Effectiveness of physical activity programs at worksites with respect to work-related outcomes

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Authors' objectives
To evaluate the effectiveness of worksite physical activity programmes in terms of work-related outcomes.

Searching
MEDLINE, PsycINFO, SPORTDiscus, OSHROM and CISDOC were searched from 1980 to 2000 for publications in English, German or Dutch; the search terms were not reported. Further studies were located from a reference search and a manual search of the authors' personal database. Unpublished studies and abstracts were excluded from the review.

Study selection
Study designs of evaluations included in the review
Randomised (RCTs) and non-randomised controlled trials (CCTs) were eligible for inclusion.

Specific interventions included in the review
Studies of worksite programmes aimed at increasing physical activity or fitness were eligible for inclusion. Comprehensive worksite health programmes with physical activity as one of several components were excluded, as were programmes for the secondary prevention of specific health problems. The physical activity programmes in the review varied in content, and included activities such as aerobic exercise, strength and flexibility training. The interventions lasted between 2 and 12 months. The control groups received no intervention, the same intervention starting at a different time, or an alternative intervention such as stress management or social games.

Participants included in the review
Studies carried out in a working population were eligible for inclusion. The included studies were of nursing staff, police officers, school district employees, pharmaceutical workers, and bank and insurance company employees.

Outcomes assessed in the review
Studies were eligible for inclusion if they assessed work-related outcomes. The included studies reported absenteeism from work (determined from company records) and job stress and satisfaction (measured by questionnaires), as well as productivity and employee turnover.

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 studies were assessed and scored on 9 criteria: the randomisation procedure; the similarity of the study groups; whether the inclusion and exclusion criteria were specified; the percentage of drop-outs; blinding; participant compliance; whether the analysis was conducted by intention-to-treat; the timing of the outcome assessments; and the length of follow-up. One point was awarded for each criterion, such that the maximum score was 9 for RCTs and 8 for CCTs (which were not randomised). A study was considered to be of high quality if it fulfilled more than 50% of the validity criteria, and of "low" quality otherwise. Two reviewers independently assessed validity. Any disagreements were resolved by consensus, or by recourse to a third reviewer if consensus could not be reached.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data
extraction. For each study, the results were classified as showing a positive, negative or no effect of the intervention. A positive effect was defined as either a statistically significant or a 'meaningful' difference (defined as a 20% difference) between the intervention and control groups, in favour of the intervention.

**Methods of synthesis**

How were the studies combined?
The studies were presented in tabular format and combined in a narrative. For each outcome, the evidence in the review was graded as strong, moderate, limited, inconclusive, or no evidence, depending on the quality of the study and the consistency of the results.

How were differences between studies investigated?
Studies were grouped by design (RCT or CCT) in the table and were discussed by outcome in the text.

**Results of the review**
The review included 8 studies with a total of 15,140 participants. There were 4 RCTs (890 participants) and 4 CCTs (14,250 participants).

The two reviewers assessing validity had an initial agreement of 72%, with a Cohen's kappa of 0.45. The quality scores ranged from 3 to 7 for RCTs and from 1 to 5 for CCTs. Two RCTs and one CCT were classed as 'high' quality.

**Absenteeism.**

Worksite physical activity programmes were found to have a positive effect on absenteeism in one high-quality RCT and 2 low-quality CCTs. However, a low-quality RCT found no evidence of an effect.

**Job stress.**

Two high-quality studies (one RCT and one CCT) did not find evidence of an effect on job stress, whereas 2 low-quality studies (one RCT and one CCT) reported a positive effect of the physical activity programme.

**Job satisfaction.**

The results from the RCTs were inconclusive. A high-quality RCT reported that the intervention had a negative effect on job satisfaction, while one low-quality study showed a positive effect and another found no evidence of an effect. A low-quality CCT found no evidence that the physical activity programme had an effect.

Further results for productivity and employee turnover were reported in the full paper.

**Authors' conclusions**
There was limited evidence of an effect of worksite physical activity programmes on absenteeism, and inconclusive evidence for the effects on job stress and satisfaction.

**CRD commentary**
The review addressed a clearly defined research question with explicit inclusion criteria for the participants, interventions, outcomes and study design. Several relevant electronic databases were searched, but the search terms were not reported. The exclusion of unpublished research and the restriction to three languages might have introduced publication and language bias. While two reviewers independently assessed study quality, the authors did not report how the study selection and data extraction processes were carried out. Therefore, the potential for reviewer errors and bias could not be fully assessed.

Relevant details of the primary studies and quality assessment were presented in the review, although the magnitude of each effect was not reported. The use of a narrative synthesis was appropriate. The quality of the included studies was
considered in the data synthesis and was used to determine the strength of the evidence obtained. The authors also considered the potential impact of publication and language bias. The authors' cautious conclusions seem appropriate given the heterogeneity and poor quality of the studies included in the review.

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

Research: The authors stated that further high-quality RCTs should be carried out to assess the effectiveness of worksite physical activity programmes. They also recommended that future studies should pay more attention to reporting aspects of study design and conduct.

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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.