

# COLLABORATION FOR ENVIRONMENTAL EVIDENCE

Systematic reviews for conservation and environmental management



## CONTEXT

Physical and restful activities have a well-known positive impact on both physical and mental health, and facilitate participation in social activities and engagement with others.

**Can these effects be enhanced if these activities occur in a natural environment ?**

This question was addressed by a **systematic review** of the existing scientific referenced and grey literature. It took into account the quality of the research and possible biases, in order to establish a rigorous, transparent, replicable and updatable review of the scientific evidence (see overleaf).



From the CEE Library

**GREEN  
SPACE IS  
GOOD  
FOR THE  
«MOOD»**

## FINDINGS

**Positive effect on self-reported emotions/mood** (anger, sadness-depression, fatigue).

**No evidence of any effect on physiological parameters** (blood pressure, stress-related hormones) and anxiety.

**Inconsistent results** concerning tranquility, attention and energy.

POLICY BRIEF  
from  
Systematic  
Review  
CEE 08-003

## RECOMMENDATIONS

**Encourage activities in green space to contribute to mental well-being.**

**Promote new studies to assess effects on health with recommendations about:**

- sampling (compare specific groups, e.g. male/female, active/passive...)
- characterisation of natural spaces (better described)
- long term measurements of outcome (sustainable effects)
- using validated tools for measurements (e.g. RCT, BACI protocols)

**Ensure that all programmes and projects are evaluated** and contribute to an expansion of the evidence-base.

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## Methodology

### Who was studied?

Human population (any part of the world) (mostly adult males, college students & volunteers).

### What type of contact with green space?

Running, cycling, walking, standing, sitting (thereafter called Activities).

### What do we compare?

Direct or indirect exposure to any sort of green space, compared to

- 1) exposure to an urban outdoor built-up or synthetic environment, or
- 2) an indoor environment.

Most comparisons rely on a short-term exposure, and record a before/after effect.

### What was measured?

Various indicators of health status and well-being (see figure).

### Protocol of the systematic review :

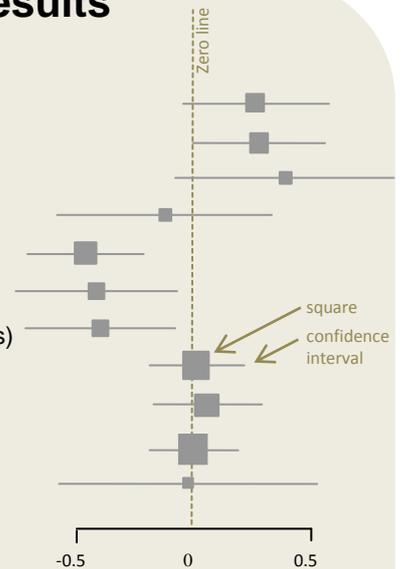
1. Literature and datasets were searched to obtain the largest number of articles dealing with the topic.
2. Articles retained by title inclusion were appraised to weight the quality of the methodology, the likelihood of biases and how they complied with the standards for good scientific research design.
3. Data from appraised studies were synthesised. A meta-analysis of a subset of data was possible and provided a quantitative summary.



Please note: the opinions expressed in this document are those of the Centre for Evidence-based Conservation and do not necessarily reflect the views of any persons or other organisations involved in the review.

## Results

attention (4 studies)  
energy (5 studies)  
tranquility (7 studies)  
anxiety (6 studies)  
anger (7 studies)  
fatigue (4 studies)  
sad/depressed (4 studies)  
systolic bp (6 studies)  
diastolic bp (5 studies)  
pulse (5 studies)  
cortisol (4 studies)



23 studies met the review inclusion criteria (i.e. contained all the characteristics listed in the methodology).

### Understanding the figures

- Each square ■ represents the standardized effect of the intervention over several studies.
- 'Effect' means the effect of the Activity in a natural environment compared with that of the Activity in the comparator environment.
- The zero line represents no effect of the intervention on the variable measured. (eg attention).
- The size of a square depends on the number of subjects involved in the studies (larger= more reliable).
- The horizontal lines represent the 95% confidence interval (variability) around the means.
- The diamond ◆ represents the weighted average overall effect of the intervention.

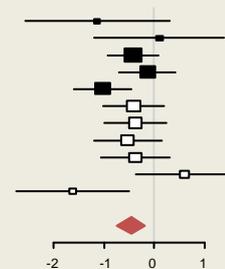
### Interpreting the figures

Anger, fatigue and sadness decreased (left side of the vertical zero line ZL) in a significant way (CI not crossing ZL), while attention, tranquility and energy did not change in a consistent way, and no effect was observed on physiological parameters or anxiety.

Below, as an example, details of results from individual studies looking at « anger ».

Bodin & Hartig (2003a)  
Bodin & Hartig (2003b)  
Hartig et al. (1991b)  
Hartig et al. (2003)  
Hartig et al. (2003b)  
Kerr et al. (2006a)  
Kerr et al. (2006b)  
Teas et al. (2007)  
Peacock et al. (2007)  
Harte & Eifert (1995a)  
Harte & Eifert (1995b)

Anger is decreased after exposure to green space



## MORE INFORMATION ...

**About this review:** Bowler, D.E., Buyung-Ali, L.M., Knight, T.M., and Pullin, A.S. (2010). The importance of nature for health: is there a specific benefit of contact with green space? *Environmental Evidence*. (ref CEE 08-003)

**Available at the CEE library:** [www.environmentalevidence.org/SR40.htm](http://www.environmentalevidence.org/SR40.htm)

**About systematic reviews:** [www.cebc.bangor.ac.uk](http://www.cebc.bangor.ac.uk) & [www.environmentalevidence.org](http://www.environmentalevidence.org)

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