



Children and Nature Initiative



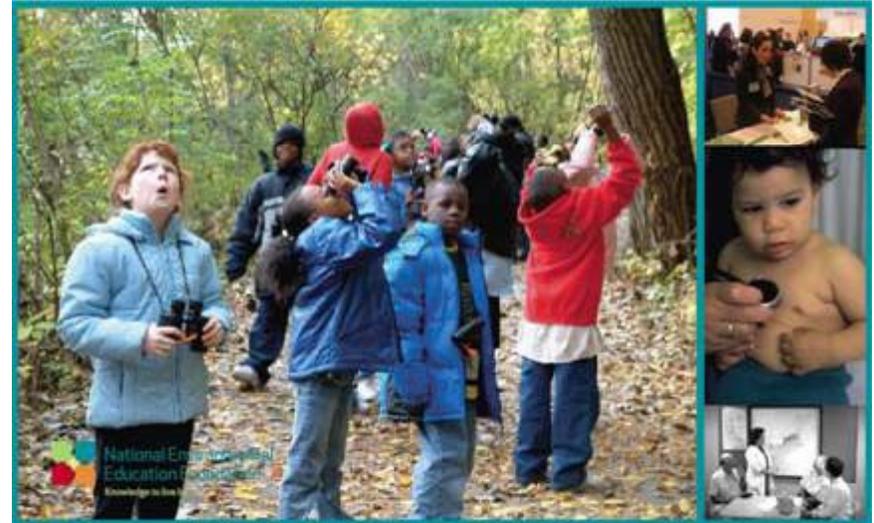
in partnership with



Children and Nature Initiative



- Goal: connect children with nature for health benefits
- Create Nature Champions: build capacity among pediatric health care providers to be leaders in prescribing nature
- Refer families to a park or nature center within economically, racially/ethnically, and culturally diverse communities
- Partners National Audubon Society, US Fish and Wildlife Service, USDA Forest Service and National Park Service provide active nature programming



Advisory Committee



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Health Network



Objectives

- Review the growing prevalence of obesity and related diseases
- Review the growing prevalence of mental health disorders such as ADHD
- Understand the relationship of changing lifestyles of US children to this change
- Understand the impact of these chronic conditions on adult disease burden



Overview: Burden of Obesity and ADHD in Childhood

Obesity & Related Conditions



Obesity

- 16.9% of children ages 2-19 are obese (BMI \geq 95thile)¹
- 31.7% are overweight (BMI \geq 85thile)¹

Childhood obesity predicts adult morbidity

- 80% of obese youth become obese adults²

Related conditions

- Type-2 diabetes, hypertension (HTN)
- Metabolic syndrome

¹Ogden CL et al. JAMA 2010;303(3):242-249.

²Whitaker RC et al. NEJM 1997;337:869-73.



Obesity-Related Diseases

Type 2 diabetes mellitus (DM)

- Formerly known as **adult-onset** diabetes
- ~ 186,300 children had Type I and Type II DM in 2007¹
- 3,700 children diagnosed with Type II DM each year¹
- CDC estimates: 1 in 3 children born in 2000 will develop DM if present obesity trends are not reversed²

¹CDC National diabetes fact sheet 2007

²Narayan KN et al. JAMA 2003;290:1884-90.



Obesity-Related Diseases

Hypertension

- BMI <85th %ile: 2.6% of children with HTN
- BMI ≥95th %ile: 10.7% with HTN¹

Cardiovascular disease

- High cholesterol levels, abnormal glucose tolerance, and HTN in children²
- Overweight adolescents are at increased risk of coronary heart disease and early death³

¹Sorof J et al. *Pediatrics* 2004;113:475-82.

²Dietz W. *Pediatrics* 1998;101:518-25.

³Ludwig DS. *NEJM* 2007;357:2325-27.

Other Medical Issues



Asthma

- Overweight children at increased risk for developing asthma, other respiratory problems¹, asthma hospitalizations²

Possible relationships between asthma and sedentary lifestyles, including lack of physical activity and television viewing^{3,4}

¹Schachter LM. *Thorax* 2001;56:4-8.

²Bender B et al. *Pediatrics*, 2007;120:805-13.

³Rasmussen F. *European Respiratory Journal* 2000;16:866-70.

⁴Sheriff A, et al. *Thorax* 2009;64:321-5.

Other Medical Issues



Vitamin D Deficiency

- 9% of US children are vitamin D deficient
- 61% are insufficient¹
- Physical activity may be associated with vitamin D levels²

Mental Health – ADHD/ADD

- Variable estimates, but prevalence is increasing
- National Health Interview Survey estimates 9% of US children with ADHD/ADD³
- Impairs school performance and socialization; may persist into adulthood

¹Kumar J, et al. *Pediatrics* 2009;124:e362-70

²Ohta H, et al. *J Bone Miner Metab* 2009;27:682-8

³Pastor PN, et al. *Vital Health Stat* 2008;10:237



Active vs. Sedentary Lifestyle

Physical activity reduces risk for

- Coronary artery disease, HTN
- Diabetes, osteoporosis, colon cancer

The US is shifting to a sedentary lifestyle

Physical activity in adulthood begins in childhood

- 40% of adults report NO leisure physical activity¹
- Kids learn by watching their parents

¹ Center for Health Statistics. Health, United States, 2007 with Chartbook on Trends in the Health of Americans. 2007.

Obesity & Physical Activity



Nationwide shift in physical activity

- Active teens become active adults
- In 2005, only 35% of HS students met recommended level of physical activity

Growth in electronic media

- 21% played videogames >3 hours daily¹
- Average child watches 3 hours TV daily²
- 7.5 hours per day spent with all forms of e-media (TV, Internet, chats, games, etc)³

¹CDC. Youth risk behavior surveillance 2005. MMWR 2006;55:SS-5

²AAP, Committee Public Ed. *Pediatrics* 2001;107:423-6

³Rideout VJ et al. Kaiser Family Foundation Report. 2010



Obesity & Physical Activity

Growth in electronic media

- 32% of 2-7 year-olds & 65% of 8-18 year-olds have TVs in bedrooms¹

Time spent in front of TV or computer = time not spent being physically active

Estimated 25% loss of play time and 50% loss in unstructured outdoor activity²

No Child Left Behind 2001

- Increased time for reading and math
- But at the expense of physical education³

¹ Roberts DF et al. Henry J Kaiser Family Foundation Report, 1999.

² Juster FT et al. Changing Times of American Youth: 1981-2003. University of Michigan, 2004.

³ Dillon S. Schools cut back subjects to push reading and math. New York Times March 26; 2006.



Health Benefits of Nature & Outdoor Activity

Part I: Physical Health

Objectives



- Review the evidence surrounding health and activity levels of children, particularly as they pertain to natural environments
- Understand the benefits of outdoor play on children's health and mental well being
- Understand the role that natural environments have in improving outdoor physical activity for children



Health Benefits of Nature

- Restorative/Therapeutic
- Increases physical activity
- Reduces childhood stress
- Coping tool for ADD/ADHD
- Developmental benefits:
 - Social, Cognitive, Emotional, Physical





Time Outdoors & Physical Activity

- Time spent outdoors usually equates to increased physical activity¹
- Study among 10-12 year olds²
 - For every hour spent outside, physical activity increased by 27 minutes/week
 - Prevalence of overweight was 27-41% lower among those spending more time outdoors

¹Burdette HL, et al. *Arch Pediatr Adol Med* 2004;159:46-50.

²Cleland V, et al. *Int J Obesity* 2008;32:1685-93.

School Grounds & Physical Activity



- Canadian emphasis on “green school grounds”
 - Diverse environmental features—trees, gardens, nature trails
- Survey of teachers, parents, administrators
 - 70% agreed it increased students’ light-moderate activity
 - 50% agreed it increased vigorous activity
 - Grounds supported wider variety of play

Dyment JE et al. *Health Ed Res* 2008;23:952-62



Parks & Physical Activity

- Associations between healthy weight & availability of 13 specific parks within 1 km of residence
 - No relationship found between BMI and simply living near a park
 - However, for children who lived within 1 km of park **with a playground**, children were **5 times** more likely to have a healthy weight
 - Relatively small study of 108 children may limit ability to find significant relationships

Potwarka LR, et al. *J Community Health* 2008;33:344-50



Parks & Physical Activity

- Study of 1556 sixth grade girls across 7 cities in the U.S.
- Measured moderate-to-vigorous physical activity (MVPA) of girls over 6 days
- Girls who lived near 1 or more parks within 1/2 mile had higher levels of non-school MVPA than girls who did not
 - Higher levels of physical activity associated with park features such as walking paths, running tracks, playgrounds, basketball courts, streetlights and floodlights

Cohen DA. *Pediatrics* 2006.118,1381-1389.



Parks & Physical Activity

- Larger study of 8 parks in Los Angeles
- Parks were in predominantly African American or Hispanic neighborhoods
 - Poverty range 13.8% to 47.3%
- 2000 individuals counted in each park
 - Vigorous activity associated with sports courts and playgrounds
- Proximity of residence predicts park use and physical activity
 - Those living < 1 mile away were more likely to use the park and had 38% more exercise sessions than those living farther away

Cohen DA, et al. *Amer J Pub Health* 2007;97:509-14

American Academy of Pediatrics (AAP)



2006 Policy Statement “Active healthy living: prevention of childhood obesity through increased physical activity”

- Lifestyle-related physical activity as opposed to aerobics linked to **sustained** weight loss
- Infants and toddlers should be allowed outdoor physical activity and unstructured free play and exploration
- Parents should encourage children to play outside as much as possible

AAP Council on Sports Medicine and Fitness and Council on School Health. *Pediatrics* 2006;117:1834-1842.



Health Benefits of Nature and Outdoor Activity Part II: Mental Health



Nature as a Restorative Mechanism

- Nature alone can influence recovery from surgery
 - Compared 23 matched pairs of patients who underwent a cholecystectomy
 - Randomly assigned the post-surgery patients to either rooms facing a brick wall or rooms with views of nature
 - Findings: those facing nature had shorter post-operative hospital stays, fewer negative comments from nurses, and took less analgesics
 - Suggests that viewing nature alone can aid in the path of recovery

Ulrich RS. *Science*, 1984;224:420–421.



Nature as a Restorative Mechanism

- RCT- used distraction therapy during a flexible bronchoscopy (FB) while consciously sedated
 - Randomly assigned to either a normal FB or FB plus distraction therapy (nature sights and sounds)
 - Patients rated the level of pain experienced and anxiety
- Findings: Pain control was much better for the intervention group than the control groups [OR: 4.76]
 - Clinicians should supplement analgesic medications with an inexpensive, non-invasive method of distraction therapy

Diette GB et al. *Chest* 2003;123:941-8.



Effects of Nature on Crime

- How could vegetation decrease crime?
 - More eyes on the street
 - Well maintained vegetation can act as a ‘territorial marker’ – implied surveillance
 - Mitigation of Mental Fatigue Symptoms
- Compared crime rates for 98 Chicago Public Housing Buildings with different levels of vegetation
- Homogeneous population for Income, Education, Life Circumstances
- Controlled for
 - # of apartments per building
 - Building height
 - Vacancy rate
 - # of occupied units

Kuo et al. Environment and Behavior 2001; 33; 343-367.



Effects of Nature on Crime

Kuo, Sullivan / VEGETATION AND CRIME 355

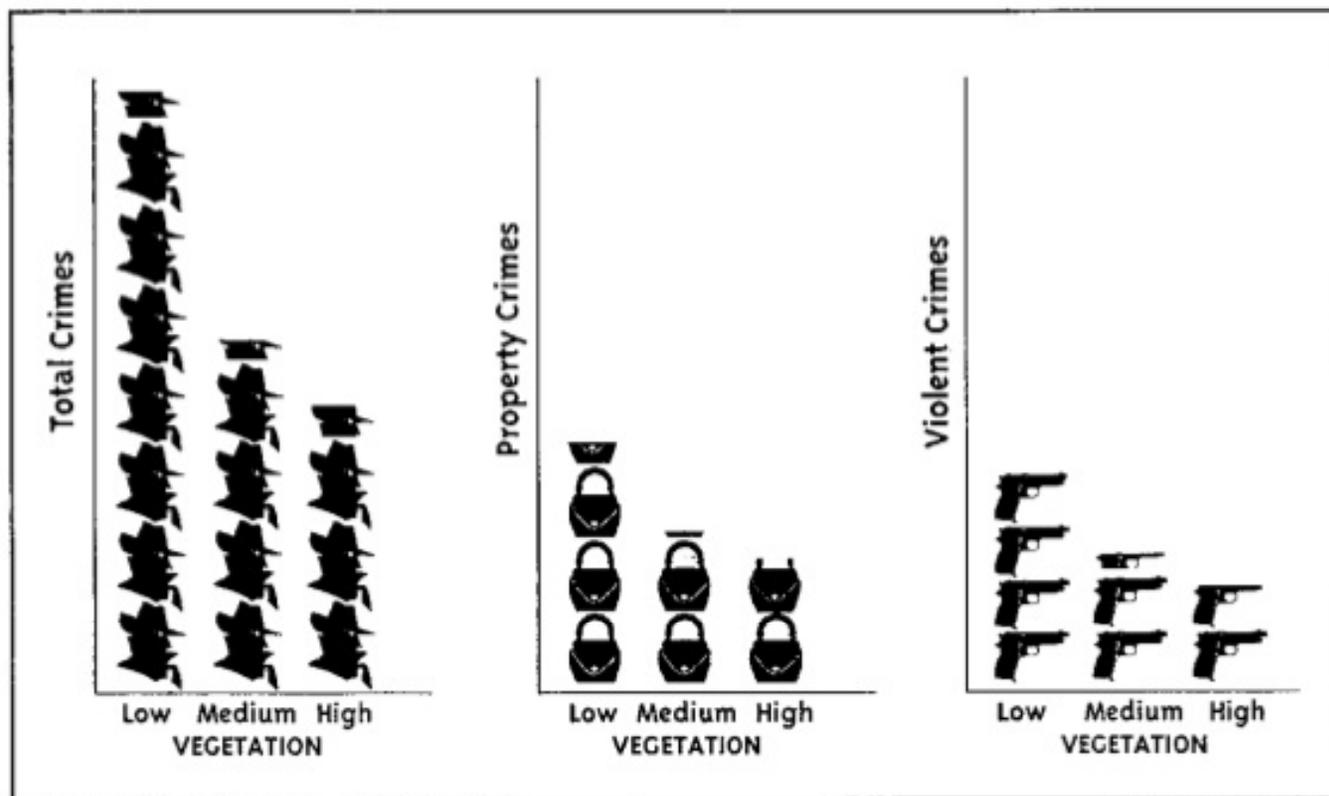


Figure 3: Mean Number of Crimes Reported Per Building for Apartment Buildings With Different Amounts of Vegetation (each icon represents one reported crime)



Reduce Childhood Stress

- Study of 337 rural NY children in 3-5 grade
- Examined child's self-worth and levels of psychological distress
- Identified whether they live in natural environment, using "Naturalness Scale"
- Lewis Stressful Life Events Scale
 - Questions about bullying, argue with parent, peer pressure, recent moves
 - Frequency of occurrences, not severity
- Rutter Child Behavior Questionnaire, Global Self-Worth subscale

Wells NM & Evans GW. *Environment and Behavior* 2003;35:311-330.

Reduce Childhood Stress Results



- Nature appeared to act as a buffer to decrease stress in rural children
- Lower levels of stress in the child were noted with increased amount of exposure to natural environments
- The nature exposure effect was especially pronounced for children with the highest levels of stressful events
- Higher nature associated with positive self worth

Wells NM & Evans GW. *Environment and Behavior* 2003;35:311-330.



Physical Activity in Natural Environments

Effects on mood and blood pressure

Synergistic health effects between physical activity and exposure to nature (“green exercise”)

- Intervention: Subjects ran on treadmill while shown 4 different themes of pictures
 - Rural pleasant, urban pleasant, rural unpleasant, urban unpleasant photographs
- Results: the rural and urban pleasant nature pictures showed a significant reduction in blood pressure and a more positive effect on mood than exercise alone
 - Participants in the rural pleasant group had the largest reduction in blood pressure

Pretty J et al. *Internat J Environ Health Res* 2005;15:319-37.

Physical Activity in Natural Environments Systematic Review



Outdoor exercise brings more positive effects on mental wellbeing than exercising indoors

- 11 trials comparing mental wellbeing after a short walk or run outdoors and indoors
- 9 of 11 trials showed improved mental wellbeing following outdoor exercise
- Outdoor exercise associated with revitalization, decreases in tension, confusion, anger, depression, and increased energy
- Greater intent to repeat outdoor activity

Effects of Nature on ADD/ADHD



- Does contact with nature improve inattentiveness?
- Survey of parents compared child's symptoms when engaging in various settings
 - Indoor setting– windowless room
 - Natural outdoor setting– park, farm, outdoor neighborhood public space

Taylor AF et al. *Environment and Behavior* 2001;33:54-77.

Effects of Nature on ADD/ADHD



- Outcome measure were 4 inattentive symptoms
 - Inability to stay focused on unappealing tasks
 - Inability to complete tasks
 - Inability to listen and follow directions
 - Being easily distracted
- Findings
 - Activities in natural settings were helpful in reducing inattentive symptoms
 - As tree cover in the setting increased, inattentive symptoms decreased

Taylor AF et al. *Environment and Behavior* 2001;33:54-77.

Effects of Nature on ADD/ADHD



Nationwide study examined if “green” settings reduced symptoms of ADHD

- Compared green outdoor after-school/weekend activities to activities in built indoor/outdoor settings
- Findings: “green outdoor activities reduced symptoms significantly more than did activities conducted in other settings, even when matched across all settings”

Critique: Not randomized, not controlled, “green activities” are not uniformly defined

Kuo FE & Taylor AF. *Amer J Pub Health* 2004;94:1580-86.

Effects of Nature on ADD/ADHD



- Prospective study of low income, urban children who relocated to new home
 - n = 17
- Compared 2 home environments to assess for natural environments
 - Pre move visit and post move visit several months later
 - Compared few natural elements and those with plants and views of nature
- Direct Attention Capacity was measured by Attention-Deficit Disorders Evaluation Scale

Effects of Nature on ADD/ADHD



- New home was more likely to have greater number of natural elements than old one
- The change in the natural environment was a significant predictor of the improvement in their attention score
- While the general quality of the housing also improved after the move, this was not a predictor of improved attention

Effects of Nature on ADD/ADHD



- Children completed a series of puzzles designed to create mental fatigue
- Children with ADHD guided through 20 minute walk in 3 different environments
 - A city park
 - An urban area
 - A residential area
- Children next completed tests of concentration and impulse control
 - Concentration significantly better after a walk in the park, compared to other 2 settings

Nature Aiding Childhood Development



AAP Clinical Report:
importance of play in a child's
social, emotional, cognitive,
and physical development

- Benefits of play – develop healthier cognition, a more developed imagination, dexterity, emotional strength, and physical strength
- Play builds active healthy children
- Advice for pediatricians: children should get free unstructured play outside



Ginsburg KR, et al. *Pediatrics*, 2007;119:182-191.

National Movement



- We Can!
www.nhlbi.nih.gov/health/public/heart/obesity/wecan/
- Exercise is Medicine
www.exerciseismedicine.org
- America's Great Outdoors Initiative
www.doi.gov/americasgreatoutdoors/
- Let's Move
www.letsmove.gov
- Let's Move Outside
www.letsmove.gov/letsmoveoutside.php
- AAP and White House Obesity Initiative
www.aap.org/obesity/whitehouse/



Prescribing Exercise

- Swedish study measured effectiveness of issuing 6300 physical activity referrals over 2 years
 - Half of the patients reached reported increased physical activity at 3 months and 12 months¹
- Program in Spain recruited 4000 physically inactive patients and provided exercise referrals to half
 - 6 months later, patients who received the referrals were more active²

¹ Leijon et al. *Scand J Med Sci Sports* 2009;19:627-36.

² Grandes et al. *Arch Intern Med* 2009;169:694-701



What Pediatricians Can Do

- Recognize that families may use the Internet as a primary source of information
 - Emphasize appropriate sites for information (ie AAP, CDC, etc)
 - www.aap.org/healthtopics/nutrition.cfm
- Promote healthy eating habits
- Decrease screen time to ≤ 2 hours/day
- Promote appropriate activity levels in children (1 hour per day)



What Pediatricians Can Do

- Encourage that at least some of this activity occur in the outdoor, natural environment
 - May be particularly relevant for patients with ADHD and other mental health issues
- Particular emphasis should be on unstructured, exploratory play
- Become advocates in the school to support physical education in the schools



Prescribing Nature

- Ample evidence attributing improved health with physical activity
- Some evidence that nature specifically can improve attention and other psychosocial aspects of health and reduce stress
- Children should be encouraged to play outside
- Physicians should consider “prescribing” outdoor play for physical and mental health benefits



Children and Nature Initiative Tools & Resources

- Children's Health and Nature Fact Sheet
- Health Care Provider Kits: Prescription Pads, Patient Brochures, Pediatric Environmental History Form in English and Spanish
- Training PowerPoint
- Peer-reviewed Publications
 - Using nature and outdoor activity to improve children's health--McCurdy, Winterbottom, Mehta, Roberts. *Current Problems in Pediatric and Adolescent Health Care* 2010;40
 - Building on Partnerships: Reconnecting Kids With Nature for Health Benefits—Kruger, Nelson, Klein, McCurdy, Pride, Ady. *Health Promotion Practice* (May 2010)
- Webpage with links to Additional Resources

Pediatric Environmental History Screening Forms



Pediatric Environmental History (0-18 Years of Age)

The Screening Environmental History

For all of the questions below, most are often asked about the child's primary residence. Although some questions may specify certain locations, one should always consider all places where the child spends time, such as daycare centers, schools, and relative's houses.

Where does your child live and spend most of his/her time? _____

What are the age, condition, and location of your home? _____

Does anyone in the family smoke? Yes No Not sure

Do you have a carbon monoxide detector? Yes No Not sure

Do you have any indoor furry pets? Yes No Not sure

What type of heating/air system does your home have?
 Radiator Forced air Gas stove Wood stove Other _____

What is the source of your drinking water?
 Well water City water Bottled water

Is your child protected from excessive sun exposure? Yes No Not sure

Is your child exposed to any toxic chemicals of which you are aware? Yes No Not sure

What are the occupations of all adults in the household? _____

Have you tested your home for radon? Yes No Not sure

Does your child watch TV, or use a computer or video game system more than two hours a day? Yes No Not sure

I how many times a week does your child have unstructured, free play outside for at least 60 minutes? _____

Do you have any other questions or concerns about your child's home environment or symptoms that may be a result of his or her environment? _____

Follow up/Notes

The Screening Environmental History is taken in part from the following sources:

- American Academy of Pediatrics Committee on Environmental Health. Pediatric Environmental Health 2nd ed. Etzel RA, Balk SJ, Eds. Elk Grove Village, IL: American Academy of Pediatrics, 2003. Chapter 4. How to Take an Environmental History.
- Balk SJ. The environmental history: asking the right questions. Contemp Pediatr. 1996;13:19-36.
- Frank A, Balk S, Carter W, et al. Case Studies in Environmental Medicine. Agency for Toxic Substances and Disease Registry, Atlanta GA, 1992, rev. 2000. Taking an Exposure History.

This screening environmental history is designed to capture most of the common environmental exposures to children. The screening history can be administered regularly during well-child exams as well as to assess whether an environmental exposure plays a role in a child's symptoms. If a positive response is given to one or more of the screening questions, the primary care provider can consider asking questions on the topic provided in the Additional Categories and Questions to Supplement the Screening Environmental History, accessible at <http://www.neefusa.org/pdf/PEHhistory.pdf>.



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Historia Pediátrica Ambiental (0-18 Años de Edad)

La Historia Ambiental Exploratoria

Para todas las siguientes preguntas, que generalmente se hacen acerca del lugar de residencia principal del niño. Aunque algunas preguntas pueden especificar sitios determinados, uno siempre debe tomar en cuenta todos los lugares donde el niño pasa el tiempo, tales como guarderías, escuelas y casas de los parientes.

¿Dónde vive su hijo(a) y dónde pasa la mayor parte del tiempo? _____

¿Cuál es la antigüedad, condición y ubicación de su casa? _____

¿Hay algún fumador en la familia? Sí No No está seguro

¿Tiene un detector monóxido de carbono? Sí No No está seguro

¿Tiene alguna mascota peluda dentro la casa? Sí No No está seguro

¿Qué tipo de calefacción/aire acondicionado tiene en su casa?
 Radiador Aire forzado Estufa a gas Estufa a leña Otro _____

¿Qué fuente de agua potable utiliza?
 Agua de pozo Agua de la ciudad Agua embotellada

¿Protege a su niño(a) de la exposición al sol excesivo? Sí No No está seguro

¿Está su hijo(a) expuesto a algún químico tóxico de que usted sepa? Sí No No está seguro

¿Cuáles son las ocupaciones de los adultos de la casa? _____

¿Ha investigado si su casa está libre de radón? Sí No No está seguro

¿Mira su niño(a) la TV, o utiliza la computadora o juegos de video más de dos horas al día? Sí No No está seguro

¿Cuántas veces a la semana juega libremente su niño(a) fuera de la casa por lo menos 60 minutos? _____

¿Tiene otras preguntas o preocupaciones acerca del ambiente hogareño del niño(a) o síntomas que puedan ser resultado del medio ambiente? _____

Seguimiento/Notes:

La Historia Ambiental Exploratoria está tomada en parte de las siguientes fuentes:

- American Academy of Pediatrics Committee on Environmental Health. Pediatric Environmental Health 2nd ed. Etzel RA, Balk SJ, Eds. Elk Grove Village, IL: American Academy of Pediatrics, 2003. Chapter 4. How to Take an Environmental History.
- Balk SJ. The environmental history: asking the right questions. Contemp Pediatr. 1996;13:19-36.
- Frank A, Balk S, Carter W, et al. Case Studies in Environmental Medicine. Agency for Toxic Substances and Disease Registry, Atlanta GA, 1992, rev. 2000. Taking an Exposure History.

Esta historia ambiental exploratoria está diseñada para captar las exposiciones ambientales más comunes de los niños. La historia ambiental exploratoria puede ser aplicada regularmente durante los exámenes rutinarios del niño, así como también para evaluar si las exposiciones ambientales juegan un papel en la sintomatología del niño. Si se obtiene una respuesta positiva a una o más de las preguntas, el proveedor de salud primaria puede considerar hacer más preguntas de acuerdo a las Categorías y Preguntas Adicionales para Complementar la Historia Ambiental Exploratoria disponible en http://www.neefusa.org/pdf/Additional20 Questions_Sp.pdf.



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Prescription for Outdoor Activity



R_x for Outdoor Activity

Name _____
Date _____

My Schedule (*when and where will you play outside this week?*)

Weekdays _____
Weekends _____

Parent/Child signature _____
Health Care Provider signature _____

Go Outside and:

- Play!
- Visit a national wildlife refuge, national fish hatchery, park, playground, or nature center
- Take a walk around the block
- Ride bikes (wear a helmet!), go bird watching, or just explore.

Comments: _____



R_x para la Actividad al Aire Libre

Nombre _____
Fecha _____

Mi horario (*¿cuándo y dónde jugará al aire libre esta semana?*)

Los días de la semana _____
Los fines de semana _____

Firma de madre/padre o hijo/a _____
Firma del Proveedor de Cuidado Médico _____

Vaya afuera y:

- ¡Juege!
- Visite un refugio nacional de vida silvestre, un criadero nacional de peces, un parque, un patio de recreo, o un centro de naturaleza
- Dé un paseo por el vecindario
- Ande en bicicleta (¡use un casco!), observe las aves o simplemente explore.

Comentarios: _____



Patient Brochure



Nature is all around you.
It's in your neighborhood, in a tree, park, or school yard or even in your backyard!

Where to Go in Your Area:

Place label listing local nature sites in your area here

To find a national wildlife refuge, national fish hatchery, park, playground, or nature center near you, go to:
www.neefusa.org/health/children_nature.htm



The National Environmental Education Foundation encourages parents and caregivers to create opportunities for children to play outside in a natural environment or in a safe neighborhood space. Together we can teach them how to appreciate the environment and protect their health!

To learn more, visit:
www.neefusa.org/health/children_nature.htm



www.neefusa.org/health/children_nature/resources.htm

Patient Brochure



La naturaleza le rodea.

Está en su vecindario, en un árbol, un parque, o el patio de la escuela—¡aún en su patio trasero!

Dónde Puede Ir en Su Área:

Place label listing local nature sites in your area here

Para buscar un refugio nacional de vida silvestre, un criadero nacional de peces, un parque, un patio de recreo, o un centro de naturaleza cerca de usted, visite: www.neefusa.org/health/children_nature.htm



La National Environmental Education Foundation anima a los padres y cuidadores a que creen oportunidades para que los niños jueguen al aire libre en un ambiente natural o en una parte segura del vecindario. ¡Juntos, podemos enseñarles a apreciar el ambiente y cuidar la salud!

Para aprender más, visite: www.neefusa.org/health/children_nature.htm



Audubon



www.neefusa.org/health/children_nature/resources.htm

Children's Health and Nature Fact Sheet





Health & Environment
A National Environmental Education Foundation Program

FACT SHEET CHILDREN'S HEALTH AND NATURE

Current State of Children's Health

Our children may be the first generation at risk of having a shorter lifespan than their parents [1]. Sedentary lifestyle and physical inactivity have contributed greatly to the numerous health problems plaguing today's children. Chronic conditions such as childhood obesity, asthma, attention-deficit disorder, and vitamin D deficiency have all increased over the past few decades [2, 3]. These conditions may lead to pulmonary, cardiovascular, and mental health problems in adulthood, and disadvantaged children are most at risk. Low-income and minority children are often more cut-off from nature due to the "built environment" around them: poor housing conditions, high-volume traffic, and a lack of parks and green space [4]. Outdoor activity in the natural environment has taken a back seat to television, video games, the computer, and a demanding schoolwork and extracurricular schedule. While losing contact with the natural environment, today's youth are missing key opportunities for physical activity, stress reduction, attention restoration, and healthy development.



Childhood Obesity

The national prevalence of childhood obesity grew significantly, from 14.8% in 2003 to 16.4% in 2007.¹ The combined prevalence of overweight and obesity among U.S. children ranges from a low of 23% in Utah and Minnesota to a high of 44% in Mississippi [5]. According to the Institute of Medicine, childhood obesity has doubled over the past 30 years for preschoolers and adolescents, and more than tripled for children age 6 to 11 years old [6].

Disparities in childhood obesity are also rising. The prevalence of combined overweight and obesity in children living in poverty increased from 39.8% in 2003 to 44.8% in 2007 compared with children living in higher income households (22.9% in 2003, 22.2% in 2007). In Hispanic children, prevalence of childhood overweight and obesity rose from 37.7% in 2003 to 41% in 2007, compared with non-Hispanic children (29.9% in 2003, 29.6% in 2007). Prevalence of overweight and obesity was 41.1% for black children in 2007, compared to 26.3% in white children [5].

¹Overweight: BMI ≥ 25th percentile and ≥ 97th percentile, childhood obesity = BMI ≥ 95th percentile. BMI = Body-mass index, calculated using the formula: weight (kg) / (height (m))² × 703. To estimate BMI, visit <http://www.nceh.nih.gov/health/calculator.asp>

- Summarizes key scientific studies on the health benefits of nature for children

www.neefusa.org/health/children_nature/resources.htm

AAP Prescription



Rx for Healthy Active Living

Name _____ Date _____

Ideas for Living a Healthy Active Life

- 5** Eat at least 5 fruits and vegetables every day.
- 2** Limit screen time (for example, TV, video games, computer) to 2 hours or less per day.
- 1** Get 1 hour or more of physical activity every day.
- 0** Drink fewer sugar-sweetened drinks. Try water and low-fat milk instead.

My Goals (choose one you would like to work on first!)

<input type="checkbox"/> Eat _____ fruits and vegetables each day.	<input type="checkbox"/> Get _____ minutes of physical activity each day.
<input type="checkbox"/> Reduce screen time to _____ minutes per day.	<input type="checkbox"/> Reduce number of sugared drinks to _____ per day.

Patient or Parent/Guardian signature

Doctor signature

From Your Doctor

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Rx Para una Vida Saludable y Activa

Nombre _____ Fecha _____

Ideas para una Vida Saludable y Activa

- 5** Come por lo menos 5 frutas y vegetales al día.
- 2** Limita el tiempo que pasas frente a una pantalla (por ejemplo, televisión, video juegos, computadora) a 2 horas o menos al día.
- 1** Haz 1 hora o más de actividad física al día.
- 0** Reduce la cantidad de bebidas azucaradas que tomas. Reemplázalas por agua y leche baja en grasa.

Mis metas (escoge una meta en la cual trabajarás primero)

<input type="checkbox"/> Come _____ frutas y vegetales al día.	<input type="checkbox"/> Haz _____ minutos de actividad física al día.
<input type="checkbox"/> Reduce el tiempo frente a una pantalla a _____ al día.	<input type="checkbox"/> Reduce el número de bebidas azucaradas a _____ al día.

Firma del paciente o del padre/custodio

Firma del doctor

De parte de tu médico

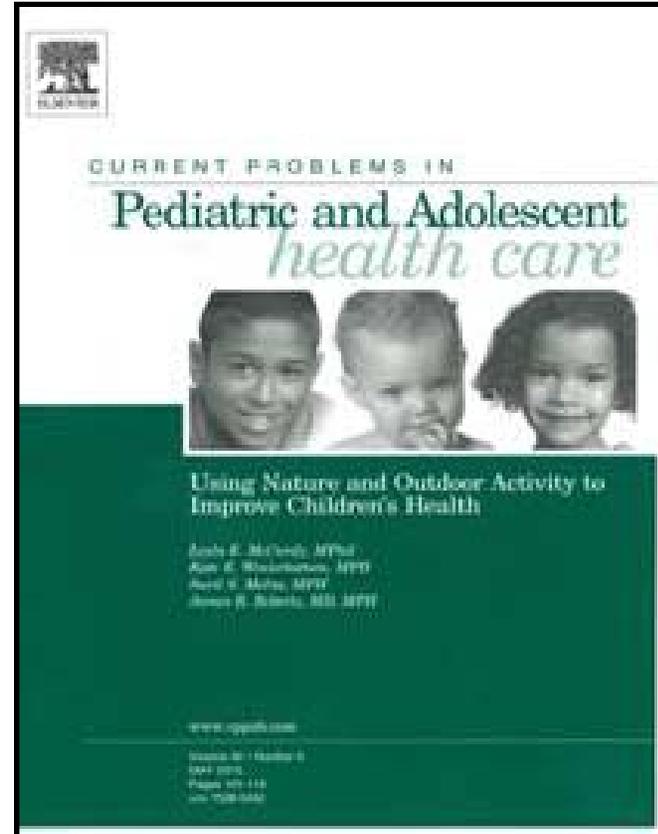
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Review Article



Using Nature and Outdoor Activity to Improve Children's Health--McCurdy, Winterbottom, Mehta, Roberts.
Current Problems in Pediatric and Adolescent Health Care 2010;5:102-117.



www.cppah.com



Nature Sites

- Tracking Nature Prescriptions
- Club Card & Incentives Program

 **Junior Ranger**
Nature Explorer
Club Log 

Dates I have explored **Nature** at a National Park...

(Ask a Park Ranger where you can stamp your card and receive a club reward)



Acknowledgments

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