Evidence suggests that green spaces encourages PA in all age groups

- *Time outdoors & in parks* are powerful predictors of PA, particularly in children
- *Preferences* for tree-lined and scenic routes for walking and running

King et al. 2000; Bird & Adams 2001; Bodin & Hartig 2003
Parks & Green Space as Important PA Resources

Evidence suggests that green spaces encourages PA in all age groups

- *Time outdoors & in parks* are powerful predictors of PA, particularly in children

- *Preferences* for tree-lined and scenic routes for walking and running

- *Access* to green space is associated with increased PA and park use
  - Supply & proximity (more & closer are better)

Parks & Green Space as Important PA Resources

Park features & access characteristics also important
  • Number & types of features/facilities
  • Quality of park and features (e.g., renovations)
  • Ease of accessing the park from surrounding neighborhood
Parks & Green Space as Important PA Resources

Park features & access characteristics also important

- **Number & types of features/facilities**
- Quality of park and features (e.g., renovations)
- Ease of accessing the park from surrounding neighborhood

- Youth 2.5x more likely to achieve PA recommendations if had a park with a playground within 1/2 mile of home
- Importance of trails for PA across age groups
- Park amenities such as shade is associated with greater PA

Wilhelm Stanis et al 2014; Besenyi et al. 2016; Kaczynski et al., 2008; Cohen et al 2006; Li et al., 2005
Parks & Green Space as Important PA Resources

Park features & access characteristics also important
  • Number & types of features/facilities
  • Quality of park and features (e.g., renovations)
  • Ease of accessing the park from surrounding neighborhood

- **Renovations** to playgrounds and park features result in increase use and PA.

- Park quality and renovations also associated with increased perceptions of park **safety**, which promotes use and PA

Timperio et al., 2008; Colabiachi et al. 2009; Cohen et al. 2015
Parks & Green Space as Important PA Resources

Park features & access characteristics also important
- Number & types of features/facilities
- Quality of park and features (e.g., renovations)
- Ease of accessing the park from surrounding neighborhood

- Residents less likely to use park if must cross high-speed road on their way to the closest park
- Residents with greater intersection density (street connectivity) were more likely to use parks and engage in PA in parks

Wilhelm Stanis et al 2014; Besenyi et al. 2016; Kaczynski et al., 2014
Contact with Nature: Mental & Physical Health Benefits

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Strong evidence of the benefits – what’s next?
Moving forward…

- Consider ways to add “green” to our lives
- Disparities & environmental justice
- Park prescription programs
- Investments in parks and green space
Moving forward...

- **Consider ways to add “green” to our lives**
- Disparities & environmental justice
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Adding Green

Consider the range from small micro-restorative encounters (views of nature) to “deep restoration” in wilderness

- Around schools: views out window can help teachers’ stress, youth cognitive restoration, & promote youth PA at recess
- Green travel routes: decrease driving stress, mitigate work stress, encourages more active transportation
Moving forward…

- Consider ways to add “green” to our lives
- **Disparities & environmental justice**
- Park prescription programs
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Environmental Justice

- Green space availability, park features & quality, and safe access are generally worse in low income and/or high-minority areas.

- Given nature’s importance for mental and physical health, considered the next wave of environmental justice.

- An important way to make changes is to engage community members to take action to address community-based issues.

Vaughan et al. 2013; Crawford et al., 2008; Estabrooks et al., 2003; Moore et al., 2008
Community Park Audit Tool (CPAT)

- Developed with & for community members to quickly & reliably assess parks for their potential to promote PA
- Comprehensive (key areas covered) yet user-friendly (length, format)
- 6 pages with 4 sections:
  - Park Information
  - Access & Surrounding Neighborhood
  - Park Activity Areas
  - Park Quality and Safety

Kaczynski, Wilhelm Stanis et al 2012
Community Park Audit Tool (CPAT)

Currently:
• Electronic format (eCPAT)
• Advocacy efforts with youth
• Workshop trainings in communities

Data collection on Mobile Device + App

Kaczynski, Wilhelm Stanis et al 2012
Moving forward…

- Consider ways to add “green” to our lives
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Park Prescriptions

- Growing movement of park prescription programs designed to better connect the health care community and public lands to create healthier people

- Goal to increase the prescription of outdoor activity in recognition of the many mental and physical health benefits
Moving forward…

- Consider ways to add “green” to our lives
- Disparities & environmental justice
- Park prescription programs
- **Investments in parks and green space**
Investments in green space as a public health resource

• Recognize parks & green space as an essential component of the **health care system**
• Ensure parks & green space providers are **aware of & promote** health outcomes
• **Design & renovate** parks, buildings, neighborhoods to facilitate contact with nature
• Develop new **policies** around nature & health
• Enhance **partnerships** between green space providers & health related organizations (can’t do it alone!)
• Continue to **evaluate & document** the contributions
Summary

- The evidence is clear that contact with nature provides many mental & physical health benefits
- Parks & green spaces are important public health resources
- Opportunities to extend the benefits and impacts
Thank you!

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