

The Economics of Ergonomics

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Whether you're a student, construction laborer, office worker or employed in other occupations all of us, to some degree, are affected by the various elements of *Ergonomics*. This is also true in all facets of our daily lives regardless of where we work or our specific line of work. The concepts involved in *Ergonomics* are prevalent in our homes, the vehicles we drive, and the recreational activities we engage in.

So what is this term we hear so much about? The term *Ergonomics* is derived from the Greek words: “*ergon*” meaning work and “*nomoi*” meaning natural laws. *Ergonomics* is the science of matching the physical characteristics of the person with their environment for the purpose of increasing efficiency and comfort while reducing stress and fatigue which can increase the potential for injury. The study and application of ergonomic principles is commonly referred to as human factors engineering.

So why is the use of ergonomics so important? In the workplace, the application of *Ergonomics* can reduce unnecessary exposure to factors that can result in musculoskeletal injuries and repetitive stress disorders (RSD's). Those factors commonly include force, posture, repetition, contact surfaces, vibration, and other environmental factors such as extremes of heat and cold. Other individual factors can include lack of rest and poor health. While the application of ergonomic principles in the workplace can significantly reduce the number and severity of injuries, there are often other related issues such as worker and workplace safety that can influence the incidence of injury. What most research studies indicate is an overall decline in the severity of work injuries and a substantial decrease in the financial burden on employers resulting from lost time and productivity as well as a reduction in medical claim costs when ergonomic solutions are applied.

Looking at the numbers, a total of 1.3 million workplace injuries and illnesses requiring recuperation away from the job were recorded in 2004 and a like number in 2005. Injuries to the shoulder resulted in the longest time away from work followed by injuries to the knees and wrists. The costs associated with upper extremity injuries were 80% higher than all other workers' compensation claims. Back pain alone accounted for over 4 billion dollars in medical costs and aside from the common cold, it kept more people away from work than any other single cause. Given these factors alone has led most employers to consider the implementation of ergonomic strategies in the workplace regardless of the type of work being done.

Generally the implementation of ergonomic solutions for the workplace as well as home, follow a thorough evaluation the workstation and general work area. Factors such as lighting; seating and worker position relative to the work surface, tools, machines, and other equipment being used; the physical exertion required to do the work; the work processes; and output expectation are considered. Remember, the application of ergonomic principles is to obtain a good match between the worker and the work being performed. Comfort, as well as efficiency, remains the primary goals when considering practical and economically feasible ergonomic solutions.

When implementing *ergonomics*, the following principles should be considered:

- Ø **Keep everything within easy reach. Reduce overhead/below knee reaches.**
- Ø **Work at proper heights whether seated or standing.**
- Ø **Reduce excessive force (gripping, lifting, pushing/pulling).**
- Ø **When lifting, keep the load close to your body.**
- Ø **Avoid carrying heavy objects by using manual or mechanical assistance.**
- Ø **Work in good posture when sitting or standing.**
- Ø **Reduce excessive repetition by varying tasks and task cycles.**
- Ø **Minimize fatigue by planning your work and pacing the tasks.**
- Ø **Minimize direct pressure on wrists and forearms.**
- Ø **Provide adjustability and posture change for prolonged sitting or standing.**
- Ø **Provide proper clearance and access to all equipment and work surfaces.**
- Ø **Maintain a comfortable environment (air quality, temperature, and lighting).**
- Ø **Improve work area organization and work processes to increase efficiency.**

Adhering to these principles will make the process of creating an ergonomically correct work zone for home or work a reality and will ultimately improve comfort and efficiency.

To learn more about how *ergonomics* can work for you contact the National Institute for Occupational Safety and Health, cdc.gov/niosh/homepage.html or Professional Therapy Services, Inc. www.ptsinc.org.