
The effect of theory-based interventions on physical activity participation among overweight/obese individuals: a systematic review

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CRD summary

This review concluded that the long-term impact of theory-based interventions on increasing physical activity was ambiguous. Whilst this reflects the results of the review, the reliability is unclear due to issues with the reporting of the review, the possibility of selection bias and the unclear quality of the included studies.

Authors' objectives

To assess the long-term effectiveness of theory-based interventions to increase physical activity participation in overweight/obese adults and to identify components of interventions which may prove most effective.

Searching

MEDLINE, EMBASE, CINAHL, PsycINFO, Sport Discus, Cochrane Central Register of Controlled Trials (CENTRAL) and PROQUEST were searched up to approximately mid 2008. The references of relevant articles were checked and additional searches for articles by key authors performed. Only studies published in English after 1980 were eligible for inclusion.

Study selection

Randomised controlled trials (RCTs) and quasi-experimental studies of interventions for increased physical activity participation based on one or more psychosocial theories were included in the review. Single groups studies with a pre-post-design were excluded from the review. Also excluded were interventions that used weight loss pharmacotherapy, herb or natural products, very low calorie diets, meal replacement or food provision, structured physical activity programmes or diets. Trial participants were required to have a mean body mass index (BMI) of between 25 and 39.9 kg/m² and a mean age between 18 and 64 years. Studies of participants with known mental disorders, physical diseases or specific populations were excluded with the exception of those that targeted individuals with diabetes, related metabolic syndromes, hypercholesterolaemia or hypertension. Studies were required to follow participants up for at least three weeks without therapeutic participant contact.

Included studies enrolled patients with mean BMIs that ranged from 29.7 to 37.9 kg/m² and mean ages between 37.7 and 55.1 years who were mainly female and Caucasian. One study targeted African Americans and patients with hypertension whilst two enrolled patients with diabetes. All except three of the studies, which were focused on increasing physical activity, had primary aims of weight management. Most studies assessed physical activity subjectively by methods such as self-reported questionnaires; objective assessments used pedometers, accelerometers or physical fitness indicators

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality

The authors did not state that they assessed the quality of included studies, but aspects of quality were discussed in the synthesis.

Data extraction

Data extraction focused on physical activity rather than physical fitness where both outcomes were reported. Where several physical activity outcomes were reported, those that related to frequency or duration were prioritised. Attrition rates were calculated only when exact numbers of participants were reported. Analysis of behaviour change techniques was based on a published taxonomy. Two reviewers independently extracted the data with disagreements resolved through consensus with a third reviewer. Authors were contacted for missing data where necessary.

Methods of synthesis

The studies were combined in a narrative synthesis.

Results of the review

Twenty-three studies that assessed 18 interventions were included in the review. All were described as RCTs but the randomisation methods were unclear in 11 studies. Sample sizes ranged from 24 to 389. Attrition rates ranged from 6% to 46.3% and only three studies had a rate below 20% at six or 12 month follow-up. Three studies reported an intention-to-treat analysis. Most studies had follow-up of six months or longer.

Three studies reported statistically significant between-group differences at post-intervention time-points including treatment and maintenance phases; one of these studies (based on the transtheoretical model plus social cognitive theory) found the effect to be sustained at follow-up. The other two studies were based on the behavioural model and on social cognitive theory. A fourth study which was based on social learning/cognitive theory reported a significant between-group effect at follow-up but not at post-intervention assessment. Twelve of the 18 studies reported statistically significant increases in physical activity over time in the intervention groups.

The impact of interventions on theoretical variables and further exploration of the interventions assessed were also reported.

Authors' conclusions

The authors concluded that the long-term impact of theory-based interventions on increasing physical

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activity was ambiguous.

CRD commentary

The review question and inclusion criteria were clear. The search was thorough but the decision to limit the review to studies published in English may have led to publication and/or language bias and the omission of some relevant studies. The authors reported using methods designed to reduce bias and error in the data extraction but not in the selection of studies. No formal quality assessment of the studies was reported although some relevant aspects of study quality were discussed. It appeared that the quality of the evidence was variable and often low. The decision to adopt a narrative synthesis was clearly appropriate but the failure to report the results of tests of statistical significance made it hard to evaluate the results discussed. The authors' conclusions reflect the results of the review, but their reliability is unclear.

Implications of the review for practice and research

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

Research: The authors stated that more evaluation studies of the long-term effect of interventions to increase physical activity were required. They further stated that isolated theoretical constructs and techniques should be targeted and the mediating role of targeted theoretical variables assessed. Finally, the effectiveness of alternative social cognitive models such as the theory of planned behaviour and the self-determination theory should be assessed.

Funding

Not stated.

Bibliographic details

Belanger-Gravel A, Godin G, Vezina-Im LA, Amireault S, Poirier P. The effect of theory-based interventions on physical activity participation among overweight/obese individuals: a systematic review. *Obesity Reviews* 2011; 12(6): 430-439

PubMedID

[20331511](https://pubmed.ncbi.nlm.nih.gov/20331511/)

Original Paper URL

<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-789X.2010.00729.x/abstract>

Indexing Status

Subject indexing assigned by NLM

MeSH

Behavior Therapy; Evidence-Based Medicine; Health Promotion; Humans; Life Style; Motor Activity; Obesity /therapy; Randomized Controlled Trials as Topic

AccessionNumber

12011003647

Database entry date

19/10/2012

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.