The effectiveness of distance interventions for increasing physical activity: a review

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CRD summary
The authors concluded that this review provided limited support for the efficacy of distance interventions to increase physical activity, in the short-term, and revealed the limitations in the available literature. This conclusion reflected the evidence presented, but the lack of reporting of the methods makes its reliability unclear.

Authors' objectives
To evaluate the effectiveness of interventions delivered at a distance, such as by print, internet, telephone, or mass media, to increase physical activity.

Searching
MEDLINE, PsycINFO, Social Sciences Index, Cochrane Database of Systematic Reviews, and SPORTDiscus were searched, up to July 2006, for English-language articles only. The search terms were reported and reference lists of recent relevant reviews were searched.

Study selection
Eligible for inclusion in the review were randomised controlled trials (RCTs) of distance interventions that promoted any type of physical activity in adults and that reported a physical activity outcome. Distance interventions were defined as those with no face-to-face contact, between participants and researchers or health educators, for delivering the intervention or for assessing outcomes.

Interventions included printed material, such as newsletters, health promotion booklets, personalised letters, and maps; telephone calls that were motivational, counselling, or scripted; internet contact, such as interactive websites, chat rooms, discussion boards, and weekly emails; and a combination of printed material and telephone calls. The target activity level for most trials was moderate physical exercise and, generally, they did not specify the frequency, duration, and type of exercise. The duration of the intervention ranged from a single mailing to two years. The comparators included another intervention, a waiting list, and an attention control group. The mean age ranged from 36 to 68 years and the percentage of female participants ranged from 43 to 100. The setting and participants varied widely between trials, such as workplaces, general practice areas, social clubs, female licensed drivers, and those who responded to advertisements for physical activity studies. About a third of trials were of sedentary participants, and two were of participants who were physically disabled or had diabetes. All trials used a self-reported measure of physical activity, but these measures varied greatly. Other outcomes assessed included the stage of change and the maintenance of physical activity at least six months after completion of the intervention.

One investigator identified potentially relevant studies, based on the title and abstract. The authors did not state how many authors selected the trials for inclusion.

Assessment of study quality
Trial quality was assessed using the Cochrane criteria, which cover selection bias, performance bias, attrition bias, detection bias, and the use of intention-to-treat analysis. The quality was checked by two authors and discrepancies were resolved by reference to the article.

Data extraction
The data were extracted to calculate individual effects sizes and 95% confidence intervals. The authors did not state how many reviewers extracted the data.

Methods of synthesis
A narrative synthesis was used to compare the outcomes by type of intervention, number of intervention exposures, and intervention framework. The trial details, including their effect sizes for intervention versus no intervention or attention
control, were provided in tables.

**Results of the review**
Twenty-two trials were included in the review. Their quality was reported to be difficult to assess due to poor reporting. Four reported adequately concealed randomisation, 11 reported no systematic differences in withdrawals between groups, and all probably had detection bias because of the use of self-reported surveys for physical activity.

**Intervention versus no intervention or attention control:** There were 11 trials, with 65 to 4,712 participants randomised and 52 to 2,121 providing complete data. Eight trials reported data that allowed an effect size to be calculated. These sizes were small or moderate and only four were statistically significant, ranging from 0.13 (95% CI 0.03 to 0.23) to 0.45 (95% CI 0.24 to 0.66). Three of these trials used printed material (personalised letters and booklets, and a staged targeted intervention booklet) and one used the Internet (physical activity and nutrition information on a website and 12 weekly emails).

**Intervention versus another intervention:** There were 14 trials, with 78 to 1,559 participants randomised and 68 to 903 providing complete data. Six trials found statistically significant, better results for one intervention over the other (effect sizes not reported). The more successful intervention generally had more personal content (e.g. an interactive website or telephone counselling) or more theory-driven components than the comparison.

**Other outcomes:** Eight out of 14 trials that assessed stage of change reported significant differences in stage movements for participants. In seven trials, physical activity maintenance after six months showed smaller effects than short-term outcomes.

**Authors’ conclusions**
This review found limited support for the efficacy of distance interventions to increase physical activity, in the short-term, for some people, and it revealed the limitations in the available literature.

**CRD commentary**
The review addressed a clear research question and was supported by adequate inclusion criteria. The search was limited to studies in English, which means that there was a risk of language bias. No search was reported for unpublished material, which means that relevant studies might have been missed. Trial quality was assessed using an appropriate tool. The authors did not report how many reviewers selected the trials and extracted the data, which means it is unclear whether or not these processes were open to reviewer error and bias. A narrative synthesis was appropriate given the differences in populations, interventions, and outcome measures between the included trials.

The authors’ conclusion reflected the evidence presented, but the lack of reporting of the methods makes its reliability unclear.

**Implications of the review for practice and research**

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

**Research:** The authors stated that there was a need to replicate the impact of brief interventions compared with control conditions, using improved RCT methods and behavioural outcome measures. Participants should be recruited directly from the community and trials should have long follow-up periods. They should report the data in a form that allows change effect sizes to be calculated. Future research should include an assessment of the effect of repeated interventions on initiation and maintenance of physical activity; a direct examination of the interaction between intervention features, such as mode of delivery and content framework, and between these and population characteristics; and a comparison of content frameworks to identify the successful components and implementations.

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