

Primary Care Interventions to Prevent Low Back Pain: A Brief Evidence Update for the U.S. Preventive Services Task Force

Methodology

The search strategy for this brief update included a review of articles published in MEDLINE, the Cochrane Library, and the National Guideline Clearinghouse between 1994 and 2001. The search was limited to the English language and Abridged Index Medicus publications. We searched for randomized controlled trials (RCTs), meta-analyses, systematic reviews, editorials, and commentaries addressing the key questions.

We used the search term *low back pain*, then focused on prevention and control and used *randomized controlled trials* as MeSH terms. *Exercise, education, back, school, and risk factors* were also used as free-text search terms. The search yielded 324 articles that were related to low back pain prevention and control. Four of these were RCTs published in English, 1 of which had been evaluated in the previous USPSTF review. Of the 3 remaining RCTs, only 1 directly addressed injury prevention.

Studies were excluded if they did not meet the specific inclusion criteria listed or if they were not generalizable to the adult population in the United States.

The 1 RCT meeting inclusion criteria found that neither lumbar supports nor education, alone or in combination, reduced low back pain incidence or sick leave. No new RCTs were found that demonstrated that exercise or physical activity can help prevent low back pain. Two experts reviewed these findings for comprehensiveness and provided no additional evidence.

Key Questions and Results

1. (Overarching) Do exercises aimed at strengthening low back muscles prevent low back pain in individuals compared with no exercise?

There is no new RCT-based evidence that exercise or physical activity can help strengthen low back muscles to help prevent low back pain.

2. Do educational programs (ie, back schools) help to prevent low back pain?

A recent systematic review assessed the effects of back schools for patients with nonspecific low back pain.³ The authors reviewed 15 RCTs that reported on back schools for the treatment and

Systematic Evidence Reviews serve as the basis for U.S. Preventive Services Task Force (USPSTF) recommendations on clinical prevention topics. The USPSTF tailors the scope of these reviews to each topic. The USPSTF determined that a brief evidence update was needed to assist in updating its 1996 recommendations on primary care interventions to prevent low back pain.¹ This brief evidence update was written by Ramesh Krishnaraj.

To assist the USPSTF, the RTI International-University of North Carolina Evidence-based Practice Center, under contract to the Agency for Healthcare Research and Quality (AHRQ), performed a targeted review of the literature published on this topic from 1994 to 2001. This brief evidence update on primary care interventions to prevent low back pain and the updated recommendation statement² are available through the AHRQ Web site (www.preventiveservices.ahrq.gov) and in print through subscription to the *Guide to Clinical Preventive Services, Third Edition: Periodic Updates*. The subscription costs \$60 and can be ordered through the AHRQ Publications Clearinghouse (call 1-800-358-9295, or e-mail ahrqpubs@ahrq.gov). The recommendation is also posted on the Web site of the National Guideline Clearinghouse™ (www.guideline.gov).

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secondary prevention of nonspecific low back pain. A qualitative review was performed using 11 preset internal validity criteria with 6 or more positive scores denoting “high quality.”

Using these criteria, only 3 trials were considered to be of high quality. Their results showed moderate evidence that back schools have better short-term effects than other interventions for the treatment and secondary prevention of low back pain in occupational settings. There was only moderate evidence that back schools are effective in the secondary prevention of back pain in occupational settings. The review concluded that back schools may be effective in preventing further back injury for individuals with recurrent and chronic low back pain, but their cost-effectiveness is not well known.

3. Is there evidence to show that the use of lumbar supports (back belts) may increase the risk for low back pain (harm) or help prevent back injuries (benefit)?

A study conducted by van Poppel and colleagues presented new evidence regarding education and lumbar supports.⁴ This was an RCT with a factorial design conducted with 312 workers in the Netherlands. Subjects were randomized to education (lifting instructions) and lumbar support, education, lumbar support, or no interventions. Low back pain incidence and sick leave related to low back pain were measured during the 6-month intervention period. The authors found that, overall, neither lumbar supports nor education, either alone or in combination, reduced low back pain incidence or sick leave. The major limitation of the study was its lack of blinding of either the subjects or the therapists evaluating them. The authors concluded that further investigation is needed to evaluate the therapeutic effectiveness of lumbar supports for workers with low back pain.

Another prospective study of back belt use for preventing back injury was conducted by Wassell and colleagues among workers in 30 States.⁵ The main outcome measures were rates of worker compensation claims for back injury and the rate

of self-reported back pain. The results showed that back belt use did not decrease either the rate of claims or reports of injuries.

4. Is there new evidence that supports risk factor modification as a method to help prevent low back pain?

Smoking has been shown to be associated with musculoskeletal diseases including low back pain, but no RCT shows that this risk factor modification helps prevent low back pain.⁶ Some studies indicate that low back pain does not seem to be associated with alcohol consumption.⁷

Summary

Low back pain is a large medical and financial burden. It is second only to upper respiratory problems as a symptom-related reason for visits to the physician. Interventions in primary care to help prevent low back pain would help to reduce this burden if there were new evidence that such interventions are effective. No new evidence was found on the benefits or harms of physical exercise, on the harms of back belts, or on the effectiveness of risk factor modification, although obesity was not considered. However, the review did find new evidence that back schools and back belts (lumbar supports) are ineffective in preventing low back pain. No ongoing research was identified by this review.

Recommendations of Professional Organizations

The American Academy of Orthopaedic Surgeons recommendations on preventing low back pain can be accessed at http://orthoinfo.org/brochure/thr_report.cfm?Thread_ID=10&topcategory=Spine&all=all or <http://www.aaos.org/>.

The National Institute for Occupational Safety and Health (NIOSH) information on preventing low back pain can be accessed at <http://www.cdc.gov/niosh/homepage.html> or <http://www.cdc.gov/niosh/epstep1.html>.

References

1. U.S. Preventive Services Task Force; *Guide to Clinical Preventive Services*. 2nd ed. Washington, DC: Office of Disease Prevention and Health Promotion; 1996.
2. U.S. Preventive Services Task Force. Primary care interventions to prevent low back pain in adults: recommendation statement. February 2004. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/clinic/3rduspstf/lowback/lowbackrs.htm>.
3. van Tulder MW, Esmail R, Bombardier C, Koes BW. Back schools for non-specific low back pain. *Cochrane Database Syst Rev*. 2000;CD000261.
4. van Poppel MN, Koes BW, van der Ploeg T, Smid T, Bouter LM. Lumbar supports and education for the prevention of low back pain in industry: a randomized controlled trial. *JAMA*. 1998; 279:1789–1794.
5. Wassell JT, Gardner LI, Landsittel DP, Johnston JJ, Johnston JM. A prospective study of back belts for prevention of back pain and injury. *JAMA*. 2000; 284:2727–2732.
6. Porter SE, Hanley EN Jr. The musculoskeletal effects of smoking. *J Am Acad Orthop Surg*. 2001;9:9–17.
7. Leboeuf-Yde C. Alcohol and low-back pain: a systematic literature review. *J Manipulative Physiol Ther*. 2000;23:343–346.