INDUSTRIAL LOW-BACK PAIN AND INJURY**

1. General Discussions and Guides

Back pain monitor. (American Health Consultants, 67 Peach Tree Park Drive, N.E., Atlanta, GA 30309), Monthly. $126.00 per year.

This monthly publication reports on a broad range of back-related topics, including current news on prevention, treatment, rehabilitation, and compensation. Among the regular features are "Sources of Information," "Journal Review," and a "Calendar" of meetings, courses, etc. Illustrative of recent news items is a report by a specialist in physical medicine and rehabilitation from the Medical Center for the Performing Arts at Norris-town Hospital in Philadelphia concerning low-back pain among professional musicians. (October 1985, pp. 135-136.)


Low-back pain at some time affects more than half of the working population. Most biomechanical studies of lumbar bending have been performed in the laboratory, and very little in-plant data has been available. Blache uses biomechanical analysis as a means of understanding the ergonomic implications of lumbar bending within the context of the work environment. The relationship between angle and frequency of bend, and number of occupational low-back medical visits is discussed.


Chaffin stresses the necessity for assessing the physical capabilities of workers as well as the physical demands of their jobs. He examines the adverse effects on the lower back of lifting, lowering, pushing and pulling. Topics covered include the biomechanics of manual materials handling (combination of weight being handled and method of handling); job conditions that have positive correlations with increased injury rates; and physical assessment of a person's ability to perform manual materials handling tasks. Some preventive measures currently being utilized in an attempt to reduce number and severity of occupational back injuries are pre-employment lumbar x-rays, low back medical histories, and lordosimetry, which uses a device to monitor the relative position of the spine while a person holds various loads. The author emphasizes that manual materials handling activities have produced both the largest number and the most severe types of injuries in all industries throughout the world. The essay is one of the major papers addressing the topic of degenerative disease and injury of the back presented at the 57th American Medical Association Congress on Occupational Health, co-sponsored by the National Institute for Occupational Safety and Health at St. Louis, Missouri in September 1977, and is one of several selected for inclusion in the published proceedings. (Wash., DC, U.S. Government

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** Items from this list should be ordered directly from the publisher. Addresses are given in connection with each reference. For items that are out of print, consult libraries.

This *Special Issue* contains forty-three of the papers presented at the July, 1983 Conference of the First Action Programme on Health and Safety at Work of the Health and Safety Directorate, Commission of the European Communities. It is divided into ten major sections covering the entire scope of the seminar: the prevention of lumbar disorders at work, epidemiology, occupational statistics and pathology, spinal diseases resulting from physical work, biology and materials handling, effects of age and sex differences, environmental considerations, methods of measurement, permissible loads and limiting factors, and training and prevention.


The results of a 1980 twenty-two state survey of blue-collar workers who injured their backs while lifting, placing, lowering, carrying, or holding objects are presented. Those industries dominated by white-collar and service workers are not represented. The primary benefit of the study was in determining injury patterns. Detailed tables provide information on source of injury, age and sex of worker, body position at time of injury, work experience and training, history of back problems, pre-employment screening, and estimated number of workdays lost. Of the 906 back injuries associated with lifting, 42% of the afflicted workers were from manufacturing, with construction, wholesale trade, retail trade, and public utilities and transportation each representing 10 to 15%. One third of the injured workers were between 25 and 34 years old. Male victims represented 86% of the total. Over 25% of the victims lost one to five days of work because of their injuries. A copy of the survey questionnaire is included.


Back injuries consistently account for one-third of all civilian injuries and a lesser but, nevertheless, substantial percentage of military injuries. This guide outlines the Army's back injury prevention procedures. It contains very useful explanations, with diagrams when appropriate, of conditioning exercises and safe lifting practices and tips.


This publication presents papers given at two Bureau of Mines Technology Transfer Symposia on reducing back injury within mining industries. Topics covered include: materials handling methods and problems in coal mines, activities and objects most commonly associated with miners' back injuries, field testing of workers involved with materials handling, determination of workers' lifting capacity, and job design for manual materials handling tasks. Prevention methods discussed include: training procedures to reduce injury, a Manual Materials Handling Training Program for the mining industry, and the possibility of mechanization of materials handling tasks. Material covered is relevant to other heavy labor industries as well.

This comprehensive guide summarizes research and presents recommendations regarding the hazards associated with lifting compact loads with both hands. Topics discussed include: safe load weight, biomechanical factors, job and personal risk factors, physical fitness and types of beneficial exercise, engineering guidelines for design of the workplace, and selection and training of workers who will be performing manual materials handling activities. Quantitative recommendations regarding safe load weight, size, location, and frequency of handling are outlined. Field studies have been undertaken in an attempt to determine the validity and applicability of the NIOSH lifting method to industry.


This discussion of personal and occupational risk factors associated with low back pain includes such topics as: age and sex, anthropometry, musculoskeletal abnormalities, muscle strength and physical fitness, psychological factors, and previous history of low back pain. The time and place of onset, workplace factors, and the well-documented association of low back pain with heavy physical labor are discussed. In preventing back pain and injury in industry, a combination of pre-employment strength testing and ergonomic job design appear to be most effective.

2. PRE-EMPLOYMENT LOW-BACK X-RAYS


Since the 1940's routine pre-employment radiography of the lower spine has been used in industries which require heavy labor tasks. The efficiency of the low back x-ray has been debated, and concern exists over its routine use. This report is a summary of the literature and a discussion of objectives, protocol, costs, medical aspects, risks, and incidence statistics with and without the screening procedure. Economic costs and benefits of screening, specifically the cost of the exam and the expected reduction in future medical and compensation payments, are outlined. These costs and benefits are contrasted with the health risks of workers' exposure to radiation, specifically to the active bone marrow and gonads.

Rothstein, Mark A. Medical screening of workers. Rockville, MD 20850-3397. BNA Books, Distribution and Customer Service Center (9435 Key West Avenue), 1984. 276 pp. $30.00

The author examines the scientific basis upon which job applicants and employees can be disqualified from work; types of medical screening, genetic screening, and reproductive hazards; how medical information is used in employer decision-making; and relevant legislation and judicial opinions. Based on the cited studies, the predictive value of low-back x-rays is considered to be questionable. However, in spite of this, some employers consider this type of medical screening cost-effective in the long run, because even though many healthy, potential employees may be disqualified in the process, the number of potential expensive back-injury claims may be reduced. Several charts and tables are included.

3. PREVENTION AND REHABILITATION PROGRAMS


The benefits of using stretching exercises as part of a program to prevent low back injury in the workplace are discussed. Locke outlines a series of specific
stretches may be used as a warm-up program for workers.
Among other beneficial articles included in this issue are "Back injury prevention means education" by Beth Melton (pp. 20-23), and Alexander Strasser's "Backs can't be regulated by OSHA back standard" (pp. 35-36).


Marks and Blue discuss the role of the occupational health nurse in the coordination of rehabilitation activities within the workplace and the community. They stress prevention, appropriate care, and rehabilitation of the back injured worker through the correct assessment of the nature of back injuries in order to prevent further degeneration of the spine and possible nerve root compression. They emphasize the proper management of pain, the continuing evaluation of employees and the environment (especially with relation to ergonomic factors), and the importance of motivating employees toward adopting healthier lifestyles.


Taravella discusses the merits of American Network Services (ANS), a California based management, consulting, and training firm that specializes in treatment and prevention of back injuries in the industrial and corporate workplace. Its services aim to assist employers in preventing injuries and in turn, reduce workers' compensation costs. Programs offered educate both supervisors and employees in the physical and psychological aspects of back care and injury prevention. Other services include pre-employment screening programs and designing disability case management programs. A related article is "Management turns its back on back problems" by Alfred G. Haggerty (*National Underwriter: Property and Casualty Insurance Edition*, November 22, 1985, pp. 10-11) which outlines the training and consulting services offered by Total Back Care of San Rafael, California.

4. Workers' Compensation Claims


Looking at company data for 1980 only, Antonakes reports that 33% of payments of Liberty Mutual for workers' compensation claims were for back injuries. He notes that as the duration of disability increases, the costs rise at an accelerating rate, and these costs increase when conservative or surgical treatment fails. Looking at claims from three divisions of Liberty Mutual, he reports that while 20% of all occupational injuries involve backs, back injuries account for 60% of disability claims.


An analysis of workers' compensation claim data for 1979 is presented in an attempt to determine occupational incidence rates of back strains and sprains in industrial employees in the twenty-six states covered by compensation systems. Data was supplied by the Bureau of Labor Statistics Supplementary Data System (SDS), a program designed to provide information concerning work-related injuries and illnesses. It is reported that back injuries produce approximately 19 to 25% of all workers' compensation claims among industrial workers, and as of 1979, back injury continued to be the most frequent compensation claim filed by American workers.