CRD summary
This review made a number of tentative conclusions about the effectiveness of interventions promoting physical activity participation among children and adolescents. Given the differences between studies, lack of any assessment of study quality and other limitations in the review methods and data, the authors' conclusions are unlikely to be reliable.

Authors' objectives
To evaluate the effectiveness of interventions that report physical activity outcomes in children and adolescents.

Searching
MEDLINE, PREMEDLINE, SPORTDiscus, PsychINFO, PsycARTICLES, Cochrane Database of Systematic Reviews, CINAHL, ScienceDirect, Web of Knowledge and Social SciSearch were searched for English-language articles that were published in peer-reviewed journals between January 1985 and the end of June 2006. Search terms were not reported.

Study selection
Randomised controlled trials (RCTs) and quasi-randomised controlled trials (quasi-RCTs) that reported physical activity outcomes in more than 16 children (aged four to 12 years) or adolescents (aged 13 to 19 years) were eligible for inclusion in the review. Studies that used a post-intervention assessment-only design or no control condition were considered for inclusion in the review on a case-by-case basis. Eight studies that included participants who crossed the relevant age ranges were included. Studies of overweight or obese populations were excluded from the review, as were studies of clinical populations. Studies that reported only fitness outcomes were excluded. Included interventions varied and were grouped into four setting categories: school; family; primary care; and community. School settings were further divided into: curriculum only; curriculum and physical education; curriculum, physical education and environment; physical education only; physical education and environment; environment only; activity breaks; school and family; and school, family and community. Most studies assessed interventions set in schools. Others were set in family, primary care or community-based settings; one intervention was delivered via the Internet. Most studies were set in the USA. Others were set in Canada, UK, Ireland, Greece, Belgium, Finland, France, Spain and Australia. Twenty-six studies specifically included participants from ethnic minorities, 11 studies included rural populations and 21 studies included participants from low-mid socioeconomic status areas or families. Physical activity outcomes varied and were gathered either by survey or by using objective/observational outcomes.

Study inclusion was determined by two independent reviewers and discrepancies resolved through discussion with a third reviewer.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction. Details of the data extracted were available online.

Methods of synthesis
Studies were combined in a narrative synthesis grouped by intervention setting and where possible different strategies within the settings. Some differences between studies were discussed in the text and were evident from the data tables.

Results of the review
Seventy-six physical activity interventions were identified in 41 RCTs; 14 quasi-experimental studies; 13 comparative studies with concurrent control; one pre-post controlled crossover study; one post only with control study; one cohort
study; one cross-sectional study with retrospective evaluation; one pre-post study with historical control; one post study with no control; and two pre-post studies with no control. Nine interventions were assessed in studies (n=9) including study populations with an age range that was extended beyond children and adolescents.

Studies in children (42 interventions):

Overall associations with physical outcomes for the following categories of school based interventions were: curriculum only (one positive statistically significant study and four showing no association); curriculum and physical education (two positive statistically significant studies); curriculum, physical education and environment (one study showing no association); physical education only (two positive statistically significant studies); physical education and the environment (one positive statistically significant study); environment only (three positive statistically significant studies); activity breaks (two positive statistically significant studies); school and family (eight positive statistically significant studies and six studies showing no associations); and school, family and community (three studies showing no associations).

Overall, positive association in studies assessing family-based interventions were: education (one positive statistically significant study); education and physical activity sessions (one positive statistically significant study, two studies showing non-significant positive trends and two studies showing no associations); education, physical activity sessions and family nights (one study showing a non-significant positive trend); and day camp and internet delivery (one study showing no associations). Fifty-eight primary care-based studies and 29 community-based studies showed statistically significant positive associations with the intervention; one community study found no association and 29 found a non-significant positive trend.

Studies in adolescents (25 interventions):

Overall associations with physical outcomes for the following categories of school based interventions were: curriculum only (one positive statistically significant study, four showing no association and two showing a non-significant positive trend); curriculum and physical education (two positive statistically significant studies, four showing no association and two showing a non-significant positive trend); curriculum, physical education and environment (one positive statistically significant study); physical education and the environment (one positive statistically significant study); special classes/pedometers (two positive statistically significant studies and two studies showing no associations), tailored advice/brief counselling (two positive statistically significant studies and one study showing no associations); after-school programs (one positive statistically significant study and one showing no associations); and school/family and community (two positive statistically significant studies and one study showing a non-significant positive trend). One study of family-based interventions showed a positive statistically significant association. Three primary care-based studies and one online study showed statistically significant positive associations with the intervention; two primary care-based studies found no associations.

Further results including subgrouping data according to the type of measure (survey or objective/observational) were also reported.

Authors’ conclusions

In many cases, studies had major limitations and were difficult to compare. Studies that delivered in the school setting, involved some focus on physical education and which involved activity breaks or family strategies appeared to be the most effective among children. Among adolescents, interventions in primary care settings and tailored advice/brief counselling appeared to be the most effective. Evidence for the effectiveness of interventions outside the school setting was limited.

CRD commentary

This review answered a very broadly defined research question, particularly in terms of intervention and outcome. Criteria were specified for study design, but other types of study designs were included on a case-by-case basis, which suggested a risk of selection bias. The inclusion of only peer-reviewed articles published in English suggested that the review was at risk from language and publication bias. The review methods were poorly reported, which made it difficult to assess the risk of error and bias during data extraction. No assessment of study validity appeared to have been carried out, so it was difficult to assess the reliability of the data, particularly given that studies other than the
specified RCTs and quasi-RCTs were included. The broad selection criteria resulted in the inclusion of a large number of studies that varied widely in their intervention, design, outcomes and population, which made it difficult to summarise the data. Little quantitative data was reported, even in the additional tables published on the Internet. Consequently, the authors' synthesis was limited to a narrative summary with accompanying summary tables of data, which rely mainly on counting the significance and direction of overall effects with no indication of the effect size. Given the limitations in the review methods and the poor reporting of both the study data and review methods, the authors' conclusions are unlikely to be reliable.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that further research in the form of well-conducted and reported (adhering to published standards of reporting) studies were required, particularly to evaluate the effectiveness of web-based approaches and interventions in family and community-based settings. Future studies should: use an objective measure of physical activity; report mediators of short-term and long-term behaviour change; include longer periods of follow-up (one to two years); and investigate the effectiveness of interventions in different subgroups and across different countries.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.