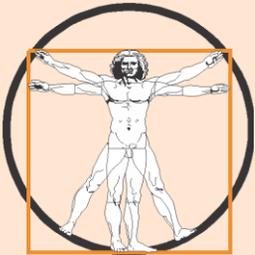




# The Human FACTOR



Taking ergonomics into consideration yields better chiropractic care for your patients

by Stuart C. Marmorstein, DC

**T**he 50-year-old science of ergonomics is all-inclusive in that it covers nearly everything about the relationships between people and the environments where daily activities are performed. The word “ergonomics” is derived from Greek—*ergon* (work) and *nomos* (laws), which means the science of work. Ergonomics is also known as the human factors, especially in the United States. Essentially, it is about designing our world to fit us better.

Many ergonomists have chosen to limit their research to work, as in occupation or livelihood. Physicists define “work” in a much broader sense to mean any activity that uses energy. When the definition of work is expanded, the scope of ergonomics is also widened to include not only work time, but also nonworking time.

## Ergo Chiropractic

Ergonomists need the biological background of chiropractic, as well as specialized knowledge in engineering. An area ergonomists study, anthropometry, deals with body measurements. If a chair is designed in such a way that it forces someone to sit in an awkward posture while performing work, this chair will cause an injury to that worker over time, as would a car accident or fall.

Anthropometry goes beyond questions such as, “How long is the average adult thigh bone?” and addresses issues such as, “How much is a wrist joint deviating from its neutral position while using this particular computer keyboard?” Ergonomics investigates any aspect of the tools we use or the rooms we use them in to find out how they physically affect us. This can include lighting, temperature, noise, local and whole body exposure to mechanical vibrations, working angles, the force required to operate a tool, the weight of objects moved, the operating machinery speeds, the padding and shapes of handles, and even the repetitiveness and boredom factors of a task.

When these factors are examined in-depth, the risk of many types of work-related injuries is lowered. Ergonomic studies have also led to more comfortable cars, scissors for lefties, and packaging for those with weak or arthritic hands.

The Board of Certification for Professional Ergonomists defined ergonomics in 1993 as: “...a body of knowledge about human abilities, human limitations, and human characteristics that are relevant to design. Ergonomic design is the application of this body of knowledge to the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable, and effective human use.” Some ergonomists become inventors, courtroom expert witnesses, or consultants to businesses and industries. There are universities that offer programs in ergonomics, as well as conferences and workshops on various aspects of this field.

## Practicing Pragmatism

What concepts can be immediately useful to you as a doctor of chiropractic in the care and education of your patients and your staff? First, a few disclaimers must be mentioned. Some items for sale may be labeled by clever marketing people as being ergonomically designed, but offer no real advantage to the consumer over a more conventional model.

Another common and dangerous assumption is that if people work with well-designed tools, they are immune to injury. It is critical that workers are carefully trained in using tools properly, ensuring good body mechanics, taking appropriate breaks, wearing protective clothing (including shoes, gloves, and helmets), and checking that equipment is well-maintained and in good condition.

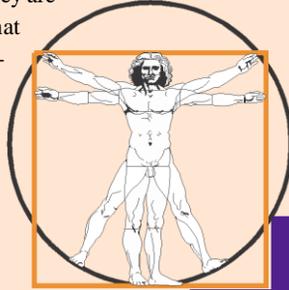
Workers should also maintain general good health, as well as having the specific strength, power, flexibility, range of motion, and hearing and visual acuity needed to perform the tasks for which they have been hired. Management can rotate workers, expand job responsibilities to eliminate some of the repetitious nature of the task, institute conditioning programs for the employees, and limit the amount of overtime.

Routine chiropractic care can do for injury prevention what the most perfect environmental manipulations cannot. One final disclaimer: results may vary, because we cannot control, or even be aware of all of the possible variables involved.

Why should we pay attention to ergonomic principles in the workplace? The number one reason is to prevent certain types of common occupational injuries. By preventing these injuries, we are also likely to improve job satisfaction, productivity, employee turnover and absenteeism, and medical and workers' compensation costs. We also avoid being in violation OSHA regulations designed to protect the safety and health of the workforce.

I have witnessed many chiropractors temporarily or permanently sidelined by preventable injuries. I have also heard CAs from other offices complain about lower back pain, wrist injuries, and other maladies directly attributable to improper physical settings at the job site. Do you cringe when you see someone holding a telephone between an ear and a shoulder? The high quality and low cost of a portable headset phone make this an easy investment. What do you suppose happens to the muscles, nerves, blood vessels, and cervical vertebral joints after years of laterally flexing to one side? Kinks may be considered beautiful in a Bonsai plant, but not in our own necks when there is a perfectly acceptable technological alternative.

What about you? Are you working on a chiropractic table that belongs in a Norman Rockwell painting depicting a late 19th-century, small town chiropractor being adjusted by a colleague because he can't stand up straight? There are modern height-adjustable tables available to ease the strain. A table that allows working from a mechanically advantageous position can help save your arms and back. Also, remember to work equally from both sides of your table.



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## Tied to a Desk

Many of my patients work seated in front of a computer. Keep in mind that ergonomics principles apply to everyone doing anything, whether they are operating a backhoe, a drill press, a space shuttle, or luncheonette. These principles can be applied to students, and to anyone who communicates by mail, telephone, or computer from home, all of whom share the same issues.

One way to troubleshoot problems is to look at what a troubled body is doing that is undesirable. If shoulders are raised or hunched while holding a telephone, consider a headset or speakerphone. This will also relieve the problem of having the elbow bent for too long a time. Relaxation training can be helpful in other situations where the shoulders are up around the ears to change the habit component of this problem. If it occurs while the person is typ-

ing, she or he can try lowering the work surface, keyboard, or armrests if they are adjustable. Otherwise, it may be possible to raise the chair, provided that foot contact with the floor can be maintained.

For those who sit with elbows splayed out, advise adjusting the armrests closer

together. Splayed elbows cause the wrists to bend to the side during keyboard usage. Adequate padding is always desirable for seats and for any surfaces where the arms or wrists rest. Many people, including me, prefer a split keyboard design. Once I became used to working with a split, curved keyboard, I found long periods of writing to be much more comfortable. Keyboard tray extensions are also available. I also prefer using a trackball or glidepad, rather than a conventional mouse. This reduces motion and speeds up my work. It also prevents reaching, and eliminates the need for a mousepad. With these devices, as well as with the original computer mouse, it is possible to switch hands from time to time. I also recommend using keyboard shortcuts provided by your software when practical. With a regular mouse, wrist and forearm rests are often helpful. Keep the mouse as close to your body as possible.

My office is furnished with the best chairs, cushions, and supports, but this is not enough. I will instead pass on something I have learned from being a chiropractor for 23 years: get up and move around! The adjustments—monitor distance, brightness, and image quality—help; yet they, too, fail to provide adequate protection. We all need to preserve our backs and preserve our vision.

The best single action we can take is to move away from the desk. Take time—physically and mentally—to get away from the task at hand. This simple ergonomic solution relaxes the eyes, the neck, the back, and the mind. CP

### About the Author

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