Children and Nature Initiative

National Environmental Education Foundation

Knowledge to live by

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DEPARTMENT OF THE INTERIOR

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Audubon

YOUTH IN THE GREAT OUTDOORS

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 and U.S. Fish and Wildlife Service provide active nature programming

Advisory Committee

Janet Ady- U.S. Fish and Wildlife Service

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Stephanie Chalupka, EdD, RN, PHCNS-BC, FAAOHN- Worcester State College

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Overview: Burden of Obesity and ADHD in Childhood

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

Obesity & Related Conditions

Obesity

- 16.9% of children ages 2-19 are obese (BMI ≥ 95%ile)[1]
- 31.7% are overweight (BMI ≥ 85%ile)[1]

Childhood obesity predicts adult morbidity

- 80% of obese youth become obese adults[2]

Related conditions

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

[1]Ogden CL et al. JAMA 2010;303(3):242-249.
[2]Whitaker 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 2007[1]
- 3,700 children diagnosed with Type II DM each year[1]
- CDC estimates: 1 in 3 children born in 2000 will develop DM if present obesity trends are not reversed[2]

[1]CDC National diabetes fact sheet 2007
[2]Narayan 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 HTN[1]

Cardiovascular disease

- High cholesterol levels, abnormal glucose tolerance, and HTN in children[2]
- Overweight adolescents are at increased risk of coronary heart disease and early death [3]

[1]Sorof J et al. Pediatrics 2004;113:475-82.
[2]Dietz W. Pediatrics 1998;101:518–25.
[3]Ludwig DS. NEJM 2007;357:2325–27.

Other Medical Issues

Asthma

- Overweight children at increased risk for developing asthma, other respiratory problems[1], asthma hospitalizations[2]

Possible relationships between asthma and sedentary lifestyles, including lack of physical activity and television viewing[3,4]

[1]Schachter LM. Thorax 2001;56:4-8.
[2] Bender B et al. Pediatrics, 2007;120:805-13.
[3]Rasmussen F. European Respiratory Journal 2000;16:866-70.
[4]Sheriff A, et al. Thorax 2009;64:321-5.

Other Medical Issues

Vitamin D Deficiency

- 9% of US children are vitamin D deficient
- 61% are insufficient[1]
- Physical activity associated with vitamin D levels[2]

Mental Health – ADHD/ADD

- Variable estimates, but prevalence is increasing
- National Health Interview Survey estimates 9% of US children with ADHD/ADD[3]
- Impairs school performance and socialization; may persist into adulthood

[1]Kumar J, et al. Pediatrics 2009;124:e362-70
[2]Ohta H, et al. J Bone Miner Metab 2009;27:682-8
[3]Pastor 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 activity[1]
- 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 daily[1]
- Average child watches 3 hours TV daily[2]
- 7.5 hours per day spent with all forms of e-media (TV, Internet, chats, games, etc)[3]

[1]CDC. Youth risk behavior surveillance 2005. MMWR 2006;55:SS-5
[2]AAP, Committee Public Ed. Pediatrics 2001;107:423-6
[3]Rideout 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 bedrooms[1]

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

Estimated 25% loss of play time and 50% loss in in unstructured outdoor activity[2]

No Child Left Behind 2001

- Increased time for reading and math
- But at the expense of physical education[3]

[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 activity[1]
- Study among 10-12 year olds[2]
  - 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

[1]Burdette HL, et al. Arch Pediatr Adol Med 2004;159:46-50.
[2]Cleland V, et al. Int J Obesity 2008;32:1685-93.

Nature & 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

Nature & Physical Activity

- Associations between healthy weight & availability of ≥ 1 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

Nature & Physical Activity

- Larger study of 8 parks in Los Angeles
- Parks in were 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 cholecsytectomy
  - 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

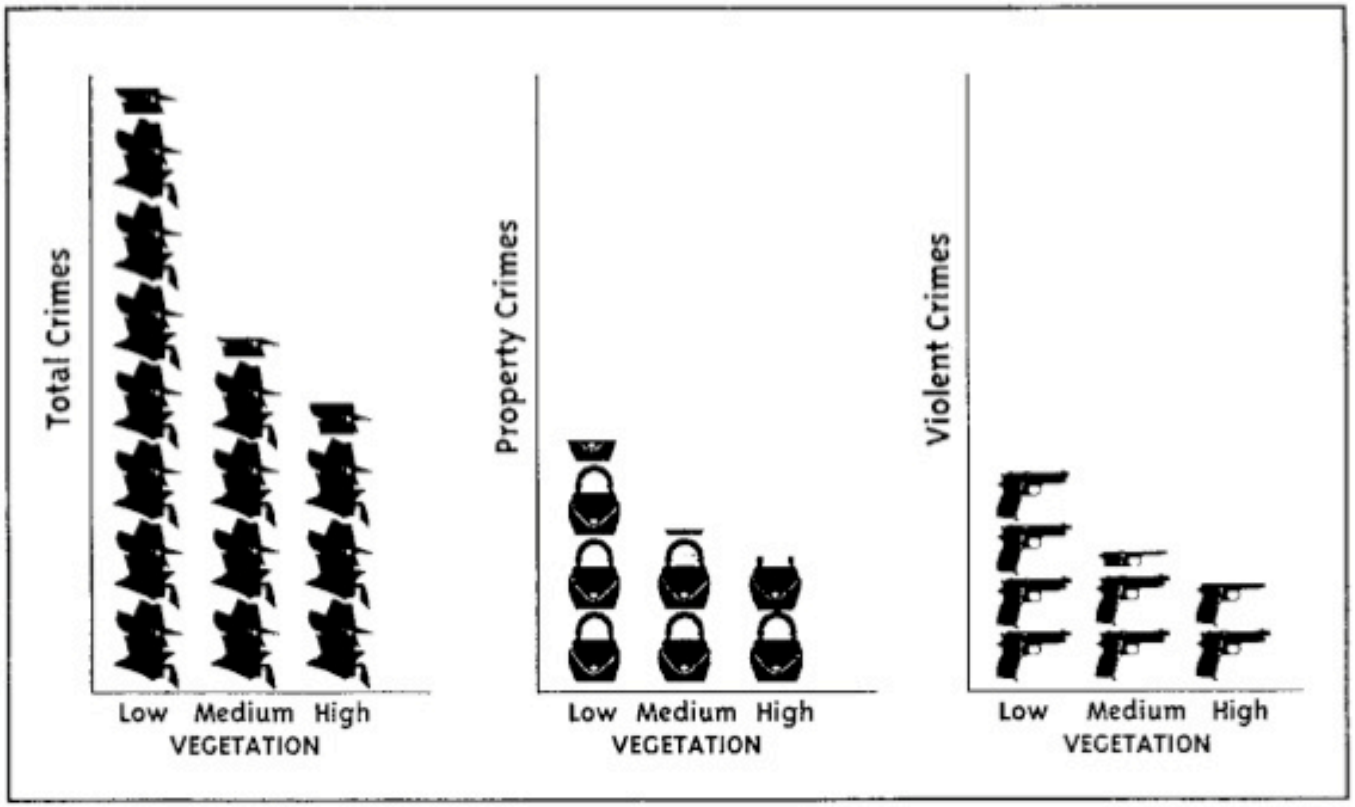


Figure 3: Mean Number of Crimes Reported Per Building for Apartment Buildings With Different Amounts of Vegetation (each icon represents one reported crime)

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.

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

Wells NM. Environ Behav 2000;32:775-95

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

Wells NM. Environ Behav 2000;32:775-95

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

Tayor AF Kuo FE. J Atten Disord 2009;12:402

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.

Environmental Considerations

National Movement

- *Last Child in the Woods* by Richard Louv
- Let's Move Outside www.letsmove.gov/outside/
- AAP and White House Obesity Initiative www.aap.org/obesity/whitehouse/
- Exercise is Medicine www.exerciseismedicine.org

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 months[1]
- Program in Spain recruited 4000 physically inactive patients and provided exercise referrals to half
  - 6 months later, patients who received the referrals were more active[2]

[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

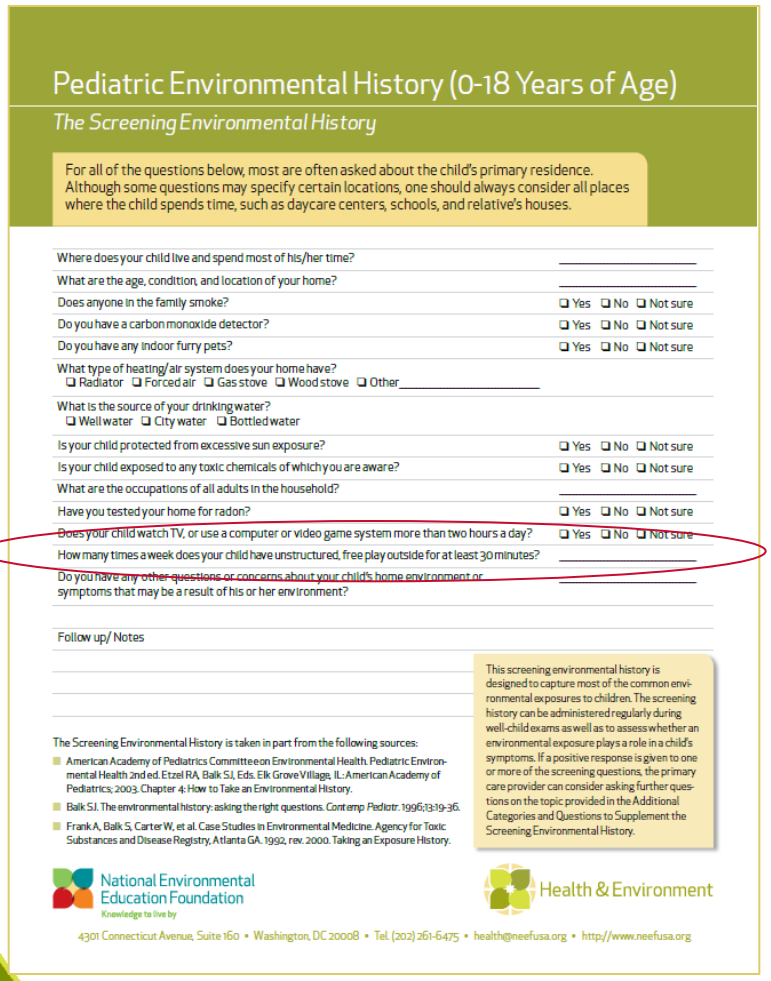
- Encourage that at least some of this activity occur in the outdoor, natural environment
  - May be particularly relevant for patients with ADHD and other mental health issues
- Particular emphasis should be on unstructured, exploratory play
- Become advocates in the school to support physical education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

Pediatric Environmental History Forms (English & Spanish)



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
How many times a week does your child have unstructured, free play outside for at least 30 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

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 further questions on the topic provided in the Additional Categories and Questions to Supplement the Screening Environmental History.

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.

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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 carbón?	❑ 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 radon?	❑ 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 30 minutos?	_____
¿Tiene otras preguntas o preocupaciones acerca del ambiente hogareño del niño(a), o síntomas que puedan ser resultado del medio ambiente?	_____

Seguimiento/Notas:

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.

La Historia Ambiental Exploratoria está tomada en parte del 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.

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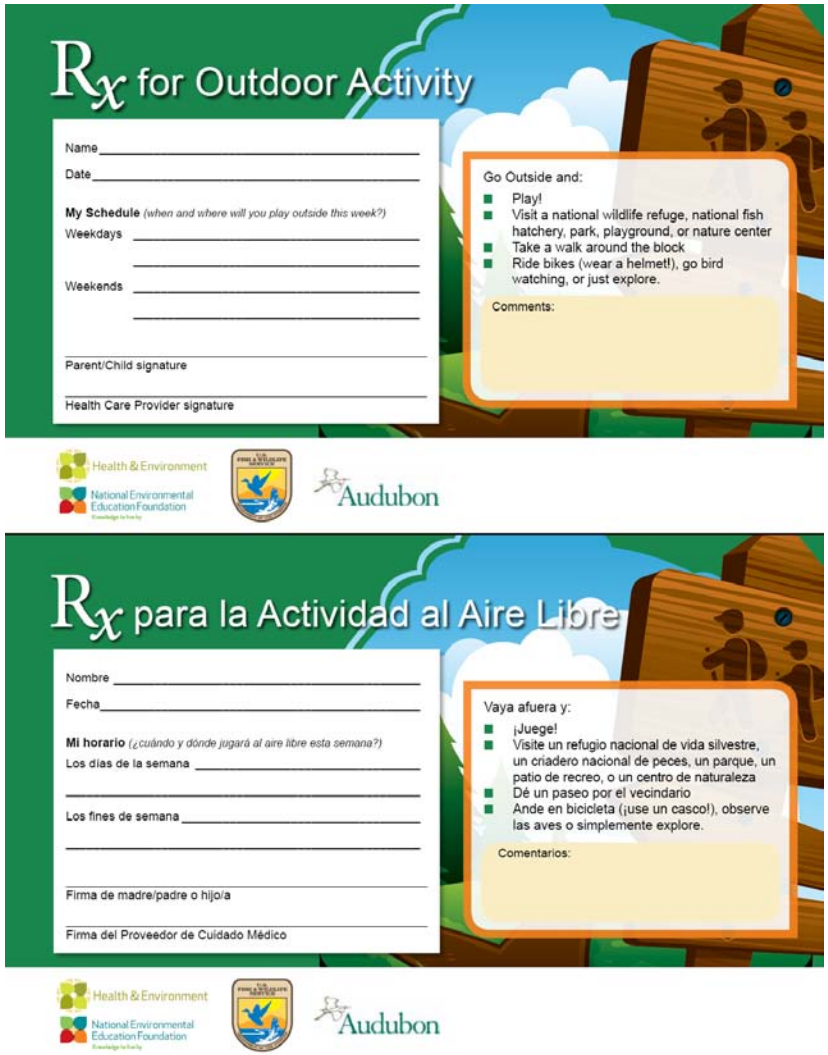
www.neefusa.org/health/children_nature/resources.htm

NEEF Prescription
(English & Spanish)



Rx 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:

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Audubon

Rx 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:

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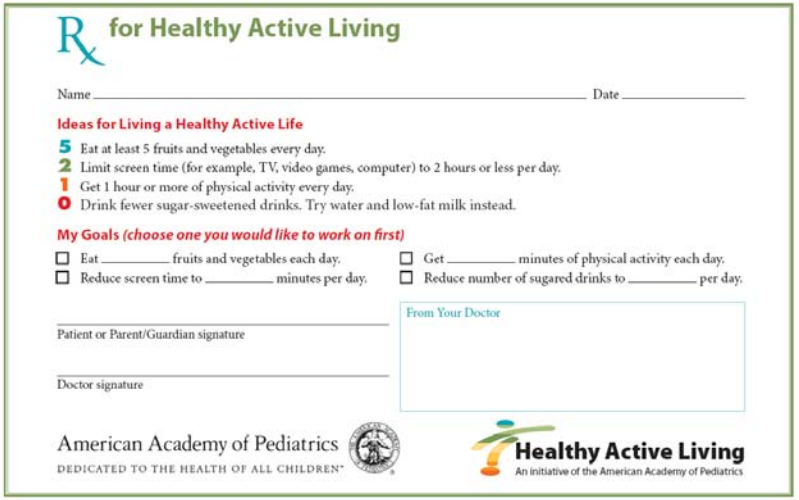
National Environmental Education Foundation
Audubon

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

AAP Prescription (English & Spanish)



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)*

☐ Eat _____ fruits and vegetables each day.
☐ Reduce screen time to _____ minutes per day.
☐ Get _____ minutes of physical activity each day.
☐ Reduce number of sugared drinks to _____ per day.

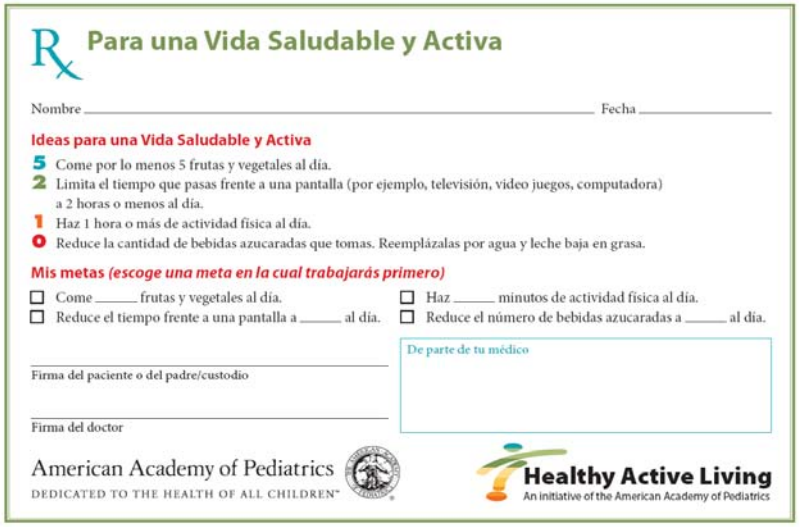
_____
Patient or Parent/Guardian signature

_____
Doctor signature

From Your Doctor

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Healthy Active Living
An initiative of the American Academy of Pediatrics



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)*

☐ Come _____ frutas y vegetales al día.
☐ Reduce el tiempo frente a una pantalla a _____ al día.
☐ Haz _____ minutos de actividad física al día.
☐ Reduce el número de bebidas azucaradas a _____ al día.

_____
Firma del paciente o del padre/custodio

_____
Firma del doctor

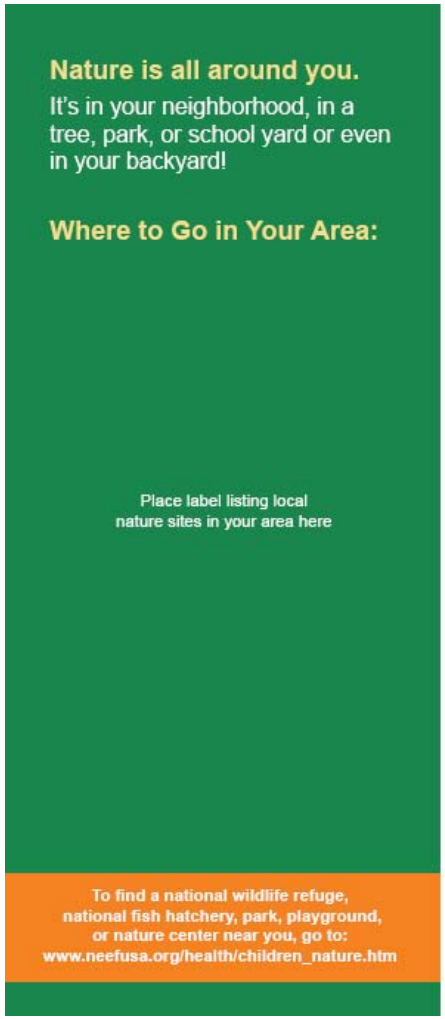
De parte de tu médico

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Healthy Active Living
An initiative of the American Academy of Pediatrics

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

Patient Brochure (English)

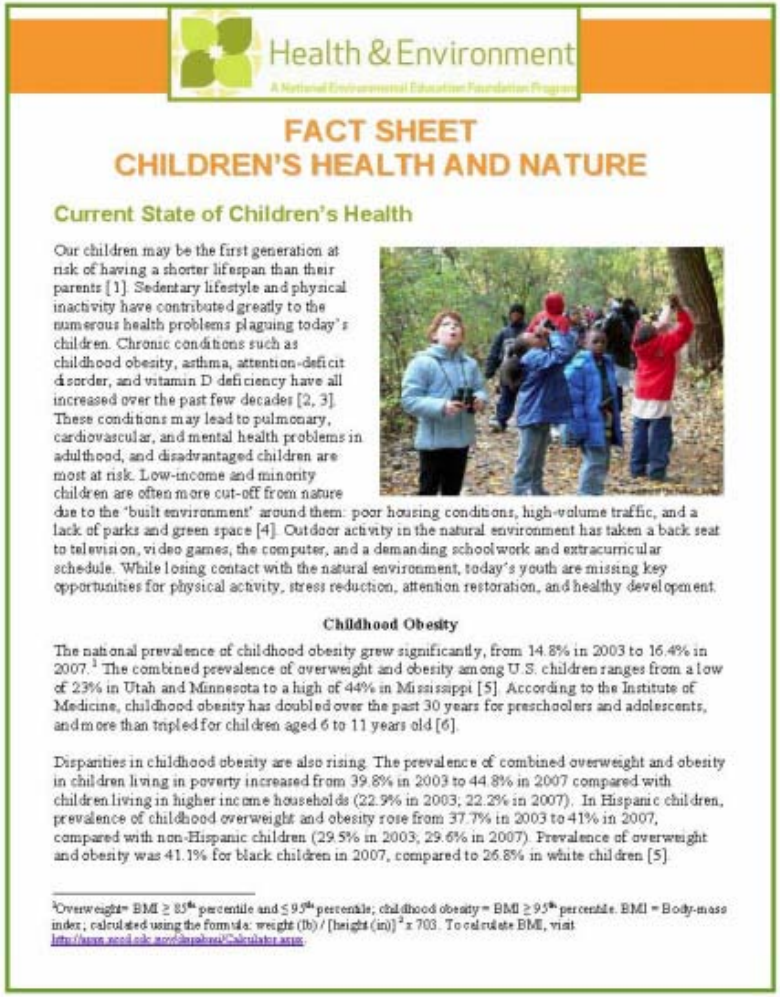


www.neefusa.org/health/children_nature/resources.htm

Patient Brochure (Spanish)

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 aged 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 (29.5% in 2003; 29.6% in 2007). Prevalence of overweight and obesity was 41.1% for black children in 2007, compared to 26.8% in white children [5].

[1]Overweight= BMI ≥ 85th percentile and ≤ 95th percentile; childhood obesity = BMI ≥ 95th percentile. BMI = Body-mass index; calculated using the formula: weight (lb) / [height (in)]^2 x 703. To calculate BMI, visit http://www.cdc.gov/nccdphp/dnpa/bmi/calculator.htm.

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

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.

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Acknowledgments

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