

Physical Health Benefits

2024

Overview

Trees, green spaces, and nature are essential elements of urban infrastructure and contribute to the physical well-being of the community. They alleviate stress, stabilize blood pressure and address anxiety and depression in addition to many other benefits. These benefits are brought forth by a range of inputs such as improved air quality, increased physical activity, enhanced immune function, stress reduction and improved social cohesion.

Interesting Information

Live Longer

- People with more access to quality green spaces appear to live longer. This pattern is stronger in under-resourced urban communities (Twohig-Bennett et al., 2018).
- Some research indicates that people residing close to parks and community gardens are, on average, 2.5 years biologically younger than those who do not have that access (Elton, 2023).
- A nationwide study conducted at the Harvard School of Public Health indicated that women living in areas with higher levels of green vegetation had a 12% lower rate of death compared to those with less green vegetation. Specifically, women residing in areas with abundant greenery experienced 13% lower cancer mortality, 35% lower respiratory disease-related mortality, and 41% lower rate for kidney disease mortality (Frates, 2017).
- One recent method of promoting more time in nature is the use of formal nature prescriptions by physicians and other healthcare and social service providers. People have shown they are more likely to engage in a lifestyle or health-behavior change when given formal prescriptions. These methods are being increasingly adopted in countries like the UK, where the National Health Service has begun a “green social prescribing” program to improve health outcomes and address health inequalities. In the United States, resources like Park Rx America are facilitating the writing and inclusion of NR_x in patient EHR (electronic health record) charts (Beil, 2023).

Obesity/Diabetes/Cardio-vascular disease

- More urban green is associated with reduced risk of chronic health conditions including heart disease, cancer, and diabetes. Being physically active can reduce the risk of cancer and heart disease by almost 50 percent (Twohig-Bennett et al., 2018).
- Adults who spend more time in parks may be 35 percent more likely to meet physical activity guidelines and significantly lower their risk of obesity (Faka et al., 2019).
- Research indicates that the availability of parks, trails, and nature can positively affect attitudes toward being active and encourage physical activity. It also shows that when people exercise in natural environments, they do so for longer and at greater intensity (Urban Forestry Toolkit, n.d.)

- A Portland, Oregon study showed that on average, 11.7 new trees in each neighborhood were associated with 15.6 fewer non-accidental deaths and five fewer cardiovascular deaths each year (Donovan et al., 2022).
- A study of residents of Brussels found an inverse relationship between medication sales for treatment of mood disorders and cardiovascular disease and access to quality trees. The study found that there was an especially strong inverse relationship with larger trunk and crown size (Chi et al., 2022).

Immunity and Pain

- There is growing evidence that adults who take short day trips to the woods may boost their levels of immunoproteins and natural killer white blood cells. This may include anti-inflammatory, anti-allergic, and anti-asthmatic impacts (Anderson, 2021).
- Studies have reported faster surgical recovery and patient healing in hospitals and higher pain thresholds associated with passive nature experiences and views. One thought is that nature serves as a distraction resulting in increased pain thresholds and tolerance as well as improved coping and healing (Wolf et al., 2015).

Birth Weight

- A sibling study of Scottish mothers and their children (1991–2010) indicated that infant birth weight was associated with the quantity of natural space around the mother’s homes (Urban Forestry Toolkit, n.d.).

Cancer

- Nature exposure appears to improve physical and psychological recovery in cancer survivors (Blaschke, 2017). It may increase cancer patients’ tumor-killing cell activity and their quality of life and spiritual wellbeing (Nakau, 2013). One gardening program found that 90% of survivors reported better strength, agility, and endurance (Blair et al., 2013).

Stress

- The very act of being out in fresh air can cause a response in your brain that releases endorphins and appears to reduce cortisol – a stress causing hormone (St. Luke’s Health, 2022).
- Research indicates that adults who exercise outdoors feel more energized, happier, and less stressed than those who exercise indoors (Coon et al., 2011).
- A two-hour “dose” of nature a week significantly boosts health and wellbeing, research suggests, even if you simply sit and enjoy the peace. A study of over 20,000 people in England found that a quarter of those who spent little or no time in nature reported poor health and almost half said they were not satisfied with their life, a standard measure of wellbeing. In contrast, just one-seventh of those who spent at least two hours in nature said their health was poor, while a third were not satisfied with their life. Research into shinrin-yoku – Japanese “forest bathing” – for instance, suggested that various psychophysiological benefits can be gained from merely sitting passively in natural versus urban settings. (Carrington, 2019).

Youth

- The urban environment presents significant health challenges for children, such as discouraging physical exercise and increasing exposure to air pollution, excessive noise and higher temperatures. Reducing exposures to these negative environmental factors can have great

benefits on a child's well-being and lower their risk of developing chronic diseases later in life (Islam, 2020).

- Research shows that children of all ages tend to engage in more physical activity when they have access to nearby green spaces and, as a result, can access the physical and mental health benefits widely associated with exercise. Even street trees can increase the likelihood of children walking and cycling outdoors. (UNICEF, n.d).
- Young children who play in nature compared to a traditional playground appear to develop superior motor skills, balance, and coordination (Fjortoft et al., 2004).
- There are indications that children who attend outdoor daycares with lots of greenery and varied topography sleep longer at night and enjoy better overall health (Soderstrom, 2013).
- Nearsightedness has reached epidemic proportions, especially in East Asia. In China, up to 90% of teenagers are nearsighted, of whom one-tenth are likely to develop vision loss later in life. Research is beginning to show that children who spend time in sunlight – such as in green schoolyards - are significantly less likely to develop nearsightedness (UNICEF, n.d.).

Elderly

- A study at a dementia facility found that patients with access to a “wander garden” had about 30 percent fewer falls and a reduction in fall severity. In addition, they found significant reductions in the amount of medications used -an approximate 10.5-percent reduction overall. Wander gardens” are confined outdoor spaces that enable activity without restraint but prevent departure (Detweiler et al., 2012).
- Time spent in parks and gardens can improve quality of life and function of dementia patients by reducing negative behaviors up to 19 percent, improving sleep patterns and hormone balance (Wolf et al., 2015).

References

Andersen, L., Corazon, S. S., & Stigsdotter, U. K. (2021). Nature exposure and its effects on immune system functioning: a systematic review. *International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health*, 18(4), 1416. <https://doi.org/10.3390/ijerph18041416>

Beatley, T. (2023, November 27). *Canopy Cities*. <https://doi.org/10.4324/9781003377344>

Blaschke, S. (2017, May 25). The role of nature in cancer patients' lives: a systematic review and qualitative meta-synthesis. *BMC Cancer*, 17(1). <https://doi.org/10.1186/s12885-017-3366-6>

Beil, K. (2023). Prescription: Nature. *Natural Medicine Journal*. <https://www.naturalmedicinejournal.com/journal/prescription-nature>

Blair, C. K., Madan-Swain, A., Locher, J. L., Desmond, R. A., de Los Santos, J., Affuso, O., Glover, T., Smith, K., Carley, J., Lipsitz, M., Sharma, A., Krontiras, H., Cantor, A., & Demark-Wahnefried, W. (2013, February 26). Harvest for health gardening intervention feasibility study in cancer survivors. *Acta Oncologica*, 52(6), 1110–1118. <https://doi.org/10.3109/0284186x.2013.770165>

Carrington, D. (2019, June 19). *Two hour dose of nature significantly boost health*. The Guardian. [Two-hour 'dose' of nature significantly boosts health – study | Environment | The Guardian](#)

Chi, D., Aerts, R., Van Nieuwenhuysse, A., Bauwelinck, M., Demoury, C., Plusquin, M., Nawrot, T. S., Casas, L., & Somers, B. (2022, May). Residential Exposure to Urban Trees and Medication Sales for Mood Disorders and Cardiovascular Disease in Brussels, Belgium: An Ecological Study. *Environmental Health Perspectives*, 130(5). <https://doi.org/10.1289/ehp9924>

Coon, J. T., Boddy, K., Stein, K. V., Whear, R., Barton, J., & Depledge, M. H. (2011). Does Participating in Physical Activity in Outdoor Natural Environments Have a Greater Effect on Physical and Mental Wellbeing than Physical Activity Indoors? A Systematic Review. *Environmental Science & Technology*, 45(5), 1761–1772. <https://doi.org/10.1021/es102947t>

Detweiler, M (2021). What Is the Evidence to Support the Use of Therapeutic Gardens for the elderly? *Psychiatry Investigation*. <https://doi.org/10.4306>

Donovan, G. H., Prestemon, J. P., Gatzolis, D., Michael, Y. L., Kaminski, A. R., & Dadvand, P. (2022, December). The association between tree planting and mortality: A natural experiment and cost-benefit analysis. *Environment International*, 170, 107609. <https://doi.org/10.1016/j.envint.2022.107609>

Elton, C. (2023, August 18). Fountain of youth: Living near a green space can reduce your biological age by 2.5 years. *Euronews*. <https://www.euronews.com/green/2023/06/29/fountain-of-youth-living-neargreen-space-can-reduce-your-biological-age-by-25-years>

Faka, A., Chalkias, C., Georgousopoulou, E., Tripitsidis, A., Pitsavos, C., & Panagiotakos, D. B. (2019). Identifying determinants of obesity in Athens, Greece through global and local statistical models. *Spatial and Spatio-temporal Epidemiology (Print)*, 29, 31–41. <https://doi.org/10.1016/j.sste.2019.02.002>

Fjørtoft, I. (2004). Landscape as Playscape: The Effects of Natural Environments on Children's Play and Motor Development. *Children, Youth and Environments*. <https://doi.org/10.1353/cye.2004.0054>

Frates, E. (2017, March 9). Time spent in “green” places linked with longer life in women. *Harvard Health Blog*. <https://www.health.harvard.edu/blog/time-spent-green-places-linked-longer-life-women-2017030911152>

Hunter, M. R., Gillespie, B. W., & Chen, S. Y. P. (2019, April 4). Urban Nature Experiences Reduce Stress in the Context of Daily Life Based on Salivary Biomarkers. *Frontiers in Psychology*, *10*. <https://doi.org/10.3389/fpsyg.2019.00722>

Islam, M., Johnston, J., & Sly, P. (2020). Green space and Early Childhood Development - A systemic review. *Review Environment Health*.

Nakau, M., Imanishi, J., Imanishi, J., Watanabe, S., Imanishi, A., Baba, T., Hirai, K., Ito, T., Chiba, W., & Morimoto, Y. (2013, March). Spiritual Care of Cancer Patients by Integrated Medicine in Urban Green Space: A Pilot Study. *EXPLORE*, *9*(2), 87–90. <https://doi.org/10.1016/j.explore.2012.12.002>

The great outdoors: 8 ways nature benefits your well-being | St. Luke's Health. (2022, March 28). St. Luke's Health. <https://www.stlukeshealth.org/resources/the-great-outdoors-8-ways-nature-benefits-your-well-being>

Söderström, M., Boldemann, C., Sahlin, U., Mårtensson, F., Raustorp, A., & Blennow, M. (2012, November 3). The quality of the outdoor environment influences childrens health – a cross-sectional study of preschools. *Acta Paediatrica*, *102*(1), 83–91. <https://doi.org/10.1111/apa.12047>

Twohig-Bennett, C., & Jones, A. (2018, October). The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. *Environmental Research*, *166*, 628–637. <https://doi.org/10.1016/j.envres.2018.06.030>

Urban Forestry Toolkit. (n.d.). Vibrant Cities Lab: Resources for Urban Forestry, Trees, and Green Infrastructure. <https://www.vibrantcitieslab.com/toolkit/>

Why we need trees: Trees help fight climate change, save wildlife, and improve our health. (n.d.). Woodland Trust. Retrieved April 24, 2024, from <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/british-trees/benefits/>

UNICEF. The Necessity of Urban Green Space for Children's Optimal Development *A discussion paper* [Necessity of Urban Green Space for Children's Optimal Development | UNICEF](https://www.unicef.org/publications/0/necessity-of-urban-green-space-for-childrens-optimal-development) unicef.org

Wolf, K. L., & Robbins, A. (2015). Metro Nature, environmental health, and economic value. *Environmental Health Perspectives*, 123(5), 390–398. <https://doi.org/10.1289/ehp.1408216>