The effectiveness of physical activity interventions in socio-economically disadvantaged communities: a systematic review

Cleland CL, Tully MA, Kee F, Cupples ME

CRD summary
This review concluded that, out of possible effective approaches to increasing physical activity in socio-economically disadvantaged groups, group-based interventions that targeted adults were most effective. The authors advised further research. The need for research appears sensible but the superiority of group-based interventions over other types of intervention is unclear as these were not directly compared.

Authors’ objectives
To evaluate the effectiveness of interventions to promote physical activity in socio-economically disadvantaged communities and to identify the theoretical frameworks and components of any effective interventions.

Searching
MEDLINE, Sport DISCUS, The Cochrane Library, Physical Education Index and Science Direct were searched from 1st January 2000 to 31st December 2010 for studies published in English. The search strategy was provided. Reference lists of all included studies and previous reviews were examined for additional studies.

Study selection
Eligible studies evaluated interventions to increase physical activity targeted at socio-economically disadvantaged communities. Interventions included counselling, organised exercise classes, information distribution, exercise consultation, fitness assessment or lifestyle advice. Socio-economically disadvantaged community was defined as an area, neighbourhood or community with residents clearly defined as disadvantaged relative to the wider national population. Definitions could relate to income, educational level, ethnic diversity or public housing. Interventions that targeted participants with a specific disease or condition were excluded, as were those with no outcomes or no measure of free living physical exercise.

Studies took place across the world with most conducted in the USA. Interventions targeted individuals, groups or communities. Interventions focused on children and adolescents included ages that ranged from five to 17 years old. Interventions that targeted adults included 16 to 75 year old participants, where stated. Approximately half of the interventions included only female participants; the remainder included both male and females. Recruitment strategies, participant characteristics and outcome measures varied across the studies. Intervention duration ranged from one 30 minute session to activities spread over four years. Interventions tended to involve multiple components. Not all studies had a control group and different types of physical activity intervention were not directly compared.

The number of reviewers involved in the selection of studies for the review was not stated.

Assessment of study quality
Two independent reviewers assessed study quality and scored studies from 0 to 9 based on description of intervention, methods of sampling, measurement of exposure to intervention, use of valid and reliable exposure and outcome measures, appropriateness of data analysis, study attrition and control of confounders.

Data extraction
Two independent reviewers extracted data. An effect size (Cohen's d) was generated for each intervention compared to control using results closest to the intervention's end and any longer follow-up time points. Effect sizes were interpreted in the usual way as negligible (less than 0.2), small (0.2 to 0.49), medium (0.5 to 0.79) and large (greater than 0.8). Where effect sizes could not be calculated, the net benefit of interventions was assessed on a case-by-case basis.

Methods of synthesis
A narrative synthesis was conducted with meta-analyses where appropriate. Heterogeneity of studies was assessed. The overall strength of the evidence (based on number of studies, consistency and size of intervention effects) was
summarised for the different target populations (individual, group or community).

Results of the review

Twenty-seven studies were included in the review (number of participants not stated). Fourteen of 27 studies were found to be effective, nine reported an underpinning theoretical framework of behaviour change.

Individually targeted interventions (four studies): Three good quality studies (score of 8) showed negligible or small effects of the intervention. One study (score of 6) reported a large effect of the intervention. Overall meta-analysis showed no significant effect of the intervention with large heterogeneity (SMD 0.43, 95% CI -0.37 to 1.23; I²=91%).

Group interventions with adults (12 studies, 10 studies analysed): Two studies were of good quality, eight were fair. Six of these studies were consistent in showing positive effects of the intervention. Meta-analysis based on two studies only identified a significant intervention effect (SMD 0.36, 95% CI 0.06 to 0.65; I²=0%).

Group interventions with children and adolescents (six studies): Four of six studies showed no significant effects and had fair or good quality scores. Evidence was mainly focused on overweight African-American populations. Meta-analysis, based on two studies only, failed to identify a significant intervention effect and heterogeneity was large (SMD 0.59, 95% CI 0.77 to 1.95; I²=89%).

Community interventions (five studies): Of five trials that involved multiple component interventions, one had no effect on physical activity, three had a small effect and one a moderate effect. All were of fair quality. Meta-analysis was not possible for this category of interventions.

Authors’ conclusions

Among the possible effective approaches to increasing physical activity in socio-economically disadvantaged groups, group-based interventions that targeted adults were most effective. Careful evaluation of future interventions was needed to provide evidence for best practice.

CRD commentary

This review had defined inclusion criteria and was underpinned by a search strategy that involved several sources of research. Only papers published in English were eligible which raised the possibility of both language and publication bias. Two reviewers were involved in data extraction and quality assessment which helped to minimise bias and error. It was unclear if more than one reviewer was involved in study selection.

Validity was assessed using appropriate criteria and results of the appraisal were used to inform the review findings. A narrative synthesis was appropriate but the meta-analyses related to group interventions were based on two studies each for children and adults. The need for future research as highlighted by reviewers appeared sensible. The superiority of group-based interventions over other types of intervention would need to be investigated in direct comparisons.

Implications of the review for practice and research

Practice: The authors advised caution on the transferability of the review findings to different target populations and contexts. Programme designers should bear in mind the evidence of effectiveness of previous interventions.

Research: The authors stated that more robust studies were needed to determine the effectiveness of physical activity interventions that targeted individuals in hard to reach communities. Studies should report more detail on how they identified their sample, their inclusion criteria and methods of recruitment. Study samples should be sizeable and representative of their community. Researchers should aim to minimise attrition and should use objective physical activity measurement tools.

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Bibliographic details

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.