The effectiveness of four interventions for the prevention of low back pain
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Authors' objectives
To evaluate the effectiveness of 4 strategies for preventing lower-back pain in the clinical setting.

Searching
MEDLINE was searched from 1966 to 1993, and the bibliographies of identified articles were examined. Back pain specialists reviewed the final bibliography for completeness.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), controlled trials, prospective observational designs, case-control studies, case series, and prospective and cross-sectional epidemiological studies.

Specific interventions included in the review
Back and aerobic exercise, education, mechanical supports (corsets) and risk factor modification.

Participants included in the review
Currently asymptomatic patients with or without prior acute back pain. Patients with a history of chronic back pain were excluded.

Outcomes assessed in the review
Prevention of lower-back pain, knowledge about back pain and absenteeism from work.

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
Studies had to contain original data about the prevention of lower-back pain for asymptomatic individuals. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined by narrative review, with studies graded according to the strength of their design.

How were differences between studies investigated?
Study differences were investigated by the type of study design. Differences between interventions were also mentioned, e.g. for educational interventions 'education' varied from being given a pamphlet to enrolment in a back school programme.

Results of the review
Sixty-four studies about the prevention of lower-back pain, including 2 RCTs of exercise interventions (n=194), 3 RCTs of educational interventions (n=329) and 2 RCTs of exercise plus educational interventions (n=208).

Exercise:

4 RCTs showed a statistically-significant short-term benefit from an exercise intervention.

1 controlled trial found no improvement in duration of recurrent back pain episodes, although patients in the exercise group had significantly improved aerobic capacity compared to the control group.

12 observational studies reported mixed support for decreased lower-back pain or increased flexibility.

Education:

5 RCTs, of which only 1 reported a significant decrease in subsequent lower-back pain. However, this trial did combine education with an exercise programme. Of the remaining 4 trials, although they had negative results overall, 3 found significant differences in intermediate outcomes, e.g. increased knowledge about back pain.

5 out of 6 controlled trials also reported non significant results. 1 controlled trial, to prevent pregnancy-associated back pain, reported that women in the intervention group had significantly less self-reported severe back pain than controls (32 versus 54%).

4 observational studies reported mostly non significant results from education interventions.

Mechanical supports (limited to corsets): 1 RCT reported no differences in mean rates of work loss between the intervention and control group; the other RCT reported that the intervention group had increased knowledge and decreases absenteeism, compared to the control group. However, no differences were found in changes in abdominal strength, productivity and rates of injuries between the groups.

Risk factor modification:

Epidemiological studies have linked smoking, obesity and psychological factors to the development of back pain, but no studies have examined the effect of modifying these risk factors on back pain risk.

Authors’ conclusions
There is limited evidence to recommend exercise to prevent lower-back pain in asymptomatic individuals, and there is insufficient evidence to recommend other prevention strategies. These conclusions should be viewed with caution since they are based primarily on studies conducted in the workplace, rather than in clinical settings.

CRD commentary
The original objectives of this study, which were to evaluate the effectiveness of 4 interventions for preventing lower-back pain in the clinical setting, seem to have been only partially met: out of the 3 types of intervention (exercise, education and mechanical supports) only 1 study was carried out in a non-work environment.

It is unclear how decisions were made about which of the 64 reviewed studies were to be included or excluded.

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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.