

**Whole Child:
Developing Mind, Body and Spirit
through Outdoor Play**




BE OUT THERE™
NATIONAL WILDLIFE FEDERATION®



Executive Summary

"We have shifted our culture from one that is engaged in a healthy, interactive, imaginative way to one that is inwardly facing, sedentary and expecting things to be fed to us."

Dr. Michael Rich, Director of the Center of Media and Child Health, Children's Hospital Boston, Associate Professor, Harvard Medical School and School of Public Health



BE OUT THERE™ NATIONAL WILDLIFE FEDERATION®

Wake up, America, to a day in the life of the average kid in 2010:

It begins with breakfast, most likely in front of a TV, followed by a bus or car ride to school, texting on the way. The day continues at school, with little or no recess, then time for after-school snacks in front of the TV, homework, and a drive-thru dinner in the backseat on a mad dash to extracurricular activities. The evening brings computer face time, more texting, a little more TV, and bed.

Wake up: during this day-in-the-life, our typical child goes outdoors barely enough to pick a dandelion and scatter its seeds to the wind. It doesn't matter if the seeds would zig-zag down a city street, dodging between taxi cabs, or quietly float down a country lane—modern children just don't have the time, inclination or motivation to follow where they lead.

Wake up. Today's kids are indoors far more than their parents were, with only a quarter of children playing outside daily as compared to nearly three quarters a generation ago, even in rural areas.¹ While contemporary parents spent their free time as kids exploring and playing in nature, their children devote only four² to seven minutes a day³ to unstructured outdoor play like climbing trees, drawing with chalk on the sidewalk, taking a nature walk or playing a game of catch. Yet, kids spend more than seven hours each day in front of electronic media.⁴ Even preschoolers are not exempt. Most log an excess of 32 hours per week of TV, according to The Nielsen Company. By the time most children attend kindergarten, they have watched more than 5,000⁵ hours of television—enough time to earn a college degree.⁶

The nature of childhood has changed:

There's not much nature in it. And if you're not concerned, you should be. American childhood's move indoors profoundly impacts the health and wellness of our nation's kids. It is not just a sad loss of innocence; a detachment from all things growing and green. It is a serious public health issue that all Americans need to care about. In the last twenty years, childhood obesity rates have more than doubled;⁷ the United States

has become the largest consumer of ADHD medications in the world;⁸ and the use of antidepressants in pediatric patients has risen sharply.⁹

American kids are out of shape, tuned out and stressed out because they're missing something essential to their health and development, unstructured time playing outdoors. National Wildlife Federation (NWF) created the Be Out There movement to give back to American children what they don't even know they've lost: their connection to the natural world. In the process, NWF aims to help reverse alarming health trends and help families raise happier, healthier children. Signs everywhere show the spirit of the movement taking hold.

First Lady Michelle Obama, President Barack Obama, numerous Governors, and several Administration officials are currently advancing efforts to reconnect children, youth, and families with nature through major White House initiatives.

When First Lady Michelle Obama formally launched the "Let's Move Outside!" Initiative in June, 2010, as part of her broad campaign to tackle childhood obesity through healthier food and activity choices, she recalled that



An April 20, 2010 study by the Pew Research Center revealed half of teens send 50 or more text messages a day, or 1,500 texts a month, and one in three send more than 100 texts a day, or more than 3,000 texts a month.

when she was growing up an hour of rigorous activity was no problem. It wasn't called "activity", it was called "play." President Obama echoed the importance of active time outside at the launch of the White House's "America's Great Outdoors" initiative, encouraging young people to hike and bike more, and saying outdoor family time will help meet the goals of the Let's Move! campaign. In addition, all 50 Governors declared June 2010 "Great Outdoors Month" encouraging children and families to get outdoors and enjoy nature. By making outdoor time a national priority, we take the first step—out the door—to healthier, happier kids.

The National Wildlife Federation (NWF) is working with hundreds of partner organizations to advance policies that reconnect children with nature. In February, 2010, NWF and its partners petitioned the U.S. Surgeon General Dr. Regina Benjamin urging her to issue a "call to action" to all Americans on the importance of regular, active time outdoors. This was deemed "perfectly aligned" with the Surgeon General's vision for healthy kids and "an excellent strategy for increasing kid's physical activity" by Acting Deputy U.S. Surgeon General Dr. David Rutstein.

NWF and its many partners are also working to implement the National Physical Activity Plan launched in May,

2010 with the goal that "one day all Americans will be physically active and they will live, work, and play in environments that facilitate regular physical activity."

To keep these and other policies moving forward and foster collaborations, a newly formed strategic alliance called the Outdoors Alliance for Kids (OAK) launched in June, 2010. OAK's primary goals are to advance public policy, raise decision-maker awareness, and engage young people in the movement to reconnect children, youth, and families with the outdoors. Representing diverse businesses and non-profit groups, including the National Wildlife Federation, OAK will address the growing divide between children and the natural world.

OAK is working to pass key legislation to reconnect American children and families to the outdoors, including the Moving Outdoors in Nature Act. This Act includes provisions for outdoor recreation programs, creation of natural play areas, engagement of healthcare providers, and much more. This bill and others will go a long way toward changing the way we live, move, learn and play.

This report, *Whole Child: Developing Mind, Body and Spirit through Outdoor Play*, is the first in a series illuminating the critical issues and societal costs surrounding America's indoor childhood. It is not

meant to be exhaustive, nor can it be. Compelling work has been done that we do not have room to include, and excellent research continues on this subject. Here, we offer insight into the health benefits associated with children and the outdoors and hope it will spark discussion and action at the family, community, local, state and national levels.

This report examines the ways in which nature, specifically unstructured daily outdoor time, nurtures a child's body, mind and spirit and offers recommendations for parents, healthcare providers, educators, media representatives and government leaders that will help children grow healthy and strong. As you will learn, the negative health effects of this society-wide shift to the indoors are great—but the benefits of getting more time outdoors on mind, body and spirit can be a great part of mitigating the risks and increasing overall wellness. **When it comes to the whole child, nature may indeed be the best kind of nurture.**

MIND: Get Schooled on Outdoor Play



American childhood's increasingly "interior landscape" has altered the country's educational landscape because it includes fewer opportunities for outdoor time at school. Once a part of every child's school day, recess is heading toward extinction. While "play is an active form of learning that unites the mind, body, and spirit," according to the National Association for the Education of Young Children, many schools around the country have limited or eliminated recess. This is particularly true for urban and lower income students.¹⁰ Budget cutbacks and the demands of preparing for standardized statewide tests means fewer outdoor field trips and opportunities to explore the natural world up close. With more and more children being driven to school, just one-in-eight U.S. children now walk or bike to class, eliminating time outdoors as part of most children's pre-and post-school ritual.¹¹

While playing and learning outside may be more difficult to fit in a busy schedule, teachers need to think twice about saying, "Stop staring out the window and pay attention." According to a March, 2010 survey by NWF of nearly 2,000 educators, 78 percent feel students who spend regular time in unstructured outdoor play are better able to concentrate, and 75 percent feel students who spend regular time outdoors are more creative and better problem solvers. Studies confirm access to nature in an educational setting has a positive impact on student focus and learning by improving attentiveness, test scores and performance.

The Centers for Disease Control (CDC) now estimates that 4.5 million children aged 5-17 years have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD)

According to Cal Tech's Jet Propulsion Lab, interviews of all potential candidates include questions about their play experiences as children, because they've found a direct correlation between hands-on play and superior problem-solving skills.

with diagnoses of the disease increasing 3% each year between 1997 and 2006.¹² By conservative estimates, ADHD costs the United States between \$36 and \$52 billion annually¹³, presenting challenges to both health professionals and educators. Learning is often inhibited for children with the disorder as well as their fellow students. There is no one definitive reason why ADHD diagnoses are on the rise, but theories include better diagnostics, chemicals in our environment and food, and increases in media consumption.

While not considered a cure, exposure to natural settings may be "widely effective" in reducing ADHD symptoms in kids, according to researchers at the University of Illinois. The authors surveyed parents of more than 400 boys and girls diagnosed with ADHD about their children's performance in a wide range of activities, both indoors and in natural settings such as a tree-lined street or park. The "green" activities consistently received more positive ratings, indicating that outdoor time is beneficial in reducing ADHD symptoms.¹⁴ Sadly, children with ADHD may get even less outdoor time than their peers, as children with attention problems are more often held in for recess due to misbehavior in the classroom.





Regular outdoor time can be a scholastic boon to children with attention problems, but research reveals connecting all kids with nature can help them excel academically. A 2003 study entitled “Environmental Education: Improving Student Achievement” compared 77 pairs of demographically equivalent schools and examined standardized test performance. Half of the schools had environmental education programs and half did not. The study concluded that in the schools with an environmental education component, students scored higher on standardized tests in math, reading, writing and listening—and this pattern of improved test scores persisted for five years.¹⁵

A 2004 study supports the positive effect of environment-based education on learning, specifically its ability to boost critical thinking. Test scores of 400 students, grades 9-12 in 11 Florida high schools were studied to measure response to Environment as an Integrating Context for Learning (EIC Model) programs. Researchers evaluated performance on three norm-reference tests including Achievement Motivation Inventory, Cornell Critical Thinking Test and the California Measure of Mental Motivation. EIC programs were found to significantly raise performance on all three tests.¹⁶

Outdoor time has a dramatic impact on children’s attentiveness and school preparedness, including a reduction in ADHD symptoms — a problem that has exponentially increased over the last several decades. Children who spend time outdoors, whether through walking or biking to school, or playing or learning outside, score higher on a wide range of tests of their academic ability and performance.

“Wouldn’t it be great if schools were designed next to wooded areas so the wooded areas could be used for educational purposes?”

Sheila Franklin,
Executive Director of the National Coalition
for Promoting Physical Activity

BODY:

Let's Move, Outside!

"I am deeply troubled by some of the trends I see in my practice including increased obesity in kids and higher rates of asthma, attention deficit hyperactivity disorder, anxiety and depression. What all kids need are natural, safe places where they can play."

Dr. Sandra Stenmark, pediatrician with Kaiser Permanente and Physician Lead of Colorado Pediatric Cardiovascular Health



"Sixty minutes of daily unstructured free play is essential to children's physical and mental health."

American Academy of Pediatrics

Growing up "inside the box"—always in a room, four walls and a ceiling—affects the whole child, but impacts to children's bodies are perhaps the most dramatic and urgent. Children raised indoors are at risk for serious health problems, and it's not a matter of when these problems will arrive; they're already here in the form of obesity, vision problems, vitamin D deficiency, and diabetes.

When it comes to obesity, the numbers are heavily weighted in favor of an epidemic, according to the Centers for Disease Control (CDC). In the last 20 years, the prevalence of obesity among young children aged 6 to 11 has more than doubled to 17 percent and more than tripled to 17.6 percent for adolescents aged 12-19.¹⁷ The odds of being obese are even higher in marginalized neighborhoods with few or no parks. Risks associated with overweight and obesity include high blood pressure, diabetes, high cholesterol, asthma, sleep apnea, joint pain, and fatty liver disease—and most alarmingly, shortened life expectancy.

"Overweight and obese adolescents have a 70 percent chance of becoming obese adults," according to Acting Deputy U.S. Surgeon General Dr. David Rutstein. **"If this problem is not addressed, we will leave our children a legacy of shorter life spans for the first time in history."**

Playing outside is an excellent way for children to start living healthier, and longer, lives, since outdoor play is associated

with higher physical activity levels than playing indoors. To combat childhood obesity, the CDC recommends one hour per day of physical activity for kids. Outdoor games that include running, jumping, and climbing, whether in the backyard, a neighborhood playground, or a city park, engage children's cardiovascular system and major muscle groups, helping them grow trimmer and stronger. The real benefit of outdoor play is that children are doing what comes naturally, having fun, and don't see it as "exercising."

From the risks of too much weight to...eyes? Children who play outside literally see things differently. Several studies reveal kids who get outdoor time suffer less nearsightedness, reducing their need for eyeglasses. Myopia has become increasingly common among young children in recent decades, with indoor time spent reading up-close material, such as on an electronic screen, a potential cause. According to a study in the Journal of the American Academy of Optometry, a child's chance of becoming nearsighted if he or she has two nearsighted parents is about six in ten for children who spend zero to five hours outside a week. But the risk drops to two in ten when outdoor time exceeds 14 hours a week, reducing the myopia risk by two-thirds.¹⁸

Another surprisingly prevalent health problem arising from spending too much time indoors is vitamin D deficiency. Vitamin D is primarily produced in the skin after exposure to sunlight. With children spending less and less time outdoors, they receive limited doses of daily sunshine, leading to inadequate



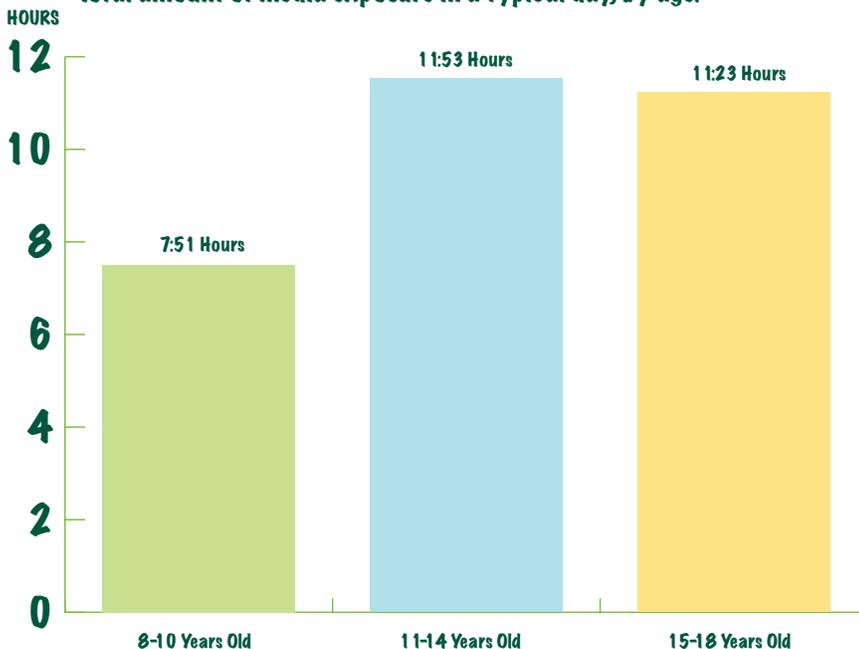
“When I was young we walked to school every day, rain or shine—in wind, sleet, hail and snow, too. And we spent hours running around outside when school got out.”

First Lady **Michelle Obama**

levels of vitamin D and setting them up for increased risk of bone problems, heart cardiovascular disease, diabetes, and other health issues.¹⁹ In fact, a study of vitamin D levels in nearly 10,000 children found **9 percent** of American children aged 1 to 21 were vitamin D deficient, representing 7.6 million U.S. children, and **61%** were vitamin D insufficient, representing 50.8 million U.S. children.²⁰

TOTAL MEDIA EXPOSURE, BY AGE

Total amount of media exposure in a typical day, by age:



Source: Keiser Family Foundation. **GENERATION M2** Media in the Lives of 8- to 18-Year-Olds, 2010

The health risks of America’s indoor childhood threaten to give this generation of kids the terrible distinction of living shorter and lower-quality lives than their parents. Obesity and vitamin D deficiencies put children at risk for heart disease, bone problems, cancer, diabetes, high blood pressure, asthma and more. Moving and playing outdoors offers enormous benefits, including healthier body weights, stronger muscles and bones, healthy hearts and better eyesight.

A BE OUT THERE CHILD IS A WHOLE MIND, BODY AND SPIRIT

CREATIVE

Whether for building a fort out of twigs, creating a fairy forest or pretending to be a superhero, playing outside inspires, and requires, an active imagination.



SMART

Children who spend time outdoors learn to work as a team and are better problem solvers as adults. They score higher on assessments of cognitive ability and standardized tests.



CALM

In today's overscheduled world, kids could use a little more R&R. Research shows their stress levels fall within minutes of being outside.



Over the last two decades childhood has moved indoors, but studies show children who regularly spend time outside are healthier and happier.

E CHILD:



BE OUT THERE™

NATIONAL WILDLIFE FEDERATION®

KIND

Mom always says to “play nice.” When kids play outside, they are more likely to! Being outdoors helps create compassion and improves social bonds.



HAPPY

Play protects kids’ emotional development, letting kids be kids. Lying in the grass to watch the clouds go by or playing a game of tag to let off steam helps keep joy at the forefront.



STRONG

Sunshine helps kids’ bodies create vitamin D, which is essential to building strong bones and preventing disease.



HEALTHY

Overweight and obese children are at risk for shortening their lifespans. Give your kids the run-around—outdoors—to help them maintain a healthy weight.

Visit www.BeOutThere.org to learn more about making every kid a Be Out There kid.

www.BeOutThere.org

SPIRIT: Be Out There, and Play Nice



How many modern kids could recognize a tweet that's a bird call rather than a 140-character sound bite? How many would pick a blackberry to eat rather than to text on? Like mini CEO's, modern children shuttle from lessons to sessions in art, dance, and organized sports, leaving little time for free time. In fact, a six-year study of kids' discretionary time showed an overall 16 percent decline in time for play, or a total of nine fewer hours per week. When kids had a few moments to themselves, they were plugged in, and the study showed that computer use rose significantly during that time.²¹ With most of their time spent overscheduled and in constant contact, today's kids are hyper-connected, yes, but to whom and what? And does high tech overload make them happier?

Perhaps not. Antidepressant use is on the rise according to a four-year study that examined antidepressant use among approximately two million children under the age of 18. **Over the course of the study, antidepressant use increased by 49%, with the fastest growing segment of users found to be preschool children aged 0-5 years.**²² Characterized by low mood, anxiety and loss of self-esteem, among other symptoms, childhood depression is a serious illness that outdoor time can help alleviate.

An increasing number of experts are recognizing the role of playing outside in enhancing kids' mental health by helping to better connect them to self, to others and to the natural world. An American Academy of Pediatrics 2007 report on the importance of play points out that play protects children's emotional development whereas loss of free time in combination with a hurried lifestyle can be a source of stress, anxiety and may even contribute to depression for

"Nature brings out more social feelings, more value for community and close relationships."

Richard Ryan, Ph.D., Professor of Psychology, Psychiatry and Education, University of Rochester

many children.²³ According to one study, children's stress levels fall within minutes of seeing green spaces, a simple, no-cost and time-efficient antidote for stressed-out kids.²⁴

Children who spend much of their time indoors watching television or playing video games can become isolated and withdrawn, even if they think they are connecting on-line. But playing outside person-to-person helps young people improve social interactions. **Free play teaches kids to share, cooperate and resolve problems.** Researchers have found kids who play together and organize games experience a constructive way to avoid social isolation.²⁵ This type of group interaction also helps a child learn teamwork and how to problem solve with others.





According to Dr. Rich of Children's Hospital Boston, playing with others outdoors, "demands of us that we create a fort out of a backyard, and a tree house out of a tree and a bunch of old boards. It demands we put together the imaginary play we need in order to be good problem solvers as adults."

So nature helps kids feel less stress and interact in positive ways, but a 2009 study at the University of Rochester reveals that being in, or even looking at, nature also makes human beings behave more human—it makes you nicer.²⁶ "Previous studies have shown the health benefits of nature range from more rapid healing to stress reduction to improved mental performance and vitality," says Richard Ryan, a professor of psychology, psychiatry, and co-author of the study.

"Now we've found people are more caring when they're around nature."

"When we go outside, my kids become their best selves. Gone are the petty arguments about whose turn it is or what to do next. Suddenly the kids are creative—digging in the dirt, picking up worms, jumping and laughing."

Renee Limon, co-founder of Enviromom.com

Excessive media consumption contributes to a reduction in happiness for today's children. Replacing connectedness to self, friends and the natural world with the pseudo-connectedness of the online world doesn't work. Nature offers opportunities to decompress, reduce stress and improve relationships, helping kids feel lighter and happier.

Keeping Kids Whole:

Be Out There Recommendations for Caregivers, Healthcare Providers, Policy Makers, and Educators



"Some say it takes a village to raise a child. NWF says: it takes a backyard, a playground, a park"

Jaime Matyas,
Executive Vice-President and
Chief Operating Officer of
National Wildlife Federation

This report detailed how American childhood is going down a wrong path, one that is increasingly neither green nor outdoors. At stake is the health and happiness of our nation's children, who will have healthier, happier and, tragically, longer lives if we do not do something, now, to change the way they live, learn and play. Risks to mind, body and spirit range from attention problems to obesity to depression. But NWF believes these risks, and more, are reversible, if only we ask: **"What if?"**

What if we could each make a difference, getting kids back outside where they belong and helping them lead happier, healthier, longer lives? **What if** we worked together—parents, teachers, healthcare providers, and local, state and national leaders—to make it happen? And **what if**, in only one generation, we could all wake up to a new day for America's kids?

Let's all Be Out There, and see.

Caregivers

Parents are the custodians of their children's health. Along with grandparents, aunts and uncles, neighbors and family friends, they strongly influence habits and are instrumental in creating and maintaining behaviors that lead to wellness. Caregivers can do the following to encourage outdoor time:

- Take the pledge to Be Out There and get the kids in their life into the great outdoors www.beoutthere.org/pledge.
- Be a role model for kids: show them how to un-plug from media and plug into nature.
- Where safe, encourage kids to walk or bike to school.
- Download simple and fun Be Out There activities. Don't forget that gardening can be a fun way to get kids outside while they experience the thrill of helping things grow.
- Enlist friends and neighbors to create outdoor playgroups.
- Join kids for outdoor fun in the backyard, garden, park or nature trail.
- Download Be Out There health questions to share with their pediatrician and school health professional.



Healthcare Providers

By recommending patients establish healthy behaviors early, such as daily time outdoors, medical doctors and mental health practitioners can help reduce negative health impacts of an indoor childhood.

"I would far rather write a prescription for safe outdoor play for my pediatric patients than see them five years later with depression, anxiety and obesity," says Wendy Kohatsu, MD, Santa Rosa Family Medicine and assistant clinical professor at the University of California, San Francisco. By taking the following actions, healthcare providers can lead the charge toward whole child wellness:

- Add three to five questions about outdoor time and media habits to intake forms/risk assessments. Plus, inform parents of the link between outdoor time and better health.
- Write a prescription for regular outdoor time.
- Include links to Be Out There activities on their websites.
- Hang Be Out There posters in their waiting rooms.
- Instruct parents to create a nature journal that catalogs outdoor activities with their kids and the effect it has on their children's mood.
- Remind parents to limit plugged-in time.

Local, State and National Leaders

For change to happen, it must be supported on the local, state and national level. Government leaders and policy makers can do their part to ensure America's childhood moves back outside.

- Pass the federal Moving Outdoors in Nature Act and the federal No Child Left Inside Act to engage children in outdoor learning at school.
- Adopt the Centers for Disease Control environmental policies to support obesity prevention.
- Urge the U.S. Surgeon General to issue a "Call to Action" on the health benefits of healthy, active time outdoors in nature.
- Include policies that connect children with nature in the White House's America's Great Outdoors initiative and the First Lady's Let's Move Outside! campaign.
- Create comprehensive state strategies for connecting children to nature through education, health, parks and recreation.

- Partner with health organizations to design plans, projects or policies that promote health.
- Provide funds and manpower at the local level so that safe outdoor play areas can be developed, especially in underserved communities.

Educators

Most children spend more waking hours in school each day than with their parents. Educators can have a profound effect on students' attentiveness and classroom performance by taking the following actions:

- Encourage teachers, school nurses and principals to include unstructured outdoor time and recess as part of their daily curriculum.
- Advocate on the school district, county and state level for recess and outdoor time.
- Begin a safe routes to school program to encourage kids to bike and walk to school.
- Post outdoor activities and their benefits on school websites, such as Blackboard, with links to Be Out There resources.
- Encourage school counselors to include outdoor activities as examples of how to build social skills and confidence.
- Get your school involved in creating an NWF Schoolyard Habitat® or register your school as an Eco-School so students can engage in a variety of outdoor activities that help the environment.

"I've begun hearing about doctors around the country who are medicating their patients with nature in order to prevent (or treat) health problems ranging from heart disease to attention deficit disorder."

Dr. Daphne Miller, family physician and associate clinical professor at the University of California, San Francisco



References

1. Clements, R. "An Investigation of the State of Outdoor Play." *Contemporary Issues in Early Childhood*, Vo. 5(1): 68-80, 2004.
2. Hofferth, Sandra and John Sandberg (1999), "Changes in American Children's Time, 1981-1997," University of Michigan Institute for Social Research.
3. Juster, F. Thomas et al. (2004). "Changing Times of American Youth: 1981-2003," Institute for Social Research, University of Michigan. http://www.umich.edu/news/Releases/2004/Nov04/teen_time_report.pdf
4. Rideout, Victoria et al. (2010). "Generation M: Media in the Lives of 8-18 Year-Olds," The Henry J. Kaiser Family Foundation. <http://www.kff.org/entmedia/entmedia030905pkg.cfm>
5. McDonough, Patricia (2009), "TV Viewing Among Kids at an Eight-Year High," The Nielsen Company, October 26, 2009. http://blog.nielsen.com/nielsenwire/media_entertainment/tv-viewing-among-kids-at-an-eight-year-high/

Calculation of > 5,000 hours:
32 TV hrs/wk for 2-5 yr olds * 52 wks/yr * 3.25 yrs of watching (based on 5.25 avg age for starting kindergarten) = 5,408 hours of TV watching before starting kindergarten.
6. Indiana University East: Planning Your Semester. (2009). Retrieved December 23, 2009, from <http://www.iue.edu/ucollege/advising/planningyoursemester.php>

Calculation for total hours to get a college degree:
120 credit hours for degree * 2.5 times the hours for studying and class time per week * avg of 14 week semester = 4,200 total hours
7. CDC's National Center for Chronic Disease Prevention and Health Promotion. Division of Adolescent and School Health. *Childhood Obesity*. 20 Oct. 2008. <http://www.cdc.gov/HealthyYouth/obesity>
8. Sax, Leonard, "Ritalin - Better Living Through Chemistry?" *The World and I*. Nov. 1, 2000.
9. Delate, T., Gelenberg, A.J., Simmons, V.A., & MOTHERAL, B.R. (2004) "Trends in the use of antidepressant medications in a nationwide sample of commercially insured pediatric patients, 1998-2002." *Psychiatric Services*. 55(4):387-391.
10. What's on our minds....Play, Policy and Practice (PPP). Interest Forum, Olga Jarrett, Ph.D., Georgia State University, Atlanta, Sandi Waite-Stupiansky, Edinboro University of Pennsylvania.
11. Beck, L.F. & Greenspan, A.I. (2008) "Why don't more children walk to school?" *Journal of Safety Research*, 39(5), 449-452.
12. Bloom, B. & Cohen, R.A. *Summary Health Statistics for U.S. Children: National Health Interview Survey, 2006*. National Center for Health Statistics. *Vital Health Stat* 10(234). 2007.
13. Pastor, P.N. & Reuben, C.A. *Diagnosed attention deficit hyperactivity disorder and learning disability: United States, 2004-2006*. National Center for Health Statistics. *Vital Health Stat* 10(237). 2008.
14. Kuo, PhD, Frances E., & Andrea Faber Taylor, PhD. "A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence From a National Study." *American Journal of Public Health* 94.9. Sept. 2004. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1448497>
15. Bartosh, Oksana. "Environmental Education: Improving Student Achievement." Evergreen State College, 2003. [http://www.seer.org/pages/research/Bartosh 2003.pdf](http://www.seer.org/pages/research/Bartosh%2003.pdf)
16. Ernst, Julie (Athman) & Martha Monroe. "The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking." *10.4 Environmental Education Research*, Nov. 2004.
17. CDC's National Center for Chronic Disease Prevention and Health Promotion. Division of Adolescent and School Health. *Childhood Obesity*. 20 Oct. 2008. <http://www.cdc.gov/HealthyYouth/obesity>
18. "Outdoor time may protect kids from nearsightedness." *Reuters. Optometry and Vision Science*, Jan. 2009.
19. American Academy of Pediatrics. "Many Children have Suboptimal Vitamin D Levels," *Pediatrics*. <http://www.aap.org/advocacy/releases/oct2609studies/htm>
20. Kumar, J., Muntner, P., Kaskel, F.J., Hailpern, S.M., & Melamed, M.L. (2009). Prevalence and associations of 25-Hydroxyvitamin D deficiency in US children: NHANES 2001-2004. *Pediatrics* (August 3).
21. Hofferth, Sandra & John Sandberg (1999), "Changes in American Children's Time, 1981-1997," University of Michigan Institute for Social Research.
22. Delate, T., Gelenberg, A.J., Simmons, V.A., & MOTHERAL, B.R. (2004) "Trends in the use of antidepressant medications in a nationwide sample of commercially insured pediatric patients, 1998-2002."
23. Ginsburg, MD MSED, Kenneth R. Committee on Communications, and Committee on Psychosocial Aspects of Child and Family Health. "The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds." 119.1
24. Kuo, PhD, Frances E., & Andrea Faber Taylor, PhD. "A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence From a National Study." *American Journal of Public Health* 94.9.Sept. 2004. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1448497>
25. National Association for the Education of Young Children. <http://naeyc.org>
26. Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). "Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity." *Personality and Social Psychology Bulletin*, 35, 1315-1329.

PHOTO CREDITS: Girl with pink hat - Leighann Calentine/d-mom.com; Boy in tree - Amie Hurst Adams/mammaloves.com; Boy hugging tree - Holly Ambrose/tropicofmom.com; Beach scene - Emily McKhann/themotherhood.com; Girl fishing - Rebecca Garland; Kids on boogie boards - Rebecca Garland

Get Physically Fit and Have Fun with These Fun Outdoor Activities

Calories Burned / Hr*

413	Backpacking
266	Badminton, social
148	Baseball, playing catch
266	Basketball, shooting baskets
236	Bicycling, <10mph, leisure
472	Bicycling, 12-14mph, moderate
236	Canoeing, on camping trip
708	Canoeing, rowing, vigorous
207	Fishing from river bank
354	Fishing in stream or surfs
472	Football, touch or flag
177	Frisbee playing
295	Gardening
325	Golf, carrying clubs
354	Hiking, cross country
472	Hockey, ice or field
236	Horseback riding
295	Hunting
413	Jogging
295	Kayaking
413	Kickball
236	Paddleboat
236	Raking lawn
590	Rope jumping, moderate
531	Running, cross country
177	Sailing, boat/board, windsurfing
354	Shoveling snow
295	Skateboarding
413	Skating, ice
472	Skiing, cross-country
413	Skiing, downhill
413	Sledding
295	Snorkeling
472	Snow shoeing
413	Soccer, casual
177	Surfing, body or board
472	Swimming, freestyle, light/moderate
472	Tennis, doubles
354	Tennis, singles
472	Volleyball, beach
207	Walking the dog
295	Whitewater rafting, kayaking, or canoeing

* Calories burned based on 130 lb person, source:
Department of Health and Family Services, State of Wisconsin

The following health professionals have reviewed this report for accuracy and concur with its findings.

Wendy Kohatsu, M.D.

Director, Integrative Medicine Fellowship
Core Faculty/Culinary Medicine Chef
Santa Rosa Family Medicine Residency

Victoria Maizes, M.D.

Executive Director, Arizona Center for Integrative Medicine
Professor of Clinical Medicine, Family Medicine, and Public Health

Daphne Miller, M.D.

Family Physician
Associate Clinical Professor, University of California, San Francisco

Michael Rich, M.D.

Director of the Center of Media and Child Health
Children's Hospital of Boston
Associate Professor, Harvard Medical School and School of Public Health

Sandra Stenmark, M.D.

Physician Lead of Colorado Pediatric Cardiovascular Health
Kaiser Permanente

Andrew Weil, M.D.

Founder and Director, Arizona Center for Integrative Medicine
Clinical Professor of Medicine and Professor of Public Health
Lovell-Jones Professor of Integrative Rheumatology



There's a reason they call it the great outdoors.™




BE OUT THERE™
NATIONAL WILDLIFE FEDERATION®

National Wildlife Federation
11100 Wildlife Center Dr, Reston VA 20190

www.beoutthere.org

