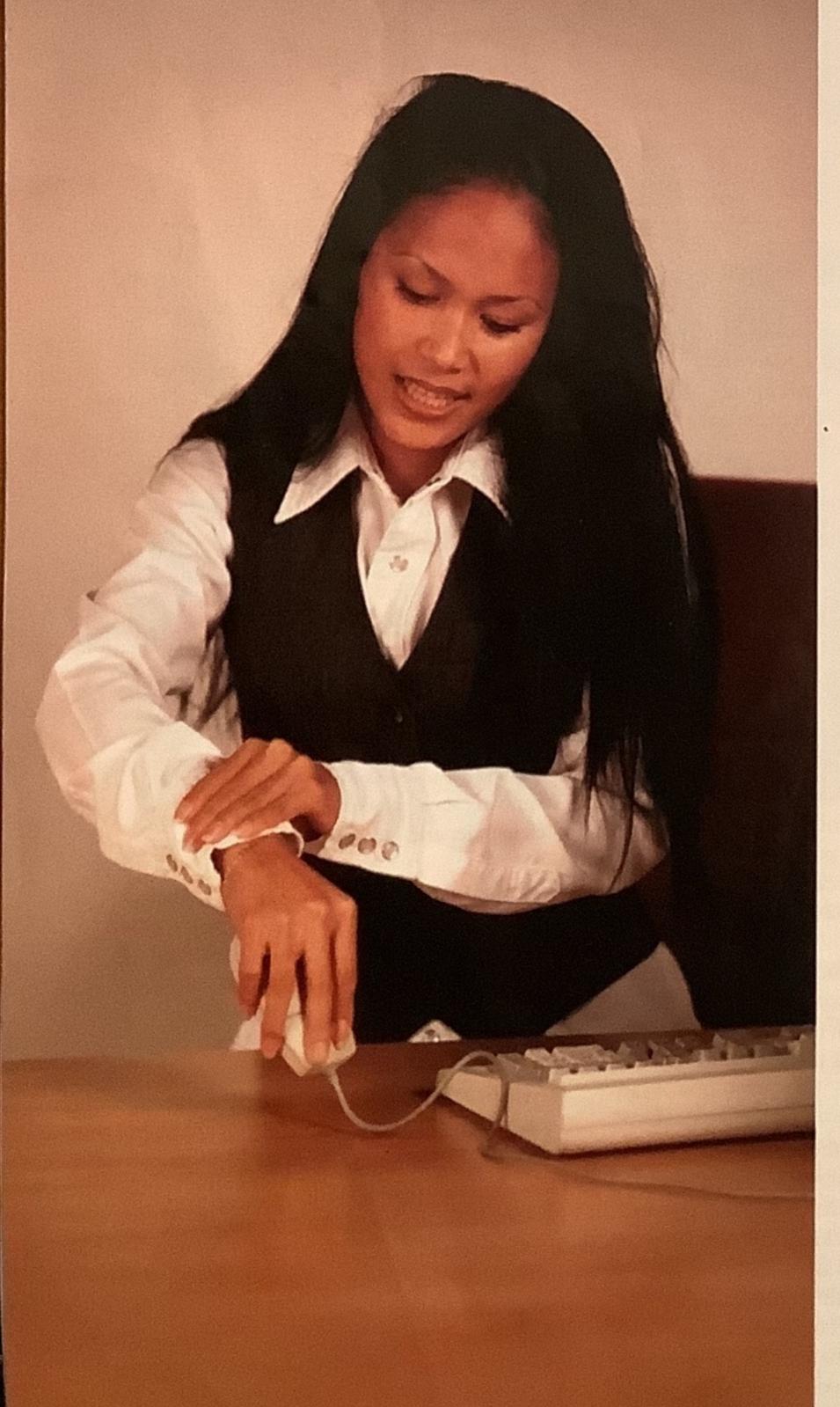# Ergonomics

The Costs of Discomfort

By Steven Price

Studies show employee discomfort is very common in most office environments, even where ergonomic products are utilized. Discomfort assessments that ask, "To what do you attribute your discomfort?" make it clear why employees rarely complain, even when their discomfort is serious. Many attribute their pain to a weakness within themselves, while others are simply reluctant to speak up.

Whether or not they complain, these employees' discomfort can be very expensive. Surprisingly, employers with low levels of reported discomfort can actually pay a higher cost than others.

Symptoms of improper accommodation include increased anxiety and difficulty concentrating. In office environments where management is not stringent, employees will react to such symptoms and other minor discomfort by frequently leaving their workstations. A specific pain might not become serious. Indeed, it may never become known there is a flaw in the design or use of the workstation.

This phenomenon is called on-premises absenteeism. It can lead to lost productivity and substantial increases in staffing that might otherwise be unnecessary.

Many employees are actually the architects of their own discomfort, through the improper use of ergonomic chairs and components. Pain and discomfort can take months to develop. Employees rarely realize or acknowledge that their improper sitting and working postures lead to the discomfort they experience. This is why, following the purchase of ergonomic equipment, teaching people to correctly use their workstations and chairs remains an essential step.

Ergonomic in name only

Unfortunately, many products purchased to improve working comfort are ergonomic in name only. Some actually cause or increase employee discomfort. In fact, it is not uncommon for ergonomic products to alleviate one discomfort while creating a new one that did not exist before. In some cases, it is just not possible to use the product in the manner for which it is intended and employee discomfort cannot be avoided.

One example is the articulating keyboard support arm. Usually implemented to give employees a posture that prevents shoulder pain while they type, it frequently causes discomfort or makes simple tasks more difficult to complete.

This is because most computer users refer to documents or reference materials (such as binders and files) while working or reach frequently to a phone, printer, calculator, etc. All such items must sit on the desk surface—the very surface from which they are pushed away by the articulating keyboard support arm.

The discomfort that results from the awkward postures people assume when trying to reach or use their desk surface can be more serious than the discomfort initially alleviated by the adjustable keyboard arm. Trying to read documents from a greater distance causes discomfort that will only worsen as employees age and their visual acuity suffers.

Many employees will push the keyboard out of the way every time they need to move towards their desk surface. Eventually, they adjust their keyboard to a height where it can be easily retracted, rather than to the height they require to work without discomfort. When discomfort does return, it is usually in a place where it did not exist before.

Articulating keyboard support arms should never be used if they interfere with the ability of the employee to complete his/her work with ease or if they cannot be used properly. They do not save the cost of a properly designed ergonomic workstation—an employee who is prevented from working comfortably and efficiently will always cost more.

This is especially true for employees who complete a substantial amount of desk work that is not computer-related. If the desk surface remains at a fixed height, they will frequently experience discomfort while completing their tasks.

Monitor risers also continue to be purchased, even though their use has been discredited by some of the people who first recommended elevated monitors back in the 1980s (see "Set Your Sights a Bit Lower," by John Goddard, *The Toronto Star*, January 31, 2003; and "How Low Should You Go," by Nicolette Beharie, *OHS Canada*, April/May 2003).

Determining whether a monitor should be elevated or lowered can be achieved by conducting an eye-motion study. If the worker looks frequently to the keyboard or a document that must sit on the desk surface, then the monitor should be lowered. This does not make the user look down— they are already looking down. Rather, it alleviates discomfort by reducing the distance they have to look up.

Looking down is not an unnatural position. Humans have evolved doing so while using their hands and while walking on uneven surfaces. People throughout the world continue to complete tasks by hand, looking down all day.

Computer use is one of the few functions where looking up can be considered, yet the recommendation to do so has been unique to North America. In Europe, the practice of elevating monitors was never adopted and, in fact, monitors are frequently recessed into the desk surface.

Seating discomfort

Neck pain and discomfort are becoming more common in the office environment and a major cause is deflection of the head and neck, but this has nothing to do with the placement of the monitor. The cause is the improper adjustment of the chair back and the growing tendency for people to lean back while working at their computer. They pull their heads forward and stretch the muscles up the back of the neck unnaturally.

People can reduce or eliminate their neck pain by sitting up straight—a posture on which every typing teacher has always insisted. Unfortunately, some so-called ergonomic chairs simply cannot be adjusted to support that posture. Their occupants are often seen sitting upright with completely unsupported backs, trying in vain to avoid the unnatural working posture of leaning back.

Most of the chairs available in the market today are called 'ergonomic'. However, when noting the differences in the design of chair backs and their range of adjustment—and not just between manufacturers, but between chair models from the same source—it appears there is a substantial difference of opinion about the average shape of

the human back and the manner in which it should be supported. If there were a consensus, then all chair backs would look similar.

Choosing a chair must therefore be a careful process. Employees should never be allowed to choose their own chairs, especially when they are seeking to replace one they think is causing them discomfort. Too often, they pick a chair for all the wrong reasons, including, "It feels comfortable." Most will choose a chair for its ability to allow them to *sit* comfortably, rather than its ability to allow them to *work* comfortably.

In addition, a poorly designed chair can feel more comfortable than the one it replaces, simply by changing the way the occupant sits. All too often, the improvement in comfort is short-lived and back pain returns, but where it did not exist before.

It is not possible for one style of chair to accommodate everyone's physical needs. The best chair models offer small, medium and large options in the size of their seats and backs and the travel range of their cylinders.

An experienced ergonomic consultant should assist in the determination of the specific chair style for each employee. While it means chairs of employees who leave may not fit their replacements, the cost of an uncomfortable employee is still far greater than the cost of a few new chairs.

Armed and uncomfortable

Chair arms are referred to as ergonomic when they are adjustable. Unfortunately, it is not always possible to adjust them in a way that makes their use practical for the average office employee and they often cause discomfort.

Most employees multi-task or complete work in a manner that requires constant movement within their workstations. Reaching—whether for a phone, file, printer, binder, notepad, calculator and file drawer—is simplified when people can swivel freely in their chairs.

Most employees are provided with cockpit-style or V-shaped workstations, which are intended to make the surfaces and everything they contain easier to access. However, when the work surface, keyboard and chair arms are all adjusted to ergonomically correct positions, they will all be at the same height.

Even with short chair arms, occupants are able to swivel only a short distance before the arms hit something, at which point they must twist, turn or stretch unnaturally to complete their tasks. Articulating keyboard support arms usually make the problem worse, causing further interference with movement.

Employees using chairs with arms often experience lower back pain and strained muscles in other parts of their upper body. Some lower their chairs to allow for freer movement, but experience shoulder pain. Others lower the chair arms instead, but suffer postural problems when using them.

When these factors are pointed out during training and education seminars, 85 per cent of employees on average have asked to have their chair arms removed. That represents substantial costs that can be avoided earlier in the process.

True ergonomics

A workstation can only be considered ergonomic if it properly accommodates both the physical and functional requirements of the occupant.

The functional requirements are less easily identified, so they are rarely taken into consideration. In fact, the purchase of standard, "cookie-cutter" workstations—generally sized to the amount of available space and not the needs of the occupant—has become the norm.

It is often intentional, especially on the part of government, to facilitate what has become known as "suitcase moves," where employees take only their personal belongings as they are moved between standard, common-design workstations. Unfortunately, these workstations frequently fail to help occupants complete the work expected of them.

The specification of complete adjustability is frequently passed to make it easier to move people than to accommodate their individual needs. Although this does save money on moves and furniture, the increased cost of employees who are not able to work comfortably, efficiently or productively is substantial.

Some offices have staffing levels as much as 50 per cent higher than would be necessary if their employees were provided with the proper tools and they were used correctly. Surprisingly, attention paid to improving individual productivity and efficiency has been slow to find its way out of the industrial and manufacturing environments and into offices.

Many employees are expected to multi-task and planning solutions that accommodate all of their needs can be challenging. To maximize employee productivity and efficiency, workstation layouts should be planned by independent consultants who specialize in functional needs analysis.

This approach rarely results in a plethora of layouts, as they are actually specific to the functions, not the individuals. However, if the process does result in the recommendation of a variety of workstation configurations, then it is the responsibility of the office furniture manufacturers to use the least number of components while offering the greatest degree of long-term flexibility.

This "inside-out" style of planning has been the norm in Europe for decades. It should be completed before beginning the overall design phase and, where possible, before space is allocated or leased.

When employers start insisting on the proper planning and implementation of workstations that accommodate both the physical and functional requirements of their employees, they will finally begin to reap the long-anticipated benefits of office computerization. It is important to note that to maintain those benefits, both the employees and the workstations they occupy must be effectively managed to ensure they remain properly configured and correctly used.

Steven Price is the senior consultant for Individuals Ergonomic Consulting. For more information, contact him at (416) 930-7224 or via e-mail at steven.price@ieconsulting.ca.