

The effects of performing physical activity in the natural environment compared with the indoor
environment
FINAL PROTOCOL

Final protocol

PROJECT TITLE:

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

Project team:

Jo Thompson Coon

Becky Whear

Kate Boddy

Ken Stein

Joanne Barton

Michael Depledge

Project Advisors:

(no authorship status)

Version/date:

19th April 2010

1.1 Decision Problem

What are the effects on physical and mental wellbeing of performing physical activity in the outdoor environment compared with the indoor environment?

1.1.1 Purpose

Relationships between physical and mental health are well recognised as are the beneficial effects of increased physical activity on mental health. The purpose of this systematic review is to help to clarify the added physical and psychological benefits of undertaking physical activity in the natural environment.

1.1.2 The interventions

Exercise initiatives in the outdoor environment. Studies that include virtual environments will also be included.

1.1.3 Population

Adults and children.

1.1.4 Comparators

Exercise initiatives conducted in an indoor environment.

1.1.5 Outcomes to be examined

If possible, outcome measures will include:

- Measures of psychological wellbeing
- Physical health implications
- Health related quality of life
- Long term adherence rates

1.2 Methods of synthesis of evidence of clinical effectiveness

The review will be undertaken following the general principles published by the NHS Centre for Reviews and Dissemination.¹

1.3 Search strategy

A sensitive search strategy will be devised, by analysis of key studies, to capture the concepts of exercise and location (indoors versus outdoors). No methods filter will be

applied. The master search strategy (see appendix 1) will be translated and run on a number of medical, environmental and social sciences databases.

The search strategy will comprise the following main elements:

- Searching of electronic databases including Medline, Embase and PsycInfo using the Ovid Interface, GreenFILE and SportDISCUS using the Ebsco interface, the Cochrane Database of systematic reviews and CENTRAL and Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Conference Proceedings Citation Index- Science and BIOSIS via the Web of Science Interface.
- Scrutiny of bibliographies of included studies
- Contact with experts in the field
- Internet searching of the following relevant websites: British Trust for Conservation Volunteers, Countryside Recreation Network, Forestry Commission, Green Space, Groundwork, the National Trust, Natural England, Walking for Health Initiative, Green Exercise, MIND and the Collaboration for Environmental Evidence.
- Hand searching of key journals e.g. International Journal of Stress Management

1.4 Study selection criteria and procedures

1.4.1 Types of study to be included

Randomised clinical trials and other controlled trial data will be included. These study design criteria may be relaxed to include uncontrolled study designs depending on the availability of more methodologically robust evidence.

Studies will only be included if they compare the effects of exercise initiatives in the natural environment with exercise initiatives conducted indoors on physical and mental wellbeing in adults and children.

Studies that include virtual environments will also be included.

1.4.2 Types of study to be excluded

- Animal models
- Pre-clinical and biological studies
- Narrative reviews, editorials, opinions
- Reports published as meeting abstracts only, where insufficient methodological details are reported to allow critical appraisal of study quality

1.4.3 Study selection

The abstracts and titles of references retrieved by the electronic searches will be screened for relevance. Full paper copies of potentially relevant studies will be

obtained. The retrieved articles will be assessed for inclusion by one reviewer and independently checked by a second, using the pre-specified inclusion/exclusion criteria. Discrepancies will be resolved by discussion, with involvement of a third reviewer, where necessary. All duplicate papers will be double checked and excluded.

1.4.4 Quality assessment strategy

The quality of individual studies will be assessed by one reviewer, and checked by a second reviewer. Any disagreement will be resolved by consensus and if necessary a third reviewer will arbitrate.

The quality of the studies will be assessed according to appropriate criteria.

1.5 Data extraction strategy

Data will be extracted from included studies by one reviewer into a bespoke database and checked by another reviewer. Discrepancies will be resolved by discussion, with the involvement of a third reviewer if necessary.

1.6 Data synthesis

Data will be tabulated and discussed in a narrative review. Where appropriate, meta-analysis will be employed to estimate summary measures of effect on relevant outcomes, based on intention to treat analyses.

If meta-analysis is conducted it will be carried out using fixed and random effects models, using bespoke software and STATA. Heterogeneity will be explored through consideration of the study populations, methods and interventions, by visualisation of results and, in statistical terms, by the χ^2 test for homogeneity and I^2 statistic and, where appropriate, using meta-regression. Small-study effects (including publication bias) will be visually assessed using funnel plots and quantified using Egger's statistic.

Appendix 1

Master search strategy (PsycInfo/OVID)

1. green exercis*.ti,ab.
2. green gym*.ti,ab.
3. ecotherapy.ti,ab.
4. ((outdoor* or outside*) and (exercis* or physical activit* or walk* or physical fit*)).ti,ab.
5. (park* and (exercis* or physical activit* or walk* or physical fit*)).ti,ab.
6. ((greenspace* or green space*) and (exercis* or physical activit* or walk* or physical fit*)).ti,ab.
7. (natural environment* and (exercis* or physical activit* or walk* or physical fit*)).ti,ab.
8. (nature and (exercis* or physical activit* or walk* or physical fit*)).ti,ab.
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. (indoor or inside or laboratory or gym*).ti,ab.
11. 9 and 10