physical activity, of participation in physical activity in natural environments compared with physical activity indoors.

Design Systematic review.

Data sources Medline, Embase, Psycinfo, GreenFILE, SportDISCUS, The Cochrane Library, Science Citation Index Expanded, Social Sciences Citation Index, Arts and Humanities Citation Index, Conference Proceedings Citation Index – Science and BIOSIS from inception to June 2010. Internet searches of relevant websites, hand searches of relevant journals and the reference lists of included papers and other review papers identified in the search.

Methods Controlled trials (randomised and non-randomised) were included. Eligible trials compared the effects of outdoor exercise initiatives with those conducted indoors and reported on at least one physical or mental wellbeing outcome in adults or children. Screening of articles for inclusion, data extraction and quality appraisal were performed by one reviewer and checked by a second with discrepancies resolved by discussion with a third if necessary. Heterogeneity of outcome measures precluded formal meta-analysis.

Results Eleven trials (833 adults) were included. Most participants (6 trials; 523 adults) were young students. Study entry criteria and methods were sparsely reported. All interventions consisted of a single episode of walking or running indoors with the same activity at a similar level conducted outdoors on a separate occasion. A total of 13 different outcome measures were used to evaluate the effects of exercise on mental wellbeing and four outcome measures were used to assess attitude to exercise. Most trials (n=9) showed some improvement in mental wellbeing on one or other of the outcome measures. Compared with exercising indoors, exercising in natural environments was associated with greater feelings of revitalisation and positive engagement, decreases in tension, confusion, anger and depression and increased energy. Participants reported greater enjoyment and satisfaction with outdoor activity and declared a greater intent to repeat the activity at a later date. None of the identified studies measured the effects of physical activity on physical wellbeing, or the effect of natural environments on exercise adherence.

Conclusions The results show some promising effects on self-reported mental wellbeing immediately following exercise in nature which are not seen following the same exercise indoors. However, the interpretation and extrapolation of these findings is hampered by the poor methodological quality of the available evidence and the heterogeneity of outcome measures employed. The influence of these effects on the sustainability of physical activity initiatives also awaits investigation.

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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

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Objective To compare the effects on mental and physical wellbeing, health related quality of life and long term adherence to