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Dr. Henry C. Brock III
Brock's Loss Control Services
10646 S. Bethel Avenue
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Dear Dr. Brock,

At your request I have completed some research with findings/opinions on the issue of wearing back braces. I reviewed several sites and summarized a few of those here. I am also attaching short articles from UCR, UCLA and CDC. Wearing back braces have been studies for years by the Occupational Safety and Health Administration (OSHA) and many other organizations. I brief review of articles I found some of the following comments and observations.

> University of South Carolina references their back care program, which they associated with material handling occupations. "Back belts are controversial addition to the techniques used in the prevention of back pain. The goal of back belts is to impose a fixed posture on the wearer, making it difficult or impossible to bend or twist when lifting. There is significant disagreement on the use of back belts, however, with much contradictory evidence regarding their effectiveness. Back belts are not considered personal protective equipment by OSHA and are not specifically covered by existing regulations. The Office of Environmental Health and Safety (EHS) does not recommend the use of back belts."
>
> They went on to say that, "Departments that choose to allow their workers to use back belts should develop a policy on back belt use while considering the following:
>
> -Back belts are not needed if workers understand and use back care methods, proper lifting techniques, and stay physically fit;
>
> -Information of the pros and cons of back belts should be made available to workers prior to purchasing the belt;
>
> -Participation in any back belt program should be strictly voluntary;

-Back belt use should be permitted only after the worker has received and understood training in back care, safe lifting, exercise and belt use."

Another study of 1,316 workers at an Air Force base found that worker who wore lumbar support belts had a higher rate of back injuries and lost more time off work than those who didn't wear belts.

One website I reviewed referenced that there were more than 30 primary types of back braces, each serving different purpose. The wrong brace or support could cause more harm than healing, especially if worn improperly. There are a variety of reasons for using spinal bracing or back supports. They are used to control pain, to prevent further injury, to promote healing of the spine, to compensate for weakness in the muscle and to address deformities. abdomen, increasing what is known as intra-abdominal pressure.

There are pros and cons but the problems mostly seem to be around the false sense of security, wearing them improperly, prolonged use causing other health issues, and lack of training and follow through of good lifting mechanics. Personally what I have come to understand is that back braces will help to stabilize the area braced but puts the greater strain just above and below the belt support. Certainly in manual material handling operations there can be a place for the belt supports but one size does not fit all and should be carefully reviewed along with other best practices. I hope this is helpful to you.

Sincerely,

Cheryl R. Chandler, M.A., CRC, ABVE/D
Vocational & Ergonomic Consultant

NIOSH Update:

NOTE: This page is archived for historical purposes and is no longer being maintained or updated.

No Evidence That Back Belts Reduce Injury Seen in Landmark Study of Retail Users

December 5, 2000
Contact: Centers for Disease Control and Prevention (CDC)
National Institute for Occupational Safety and Health(NIOSH)
Fred Blosser, Media Relations (202)401-3749

Washington, DC—In the largest study of its kind ever conducted, the Centers for Disease Control and Prevention's (CDC)'s National Institute for Occupational Safety and Health (NIOSH) found no evidence that back belts reduce back injury or back pain for retail workers who lift or move merchandise, according to results published today in the *Journal of the American Medical Association (JAMA)* Dec. 6th issue.

The study, conducted over a two-year period, found no statistically significant difference between the incidence rate of workers' compensation claims for job-related back injuries among employees who reported using back belts usually every day, and the incidence rate of such claims among employees who reported never using back belts or using them no more than once or twice a month.

Similarly, no statistically significant difference was found in comparing the incidence of self-reported back pain among workers who reported using back belts every day, with the incidence among workers who reported never using back belts or using them no more than once or twice a month. Neither did the study find a statistically significant difference between the rate of back injury claims among employees in stores that required the use of back belts, and the rate of such claims in stores where back belt use was voluntary.

Back belts, also called back supports or abdominal belts, resemble corsets. In recent years, they have been widely used in numerous industries to prevent worker injury during lifting. There are more than 70 types of industrial back belts, including the lightweight, stretchable nylon style used by workers in this study. Approximately four million back belts were purchased for workplace use in 1995, the most recent year for which data were available. The results of the new study are consistent with NIOSH's previous finding, reported in 1994, that there is insufficient scientific evidence that wearing back belts

protects workers from the risk of job-related back injury.

"Work-related musculoskeletal disorders cost the economy an estimated $13 billion every year, and a substantial proportion of these are back injuries," said CDC Director Jeffrey P. Koplan, M.D., M.P.H. "By taking action to reduce exposures, employers can go a long way toward keeping workers safe and reducing the costs of work-related back injury."

This study was the largest prospective study ever conducted on use of back belts. From April 1996 to April 1998, NIOSH interviewed 9,377 employees at 160 newly opened stores owned by a national retail chain. The employees were identified by store management as involved in materials handling tasks (lifting or moving merchandise). Through interviews, data was gathered on detailed information on workers' back-belt wearing habits, work history, lifestyle habits, job activities, demographic characteristics, and job satisfaction. The study also examined workers' compensation claims for back injuries among employees at the stores over the two-year period.

In a prospective study, researchers identify a cohort or group of workers for evaluation, and then collect current information on that group as the study progresses. In this study, NIOSH determined workers' habits in wearing back belts in advance of any injuries, and collected data as workers filed back injury claims.

Findings from this study included:

- There was no statistically significant difference between the rates of back injuries among workers who wore back belts every day (3.38 cases per 100 full time equivalent workers or FTEs) and back injury rates among workers who never wore back belts or wore them no more than once or twice a month (2.76 cases per 100 FTEs).
- There was no statistically significant difference between the incidence of self-reported back pain among workers who wore back belts usually every day (17.1 percent) and the incidence of self-reported back pain among workers who never wore back belts or wore them no more than once or twice a month (17.5 percent).
- There was no statistically significant difference between the rate of back injury claims in stores requiring the use of back belts (2.98 cases per every 100 FTEs) and the rate in stores where back belt use was voluntary (3.08 cases per 100 FTEs).
- A history of back injury was the strongest risk factor for predicting either a back-injury claim or reported back pain among employees, regardless of back-belt use. The rate of back injury among those with a previous history of back pain (5.14 cases per 100 FTEs) nearly twice as high as the rate among workers without a previous history of back pain (2.68 per 100 FTEs).
- Even for employees in the most strenuous types of jobs, comparisons of back injury claims and self-reported back pain failed to show any differences in rates or incidence associated with back belt use.

"We appreciate the partnership offered by workers and management in helping us conduct this important study," said NIOSH Acting Director Lawrence J. Fine, M.D., D.P.H. "We look forward to working closely with industry and labor to disseminate our findings as widely as possible."

CDC protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national and international organizations.

Editor's Note: For further information on the study, or for other information on preventing work-related musculoskeletal injuries, contact the CDC's NIOSH toll-free information number, 1-800-35-NIOSH (1-800-356-4674) or visit the web page at www.cdc.gov/niosh (/niosh/) .

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800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC–INFO

Ergonomics

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

Back Belts and Supports

Do Back Belts Prevent Injury?

The answer to this question is complex. While back belts do indeed provide additional support to the lower back during heavy or strenuous tasks (such as lifting), they do not eliminate the risk exposure. Many people who wear a back belt misunderstand the protection a back belt offers. It is common practice for individuals who wear back belts to lift heavier items that they would not normally consider lifting. This false sense of protection may actually result in an increased risk of injury.

Do Back Belts Weaken your Core Muscles?

Back belts act as an external stabilizer for your back during strenuous activities. Abdominal and core muscles, when engaged, act as an internal stabilizer for the low back, reducing the risk of injury when lifting. When back belts are worn properly (tightened **only** during the strenuous part of an activity), the chances of the belt weakening your core muscles are minimal. Studies have shown that the use of back belts can result in reduce back muscle activity. It is possible that prolonged use of a belt can cause weakening of the lifting structures of the back, however additional research is necessary.

Do Back Belts Improve Posture and Body Mechanics?

A simple answer is "It depends on the back support". Most back belts and supports have no effect on lumbar motion or posture. Some of the more rigid belts (especially those with the contoured lumbar insert) can alter movement patterns, improving lower back postures and body mechanics. Be warned, however, that the stresses can be transferred to other unsupported areas of the body and may lead to an increased risk of injury there.

Are Back Belts A Good Safety Reminder?

Many believe that back belts are a good tool for increasing worker awareness during lifting, thereby reducing the likelihood of risky mechanics or behavior. It is good practice to remind employees that back belts do not make them stronger and they should not attempt to lift things they wouldn't normally lift. While back belts can serve as a safety reminder, they are only one component of safe lifting. Using sound ergonomic principles, proper body mechanics, and attempting only those tasks within your physical capabilities can help you avoid injury.

Guidelines For Using A Back Belt

1. Use your back belt together with the practice of proper body mechanics and posture.
2. Wear your back belt whenever necessary, but as little as possible. Tighten your belt only during the strenuous part of an activity. For light tasks and breaks, loosen the belt.
3. Do not rely on your belt to increase your lifting capabilities. Avoid the "Superman Syndrome".
4. Back belts should not replace good physical condition. Good strength and flexibility help a back stay healthy!
5. Be sure that your belt is properly sized, is comfortable and is appropriate for your tasks.
6. If you have any questions, contact The Ergonomics Program.

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900 University Ave.
Riverside, CA 92521
Tel: (951) 827-1012

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Back Belts

Many experts have questioned the effectiveness of back belts in preventing back injuries. There is little scientific proof providing undisputed evidence that back belts reduce the possibility of injury during lifting.

Proponents for using back belts present the following arguments:

- Belts increase intra-abdominal pressure. This is the pressure developed when you tighten your stomach muscles. Strong abdominals help support the spine, and can reduce back stress by up to 50% when lifting. Back belts can boost this pressure, especially when lifting loads greater than your body weight.
- Belts increase flexibility. Belts can help to keep muscles warm. Warmer muscles are more flexible than colder muscles.
- Belts serve a biofeedback function. The presence of a back belt can help remind workers to use proper body mechanics when lifting.

Experts questioning the value of back belts have the following concerns:

- Belts elevate blood pressure. This can be dangerous for individuals with cardiac problems.
- Belts promote sweating and heat rashes. This is especially problematic when working in warm environments.
- Tight belts can be painful. Improperly fitted belts can cause abdominal pain and injuries, especially if worn for prolonged periods.
- Belts provide a false sense of security. Workers can feel protected by the belt and lift unsafe loads.

Back belts should be used only after proper screening, fitting and instruction. Employees should recognize that belts do not increase strength and lifting ability, or substitute for proper body mechanics. However, back belts, when coupled with body mechanics and lifting training, can be part of an effective injury prevention program. They will not make employees more fit, buy can serve as a reminder to use safe lifting techniques.