



# AOTA Evidence Briefs

## Chronic Pain

*\*A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

### CPAIN #7

## **Instruction in body mechanics may prevent development of improper work postures in young people.**

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McCauley, M. (1990). The effect of body mechanics instruction on work performance among young workers. *American Journal of Occupational Therapy*, 44, 402–407.

### **Level IB3c**

Randomized controlled trial, 2 groups, fewer than 20 participants per condition, low internal validity, low external validity.

### **Why research this topic?**

Low-back pain affects an estimated 80% of American adults. Workers' compensation payments for time lost because of this condition totaled \$4.6 billion in 1981. Preventive programs incorporating instruction in body mechanics might reduce back injuries among workers.

### **What did the researcher do?**

McCauley (1990), a graduate student at the University of Puget Sound (Tacoma, Washington), evaluated the effect of on-the-job instruction in body mechanics on the work performance of newly hired workers. The participants in her study were 30 young people between ages 14 and 19 years. Their average age was 16.1 years. Twenty-three were males, 7 were females. All were participating in a summer youth employment program. They had 0–24 months of part-time work experience. The researcher assumed this to mean that they “had not yet developed maladaptive work postures or poor lifting techniques in the workplace” (p. 403).

The study included two types of jobs that required frequent lifting, lowering, pulling, and transferring: custodial helper and groundskeeper assistant. The researcher randomly assigned the jobs to an experimental or a control group.

Each group received 1 hour of orientation before the first day of work. For the experimental group, this hour consisted of instruction in body mechanics by an occupational therapist. She emphasized five principles: lifting and lowering objects using a straight back and bent knees; maintaining alignment of the spine; establishing a wide base of support by proper placement of the feet; using leg strength to provide lifting power; and centering loads when pulling or transferring objects. The group members viewed a slide show demonstrating some tasks that they would be required to perform. They also simulated some work situations. During the participants' first week of work, the researcher followed up the orientation session with two 10- to 15-minute site visits with each participant, during which she gave instruction specific to the participant's job.

For the control group, the hour of orientation consisted of safety training by an insurance company representative. The group members saw a movie on the role of the brain in decision making and the effects of a person's mental state on his or her performance. The representative reviewed guidelines for safety, including "wearing proper footgear, keeping the work area clean, securing ladders, and addressing safety concerns with the supervisor" (p. 404). A question-and-answer session followed. Follow-up sessions for this group, also 10- to 15-minutes long and conducted during the first week of work, involved a visit from the researcher, who reviewed safety concerns specific to each group member's job.

The researcher was interested in the following outcomes areas: *lifting, lowering, pulling, and transferring* (as measured by the Body Mechanics Evaluation Checklist). An independent rater made the assessments before the orientation session and after 3 weeks of work.

### **What did the researcher find?**

The experimental group's total score was **significantly** (see *Glossary*) higher than the control group's. Its scores on the pulling and transferring tasks also were significantly higher.

### **What do the findings mean?**

For therapists and other providers, the findings suggest that, in the short term and in a young population (ages 14–19 years), instruction in body mechanics can prevent the development of improper work postures. The long-term effects of such intervention are not known.

### **What are the study's limitations?**

- The study does not use any screening tool for determining back problems in study participants. Thus, back injuries, other than work-related injuries, were not detected in participants.
- Long-term benefits of the program in preventing back injuries cannot be determined from the study.
- No information regarding psychometric properties of the Body Mechanics Evaluation Checklist has been provided in the study.

## **GLOSSARY**

**significance (or significant)**—A statistical term that refers to the probability that the results obtained in the study are not due to chance but to some other factor (e.g., the treatment of interest). A significant result is likely to be generalizable to populations outside the study.

Significance should not be confused with *clinical effect*. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk may report that the participants in the treatment group were able to walk significantly longer distances than the control. However, after reading the study one may find that the treatment group was able to walk, on average, 6 feet, whereas the control group was able to walk, on average, 5 feet. Although the outcome may be statistically significant, a clinician may not feel that a 1-foot increase will make his or her client functional.

- Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.

