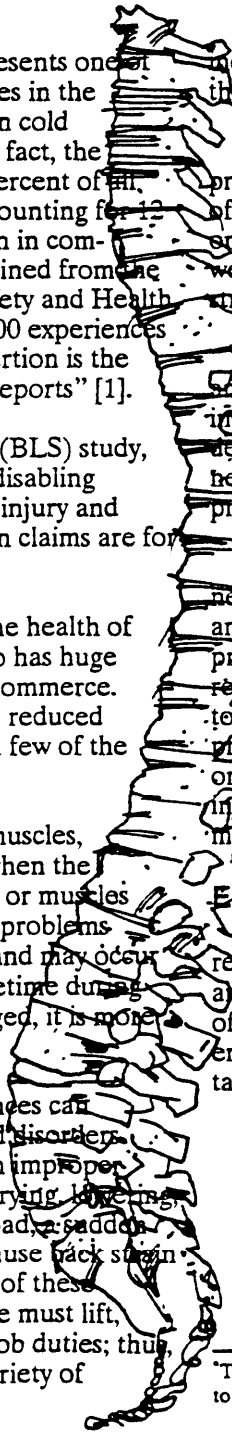
Your Aching Back: A Look at Back Strain in the Workplace

by Kerri L. Lawrence



Back strain due to overexertion represents one of the largest segments of employee injuries in the American workplace. Only the common cold accounts for more lost days of work. In fact, the National Safety Council attributes 25 percent of all workplace injuries to overexertion--accounting for 12 million lost workdays and over $1 billion in compensation costs annually [1]. Data obtained from the National Institute for Occupational Safety and Health (NIOSH) conclude that "1 worker in 200 experiences an overexertion injury and that overexertion is the cause of 60 percent of low back injury reports" [1].

In a 1987 Bureau of Labor Statistics (BLS) study, OSHA reported that one in every five disabling work-related injuries/illnesses is a back injury and one-fourth of all workers' compensation claims are for back injuries [2].

Thus, the problem not only affects the health of millions of workers nationwide, but also has huge financial implications for industry and commerce. Compensation claims and related costs, reduced productivity, and absenteeism are just a few of the resulting financial problems.

Back strain involves damage to the muscles, ligaments, and/or tendons and occurs when the ligaments or tendons are overstretched or muscles are overused. The most common back problems result from strained or pulled muscles and may occur in almost one of every two people sometime during their lifetimes. Once the back is damaged, it is more susceptible to repeated injury.

A variety of conditions or circumstances can contribute to back strain and associated disorders. Back injuries have been associated with improper methods of lifting, pulling, pushing, carrying, lowering, bending, or twisting. An unexpected load, a sudden slip or fall, or cumulative trauma can cause back strain when performing any one or a number of these actions. Millions of workers nationwide must lift, bend, or pull as part of their everyday job duties; thus, back strain afflicts workers in a wide variety of industries. (See the list of Common Back Hazards for the varied jobs that cope with back hazards daily).

In the past, attempts to deal effectively with the prevention of back injuries focused only on problems of materials handling. Preventive measures focused on training workers how to lift safely, restricting the weights lifted to a set maximum, and selecting the strongest workers for heavy work.

According to Roger Stephens, Industrial Engineer and Ergonomist for OSHA, scientific research, industrial studies, and compensation statistics have demonstrated that these measures alone were not nearly as effective in reducing and controlling the problem as compared to approaches employed today.

A growing awareness of ergonomics* has shed a new light on the prevention of overexertion injuries and back strain. Consequently, approaches for prevention include (1) engineering controls: redesigning existing workplaces, jobs, and equipment to suit the worker; and (2) administrative controls: providing training and education for all members of an organization on the sources and remedies for back injuries as well as on proper individual body mechanics.

Engineering Controls

Engineering controls can directly involve redesigning the work station, adapting equipment, and minimizing awkward movement. Through the use of engineering controls, one attempts to ergonomically redesign a job to fit the worker so tasks such as lifting or bending become less hazardous.

OSHA suggests the following engineering controls:

- "A reduction in the size or weight of the object lifted. The parameters include maximum allowable weights for a given set of task requirements; the compactness of a

*The science of fitting the job to the worker rather than the worker to the job.

Common Back Hazards

Hazard	Occupations Affected
Heavy lifting	Manufacturing, construction, and workers in most industries
Twisting and lifting at the same time	Materials handlers, assembly workers
Lifting odd-shaped objects	Hospital workers (i.e., patients), construction workers
Having to reach and lift objects	Retail food cashiers, mechanics
Bending and overexerting	Maintenance ground crews
Lifting variable weight items	Baggage handlers, movers
Standing/sitting in a constant position causing stiffness and strain	Office workers, video display terminal (VDT) users, assembly jobs

package; the presence of handles and the stability of the package being handled.

- "Adjusting the height of a pallet or shelf. Lifting below knee height or above shoulder height is more strenuous than lifting between these limits. Obstructions preventing an employee's body contact with the object being lifted also generally increases the risk of injury.

- "Installation of mechanical aids such as pneumatic lifts, conveyors, and/or automated materials handling equipment" [3].

Some examples of ergonomic improvements could include redesigning the work station to avoid awkward movement, offering a standing/sitting alternative for any stationary job or simply reducing the load of materials that workers must lift.

Factors such as the frequency, duration, and type of lifting also increase the likelihood of back strains. If lifting is a necessary function of the job, there are several ways workers can reduce the likelihood of injury. (See Lifting Technique Guidelines [4]).

Also, it is important to keep in mind that the leg muscles are stronger than the back muscles. Experts suggest bending at the legs and pushing up from the knees, then bending the back and pulling up from the waist, if lifting must be done manually. (see Figure 1.) In addition, OSHA strongly recommends that jobs be redesigned to allow workers to keep their back straight.

Administrative Controls

In conjunction with engineering controls, back strain prevention also can be targeted through administrative controls. These controls focus on minimizing worker exposure to unsafe conditions through careful training and education about the mechanics and constraints of the body. Emphasizing physically fit and trained workers ensures that they will not be exposed to loads that exceed their capacities.

However, in some jobs, such as police work, firefighting, and specialized construction, it is difficult to control the ergonomic environment. In these instances, OSHA suggests reliance on administrative controls--in particular, extensive training of workers so they can safely perform lifting tasks. Dr. Stephens concludes that an effective injury prevention program requires management commitment, employee involvement, training and education, and ergonomic analyses of the work site to find and remove the specific back injury risk factors.

"Analysis of these factors will provide direction for the selecting, evaluating, and implementing of appropriate control measures," he says.

In addition, OSHA has taken the training and education initiative one step further. The OSHA Training Institute in Des Plaines, IL, sponsors a comprehensive

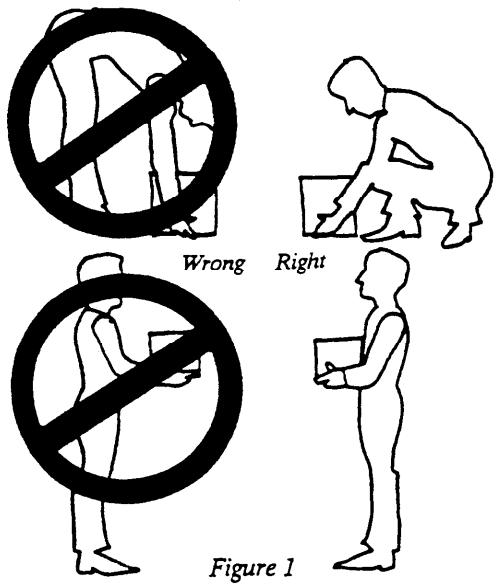


Figure 1

Lifting Technique Guidelines

- Bring the load as close as possible before you lift.
- Separate feet: put one slightly in front of the other.
- Bend your knees to a comfortable degree. (Remember, since leg muscles are stronger than back muscles, it is better to bend and push up from the knees than from the waist.)
- Lift the load straight up slowly, in a continuous fashion, avoiding fast, jerky movements.
- Don't twist your body while carrying a heavy load.
- Setting the load down is just as important as picking it up. Using your leg and back muscles, comfortably lower the load by bending your knees.
- When lifting, always make sure the load is balanced and even.
- Never lift or carry a load above your head or on the side of your body.
- Get help when necessary; don't strain!

Source: MacLeod, Dan. International Union, United Automobile, Aerospace, and Agricultural Implement Workers of America (UAW). "Strains and Sprains." Detroit, MI, 1986.

course, "Workplace Back Injuries," which focuses on preventive measures to decrease the risk of back injuries. Course instructor, Don Parker, enlists the help of four consultants--a physical therapist, a doctor of medicine, a chiropractor, and an engineer--to teach participants effective ways to prevent injury.

This 2-day course is also taken "on the road" to OSHA regional offices and various organizations around the country, as requested. Two consultants--the physical therapist and the engineer--join Mr. Parker at the off-site locations.

Through the course, Mr. Parker hopes to increase awareness of ways to prevent back injuries. "They are a leading cause of occupational injuries in the workplace today," he emphasizes.

The Training Institute will offer this course again at its Des Plaines, IL, site on March 28, 1991. Within the next few months, the course will be taken "on the road" to the OSHA regional office in Denver, CO, in February, and to the OSHA area office in Hawaii in April. For more information, contact the Training Institute at (708) 297-4810 or FTS 353-2500.

References

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