

# Listening to our Pain

Preventing workplace injuries and illnesses through ergonomics

**F**or many people, work means pain: eyestrains, back pains, traumas, strains, and repetitive motion injuries. Ergonomics focuses on the prevention of such injuries through the proper design of equipment, workstations, products, and work methods according to people's capabilities and limitations. This article explains what ergonomics is, how it works, and what the ILO is doing about it.

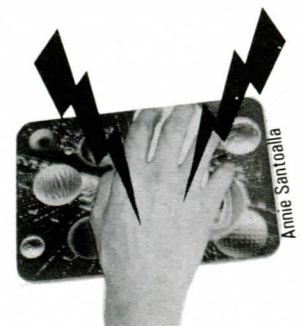
In the United States, back disorders caused more than 27 percent of all non-fatal occupational injuries and illnesses involving days away from work in 1993. Government studies have estimated total costs of low back pain to society to be between US\$50 billion and US\$100 billion yearly. Moreover, up to 30 percent of US workers routinely perform activities that may increase their risk of developing low back disorders, and it is estimated that half of the workers in the US hold jobs which could cause Cumulative Trauma Disorders (CTDs).

At the Colmotores automobile factory in Colombia (1,600 employees produce 100,000 cars yearly), where most sick leaves

and occupational injuries are due to musculoskeletal disorders, company medical experts realised that the work environment had to be improved and that ergonomic principles had to be applied. The experts understood that better working conditions would be the most effective way of reducing the risk of musculoskeletal injuries.

Ergonomic-related injuries and illnesses affect workers worldwide, from eyestrains and headaches to musculoskeletal ailments such as chronic back, neck and shoulder pain. Repetitive Strain Injuries (RSIs), Repetitive Motion Injuries (RMIs), and CTDs are terms used interchangeably.

While there are no global figures, data concerning such injuries are largely gleaned from national sources, mostly from industrialized countries. Millions of workers around the globe prob-



ably suffer from one or more of the above ailments yearly. Result: downtime, reduced productivity, and high costs for both employees and employers.

To date, reliable figures are generally not available to describe the extent of ergonomic-related injuries and illnesses in non-industrialized countries. It is encouraging, however, that in a number of developing and newly-industrialized countries such as Hungary, Tunisia, Singapore, and Myanmar, musculoskeletal diseases, RSIs and vibration-related diseases are recognized as occupational diseases. This means that a physician or employer who detects a work-related case is required by law to report it to the competent authority. The reporting system breaks down, however, even in many industrialized countries, when there is a lack of motivation on the part of employers, employees, and physicians. Without accurate reporting, reliable figures cannot be obtained to describe a country's situation.

Ergonomics, the integration of anatomy, physiology and psychology, which is used to match jobs, systems, products, and environments to the physical and mental abilities and the limitations of workers, has a proven track record in reducing work-related ailments.

The experience of the Norwegian State Institute is a case in point. Ergonomic improvements made on workstation layouts and seating halved absenteeism due to back pain in one year. In the Colmotores automobile factory, its medical director used a Finnish model of work organization and design involving choice of tools and equipment and adjustable chairs. The result was a produc-

tivity increase of 15 percent during the first five months following the application of such measures. Experience has shown repeatedly that the application of ergonomic principles in the workplace can result in marked, even dramatic, improvements.



Women work long hours without anything to rest their backs on.

#### THE SCOPE OF THE PROBLEM

Repetitive Strain Injuries are a category of injuries which occur from repeatedly performing a task putting stress or strain on a certain part of the body causing damage to nerves, muscles, tendons, and other soft body tissues. They comprise more than 100 different types of job-related injuries and illnesses, some so crippling that they may require surgery or cause permanent disability. Repetitive Strain Injuries can cause severe pain and often make daily tasks such as getting dressed, shopping, turning taps, cooking, child care, etc. difficult, or even impossible, to perform.

Increased tension at home and at work is frequently associated with RSIs due to several factors. For one, since RSIs are not usually visible to the naked eye, colleagues and family members may not believe what they cannot see. For another, the resulting disabilities usually affect the type of tasks which can be performed at

home and at work which may temporarily increase the burden of work for others. For still another, those not suffering from the condition often don't understand the nature of the injury or illness. Finally, depending on the extent of the condition, treatment and healing time can range from a number

of weeks to more than a year. Some cases never heal and may leave the injured person permanently disabled.

Not localized to any type of job, RSIs tend to affect workers in a wide variety of occupations ranging from assembly line and food processing jobs to secretarial work, data processing, and work at visual display units or VDUs (also called visual display terminals, or VDTs), to name a

few.

Repetitive Strain Injuries, though they can take years to develop, usually strike when the workers are still in their prime around the age of 40. Fortunately, treatment is available and, in many cases, yield good results, especially if the symptoms are diagnosed early. Once "cured," however, if a worker returns to the same working conditions which caused or aggravated the condition in the first place, recurrence is likely, which in turn usually necessitates more days off work.

More on RSIs:

- ◆ In an 11 December 1996 article in the *Washington Post*, US Labor Secretary Robert Reich acknowledged that RSIs were the fastest growing job-related impairments in the United States. In March 1997, the United States Department of Labor reported that 6.6 million work-related injuries and illnesses were reported in the USA in 1995. Sixty-two per-



cent (or three out of five) of the workplace illnesses were disorders associated with repeated trauma, such as carpal tunnel syndrome.

- ◆ Outlined in the 1994 issue of *Euro Review on Research in Health and Safety At Work*, research has shown that, in Sweden, one out of every four workplace accidents and more than 50 percent of the reported cases of occupational disease involve the musculoskeletal system. Two-thirds, or around 20,000 of the cases, involve symptoms of the neck, arm/shoulder, or hand. On average, musculoskeletal injuries led to more than 100 sick-leave days per case. Sweden's women in manufacturing industries have the highest risk of developing RSIs. The risk of musculoskeletal diseases among women who perform assembly work in the Swedish electronics industry has been reported to be 20 times higher than in the country's working population as a whole. Germany has also reported higher prevalence of RSIs among women. Another startling statistic from Sweden reveals that, across the board, injuries of the lower back are estimated to make almost 40 percent of all musculoskeletal injuries on the job, in any country, with some cases resulting in permanent disability.
- ◆ A 1992 report on workplace injuries published by the United States Bureau of Labor Statistics showed that the majority of the workplace disorders that year were associated with repeated trauma, affecting some 282,000 workers or 62 percent of total private industry illness cases in the United States.

- ◆ A 1994 report of the Health and Safety Commission of the United Kingdom showed that, during the financial year 1993-1994, there were at least 107,000 people in the UK alone suffering from musculoskeletal symptoms brought on as a direct result of poor

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workplace design. Half of these symptoms caused an absence of three or more days off work. The cost of these to British industry, including lost output, medical treatment, and individual suffering, exceeded UKL90 million (US\$144 million). The total cost of musculoskeletal symptoms to British industry is conservatively estimated at UKL25 billion (US\$40 billion) a year. These disorders, however, should not be considered as a hazard only of modern-day life. According to the 1994 issue of *Euro Review on Research in Health and Safety at Work*, RSIs were reported in the former East Germany as early as 1952, with between one and two thousand cases documented a year after.

**CARPAL TUNNEL SYNDROME DOCUMENTED MOST FREQUENTLY**

The most frequently documented RSI is Carpal Tunnel Syndrome (CTS), today a compensable occupational disease in many countries. Carpal Tunnel Syn-

drome occurs when the median nerve (a major nerve in the wrist) cannot function adequately because of pressure caused by repeated finger motions and/or a bent wrist. Symptoms can include numbness, pain and/or tingling in the thumb and fingers, a burning feeling in the hands or forearms, a dry, non-sweaty palm, reduced strength of the hand noticeable by the inability to open jars or to lift or hold objects, and discomfort in the arms, shoulder, or neck.

Some of the symptoms may occur during the night rather than during the day. Extreme cases can result in permanent disability due to a complete inability to use the wrists in performing or holding an object in the hand. The disease is often suffered by workers who spend long hours using computers, particularly where the computer workstation is not adequately adjusted to the side of the user, workers who process meat or poultry, supermarket check-out workers who use electronic scanners, other workers who perform repetitive tasks. Working with vibrating hand tools also increases the risk of CTS. Wrist-intensive activities at home, such as gardening or painting, can greatly exacerbate CTS or other RSIs.

According to the US Bureau of Labor Statistics, every worker suffering from CTS loses more than 30 days of work. This is longer than absences from amputation and fractures. The United States Occupational Health Safety Administration (OSHA) estimates the annual cost of these injuries to be about US\$100 million.

**"ERGONOMIC PHILOSOPHY" PAYS OFF**

Eyestrains, headaches, and musculoskeletal disorders can be prevented and optimal performance can be obtained if equipment, workstation, products, and work methods are designed ac-



ording to human capabilities and limitations, by applying the principles of ergonomics. The costs of *ignoring* these principles include:

- ♦ injuries and occupational diseases (including RSIs, CTDs, and RMIs)
- ♦ increased absenteeism
- ♦ higher medical and insurance costs
- ♦ increased probability of accidents and errors
- ♦ higher turnover of workers
- ♦ less production
- ♦ lawsuits
- ♦ low-quality work
- ♦ less spare capacity to deal with emergencies

The adoption of an ergonomic philosophy in the workplace has a proven track record. For example, an ergonomic evaluation and redesign were carried out in a park and school involving the janitorial staff in Mostreras, Sweden. The project, which was implemented from 1991 to the end of 1992, proved the benefits of ergonomics. Sick leaves went down from 44.1 days to 10.1 days per employee per year. In 1992, savings to the employer and the social insurance system amounted to SEK 417,000 (US\$57,000). Productivity rose by 150 personnel days and satisfaction among workers increased.

In the case of the Norwegian State Institute which studied the incidence of back discomfort among office workers, the ergonomic improvements made to workstation layouts and seating for the workers reduced back-related absenteeism by half and turnover from 40 percent to five percent and 40 percent of the workers on disability leave returned to work. The importance of these results cannot be overstated as muscular soreness is the second greatest cause of absenteeism next to common cold.

#### ERGONOMIC CHECKPOINTS: ILO RESPONSE

It is essential to identify ergonomic risk factors (defined as any imbalance between the worker and the work environment which results to extra demands on the worker) to prevent ergonomic-related illnesses. The first step is to perform a superficial audit of the workplace using an ergonomics checklist. It may contain the following questions:

### IT IS ESSENTIAL TO IDENTIFY ERGONOMIC RISK FACTORS TO PREVENT ERGONOMIC-RELATED ILLNESSES.

1. Are carts, hand-trucks, and other wheeled devices or rollers used when moving materials?
2. Are workers trained before allowing them to use power tools?
3. Are workers consulted when there are changes in production and when improvements are needed for safer, easier, and more efficient work?

Once an ergonomics checklist is employed and risk factors identified, a set of corrective actions should be outlined. Such actions might include ergonomic design changes in the tools, products, process, and work environment. Corrective actions can also address training needs, including identification of prevention responsibilities and development of necessary skills and knowledge to implement corrections.

Many ergonomics checklists are available but, for most of them to be effective, they have to be used by someone with a firm knowledge of ergonomics. This is where the recent (1996) publication by the International Labor Office (ILO) makes a difference.

Due to its simple and easy to understand format, the manual, *Ergonomic checkpoints*, developed jointly with the International Ergonomics Association, can be used by managers, supervisors, workers, trainers, and ergonomics specialists who wish to learn low-cost practical solutions to ergonomic problems which can be applied locally.

The manual's 128 checkpoints provide sound guidance for filtering and disseminating ergonomically sound workplace improvements. An ergonomics checklist is included. The solutions provided are fully illustrated and demonstrate good work practice. The manual will be an invaluable asset in any workplace and will surely contribute to improving both working conditions and productivity.

The high cost linked to workplace illnesses and injuries is causing policy-makers, employers, and workers to broaden their perspectives. There is incontestable evidence that fitting jobs to workers and designing and redesigning jobs taking into consideration human factors, including both capabilities and limitations, yield positive results. Eliminating the suffering of workers and their families and minimising the financial burden borne by employers and insurance companies are attainable goals. Waiting for symptoms to appear instead of preventing them will only continue to injure and cripple millions of workers in the world.

Source: *World of Work*, No. 21, September/October 1997

