



## Basic Principles of **Ergonomics**



# What is Ergonomics?

IN A NUTSHELL, IT'S THE SCIENCE OF COMFORT

More technically, Ergonomics is the scientific field concerned with fitting an individual's workspace to the individual, in order to reduce the potential for injury.

## Why care?

THE IMPACT OF POOR ERGONOMIC PRACTICE CAN BE SIGNIFICANT

According to the Bureau of Labor Statistics, Musculoskeletal Disorders (MSDs) are the number two cause of missed work (calling in sick) right behind the common cold. In 1999 there were over 600,000 reported cases of MSDs. Some estimates have placed the direct and indirect cost totals for workplace MSDs at \$50 billion annually.

Dr. J. Donald Miller, retired Director of the National Institute for Occupational Safety and Health, is quoted as saying, "that by any epidemiological criteria, occupational musculoskeletal injuries represent a pandemic problem in the United States with gigantic effects on the quality of millions of peoples' lives every year."

The personal impacts of a musculoskeletal disorder can be significant – lost time from work, significant medical costs, lasting injury, and a decreased quality of life.

Not only should we care – we should be proactively implementing solutions that will help us to avoid these often debilitating disorders.

## Back to Basics

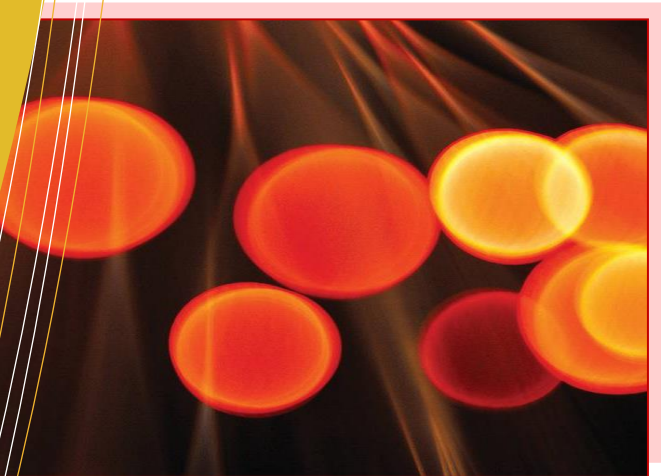
Because the field of ergonomics grew out of the mechanical engineering field there are schools of thought that everything thing should be adjusted so tall, and so wide, and so on. Another school of thought says that if you stretch and exercise every day you'll be fine.

The reality is that both schools of thought have items of value and that an integrated approach that is tailored to the needs of the individual is best.

The idea of "one size fits all" does not apply in the field of ergonomics. As an individual you should learn some basic principles and then experiment with your own unique situation to find the best solution for you.

There are many approaches that work – find which one works best for you. And if you start to experience symptoms, don't wait; consult a healthcare professional right away. Early intervention can help to avoid extreme remedies such as surgery.

Also, if you plan to implement a routine of stretches and exercises – which is a great idea – please consult with a healthcare professional before beginning. Very often they can provide you with a routine that you can easily do right at your workstation.



# Managing the Issue

MANAGE THE ISSUE BY APPLYING SOME BASIC PRINCIPLES OF ERGONOMICS TO HELP REDUCE THE IMPACT OF THE RISK FACTORS

## Improper workstation arrangement

Position items in your workstation such that you do not bend, lean, twist or over-reach to get them. Your monitor should be directly in front of you and so should your keyboard and mouse. Keep everything in the neutral reach zone – an 18 inch radius out from your torso.

## Pressure points

Avoid resting or leaning on objects. This is especially important for your wrists; ideally they should not rest on anything as you type. If must rest them on something, avoid hard edges and use padding such as a gel-type wrist rest. Watch out for the backs of your legs as well – don't let your feet dangle or tuck them under your chair. This creates a pressure point and it pulls you spine out of alignment, placing you at greater risk for back problems.

## Static postures

It doesn't matter how good your posture – if you hold that same posture for long lengths of time you increase your risk of injury. Our muscles are designed for movement – so get up and move – at least once every hour. It doesn't have to be an aerobic workout – just move!

## Extreme posture angles

How we sit, how we type, where we position our legs – all of these are areas where extreme posture angles can come into play and increase our risk of injury. Your keyboard should be positioned directly in front of your torso and with a 10 degree angle down and away from your body – yes down and away, exactly opposite of the way most keyboards are positioned. This position allows your wrists to maintain a more neutral posture – a straight line through the wrist.

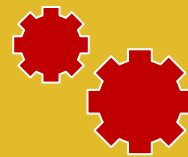
Adjust your chair such that you are completely supported in whatever position you chose to sit. It's OK to slouch a bit – if you're completely supported – it's not OK to perch on the edge and lean forward. Sit all the way back in the chair and bring objects to you not the other way around. Work with your feet flat on the floor.

## Repetition

Our body is in possession of some pretty amazing repair mechanisms that fix the damage that we inflict over the course of a day. When we fail to break up the repetition associated with our daily routines we place ourselves at greater risk or overwhelming those repair mechanisms. The concept of moving around not only helps eliminate static postures it also helps us avoid excessive repetition. As much as possible try not to do the same task over, and over, and over, break it up, do other tasks in between. Another point – most office equipment is pretty sensitive – you don't have to pound on it to get it to work – use the least amount of force possible when completing daily tasks.

## Stress

Muscles, tendons, and ligaments that are under excessive tension are much more likely to be injured than those that are relaxed. Throughout the day stress is injected into our system which increases that tension. Find a way that works for you to manage stress throughout the day and – listen carefully, this is important – find a way to completely relax at home before you go to bed. The technique doesn't really matter; an internet search will give you a million different ideas – find what works for you and do it!



## INTERCONNECTIONS

When thinking of how your work impacts your body you have to keep in mind the interconnectedness of your body's systems. A situation that impacts one area of the body can cascade through to affect other areas of the body. For example severe eyestrain has been shown to be a contributing factor for lower back



## MY EYES, MY EYES

Did you know that the white background on your computer is very hard on your eyes? You can reduce eyestrain by changing the color of the background to a nice soft, so light you can barely tell it's there, powder blue. Try it! Your eyes will thank you and so will the rest of your body. And it might even help your headache go away.



## HICKORY DICKORY, DOCK...

A study was done once that showed that the average office worker clicks the mouse button 1-3 million times during a year a travel a distance of over 60 miles across the mouse pad. Now that's some serious repetition! Some have trained themselves to switch the hand that uses the mouse to help

### A FINAL WORD...

It is important to remember that although we spend more of our waking hours at work than any other place there are still activities outside of work that can impact our musculoskeletal health.

Be aware that some leisure time activities such as mountain biking, crocheting, knitting, even reading can contribute to the problem. Find ways to apply the basic principles of ergonomics to these and other activities in your daily life.

And remember...

**RELAX!**

FOR MORE INFORMATION CONTACT:



125 So. Fort Douglas Blvd  
Salt Lake City, Utah 84113  
801.581.6590  
[www.oehs.utah.edu](http://www.oehs.utah.edu)