Exercise in treating obesity in children and adolescents

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Authors' objectives
To review the effectiveness of exercise programmes in the treatment of paediatric obesity.

Searching
Searches were made of the MEDLINE and Psychological Abstracts databases. Experimental and review articles were cross-referenced.

Study selection
Study designs of evaluations included in the review
Studies in which obese children or adolescents were provided either different types of exercise programmes or an exercise programme compared with a no-exercise control condition were included if the purpose of the intervention was weight loss. Follow up periods ranged from 15 days to 120 months. Experimental designs included randomised controlled trials (RCTs), trials in which stratified random assignment was used and studies in which the method of assignment was not specified.

Specific interventions included in the review
The following exercise programmes were included: supervised aerobic activity, extra gym classes, choice of activity, intensive activity, lifestyle exercise, calisthenics, walking, gymnastics, home aerobic activity, jogging, cycling and platform stepping. The frequency of exercise ranged from daily to five times a week. Programmes designed to reinforce activity and to reduce sedentary behaviour were included. Exercise programmes were sometimes combined with dietary manipulations. Comparison therapies included no exercise, diet only and no intervention.

Participants included in the review
Children or adolescents who were defined as obese using objective criteria were included. The ages of the participants ranged from 6 to 15 years and both sexes were included.

Outcomes assessed in the review
The main outcomes assessed were body composition and fitness measures. Body composition was assessed as % body fat, % body weight, skinfold measurement, body mass index and fitness was assessed as physical work capacity and recovery heart rates. Other outcomes measured were high-density lipoprotein cholesterol and diastolic blood pressure.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

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

Data extraction
The following data were extracted: author, age and number of subjects, study design, characteristics of the exercise and/or diet, length of treatment and follow-up and significant between-group differences for body composition and fitness measures. No details of the methods used for data extraction were given.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative review.

How were differences between studies investigated?
Differences between the studies were not investigated.

**Results of the review**
Thirteen studies were used to assess the effect of exercise (877 children). Exercise versus no exercise controls: 2 studies (393 children). Diet versus diet and exercise: 2 RCTs (63 children), 3 other studies (142 children). Diet versus diet and exercise versus non-intervention: 3 RCTs (152 children). Structure of exercise programme: 3 RCTs (127 children).

There is a shortage of controlled studies examining the influence of exercise in the treatment of child and adolescent obesity.

Exercise vs no exercise (2 studies): neither study showed significant effects of exercise on weight variables or fitness.

Diet vs diet and exercise (5 studies): better changes in weight and fitness for diet plus exercise groups compared with diet alone.

Diet vs diet and exercise versus non intervention (3 studies): none of the studies found differences between the diet and diet plus exercise groups.

Structure of exercise programme: results from 2 studies showed that programmes achieved longer maintenance of weight loss and increased fitness compared with aerobic or calisthenic exercises.

One study comparing the reduction of sedentary behaviours with increased physical activity showed greater weight loss in those who were overweight and percent fat in the reduction of sedentary behaviour group.

**Authors' conclusions**
The results support the continued use of exercise in combination with diet for child and adolescent obesity treatment but the limited number of controlled studies indicates the need for more research in this area.

**CRD commentary**
In the discussion the authors acknowledge that only limited conclusions can be made given the small number of controlled trials and mixed outcomes of the studies.

Fuller details of the literature search would have been welcome, such as the keywords used, dates for which publications were searched and languages of publications sought. The methods used to select studies and to extract data were omitted. Some information was given on the included studies but there appears to have been no assessment of their validity. More complete information on the primary studies would have been helpful, such as baseline comparability of treatment groups, methods of ascertainment of outcomes, setting of intervention, selection of subjects and data on which results of the individual trials were based. The time over which the interventions were applied varies considerably and it may have been more appropriate to determine in advance the minimum follow-up time required for studies to be selected.

Without more comprehensive information on the primary studies it is not possible to assess the quality of the included studies and hence fully evaluate the evidence.

**Implications of the review for practice and research**
Additional research is needed on the best type of exercise programme to promote added weight loss beyond that of diet alone and which promotes long-term changes in activity.
Funding
Grant numbers HD RO1 23713, HD RO1 25997, HD RO1 20829.

Bibliographic details

PubMedID
8778547

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Child; Exercise Therapy; Humans; Life Style; Obesity /prevention & control /therapy; Patient Compliance; Randomized Controlled Trials as Topic

AccessionNumber
11996004209

Date bibliographic record published
30/09/1998

Date abstract record published
30/09/1998

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.