

Excerpt from

**‘YOUR GUIDE TO OFFICE ERGONOMIC
FURNITURE AND ACCESSORIES’**

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YOUR GUIDE TO OFFICE ERGONOMIC FURNITURE AND ACCESSORIES

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The Pros and Cons of Office Ergonomic Furniture and Accessories

“Ergonomics is the relationship or match between you and your work environment whether at work or at home. That includes the tools and materials that you handle, the tasks that you perform and the environment in which you perform it.”

Many businesses believe that purchasing "ergonomic" furniture and equipment is the extent of their ergonomics program. What they need to understand is that it is only a small part of the ergonomics program or process. In fact, in order to meet compliance with current and pending regulations, it is suggested that three primary components be considered. These include ergonomic analysis of the involved area, the creation of hazard prevention and control measures as well as training the affected work force. The purchase of ergonomic equipment is considered an engineering control measure and is usually implemented to reduce ergonomic risk factors such as excessive repetition, awkward postures, forceful exertions and/or contact pressures.

Purchasing ergonomic equipment is only one part of the strategy, providing education and training to employees in its use is another. If workers are not educated and trained on their new equipment, they will not use it properly. There is nothing more futile than an employee who receives the latest new fangled ergonomic chair and never removes the instructional booklet under the seat pan or attempts to use the numerous levers or paddles on the equipment. In fact, many feel that if they make changes to the equipment, “it will never fit them the same” or worse yet, it will “upset the next person who sits in the chair”. This type of mindset is destructive to your ergonomics program and could feasibly aggravate old injuries or even create new ones for the employee and lead to lost time and money for you. For this reason, it is essential that the employer do **five** things prior to purchase:

1. Understand the purpose of the job in question and the essential functions to perform the job.
2. Involve employees in the purchase process by asking them what they feel they need to perform safely and comfortably at work.
3. Perform a thorough ergonomic assessment of the workstation and encourage the employee to do a self-assessment as well. (See Appendix A)
4. Measure the user and the worksurface to assure that the selected purchase will fit in the space provided.
5. Following the installation of the equipment, provide instruction to the end user on proper set-up and usage of the product including a demonstration of its use.

After the ergonomic analysis and self-assessment is performed, product selection can be made followed by purchase. Keep in mind that all ergonomic furniture and tools are not created equal. There is tremendous product diversity and there can be many drawbacks. Often, in your endeavor to improve the situation, you can actually create other

problems. Remember, for every ergonomic change, another may be required. In addition, there are many “Ergonomic Carpetbaggers” today selling products and accessories that do not fit the criteria of good usability and feasibility for your purpose. Just because a product is labeled “ergonomic” does not mean it will truly enhance the relationship or comfort of the end user. In many cases, it can make matters worse. Nonetheless, with careful analysis and employee involvement, your efforts are usually met with reward and greatly appreciated by the employee.



Keep in mind that many ergonomic purchases can also be avoided by thoughtful rearrangement, adjustment or modification to existing products through “Quick Fixes” (See Appendix B). In some cases, it is the employee who lacks the awareness of how to use the current product or that it was merely set up incorrectly. The "Intent" and "Limitations and Use" and “Product Options” sections in this guide can therefore be used to evaluate such changes as well as evaluate potential purchases.

Use this guide to inform the end user at the time of purchase. "Intent", "New User Orientation," and "Limitations and Use Issues" information should be given to users, preferably in written form, when they receive any ergonomic product. Practical, hands on instruction and guidance on how to operate all ergonomic equipment is strongly encouraged for employees. This in turn, will help to maximize your investment and prevent the onset of injuries and illness related to office ergonomic risk factors.

Finally, it is essential that you view the purchase of ergonomic furniture and accessories as part of a continuous improvement process that changes as the needs of your organization change. Ergonomic products designed five years ago pale in comparison to the product sophistication on the market today. And as such, today's products may become more obsolete in another 5 years. As a result, be prepared to invest for a minimum of 3-5 years with some products such as chairs and work surfaces lasting up to 10 years. With increasing use and a multi-shift work force however, your investment will be impacted that much sooner. Plan today through facility design and budgets for increased peripherals on the work surface of tomorrow. Little did we know in 1979 that by 1983 the typewriter would be replaced by the personal computer but the same work surface would still be in use in 1999. One thing for sure is that the new millennium will bring more change and change means a greater need for ergonomics to improve our relationship with technology.

Document Holders and Posture (Slant) Boards:

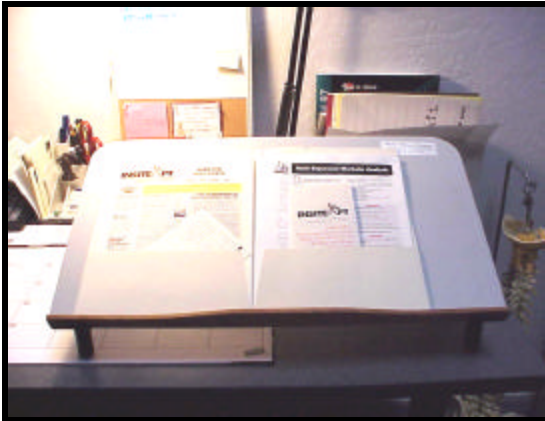


Figure 1. Example of a posture board that elevates documents above the work surface at varying angles for desk reading or writing.



Figure 2. Adjustable height and angle document holders are very practical for reduced neck stress. Monitor mounted holders maximize desk space.

Intent: Elevate and/or raise working documents from desk height, to improve visual and postural alignment during reading and or writing tasks.
Reduces neck and upper back stress.

To minimize work surface clutter and improve work surface organization.

**Limitations
and**

Use Issues: Worker may not position document holder or posture board correctly for maximum benefit.
Takes up additional work surface space.
May not support all working documents necessary as size may be limited to 8 1/2" by 11" or just simply able to sustain a few sheets of paper.
May not offer angle adjustability.

**New
User**

Orientation: Document holder should be adjustable and be positioned at the same height as the monitor screen, next to the monitor and roughly within the same viewing distance as the monitor. In-line document holders are positioned between the monitor and keyboard. Monitor mounted holders should be positioned on the dominant eye side approximately one third down from the top or equal to the first line of type.
The posture board should be elevated to a comfortable angle to minimize neck flexion and downward viewing.

Document Holders and Posture (Slant) Boards (cont.):

Product
Options:

Copyholders range in a variety of styles. When attached to the side of the monitor, they can hold several sheets of any size paper. Tabletop designs are also available with flexible arms to adjust height, distance and angle. They often have line guides to guide location on the page. There are also more stationary copyholders which sit upright on the work surface and do not offer flexibility and height adjustment. The slant board can be used as both a document holder and as an elevated work surface for both reading and writing tasks.



Figure 3. Workers who look off to the left or right to view documents at work surface level and then back to the monitor are at risk for neck or upper back discomfort.

Investment Range: \$15.00 to \$170.00.

Ergonomic Chairs:



Figure 22. Ergonomic chairs are the most important tools in the office environment and as such warrant a substantial investment. Chair selection should be made based on employee stature and essential job functions as well as time on task.

Intent: A typical office worker may have to sit in much the same position for hours at a time during their work day. For this reason there is an increased possibility for experiencing discomfort over time. Workers who sit primarily throughout the day can often experience a broad range of problems including lower back pain, aching shoulders, neck discomfort and pain in the wrists and lower arms. A good ergonomic chair can help you work more effectively, obtain greater comfort while in the work place and maintain a better state of mind and body posture throughout the work day.

**Limitations
And**

Use Issues: Sitting perhaps is one of the most stressful positions for the vertebrae of the spine. A significant amount of pressure is put on the vertebral disc while sitting. These forces will increase if the seated posture is slouched or unsupported. Sitting properly in an ergonomic chair helps to correct the curves of the spine and lessen the pressure on the vertebral disc, allowing you to be more comfortable throughout the work day. A chair that does not allow adjustments in the back rest or the seat pan may further cause you to sit in an uncomfortable posture. In addition, older chairs tend to have worn out cushions and parts which may cause increased discomfort to contact areas of the body and even be a safety hazard.

Ergonomic chairs offer a swivel feature to help the user avoid bending forward or to the side while seated in the chair. Rather use the pivot or rotation of the chair to make the turn rather than your spine.

Ergonomic Chairs (cont.):

Most manufacturers offer a 10-12 year warranty. Realize that if the chair is used in a multi-shift environment, it may only last up to 1/3 of the warranty. In addition, most support up to 250 lbs. Exceeding the weight limit may impact the warranty as well as the safety of the user. Be sure the chair supports the weight of the user.

Often paddle or lever placement is awkward to reach for the user or the tension on the controls is so high, the user must exert a great deal of force to release the lever or to alter the seat pan or back angle.

Features to Look For:

A **backrest** that is contoured so that it supports the natural posture and curve of your back. Multiple density foam on the seat as well as the backrest to help distribute body weight and relieve pressure differences in particular to the buttocks and thighs.

The chair should be proportional to provide optimum support for most sizes of people. Workers that fall below the 5th percentile or above the 95th percentile often will likely need a special chair to accommodate their height or weight.

Features such as a **backrest lock** which allows the back of the chair to be locked in an upright position (or reclining) during task intensive work is useful.

An adjustable **seat height** is extremely important to allow for flexibility in reaching the work surface and accommodating the upper extremities. Adjustable **seat tension** can help allow the user to recline more easily while in the chair without using much effort.

A **forward tilting** or **backward tilting seat pan** in combination can be extremely useful for providing alternative seated postures while working throughout the day.

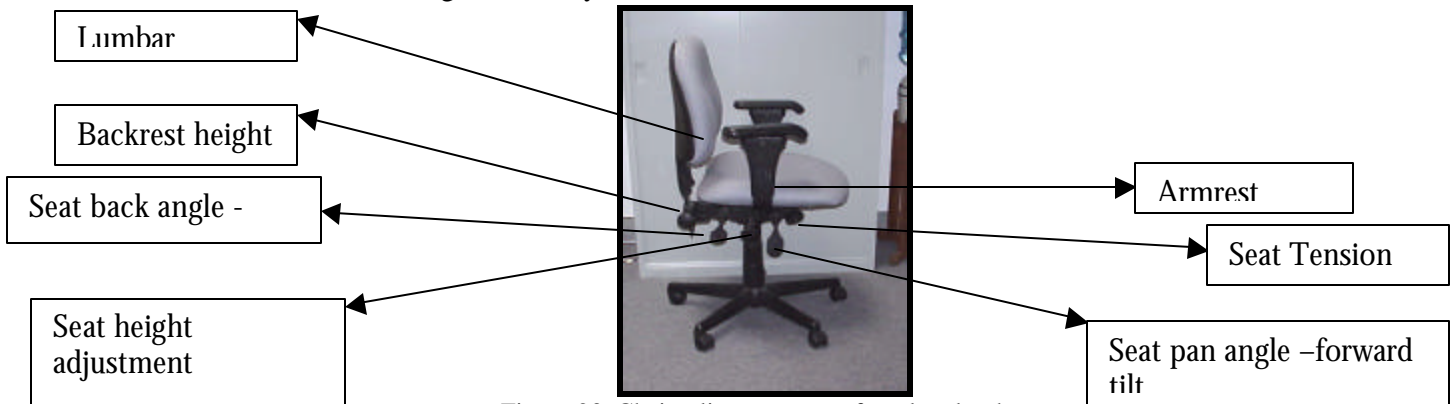


Figure 23. Chair adjustments are found under the seat pan. The user must be educated and trained on these features to justify their use and expense. This chair has the typical Northfield mechanism, a common style in chairs manufactured in the United States.

Ergonomic Chairs (cont.):

Features to
Look For

Continued:

Some chairs offer an optional **seat pan slide**. This allows the seat pan to be extended forward or back so that it can fit more workers of different sizes, especially leg length. This factor is helpful in multiple shift operations where users use the same chair.

Adjustable height **armrests** and adjustable width armrests are extremely useful to accommodate different size workers and to better match the height of the keyboard and provide support to the user's upper extremities at the same time.

An adjustable **backrest height** will allow the user to make the **lumbar support** higher or lower to suit the curve of the lower back. Be sure that the chair allows a good fit between the curve of the back and the curve of the chair.

New

User

Orientation:

Review the owner's manual of the chair if it is available.

Also carefully turn up the chair so that the underside of the seat pan is visible. Observe where the controls are to adjust the chair.

1. Sit in the chair.
2. Start by putting your feet flat on the floor.
3. Adjust the chair height to a comfortable position that keeps the feet on the floor and your thighs approximately parallel to the floor. Your weight should be equally distributed between your thighs and buttocks.
4. Move all the way back in the chair and adjust the backrest height to a comfortable position. Be sure that the contour of the curve fits in the curve of your low back. You may need to lean forward slightly to make the adjustment in the backrest height.
5. Move the backrest in or out and adjust the angle so that the depth of the seat is appropriate. You should be able to reach the backrest without experiencing any pressure behind the knees at the front of the seat cushion. The seat pan should have at least a three-finger distance between the back of your knees and the front of the seat pan.
6. Adjust the chair tilt tension (usually found in front of the pedestal) so that you can recline mostly by weight shift rather than pushing off your feet. If you must push hard, and your feet or heels fly off of the floor, then you need to lighten the tension. If you prefer not to recline, the tension can often be kept tight or even locked.
7. Adjust the height of the armrests. They should be high enough so that your elbows are supported without having to slouch or lean to one side. They should be low enough to avoid uncomfortable pressure under the forearms or elevation of the shoulders.

Ergonomic Chairs (cont.):

8. Adjust the width of the armrests. They should be close enough to avoid splaying or opening of the elbows away from your body. The arm rests should not limit your ability to get in and out of the chair easily. Remember you want your arms as close to your body as possible while performing data entry/keyboarding and mouse use.

Product Options:

There is more than one way to sit right. In fact, there are three fundamental different styles of sitting. Check your ergonomic chair to be sure that it allows you to do at least a minimum of the following positions: recline sitting, upright sitting (neutral)and forward sitting.

Reclined sitting: This position is comfortable for performing conversation while in the office. You may periodically put your chair in the reclining posture while using the telephone or meeting with someone. The reclining position allows the backrest to give more support to a larger portion of the body weight. Using a high back on the chair allows better neck support and helps to preserve the natural position of the spine. Reclining helps to unload the spine. This position will put you in a posture where your eyes focus upwards.



Figure 24. The author in a reclined position during telephone work. Head and neck are angled upward slightly to assist in focusing the eyes upward.

Upright sitting: This posture is best used when working with the hands close to the body and the eyes focused straight ahead. Many workers will sit upright to perform data entry/keyboarding and typing activities while on the computer. Upright sitting is preferred for mouse use as well.



Figure 25. The author demonstrating neutral seated posture for use with keyboarding tasks. The hips and knees are at equal height with weight distributed equally between buttocks and thighs. Head righting is neutral for forward viewing.

Forward sitting: This posture is used for active tasks, which involve reaching, writing and reading at a work surface. In addition, many people who begin to work in an upright sitting position find themselves bending forward to focus the eyes downward. Check to see if your chair will tilt forward and allow this forward leaning position. By sitting in a forward position, and keeping your arms positioned on the desk, you will not feel as if you are falling out of your chair. It is important to have the arms supported while in the forward seated position. The front of the legs bear most of your weight while in this position. Use this task to help improve neck and upper back posture. The chair will stay in contact with your spine and give you better support. It will even strengthen your legs as you use them for additional weight bearing.



Figure 26. The author demonstrates forward tilt posture using a slant board or posture board. Here, the hips are higher than the knees and the head and neck are angled to allow the eyes to look downward. Center of gravity is shifted to the front of the legs for some weight bearing.

Ergonomic Chairs (cont.):

Remember that as you change these positions, you will also need to make some adjustments in the back rest height and the seat height itself.

On the average it takes approximately 20 minutes to learn how to use your chair and a few seconds everyday to get used to finding the positions that are most comfortable for you. Even with your ergonomic chair, you should not sit longer than one hour straight. It is important to stand up, take breaks by walking and even to do some localized stretching periodically throughout the work day.

With these choices, reclining, upright sitting and forward sitting, you will feel more comfortable throughout the work day provided you change periodically. Remember, the next posture is your best posture. Using your chair to its maximum will help you reach maximum productivity and comfort throughout the workday.

Investment Range: \$250.00 to \$1,200.00.

