Physical activity interventions in Latin America: a systematic review


CRD summary
The authors concluded that there was strong evidence supporting school-based physical education to promote physical activity in children and adolescents in Latin America. More research was needed on interventions to increase physical activity in developing countries. In view of methodological problems, including lack of information about and heterogeneity between the primary studies, the conclusions should be regarded cautiously.

Authors' objectives
To evaluate strategies for promoting physical activity in Latin America.

Searching
The following databases were searched from 1980 to 2006: LILACS, MEDLINE, MEDCARIB (The University of the West Indies), OPAS/OMS (Organização Pan-Americana da Saúde), Pan American Health Organization (PAHO), WHOLIS (World Health Organization Library Information System), SciELO (Scientific Electronic Library Online), CAPES thesis database and NUTESES. Search terms were reported. The reference lists of articles identified were handsearched. Experts in the field were contacted for additional studies. The search was limited to published studies in Portuguese, Spanish or English.

Study selection
Studies of interventions focusing on physical activity were eligible for inclusion, provided they were conducted in a Latin American community setting, reported physical activity behaviour or aerobic capacity – maximal oxygen uptake (VO$_{2}^{max}$) – as an outcome and compared outcomes between people exposed to the intervention and those not exposed or less exposed. Studies were also required to address an intervention for which there was a body of evidence with the potential to provide strong or sufficient evidence of effectiveness on which to base a clinical practice recommendation. Studies of therapeutic interventions or addressing a specific clinical condition (such as obesity) were excluded, as were studies solely of one-to-one healthcare advice/counselling.

The included studies were conducted in Brazil, Chile and along the USA-Mexico border in a variety of populations including university employees, elderly women, children and adolescents. Interventions included physical activity classes in a community setting (for example, structured group exercise classes) and school-based physical programmes (for example, increased activity in physical education classes). The interventions were described in detail in an appendix to the review. A wide variety of outcomes was reported, including behavioural measures (for example, time spent in moderate or vigorous physical activity, attainment of physical activity goals, biking or walking to school, activity during physical education class) and/or tests of aerobic capacity (for example, VO$_{2}^{max}$, timed runs, endurance capacity), which were measured (where stated) in a variety of ways (for example, self-report, step-test, shuttle run test).

At least two researchers independently selected studies for inclusion. Disagreements were resolved by consensus.

Assessment of study quality
Assessment of study validity was based on design suitability and quality of execution. Design suitability was rated as greatest (for example, randomised controlled trial, prospective cohort), moderate (for example, case-control) or least (for example, case series).

Quality of execution was rated as good, fair or limited based on the number of limitations in the following areas: description of population and intervention; methods used for sampling; measures of exposure; measures of outcome; and independent variables; risk of confounding; data analysis; participation rate; comparability of groups; and other biases. Good or fair studies had four or less limitations in these areas. Two researchers independently conducted the validity assessment.

Data extraction
Data were extracted on between-group or within-group changes from baseline expressed as percentages. Studies were...
categorised by type of intervention using an adapted version of published criteria. The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

**Methods of synthesis**
Studies were combined by narrative synthesis grouped by intervention. Some results were also presented graphically, subgrouped (where relevant) by gender. Findings were graded by level of evidence of effectiveness (strong, sufficient or insufficient) based on their design suitability, quality of execution and effect size, and the population reach of the intervention.

**Results of the review**
Ten studies were included in the review, of which eight reported outcomes.

Results of studies reporting outcomes of physical activity classes in community settings (three studies, two with greatest and one with least design suitability; two with fair and one with limited quality of execution) reported net effect sizes of 2 per cent (endurance capacity), 34 per cent (VO$_2$ max) and 41 per cent (physical activity). The body of evidence was deemed insufficient to support a recommendation.

Results of studies reporting outcomes of school-based physical education (five studies, all with greatest design suitability, of which three were RCTs; three had good quality execution and two had fair quality execution) measured behavioural outcomes and/or tests of aerobic capacity and reported net effect sizes ranging from -50 per cent to +307 per cent. The overall body of evidence strongly supported the intervention for increasing levels of physical activity and improving physical fitness.

**Authors’ conclusions**
There was strong evidence to support school-based physical education to promote physical activity in children and adolescents in Latin America. More research was needed on interventions to increase physical activity in developing countries.

**CRD commentary**
The objectives and inclusion criteria of the review were clear and relevant sources were searched for studies, although the restriction to published studies meant that the review was prone to publication bias. Steps were taken to minimise the risk of error and bias by having more than one reviewer independently undertake study selection and validity assessment, but it was unclear whether this also applied to data extraction. Very few details were reported about individual studies (for example, design, sample size, intervention type and duration, length of follow-up, losses to follow up, measures of variability), which made it difficult to assess the reliability of the evidence presented. Moreover, some of the included studies did not appear to meet review-specified inclusion criteria for methodology and/or quality.

The use of narrative synthesis was appropriate, given the marked heterogeneity between studies. It was doubtful whether it was appropriate to use a common measure of effect (percentage improvement) given the wide variability between the studies in outcomes measures and in study design. The heterogeneity in the findings for the school-based intervention was acknowledged, but not adequately explained.

It was difficult to interpret the clinical significance of the findings in the absence of statistical measures of significance or absolute measures of effect. In view of methodological problems, including lack of information about the primary studies and heterogeneity between them, the conclusions should be regarded cautiously.

**Implications of the review for practice and research**
Practice: The authors stated that school physical education programmes should be strongly encouraged in Latin America.

Research: The authors stated that more high-quality research was needed to evaluate interventions to increase physical activity in Latin America.

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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.