

The Role of Ergonomics in the Workplace

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One of the most rapidly growing forms of occupational diseases is the cumulative trauma disorder (CTD). Recently the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor, reported the incidence of disorders associated with repeated trauma rose from 22,600 cases in 1982 to 185,400 cases in 1990. There were 281,800 cases in private industry reported in 1992, up more than twelve-fold from a decade ago. The portion of all occupational diseases represented by CTDs rose from 21 percent in 1982 to 56 percent in 1990. Since 1989, CTDs have been more prevalent than all other occupational diseases combined.¹ The National Institute of Occupational Safety and Health (NIOSH) estimates that the exposed workforce may be as high as 25 percent of all workers.²

Keeping in mind the fact that these injuries are the result of an accumulation of small stresses that are repeated over and over again in the workplace, the solutions are relatively clear:³

1. reduce workers' exposure to stressful situations;
2. improve workers' ability to function properly in the workplace;
3. early detection of problems and appropriate management when an injury is reported.

Ergonomics -- Reducing Exposure to Stressful Situations

While we have helped many individuals recover from their injuries and return to work, we have not as a profession taken a very active role in reducing the exposure of workers to stressful situations. One of the primary methods employed to reduce exposure to a hazardous work environment involves improving the workplace. The science of matching workers with their work environment is known as ergonomics. Properly defined, ergonomics is the scientific study of human work. A more practical definition states that ergonomics is "the science of matching the job to the worker and the product to the user."

In reality, ergonomics is the application of common sense to everyday work situations. For instance, if workers encounter problems with their wrists because the counter they work on is too hard, a reasonable solution is to provide a padded wrist support. Or if a worker develops a tendinitis in the elbow because the forces required to tighten a machine part are too great, the solution involves providing mechanical assistance to reduce the forces.

The two primary objectives of ergonomic intervention are to enhance performance and control fatigue. Three primary areas, physical, psychological, and psychosocial, can affect both performance and

fatigue. Within each of these primary areas are a number of factors including:

Workers' physical fitness -- How fit are the individuals for the job they're performing?

Force -- Does the job require the use of force? What type of force (static vs. dynamic)? How often is the force applied (seldom, frequently, constantly)? Is the force sustained for periods of time?

Position -- Are any joints and muscles placed in non-neutral postures for prolonged periods of time?

Repetition -- How frequently is a task performed?

Duty cycle -- How long does it take to perform a single task? How long is the recovery time before the task must be repeated?

Vibration -- Is the worker exposed to vibration (whole or body segmental)? Are antivibration devices used?

Friction -- Is the worker exposed to slippery surfaces?

Work practices -- Is training adequate? What are the policies regarding injury reports? Light duty? Return to work?

Environment -- Is the work environment adequate (temperature, lighting, ventilation)?

Job satisfaction -- What is the relationship between labor and management?

Operator control -- How difficult is the task to perform?

The interaction of these factors has a cumulative effect. The process of improving workplace safety involves identifying the risk factors, investigating the actual causes of injuries or the triggering events, designing intervention strategies, implementing necessary procedures, and tracking outcomes.⁴

The chiropractic profession has helped large numbers of workers by improving the worker's ability to function. Unlike other more symptom-oriented treatment systems, our efforts have focused on restoring function to the musculoskeletal system. In addition, we have asked patients to take a more active role in their own health. Perhaps most important, we have promoted a "wellness behavior" by focusing on the patient's improvement and away from their problems. As an example the phrase, "What's better today?", is commonplace in the chiropractic office. This simple phrase may help to shift the patient's (and the clinician's) attention to their recovery.

Currently, the primary contact between the chiropractor and industry occurs during the treatment of injured workers. As industry learns to appreciate the significant impact of chiropractic treatment on occupational injuries, and as the chiropractor gains more acceptance in the world health community, the areas served by the chiropractor in issues relating to industrial health and safety may be expected to grow.

References

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