

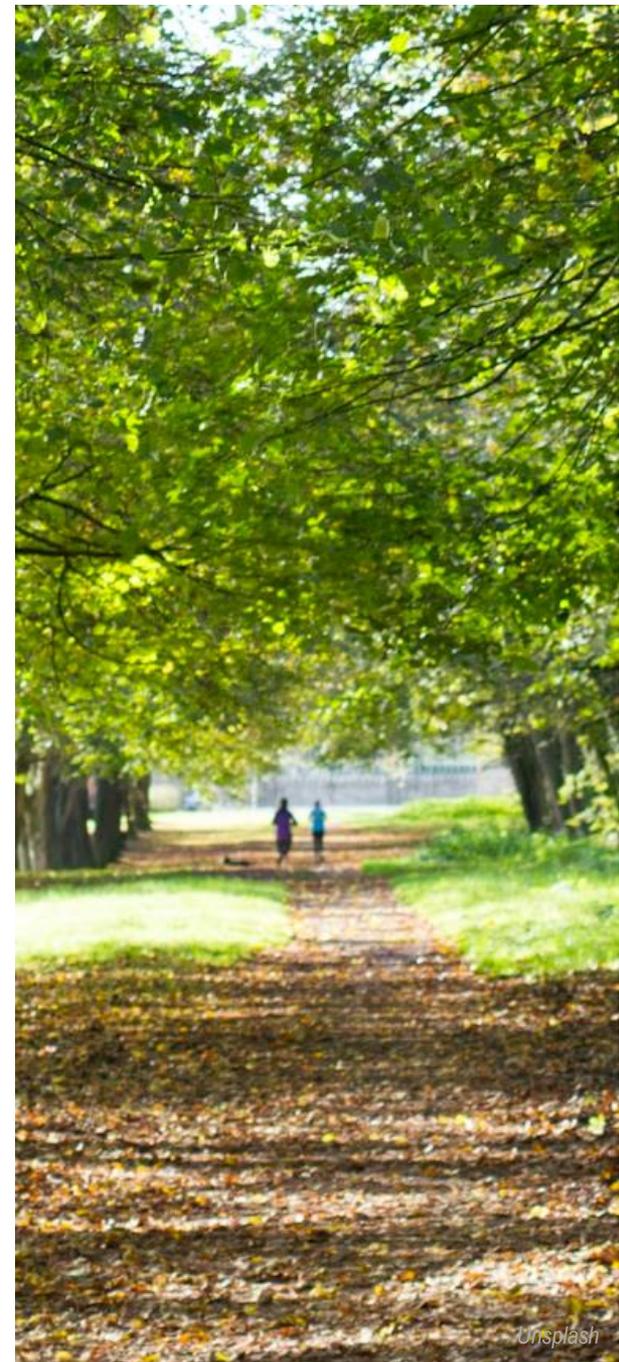


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A influência dos espaços naturais na saúde física e mental

Ana Isabel Ribeiro

17 fevereiro 2023



Unsplash

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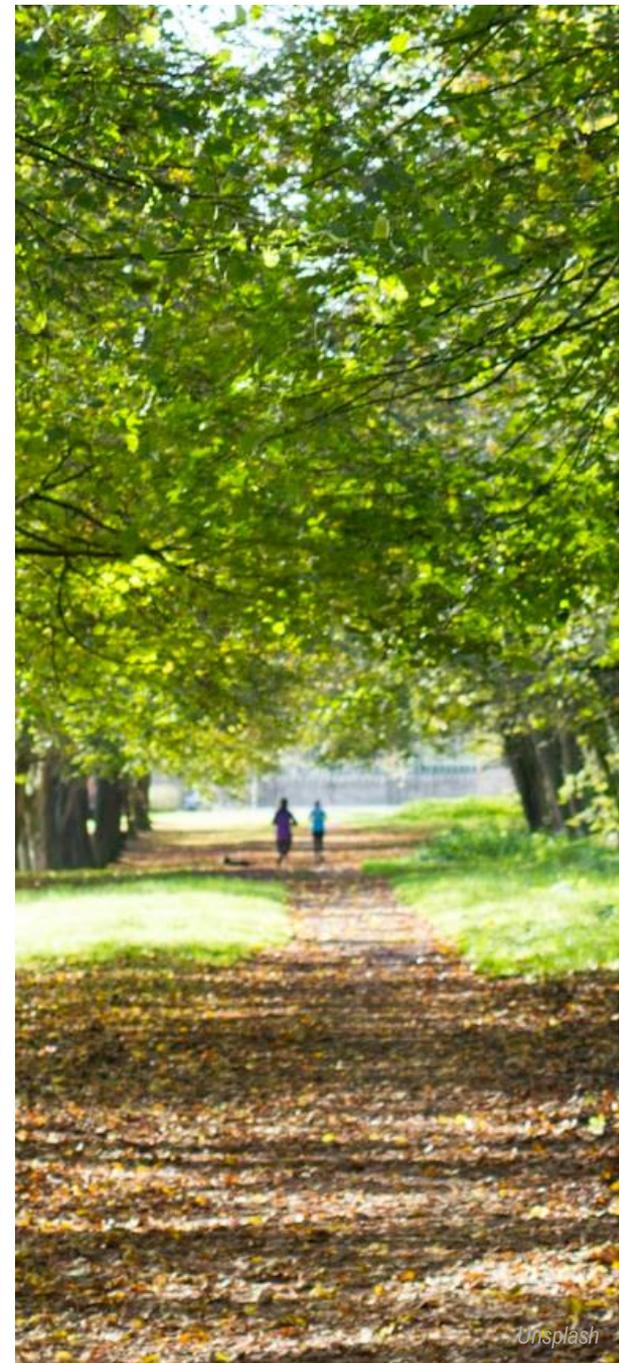


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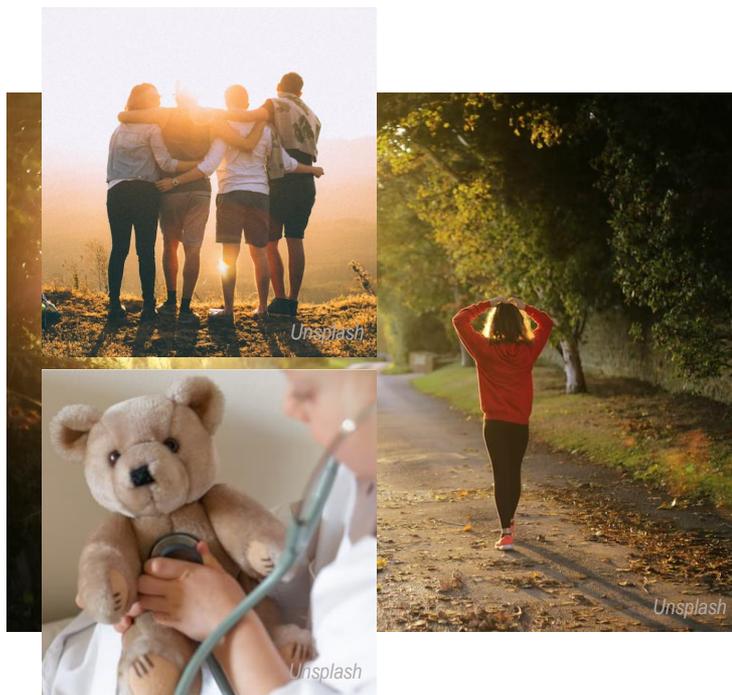
Saúde e seus determinantes



Definição de saúde



Estado de bem-estar físico, mental e social completo e não meramente a ausência de doença ou enfermidade.



Determinantes de saúde



Genética

- Hereditariedade afeta a saúde e longevidade.

Comportamentos

- Atividade física, alimentação, hábitos tabágicos, forma de fazer face a situações.

Género

- Homens e mulheres têm diferentes problemas de saúde.

Suporte social

- Apoio de família, amigos e comunidade.

Características socioeconómicas

- Escolaridade, riqueza, rendimento, ocupação.

Acesso aos serviços de saúde

- Impacto na prevenção e tratamento.

Cultura

- Tradições, crenças, religião.

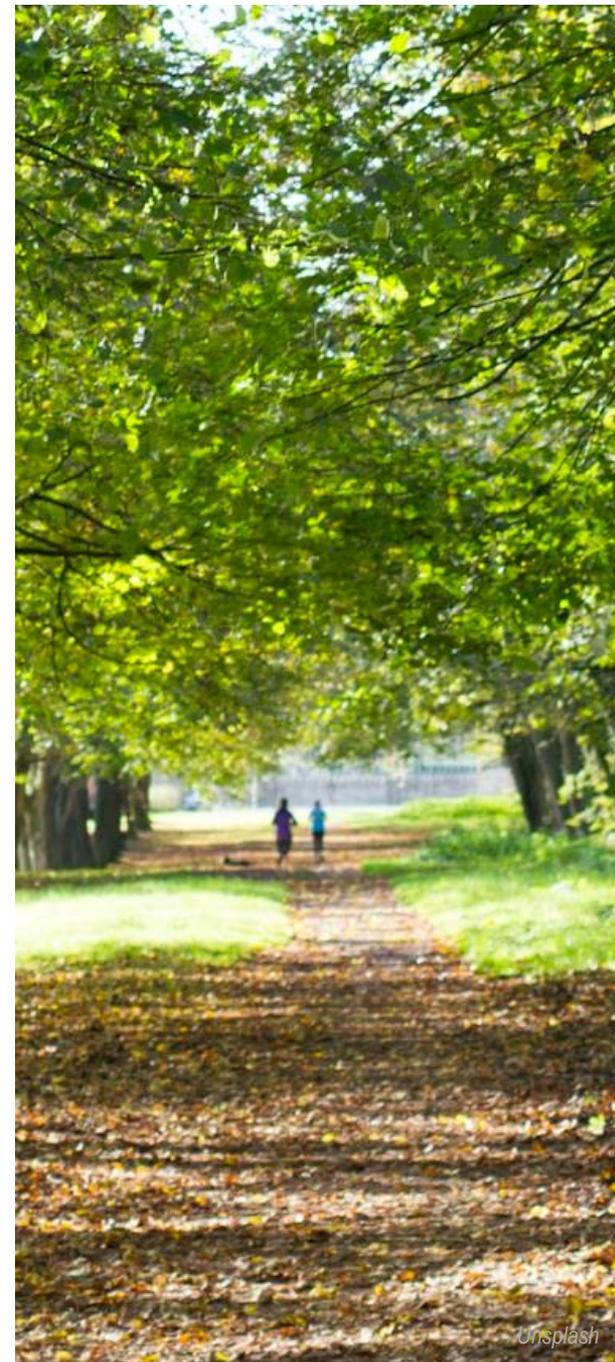
Ambiente físico

- Clima, poluição atmosférica, ruído, espaços naturais.



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Espaços naturais



Definição de espaços naturais



Espaços que contêm elementos de sistemas vivos que incluem plantas e animais não humanos.

Apresentam diferentes graus de diversidade e de intervenção humana.

Nesta definição incluem-se pequenos parques urbanos, florestas, espaços azuis (lagos, rios), áreas selvagens e intocadas.



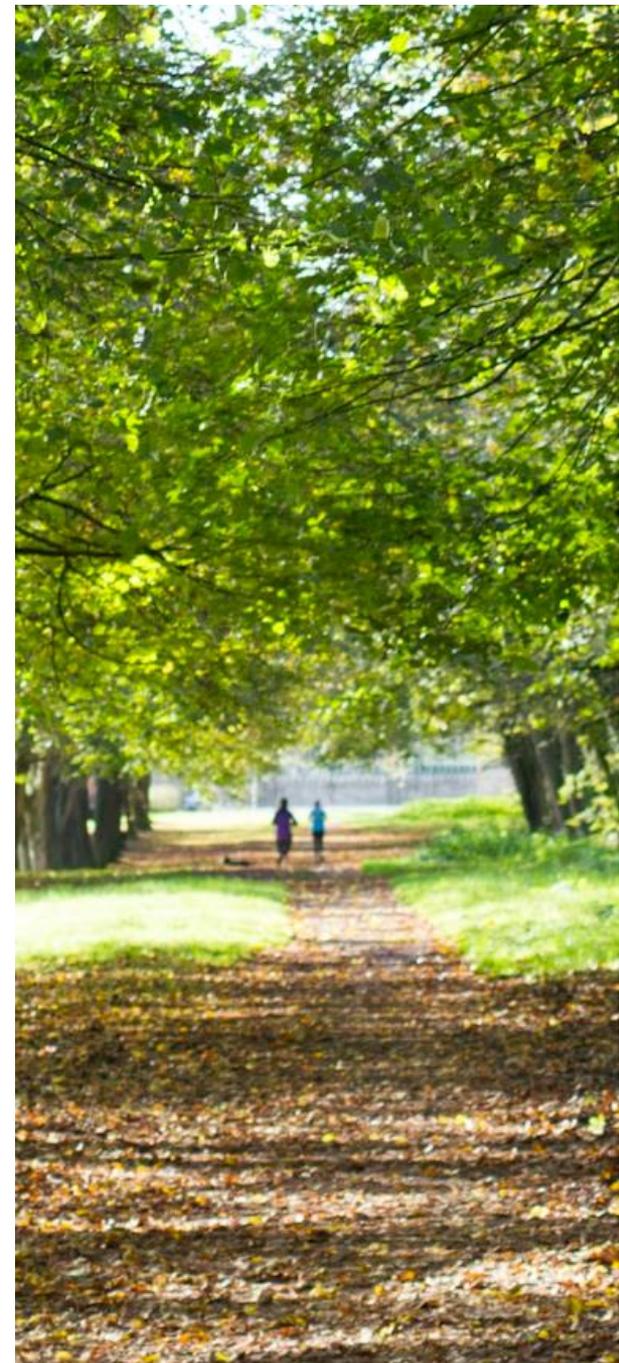
Adaptado de: Bratman, G. N., Hamilton, J. P., & Daily, G. C. (2012). The impacts of nature experience on human cognitive function and mental health. *Annals of the New York Academy of Sciences*, 1249, 118–136. <https://doi.org/10.1111/j.1749-6632.2011.06400.x>

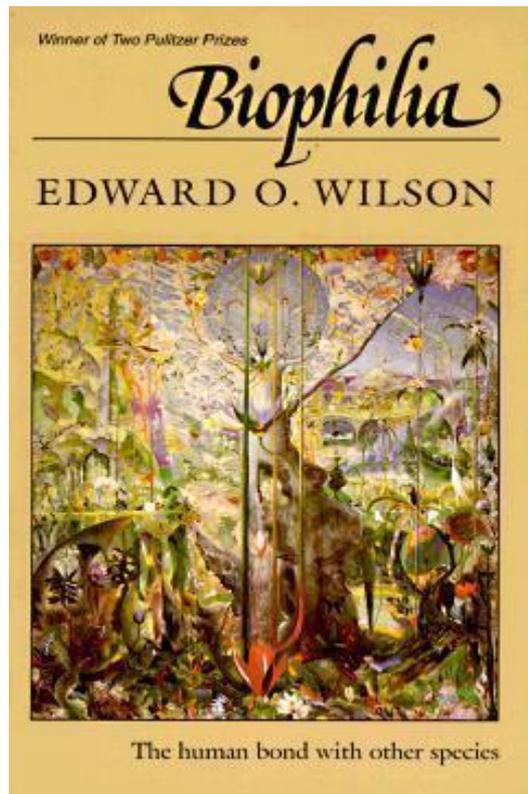
Fotos: Unsplash



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Espaços naturais e saúde





"(...) the urge to affiliate with other forms of life"

ou *"(...) desejo instintivo de se afiliar a outras formas de vida"*.

Fonte: Wilson, E. O. (1986). *Biophilia*. Harvard University Press.

Evidência empírica



"Já vi, em febres (e senti, quando eu mesma tive febre), o sofrimento agudo de um paciente (numa cabana) por não conseguir olhar pela janela e ter os nós da madeira como única vista. Jamais esquecerei o arrebatamento de pacientes com febre perante um ramo de flores coloridas. Lembro (no meu próprio caso) de me ter sido enviado um ramo de flores silvestres e dali em diante a minha recuperação acelerou."

Arquitetura Branca – os sanatórios



Sanatório das Penhas da Saúde
(criado em 1944)

Fonte: Wikipedia



Sanatório dos Covões
(Coimbra, 1930)

*Fonte: Nunes, J. A. Gardens and Landscapes of Portugal,
5(1), 39-55.*

Higienismo e cidades jardim



- Higienismo - início no século XIX em muitas cidades europeias e norte-americanas.
- Para fazer frente aos problemas de saúde gerados pela poluição, sobrelotação e ruído.
- Cidades/bairros jardim
 - *Central Park* nos EUA
 - Bairro do Marechal Gomes da Costa (Porto), Olivais (Lisboa).



Bairro do Marechal Gomes da Costa (Porto)

Fonte: André Rolo / Global Imagens



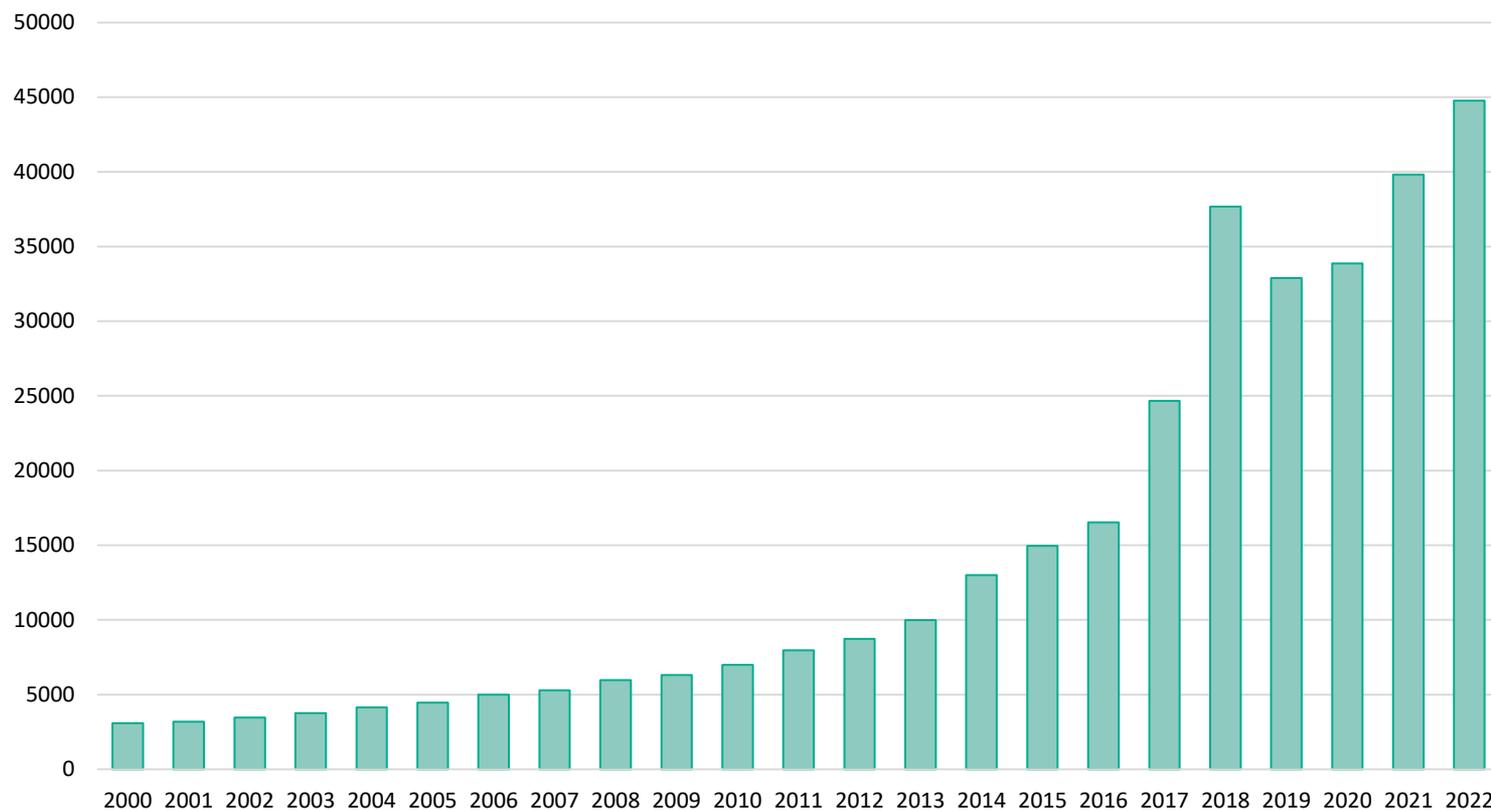
Central Park (Nova Iorque, EUA)

Fonte: Unsplash

Renascimento de uma “velha” ideia



Evolução do número de estudos sobre saúde e natureza



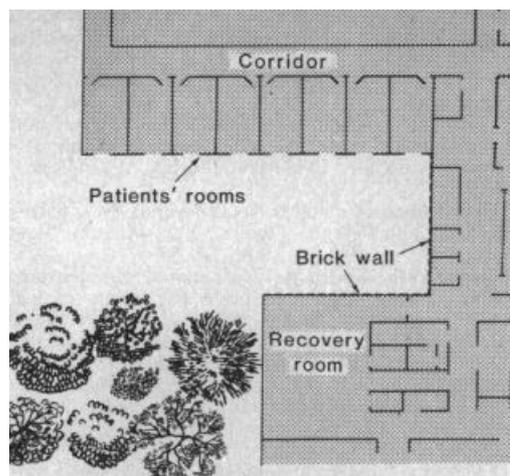
Estudo pioneiro



Table 1. Comparison of analgesic doses per patient for wall-view and tree-view groups.

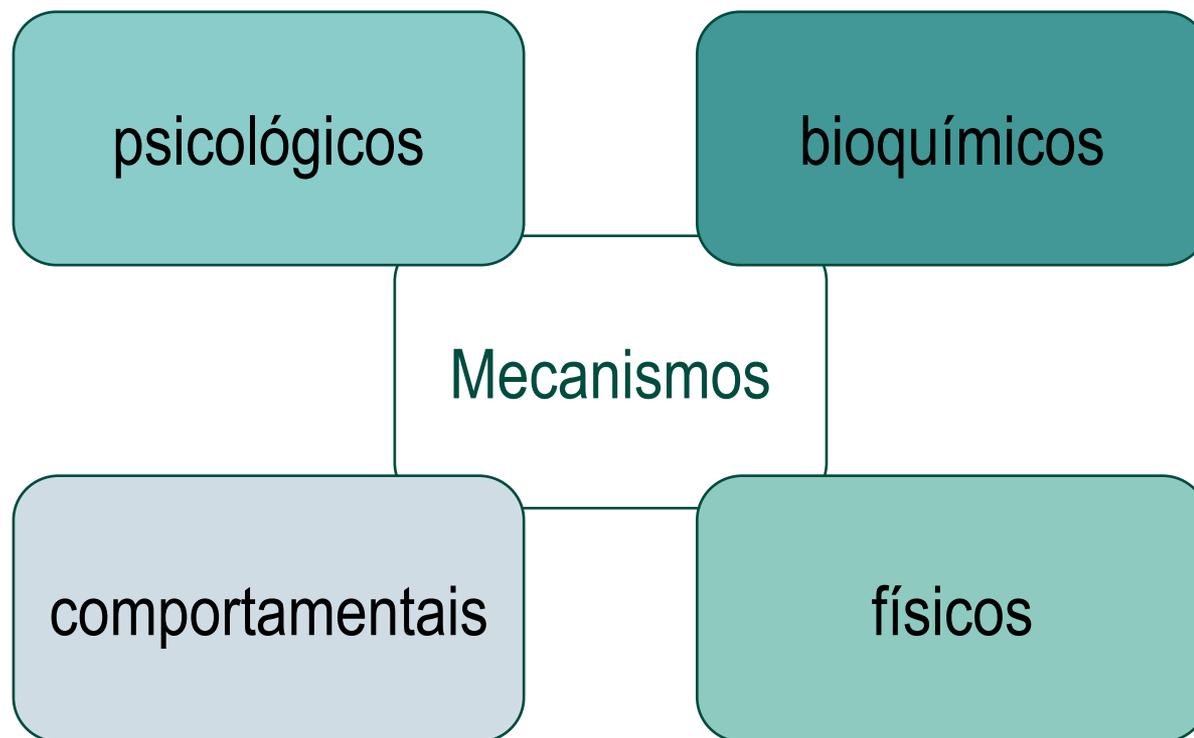
Analgesic strength	Number of doses					
	Days 0-1		Days 2-5		Days 6-7	
	Wall group	Tree group	Wall group	Tree group	Wall group	Tree group
Strong	2.56	2.40	2.48	0.96	0.22	0.17
Moderate	4.00	5.00	3.65	1.74	0.35	0.17
Weak	0.23	0.30	2.57	5.39	0.96	1.09

Fig. 1. Plan of the second floor of the study hospital showing the trees versus wall window views of patients. Data were also collected for patients assigned to third-floor rooms. One room on each floor was excluded because portions of both the trees and wall were visible from the windows. Architectural dimensions are not precisely to scale.



Planta do segundo andar do hospital-escola que compara o efeito da vista para o arvoredo e para uma parede nos doentes. Foi também recolhida informação acerca dos doentes no terceiro piso.

Espaços naturais e saúde - Mecanismos



Mecanismos psicológicos



➤ **Teoria da restauração da atenção** (*Attention Restoration Theory*)

Utilização e contemplação de espaços naturais diminui a fadiga mental associada aos estímulos constantes do cotidiano (ex.: ruído, trânsito, aglomeração), melhorando assim a concentração e atenção (Kaplan, 1995).

➤ **Teoria da recuperação do stress** (*Stress Recovery Theory*)

Contato com os espaços naturais é capaz de reduzir as respostas psicofisiológicas ao stress (Ulrich, 1983).

Fontes:

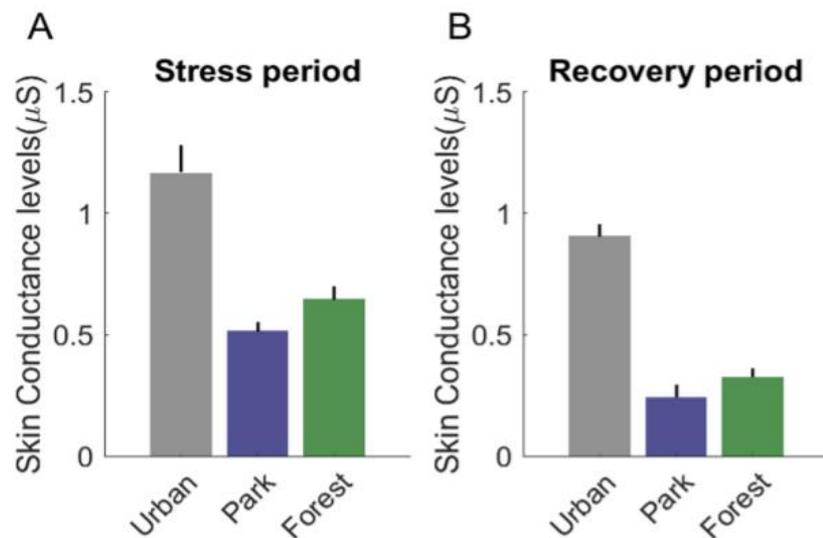
Kaplan, S. (1995). *The restorative benefits of nature: Toward an integrative framework*. *Journal of Environmental Psychology*, 15(3), 169-182.
Doi: 10.1016/0272-4944(95)90001-2

Ulrich, R. S. (1983). *Aesthetic and affective response to natural environment*. In I. Altman & J. F. Wohlwill (Eds.), *Behavior and the natural environment* (pp. 85-125). New York: Springer

Mecanismos psicológicos



O parque e a floresta, mas não a área urbana, proporcionaram redução significativa do *stress*.



Fonte: Hedblom, M., Gunnarsson, B., Iravani, B., Knez, I., Schaefer, M., Thorsson, P., & Lundström, J. N. (2019). Reduction of physiological stress by urban green space in a multisensory virtual experiment. *Scientific reports*, 9(1), 10113. <https://doi.org/10.1038/s41598-019-46099-7>

Mecanismos psicológicos

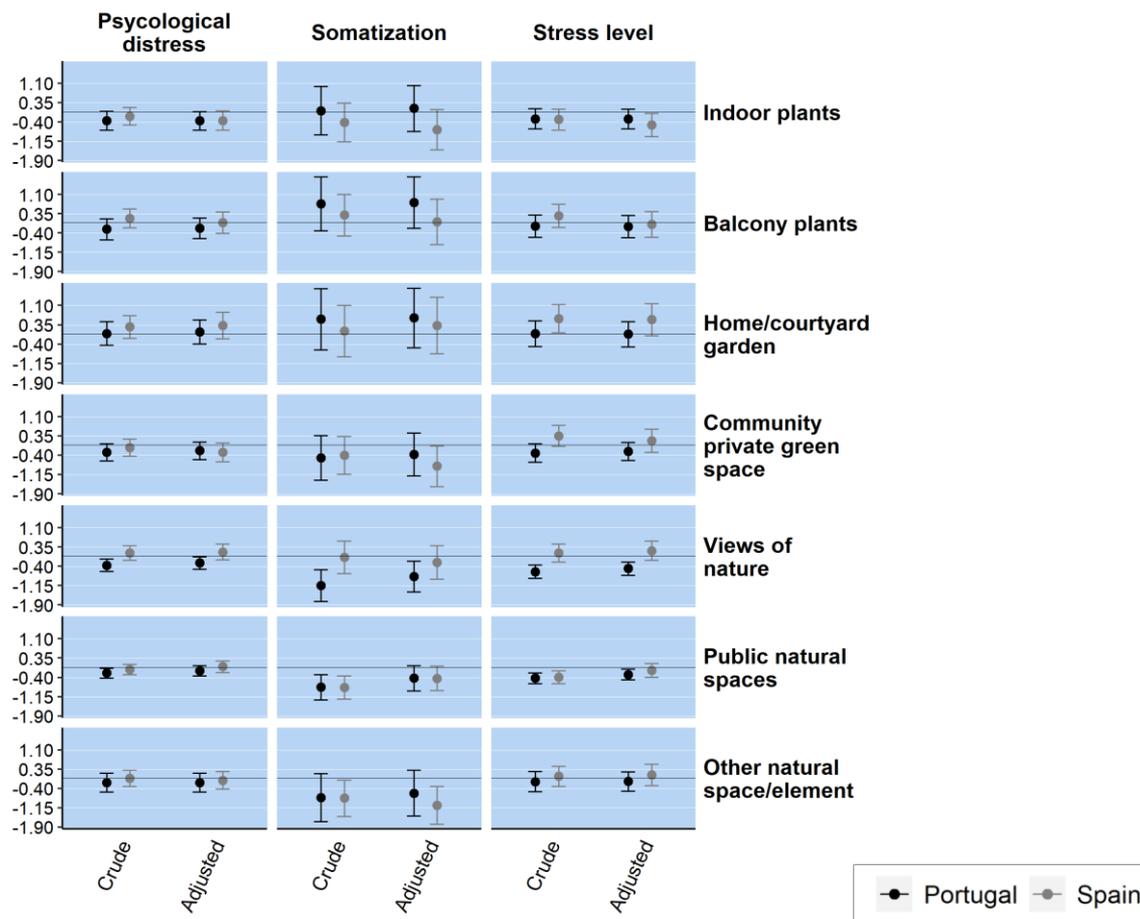


Portugal

Espaços públicos naturais e vistas → menos *stress*, sintomas somáticos e sofrimento psicológico.

Espanha

Plantas interiores e jardins comunitários → menos *stress* e sintomas somáticos.



Mecanismos bioquímicos



➤ **Vitamina D**

Exposição solar → síntese de vitamina D

➤ **Microbioma** (“hipótese da biodiversidade”)

Não exposição a diversidade de micro-organismos → desequilíbrio do sistema imunitário → inflamação → doença

➤ **Fitoncidas**

Compostos orgânicos voláteis antimicrobianos → células NK

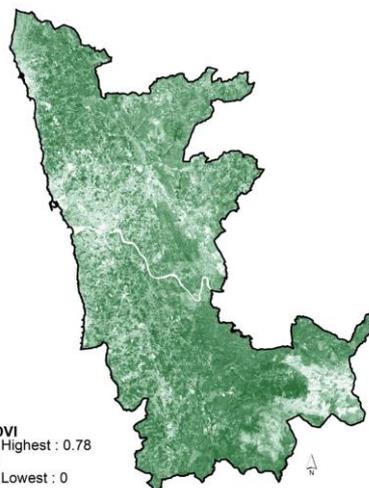
Mecanismos bioquímicos



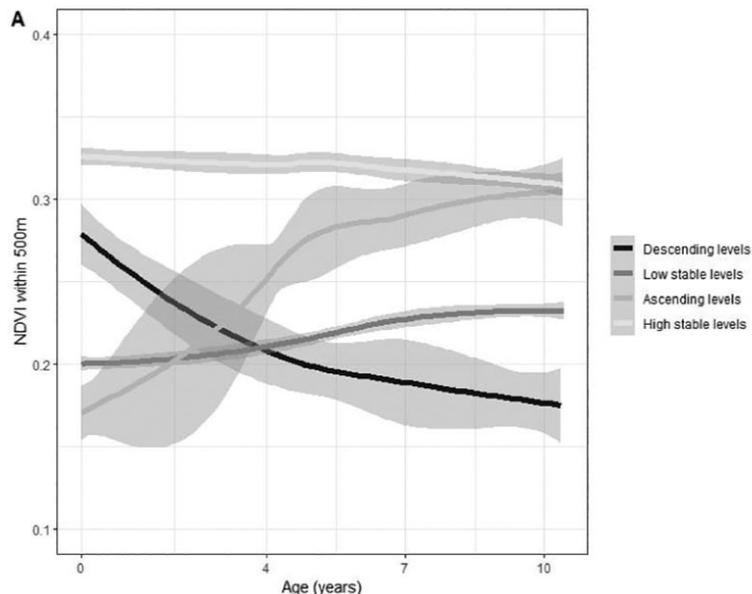
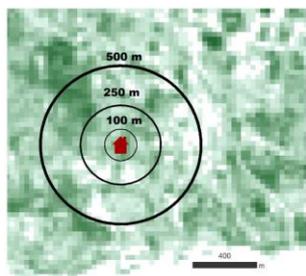
(A) NDVI equation

$$\frac{\text{Near infrared} - \text{visible light}}{\text{Near infrared} + \text{visible light}}$$

(B) NDVI in Porto Metropolitan Area



(C) Schematic representation of the NDVI measurement



NDVI

[aHR (95%CI)]

Descending levels

Reference

Low stable levels

0.627 (0.365, 1.076)

Ascending levels

0.682 (0.331, 1.405)

High stable levels

0.539 (0.301, 0.965)

adjusted for sex, distance to the nearest major road, motorway or highway and neighbourhood socioeconomic deprivation, maternal educational level, and household crowding

Fonte: Paciência, I., Moreira, A., Moreira, C., Rufo, J. C., Sokhatska, O., Rama, T., ... & Ribeiro, A. I. (2021). Neighbourhood green and blue spaces and allergic sensitization in children: A longitudinal study based on repeated measures from the Generation XXI cohort. *Science of the Total Environment*, 772, 145394.

Mecanismos comportamentais



➤ **Atividade física**

“Exercício verde” ↑ benefícios

➤ **Sociabilidade**

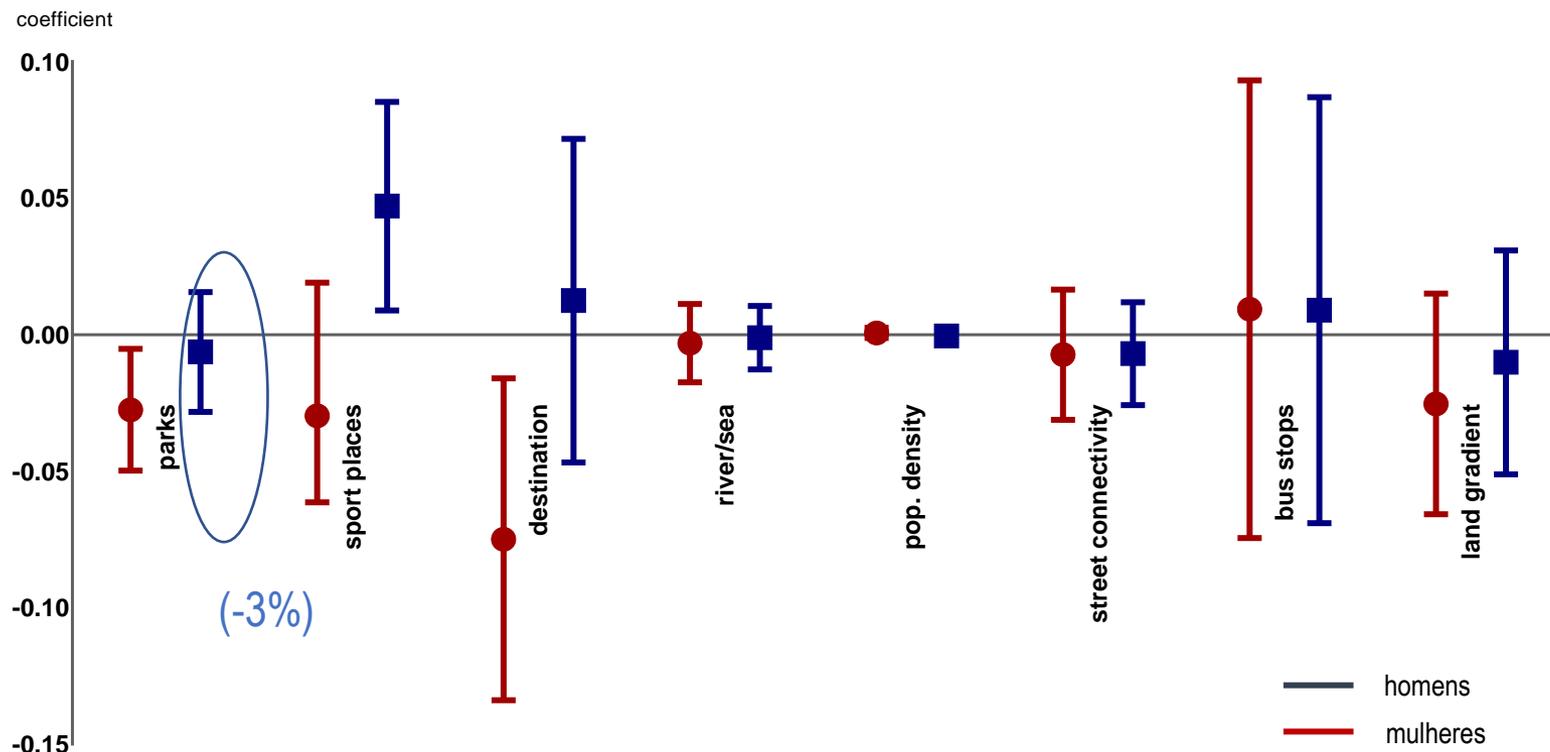
Espaço de encontro

Redução da solidão (afeta ~1/4 da população)



Fontes: Hartig, T., Mitchell, R., De Vries, S., & Frumkin, H. (2014). Nature and health. *Annual review of public health*, 35, 207-228. Astell-Burt, T., Hartig, T., Putra, I. G. N. E., Walsan, R., Dendup, T., & Feng, X. (2022). Green space and loneliness: A systematic review with theoretical and methodological guidance for future research. *Science of the Total Environment*, 157521. Lahart, I., Darcy, P., Gidlow, C., & Calogiuri, G. (2019). The Effects of Green Exercise on Physical and Mental Wellbeing: A Systematic Review. *International journal of environmental research and public health*, 16(8), 1352. <https://doi.org/10.3390/ijerph16081352>

Mecanismos comportamentais



Fonte: Ribeiro, A. I., Pires, A., Carvalho, M. S., & Pina, M. F. (2015). Distance to parks and non-residential destinations influences physical activity of older people, but crime doesn't: a cross-sectional study in a southern European city. *BMC public health*, 15, 593.
<https://doi.org/10.1186/s12889-015-1879-y>

Mecanismos físicos



➤ Ondas de calor e temperaturas altas

4% das mortes de verão nas cidades europeias são atribuíveis às ilhas de calor urbano;

Aumentar a cobertura arbórea em 30% → preveniria um terço das mortes prematuras atribuíveis à ilha de calor urbano.

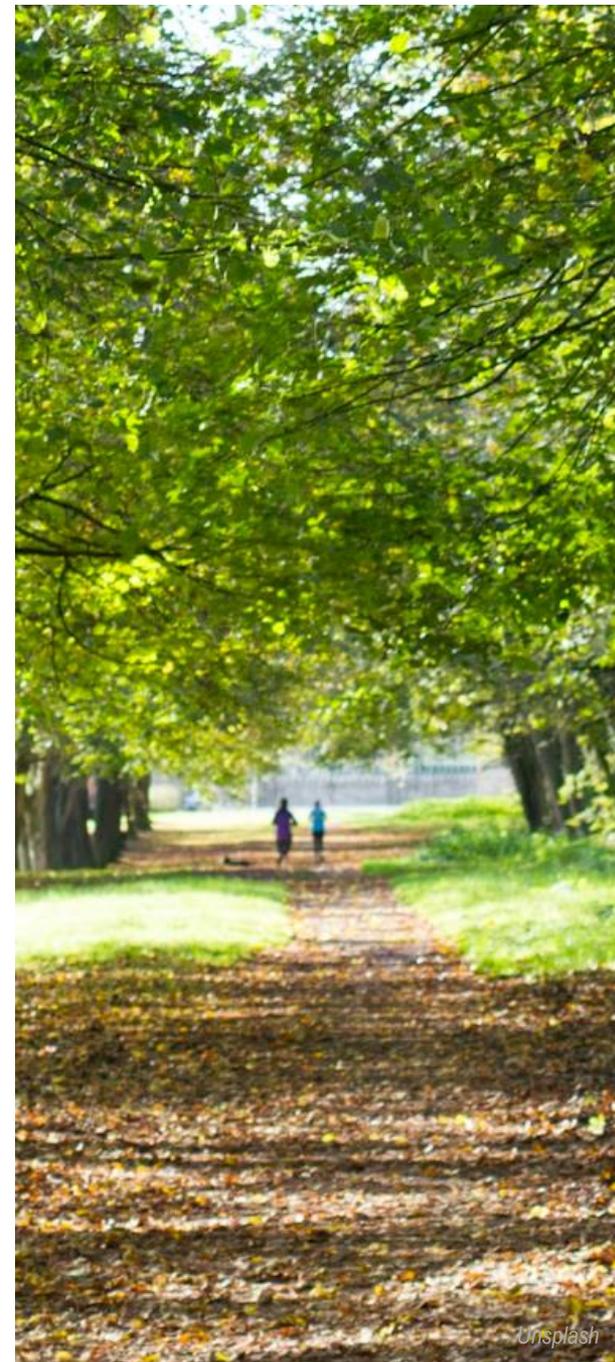
➤ Poluição sonora

➤ Poluentes do ar



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Degradação ambiental, desflorestação e saúde



Incêndios florestais



- **Europa:** 0,2% das mortes em zonas urbanas (em média, 1298 mortes anuais, ou seja, 3 a 4 mortes por dia) são atribuíveis à exposição a $PM_{2.5}$ emitidas pelos incêndios florestais.
- **Portugal:** 0,28% das mortes em zonas urbanas (em média, 127 mortes anuais, ou seja, uma morte a cada 3 dias) são atribuíveis à exposição a $PM_{2.5}$ emitidas pelos incêndios florestais.

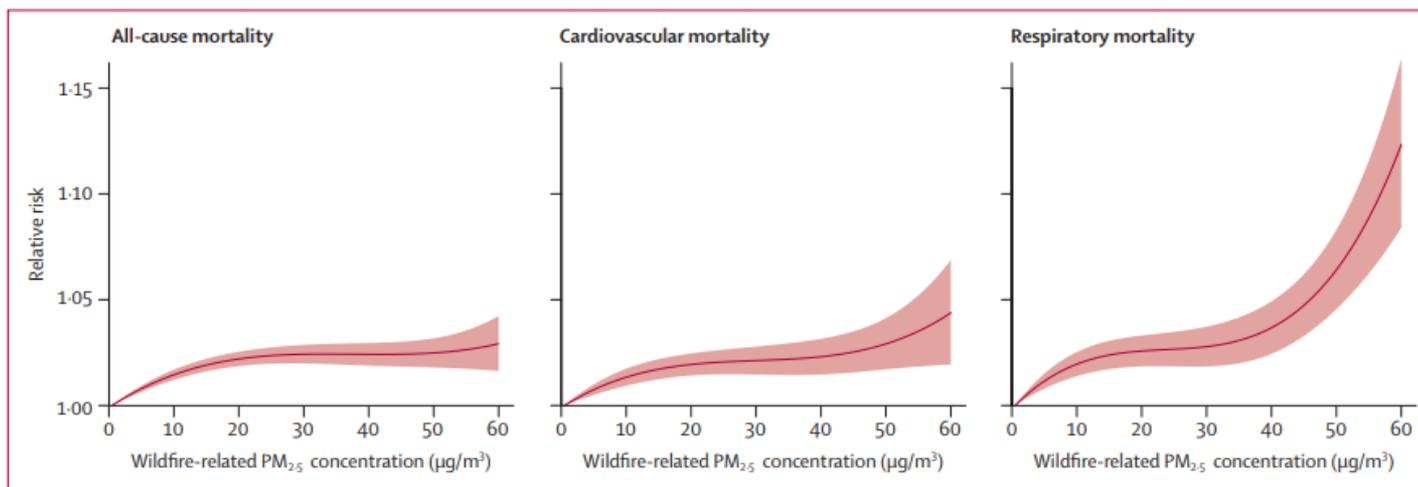


Figure 3: The pooled concentration–response relationships between mortality and the 3-day moving average of wildfire-related $PM_{2.5}$ during lag 0–2 days. Shaded areas represent 95% CIs.

Fonte: Chen, G., Guo, Y., Yue, X., Tong, S., Gasparrini, A., Bell, M. L., ... & Li, S. (2021). Mortality risk attributable to wildfire-related $PM_{2.5}$ pollution: a global time series study in 749 locations. *The Lancet Planetary Health*, 5(9), e579–e587.

Doenças infecciosas emergentes



➤ Desflorestação:

Alteração dos padrões de interação entre hospedeiros e agentes patogénicos;

Maior exposição dos humanos a florestas e outros habitats.

Alguns exemplos:

VIH/SIDA (aumento da caça e abate de carne de caça e da extração de madeira e minérios na África Central Ocidental).

Malária (efeito claro da desflorestação no aumento da incidência da doença e na alteração do habitat das espécies de mosquito).

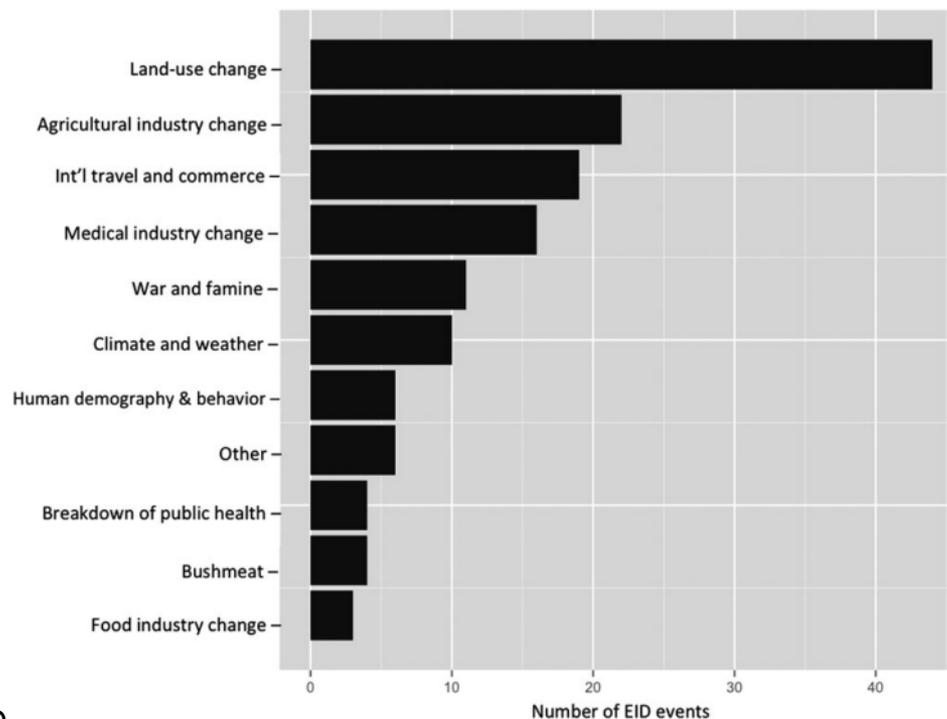


FIG. 1. Number of previous emergence events by primary drivers of disease as defined by Jones et al. (2008).

Efeitos na saúde mental



- **Efeitos agudos** – após desastres naturais.
- **Efeitos crônicos** – eco-ansiedade
Reação emocional causada pela preocupação, ansiedade e medo das ameaças globais das alterações climáticas e degradação ambiental.

Consequências: redução na funcionalidade, sintomas de depressão, ansiedade, PTSD, *stress* e insónias, pior saúde autopercebida e relutância em ter filhos.



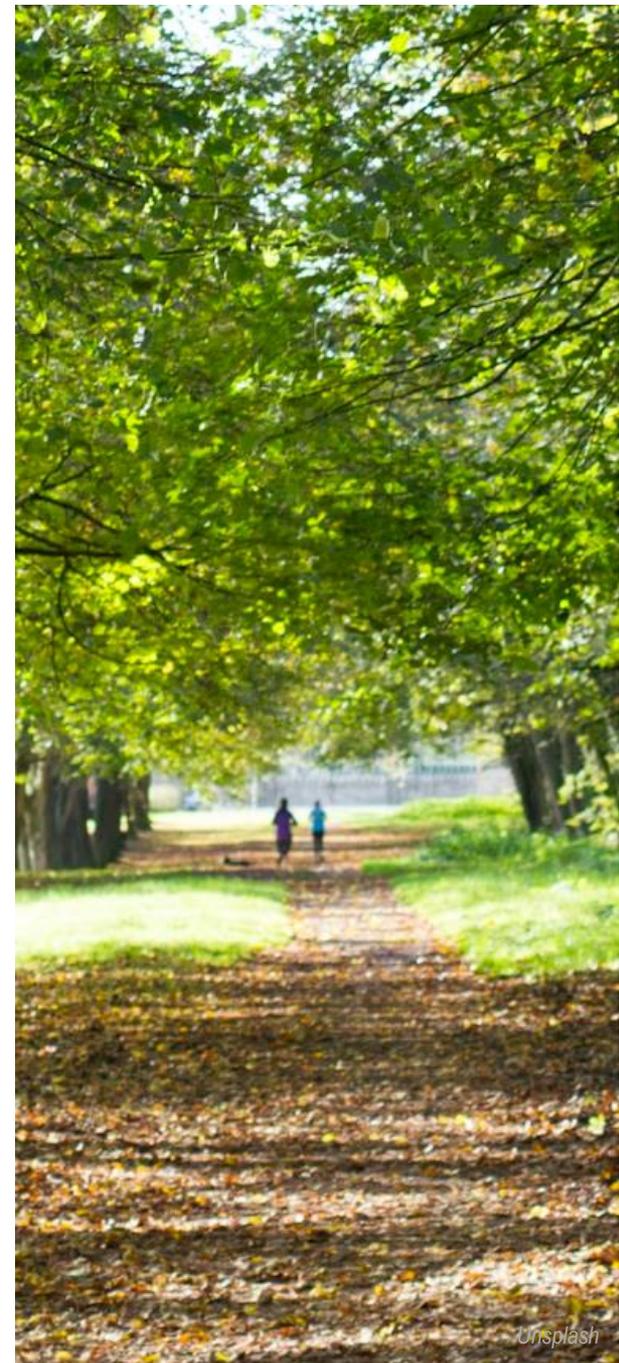
Fonte: Boluda-Verdu, I., Senent-Valero, M., Casas-Escolano, M., Matijasevich, A., & Pastor-Valero, M. (2022). Fear for the future: Eco-anxiety and health implications, a systematic review. *Journal of Environmental Psychology*, 101904.

Fonte da imagem: Pixabay

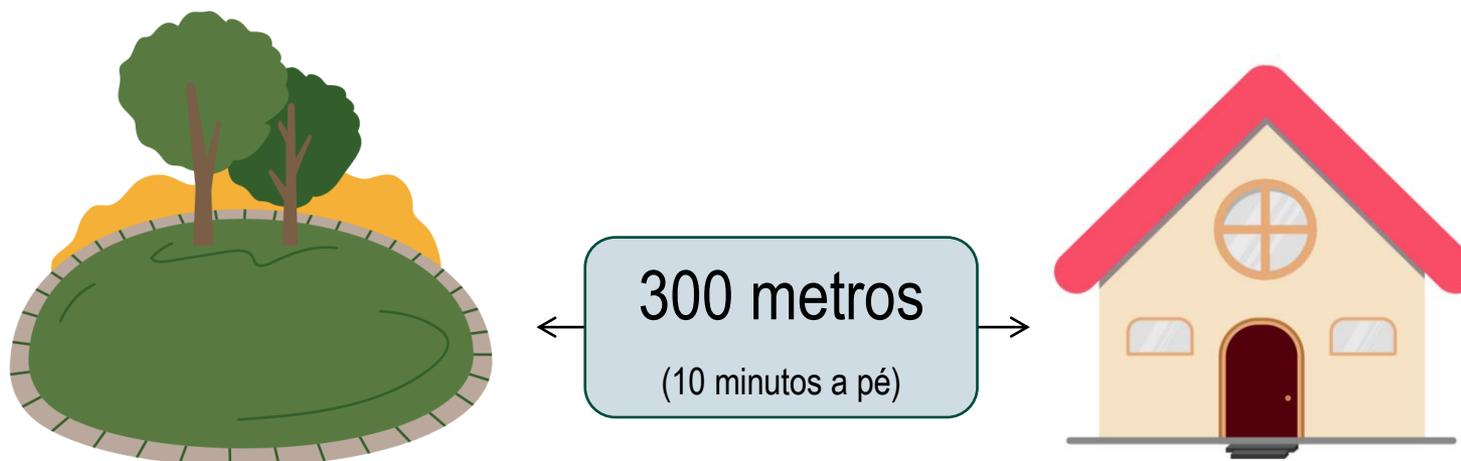


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Implicações



Recomendações OMS



9 m² de espaços verdes por habitante

Urbanismo e arquitetura biofílica



Medicalização da natureza



Wen et al. Environmental Health and Preventive Medicine (2019) 24:19
https://doi.org/10.1186/s12199-019-0822-8

Environmental Health and Preventive Medicine

REVIEW ARTICLE Open Access

Medical empirical research on forest bathing (Shinrin-yoku): a systematic review

Ye Wen^{1,2}, Qi Yan¹, Yangu Pan¹, Xiren Gu¹ and Yuanqiu Liu^{1*}

Abstract

Aims: This study focused on the newest evidence of the relationship between forest environmental exposure and human health and assessed the health efficacy of forest bathing on the human body as well as the methodological quality of a single study, aiming to provide scientific guidance for interdisciplinary integration of forestry and medicine.

Method: Through PubMed, Embase, and Cochrane Library, 210 papers from January 1, 2015, to April 1, 2019, were retrieved, and the final 28 papers meeting the inclusion criteria were included in the study.

Result: The methodological quality of papers included in the study was assessed quantitatively with the Downs and Black checklist. The methodological quality of papers using randomized controlled trials is significantly higher than that of papers using non-randomized controlled trials ($p < 0.05$). Papers included in the study were analyzed qualitatively. The results demonstrated that forest bathing activities might have the following merits, remarkably improving cardiovascular function, hemodynamic indexes, neuroendocrine indexes, metabolic indexes, immunity and inflammatory indexes, emotional state, attitude, and forest and obvious alleviation of anxiety.

Conclusion: **Forest bathing activities** enhance the methodological quality of evidence.

Keywords: Forest bathing (Shinrin-yoku)

PRA nature prescribed

Providers Patients Everyone Else

Patel et al. BMC Family Practice 2011, 12:119
http://www.biomedcentral.com/1471-2296/12/119

BMC Family Practice

RESEARCH ARTICLE Open Access

General practitioners' views and experiences of counselling for physical activity through the New Zealand Green Prescription program

Amrita Patel¹, Gauri M Schofield¹, Gregory S Kolt^{1,2} and Justin W. Keogh^{1,3}

Abstract

Background: Regular physical activity is beneficial in both the prevention and management of chronic health conditions. A large proportion of adult New Zealanders, however, are insufficiently active. To help increase population levels of physical activity in New Zealand the Green Prescription, a primary care physical activity (coprescription) program, was developed. The primary aim of this study was to identify why general practitioners (GPs) counsel for physical activity and administer Green Prescriptions. A secondary aim was to examine GPs' views and experiences of Green Prescription counselling for the management of depression.

Methods: Individual face-to-face interviews were conducted with 15 GPs. All interviews were audio-taped and transcribed. Data were analysed using an inductive thematic approach.

Results: Several themes and sub-themes emerged from the data. Notably, GPs counselled for physical activity and prescribed Green Prescriptions for both primary prevention (e.g., weight control) and secondary management (e.g., diabetes management) purposes. GPs reported the benefits of the Green Prescription centred around two main themes: (i) a non-medication approach to a treatable disease, but are at risk for future health-related problems because of their inactive lifestyle. It is recommended that time constraints of the consultation in regard to administering Green Prescriptions could be dealt with by delegating the more time-consuming tasks to the patient support counsellors that support the Green Prescription program, and having practice nurses assist in the administration of Green Prescriptions. Green Prescription counselling in conjunction with antidepressant medication may be beneficial for the management of depression and warrants further research.

Conclusion: The results of this study suggest that New Zealand GPs view the Green Prescription program as beneficial for their patients with existing conditions and/or weight problems. While this is encouraging, the Green Prescription may also be used to promote physical activity in currently healthy but low-active and sedentary individuals. Such individuals are currently disease free, but are at risk for future health-related problems because of their inactive lifestyle. It is recommended that time constraints of the consultation in regard to administering Green Prescriptions could be dealt with by delegating the more time-consuming tasks to the patient support counsellors that support the Green Prescription program, and having practice nurses assist in the administration of Green Prescriptions. Green Prescription counselling in conjunction with antidepressant medication may be beneficial for the management of depression and warrants further research.

Background

Engagement in regular physical activity can provide both physical and psychological health benefits [1,2]. Increasing focus has now been placed on the psychological benefits of physical activity engagement, especially in the treatment and management of depression. By the year 2020, depression is projected to be the second leading cause of illness and disability [3]. There is some evidence that physical inactivity is a risk factor for depression in adults, including older adults [4,5]. A number of studies that have employed a physical activity intervention with clinically depressed adults have found an association between physical activity engagement and a reduction in depressive symptoms, as well as an increase in positive mood [6,7]. A high proportion of the adult New Zealand population remains inactive, achieving less than the recommended level of physical activity [8].

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Dose of Nature

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When we are in harmony with the natural world we can begin to heal. Our nervous system can rest itself, our bodies and minds can go back to how they ought to be. No longer out of sync with nature, but once again in tune with it, we are refreshed and restored. Dr Qing Li, Associate Professor at the Medical School in Tokyo

A registered charity established to promote the mental health benefits of engaging with the natural world.

The UK Government's 25 Year Environment Plan states:
"Spending time in the natural environment... improves our mental health and feelings of wellbeing... it can reduce stress, fatigue, anxiety and depression."

Dose of Nature works with people with mental health problems and the general population, encouraging everyone to connect with nature in order to improve their mental wellbeing. Our Dose of Nature Prescriptions and wellbeing workshops take place predominantly in south-west London, but if you are interested in any part of our work, please email info@doseofnature.org.uk.

Nature Prescriptions Group Therapy Workshops Young People

Fontes: Wen, Y., Yan, Q., Pan, Y., Gu, X., & Liu, Y. (2019). Medical empirical research on forest bathing (Shinrin-yoku): A systematic review. *Environmental health and preventive medicine*, 24(1), 1-21. Patel, A., Schofield, G. M., Kolt, G. S., & Keogh, J. W. (2011). General practitioners' views and experiences of counselling for physical activity through the New Zealand Green Prescription program. *BMC family practice*, 12, 119.

<https://doi.org/10.1186/1471-2296-12-119>

Websites: <https://parkrxamerica.org/>; <https://www.doseofnature.org.uk/>.

A person wearing blue jeans and white sneakers is walking on a large, weathered log in a forest. The ground is covered with fallen leaves and twigs. The background is a dense forest with green and yellow foliage.

Mensagem a reter

Os espaços naturais,
como as florestas,
são cada vez mais
entendidos como
elementos fundamentais
para o desenvolvimento
saudável e harmonioso
das sociedades
humanas.

Nota biográfica



Ana Isabel Ribeiro (MPH, PhD) é epidemiologista e geógrafa. É investigadora no Instituto de Saúde Pública da Universidade do Porto, onde coordena o laboratório “[Saúde e Território](#)”.

É investigadora principal em vários projetos sobre a relação entre a saúde da população, o ambiente urbano (ex.: espaços verdes, poluição) e riscos ambientais emergentes, como as alterações climáticas e a degradação ambiental.

É autora e co-autora de mais de 100 artigos científicos, livros e capítulos de livros e comunicações. É também Professora Auxiliar Convidada na Faculdade de Medicina da Universidade do Porto.

Ana Isabel Ribeiro

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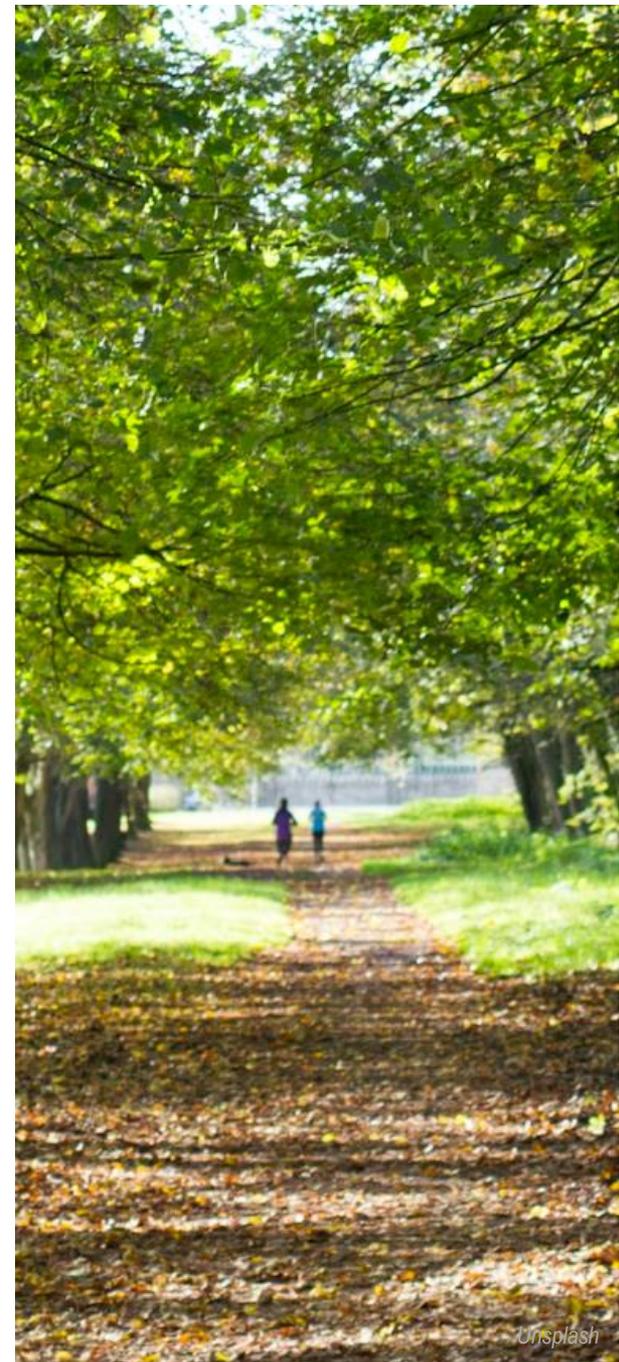
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Obrigada

O conteúdo da apresentação é da responsabilidade da autora



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