



# The Impact of Nature on Child Development: A review of the evidence through the lens of a local pediatrician

CATALINA HOYOS, MD

UPMC CHILDREN'S COMMUNITY PEDIATRICS, GIL

# Child Development

*Def.* The physical, intellectual, social, and emotional changes that occur from birth through the end of adolescence.







## Case 1

EC is a healthy 6-year-old child



# Nature and Stress Reduction

- Exposure to nature decreases perceived stress or is a buffer for daily stress in children.<sup>1</sup>
- Exposure to green school yards is associated with less perceived stress and improved ability to focus and form supportive social groups.<sup>2</sup>
- A qualitative study using the Strengths and Difficulties Questionnaire showed that high quantity and quality green space was associated with fewer difficulties and improved peer relationships.<sup>3</sup>

<sup>1</sup>Wells and Evans. Environment and Behavior. 2003

<sup>2</sup>Chawla et al. Health and Place. 2014.

<sup>3</sup>Amoly et al. Environmental Health Perspectives. 2014.





Greater time spent by adults nearby to nature improved mental and social health.<sup>1</sup>

Residents in greener neighborhoods reported less depression and more connectedness to nature.<sup>1</sup>

**PITTSBURGH  
SYSTEM OF GREEN**

 Green Network

 Parks and Open Space

<sup>1</sup>Cox et al. Int. J of Research and Public Health. 2017.

# Nature

Several studies, show the positive impact of wilderness programs on **self-esteem, autonomy, and decision making.**



## CASE 2

RJ is a 14 year old boy who was overweight and lost 20 pounds in the last 2 years



**TEEN  
SUMMER  
CHALLENGE**

**TEENS WORK OUT  
FREE**

ALL SUMMER LONG

**MAY 15<sup>th</sup> TO SEPTEMBER 1<sup>st</sup>**  
**TEENS AGES 15-18 WORK OUT TOTALLY FREE!**  
UNDER 18 MUST SIGN UP IN CLUB WITH A PARENT/GUARDIAN.

 **TEEN FITNESS CLASSES**

**ENTER TO WIN A  
\$5,000 SCHOLARSHIP\***

**VISIT YOUR LOCAL PLANET FITNESS TO SIGN UP.  
FIND A CLUB AT [PLANETFITNESS.COM](https://www.planetfitness.com)**

\*NO PURCHASE NECESSARY TO ENTER OR WIN. Void outside 50 U.S. DC and where prohibited. Open to legal residents of the 50 U.S. DC, who are 15-18 years of age (with parent approval) at time of entry. Begins 12:00 a.m. ET on 5/15/18, ends 11:59 p.m. ET on 9/1/18. Odds of winning depend on total number of entries received. For complete Official Rules, eligibility, and free entry details, visit <https://www.planetfitness.com/teensummerchallenge-rules>. Sponsor: Planet Fitness Franchising LLC, 4 Liberty Lane West, Hampton, NH 03842 USA.  
Participating locations only. Independently owned and operated. Under 18 must sign up with parent or guardian. ©2018 PFF, LLC.



# Nature and Physical Activity



- Physical activity improves health outcomes including adiposity and cardio-vascular health.<sup>1</sup>
- Nature play positively impacts physical activity in children, although it may not differ from traditional play spaces.<sup>2</sup>
- The prevalence of being overweight was up to 41% lower among those children spending more time outdoors at baseline.<sup>3</sup>

<sup>1</sup>Strong et al. Journal of Pediatrics. 2005.

<sup>2</sup>Dankiw et al. Plos One. 2020

<sup>3</sup>Cleland et al. Int Journal of obesity. 2008



# Case 3: JM

- JM is a 14-year-old boy with obesity asthma, ADHD and a history of truancy and marijuana use
- JM's mother, who has a history of mental health issues and has overcome substance abuse, is focused on treating him in a holistic approach, including going out for walks in nearby parks
- **Can nature help JM?**

**THE MORE THEY BURN  
THE BETTER THEY LEARN**

 +  (    ) = 

YOUR CHILD	AMOUNT OF ACTIVITY	VARIOUS ACTIVITIES	ACADEMIC ACHIEVEMENT
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**Did you know that kids who are physically active get better grades?**

Research shows that students who earn mostly **A**s are almost twice as likely to get regular physical activity than students who receive mostly **D**s and **F**s.

Physical activity can help students focus, improve behavior and boost positive attitudes. Do what you can to help your child be physically active, be it running, biking or swimming. Any type of physical activity is good, and 60 minutes a day is best. Their grades will thank you!

 FOR MORE INFORMATION, VISIT [MakingHealthEasier.org/Burn2Learn](https://www.makinghealtheasier.org/burn2learn)

SOURCES | CDC. Physical Inactivity and Unhealthy Dietary Behaviors and Academic Achievement. CDC. The association between school based physical activity, including physical education, and academic performance. Atlanta, GA: US: DHHS; 2010.



# Nature and ADHD

Children with ADHD score higher on attention testing after a 20 min walk in the city park vs two other urban settings<sup>1</sup>

Green outdoor settings seem to reduce ADHD symptoms in children<sup>2</sup>



<sup>1</sup>Faber and Kuo. *Journal of Attention Disorders*. 2009.

<sup>2</sup>Kuo and Faber. *American Journal of Public Health*. 2004



# Nature and Behavior

In children with behavioral issues, parents reported less problem behaviors after a therapeutic outdoor program





# Nature and mental health

Greater exposure to nature is associated with lower maternal reports of conduct issues, anxiety and depression



## Case 4:

MR is an 8-year-old boy with Type 1 Diabetes and Autism. He is nonverbal and his behaviors are difficult to manage. He spends over 4 hours per day on a screen.





A child wearing a red and black plaid shirt and a dark hat stands in a field of tall, golden-brown grass. The child is holding a model airplane aloft in their right hand. The background shows rolling hills under a soft, hazy sky. A semi-transparent white circle is visible behind the child's head. In the top right corner, there is a solid yellow rectangular shape.

Parents and caregivers of children with autism reported **motor-sensory**, **emotional**, and **sensory** benefits from contact with nature.



# Limitations of The Evidence

- Studies must often rely on interpretation or caregiver reports
- Participants often want to support the program
- Participants are often self selected
- Activity vs environment
- Small sample sizes
- Variety of study designs



# Action points

- Go outside, enjoy nature, wander and wonder
- Encourage children in your life to explore nature and to be curious; show them you care about them and nature
- Keep nature accessible by partnering with local organizations and institutions
  - local schools and parks
  - Phipps Conservatory and Botanical Gardens
- Protect and expand existing nature
  - pick up trash at local park or on your next hike
  - join groups going out to maintain trails
  - write to your government officials, vote





Thank You

[Catalina.Hoyos@chp.edu](mailto:Catalina.Hoyos@chp.edu)

