Integrative review of physical activity intervention research with aging adults
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CRD summary
This review assessed interventions to increase physical activity in older adults. The authors concluded that the interventions did increase physical activity in some older adults, but that further research is required. The review examined many types of interventions but was unable to determine why some interventions were effective and others were not.

Authors’ objectives
To assess the effects of interventions aimed at increasing physical activity in older adults.

Searching
AgeLine, SPORTDiscus, PsycINFO, MEDLINE, CINAHL and Dissertation Abstracts International were searched for studies published in English from 1960 to 2000. The reference lists in previous reviews and primary studies were also checked. Searches were conducted for other studies undertaken by the authors of primary studies. Unpublished studies were eligible.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) with at least 5 participants were eligible for inclusion.

Specific interventions included in the review
Studies of interventions aimed at increasing overall physical activity or episodic exercise were eligible for inclusion. The most commonly used interventions in the included studies were self-monitoring and health education. Other common interventions were goal setting, problem-solving, feedback, reinforcement or contingencies, relapse prevention education and modelling. The studies involved individualised interventions and group interventions, interventions conducted in participants' homes and aggregated community settings (senior centres or churches), interventions delivered using different modalities, and exercise sessions conducted with and without supervision. The interventions were delivered by different interventionists such as peer or lay leaders, postgraduate students, certified exercise trainers, nurses and physicians. Some interventions were based on social cognitive theory, while others were based on a transtheoretical framework; some studies did not report an underlying theory.

Participants included in the review
Studies of older adults (mean age 65 years or older) were eligible for inclusion. The percentage of women in the included studies ranged from 35 to 100%. Most of the studies did not state the enrolment of minority ethnic groups. The report did not give the country in which the studies were conducted.

Outcomes assessed in the review
Studies that assessed overall physical activity or episodic endurance exercise using direct measurements were eligible for inclusion. The included studies measured a wide variety of activity behaviour.

How were decisions on the relevance of primary studies made?
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 validity.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The extracted data included details of the intervention content and outcome measures. The results were extracted as reported in the primary studies. For studies with multiple reports, data were extracted from the report with the longest follow-up and the largest number of participants.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative with accompanying tables.

How were differences between studies investigated?
Differences between the studies were discussed. The number of studies reporting a positive effect on physical activity was reported for each of the following study characteristics: focus of the intervention (walking and not walking); sample size; population targeted (health problems and untargeted population); length of follow-up (less than 6 months and 6 months or more); theoretical framework; presence of supervision; content of the intervention; and intervention location and delivery.

Results of the review
Seventeen RCTs (6,391 participants) were included.

The methodological limitations of the studies included: small sample size; use of unvalidated outcome measures (8 RCTs); lack of a theoretical framework underlying the intervention (7 RCTs); and inadequate length of follow-up.

Overall, 10 RCTs found the interventions increased physical activity or exercise compared with the control. One RCT reported greater physical activity in the control group.

Focus of the intervention: 4 of the 6 RCTs that focused on walking found the intervention increased walking compared with the control.

Sample size: 4 of the 5 small studies (n<60) found no difference in physical activity between the intervention and control.

Population targeted: 6 of the 9 RCTs in people with health problems reported that the intervention increased physical activity compared with the control. Of the 8 RCTs in untargeted populations, four found the intervention increased activity compared with the control and four found no difference between the interventions.

Length of follow-up: 4 of the 9 RCTs assessing outcomes less than 6 months after the intervention found that interventions significantly increased exercise, while 5 of the 7 RCTs assessing outcomes more than 6 months after the intervention found that interventions increased activity.

Theoretical framework: 5 of the 7 RCTs based on social cognitive theory reported that the interventions increased physical activity, while 2 of the 3 RCTs based on a transtheoretical framework reported that the interventions increased physical activity. Four of the 5 RCTs based on combinations of theoretical frameworks reported that the interventions significantly increased physical activity.

Presence of supervision: 3 of the 5 RCTs of supervised exercise found that the interventions increased physical activity. Seven of the 12 RCTs without supervised exercise reported that the interventions increased exercise. Content of intervention: the results were inconsistent. No intervention with the same content used in 4 or more studies was shown to have a consistently positive or negative effect on physical activity or exercise. Four of the 6 RCTs that individualised the content reported that the interventions increased exercise.

Intervention location and delivery: 3 of the 5 RCTs conducted in the participants' homes reported that the interventions increased physical activity. All 4 RCTs conducted in aggregated community settings reported that the interventions increased exercise. Six of the 11 RCTs conducted among researcher formed groups reported positive findings, while...
the other 5 RCTs reported negative findings. Four of the 5 RCTs that delivered motivational sessions over the phone reported that the interventions increased physical activity compared with the control.

Authors' conclusions
The interventions did increase physical activity in some older adults, but further research is required.

CRD commentary
The review addressed a very broad question in terms of the intervention, participants and outcomes. Several relevant sources were searched, although the search terms were not given, and unpublished studies were eligible. By limiting the included studies to those published in English, the authors might have omitted some relevant studies. The methods used to select the studies, assess validity and extract the data were not described, so it is not known whether any efforts were made to reduce errors and bias. Validity was not formally assessed.

Some relevant data were presented in tabular format, but the drop-out rates and details of the control intervention were not reported and the influence of drop-outs on the results was not explored. A narrative synthesis was appropriate given the diversity among the interventions, but the quantitative tally (vote counting) can be misleading. Attention was not drawn to higher quality, adequately powered studies. The authors' conclusions may not be reliable, and the grouping of the studies by one characteristic at a time does not allow an overall assessment of the potential influence that other differences between studies might have on the effect of the intervention.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that adequately powered and reported RCTs of longer duration (longer than 6 months) are required to assess the effects of well-defined interventions using validated outcome measures. They stated that research should examine the effects in existing social units, the very old (age 85 or more) and people with chronic illness, and in different settings including religious organisations. Also, the effects of interventions encouraging lifestyle activity should be studied.

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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.