

WESTERN CONNECTICUT STATE UNIVERSITY

ERGONOMIC OFFICE FURNITURE STANDARD

&

INFORMATION / RESOURCE GUIDE

PROCEDURE S-116

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# Please direct any questions or comments about the applicability of this document to David Serino, Director of Environmental Health and Safety.

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**INTRODUCTION**

Computers have become the workhorses of the office. We have come to understand that using a computer for more than three hours a day may cause the user to suffer a debilitating ergonomic injury. Because ergonomic injuries develop over time, we have also come to realize that the efficiencies realized by using the computer might be more than offset by the inefficiencies resulting from the body’s reactions to a poor working posture.

The Americans with Disabilities Act has opened up the workplace to people whose needs are entirely different than their co-workers without disabilities. Additionally, the differences in the physical characteristics of today’s office worker are now an important consideration when choosing the correct office furniture. The use of the computer has moved us away from the concept of the generic office place. Today the most important elements in office design are what work is being performed in the office and what are the physical characteristics of the person utilizing the office.

**The purpose of this program is to supplement your knowledge of the potential hazards** **associated with computer usage and to help guide you in implementing a** **safe, ergonomically designed workstation.** While the primary focus of this program is and should be on computer usage, it will offer an overview of the many other factors that may contribute to the office worker suffering an ergonomic injury and how to prevent these injuries.

1. **General Description**

Proper ergonomics begins with the office worker sitting at the workstation in what is called the neutral posture or position. The following is a general description of that position. We will, in more specific terms, discuss elements of this position in the section dealing directly with the office and with office furniture.

The office worker should sit straight in the chair. The head should be as upright as possible and well centered over the spine (The head can weigh about 10 pounds and when it is not resting over the spine, muscles have to work constantly to support it). When working at the keyboard, the operator’s forearms should be approximately parallel with the floor, with the wrists and hands extending out to the middle row of the keyboard in a flat position, again parallel to the floor. The angle of the arms at the elbow should be approximately 90 degrees, with the keyboard positioned directly in front of the operator. The upper arms should fall naturally close to the body in a relaxed position. The operator’s feet should be flat to the floor and the thighs parallel to the floor. The back of the operator’s thighs needs to be far enough away from the seat pan so as not to restrict the blood flow to the lower legs.

The monitor needs to be located directly in front of the operator. The top of the monitor is to be no higher than the operator’s eyes when they have achieved the position described above. The monitor is to be located approximately 30 inches away from the seated operator and is to be free of all glare.

#### **It is to how to attain this position that we address the remaining pages of this booklet.**

1. **Workstation Layout**
	1. **Desk and Return**

The requirement / dependence to use the computer for three or more hours on any given workday forces us to change our mindset with respect to the desk. The selection of a proper desk begins with understanding what tasks are performed by the person sitting at the desk. An office worker who interfaces with the public, frequently responds to the telephone, and utilizes the computer, requires a completely different set-up than would a data entry clerk or one extensively involved in using the computer for research.

The ideal set-up requires that the work surface be adjustable in height. This is particularly important when you expect more than one user to utilize the workstation or when the user is disabled or at the physical extremes of normalcy. When it is impractical or impossible to utilize a height adjustable work surface, the height of the desk must equal the height of the return. The top surface should be somewhat of a matte finish so that light is not reflected up into the user’s eyes or onto the monitor. The standard height of 29 ½ inches is acceptable under most circumstances. If the monitor is to be located on the return, the return should be at least 48 inches in length, 24 inches in depth, of solid stock, and at least 1 ¼ inches thick. The thickness allows for the installation of under-the-desk keyboard and mouse platforms. The depth provides space for the computer monitor. The length will ensure that the user’s arms, when using the keyboard, will not come into contact with the desk. The monitor should NOT sit on top of the computer if it raises the top of the monitor above the user’s eyes. Locating the computer in the office area is a matter of preference, but access to the CD drive, heat dissipation, position of the computer cables, and the general safety of floor traffic must be considered. Mobile CPU stands allow easy mobility for accessing rear cables and cleaning behind the unit.

Workstations are referred to as being right or left-handed. Imagine yourself sitting at a desk. If the return needs to be on your left, you will order a left-hand return. The converse is true for a right hand return.

Some desks come with wire channels, access ports, and even power strips. In most cases these are excellent concepts and we encourage their use. However, when utilizing under-the-desk keyboard and mouse platforms you need to compensate for the slack in the cables required to pull out and push in the platforms. You need to be mindful of where you are going to position the computer and peripherals before selecting desks with these features.

There are both fixed and adjustable workstation tables available for data entry clerks and research orientated office workers. Such furniture, used in conjunction with standard desks, may also have a role in the general office area when no other alternatives are available. Many of the adjustable height tables allow the office worker to sit or stand.

People taller than 6 foot 4 inches, shorter than 5 foot 2 inches, and / or obese are quite likely to require a nonstandard desk or workstation.

There are desks specifically designed for people with disabilities.. Some standard desks accommodate devices for people of limited mobility and / or limited reach. When searching for such devices, require that they are ADA compliant.

* 1. **The Standing Desk**

The university offers a variable work station for personnel who are inclined to have a more active work day. A standing workstation allows alleviation of back, shoulder, knees, and other joint and muscle pains. For every 20 minutes of constant sitting, you should allow for 8 minutes of standing and 2 minutes of standing and moving (gentle stretching, walking, etc). These units sit on the desktop and allow your computer and computer monitors to be fully adjustable to your height.

Please note: while the standing desk does allow you to stand and change position. Simply standing is not an adequate substitute for active movement and stretching.

The office of environmental health and safety recommends the following to University personnel purchasing standing and sitting desks.

Varidesk Proplus 30,36, or 48.

Desk top standing and sitting adjustable desk.

Provided by Varidesk

* 1. **Keyboard and Mouse Platforms**

The goal is to have the hands and wrists remain in a neutral position during typing and prevent over-reaching when using the mouse. An under-the-desk articulating keyboard / mouse platform is an essential component of the concept of total adjustability.

The platform should rotate 360 degrees. It should be adjustable up to 6 inches in height, tilt from – 10 degrees to + 15 degrees, and extend 2 inches out from the desk or return. The platform should have a non-skid surface or capability to clamp the keyboard in place. The platform should have an adjustable wrist rest.

Having the mouse in close proximity to the keyboard is very important. Repeated or prolonged over-reaching or hyperextending for a mouse can place a stress on the shoulder and ultimately result in tendonitis, inflammation, etc. This frequently happens when a conventional keyboard tray is used without a mouse tray. The keyboard tray requires that one sit farther back from the work surface; this requires one to lift their arm up and out to use the mouse. Ideally, the mouse platform should be an integral part of the keyboard platform. In those cases where this is not possible, an independent mouse platform is desirable.

* + 1. **Keyboard and Mouse Placement**
* Place the keyboard and mouse directly in front of and close to you.
* Adjust the keyboard as low as possible, but with adequate leg room. Adjust the slope of the keyboard so that your wrists are straight. They should not extend downward or upward while typing.
* Type with your hands and wrists floating above the keyboard, using the wrist pads only to rest your wrists while typing. Studies have shown that office workers tend to relax their arms against the wrist rest while using the computer. It is important to avoid doing so, as using the wrist rests to support the arms often isolates movements from your wrist down to your fingers, which can cause problems.
* Avoid resting your wrist on sharp objects (e.g., desk edge).

Mouse technology, specifically trackball, vertical mouse, and active touch pads, require different platforms. The so-called ergonomic keyboards discussed in Appendix A also require their own keyboard platforms. At this time, demand for these products is not sufficient enough to induce manufacturers to produce complementary products. Further, there is not enough published information on these products to cause one to champion their use over the standard keyboard configuration. It is also important to understand that there are many devices on the market for people with disabilities (see Appendix A). If required, contact the Office of Environmental Health and Safety for help in understanding the latest equipment available.

* 1. **The Office Chair**

One of the most important components of a proper workstation is a properlydesigned chair. The type of work being performed in the office often dictates what kind of chair is required. The size of the person doing the work might also affect the proper choice. This guideline is intended for most users, but accommodating the extremes in a person’s height, weight, physical disability, etc., is a fact of life and must be a part of the planning process.

* The chair should have a seat back with lumbar support capable of both up–and–down and front-and-back adjustment. The seat back should provide support to both the lower back and the shoulders and enable the person to sit comfortably upright without slouching.
* To accommodate the height of the user, the chair height with respect to the floor should be adjustable.
* The seat pan should be capable of tilting and it should have a contoured or waterfall front. The front edge of the seat should curve away and down from the back of the person’s legs to promote circulation in the lower legs. Tilting transfers weight from your hips to your legs, encouraging normal back curve and reducing the pressure on the discs in the lower spine.
* The seat pan and backrest should be upholstered and cloth covered with a fabric that is breathable. Seat padding should not compress more than one inch when an individual is seated.
* The height of the armrests needs to be adjustable with respect to the seat pan. Adjustable height arm rests relieve tension in the upper back, neck, and shoulders, by allowing the user’s arms and wrists to be in a parallel position. They also provide resting planes.
* To accommodate the breadth of the user’s lower torso, the office chair armrests should be capable of in and out adjustment and that adjustment needs to be independent of the seat pan.
* The chair should be capable of swiveling at least 360 degrees.
* To prevent the possibility of tipping, the chair should have five casters. The type of casters depends on the flooring material. Use hard casters for carpeted floors. Use soft casters for hard wood vinyl or when used on chair mats.
* Look for chairs with a built-in tilt tension mechanism that controls the rate and ease with which the chair reclines to different weights and strengths of the user. This allows the user freedom to rock / shift in the chair, while not disturbing the original ergonomic settings.

Uplift seat assistors are pneumatic devices that are installed on the seat pan and when activated, help lift the mobility limited office worker out of the chair.

Refer to Appendix A for a more detailed treatment of specific ergonomic chairs. Appendix A also includes information concerning physical characteristics of the user.

The Office of Environmental health and safety has made the following recommendations to University personnel purchasing ergonomic multi-purpose office chairs:

From Insalco:

* Douglas task chair with knee-tilt 2:1 synchro mechanism, adjustable T-style arms and width adjustment brackets.
	1. **Exercise balls or ball chairs.**

The university does not recommend using exercise balls of ball chairs as a replacement for a proper ergonomic chair. While the chairs do succeed with helping core strengthening, they fail to provide any back support, especially in the lumbar region with is a critical component to an ergonomic chair. Also due to the material the exercise ball is comprised of. It does not allow the sat to be breathable and transport heat and moister away from the body.

* 1. **The Computer Monitor**

The correct placement and adjustment of the monitor can reduce eye, shoulder, neck and back fatigue. There are many types and configurations of monitor risers.

* Adjust the monitor height so that the top of the screen is at or slightly below eye level.
* Tilt the monitor back so that the top is slightly farther away from the eyes than at the bottom, but not so tilted that the monitor picks up unwanted glare from the overhead lights. Notice how you hold a magazine. Most likely you will tilt it away at the top. When we look at the world, objects in the upper part of our peripheral vision are generally farther away than the point we are looking at, and objects in the lower part of our peripheral vision are usually closer. As a result, our visual system has developed to perform best when the visual plane tilts away from us at the top.
* The monitor should be approximately an arm’s length away. One of the main reasons for computer-related eyestrain is the closeness of the monitor. Perform this exercise: Hold your finger at arm's length and bring it slowly toward your nose. Notice that the closer your finger comes, the more eyestrain you feel. When viewing close objects your eyes must both accommodate and converge. Accommodation is when your eyes change to look at something close. Convergence is when your eyes turn inward toward the nose to prevent double vision. If having a monitor that is too close contributes to eyestrain, one of the solutions is to place it further away. The farther away the object of view, the less the strain there is on both accommodation and convergence. Reducing those stresses will reduce the likelihood of eyestrain.
* Place the monitor at right angles to windows or other bright light sources to minimize glare and reflections. Installing an anti-glare filter may eliminate glare. In some situations, general illumination may need to be reduced and a task light used, as required.
* Adjust the monitor's brightness and contrast controls to enhance readability and optimal viewing comfort. Check the program specifications to determine if color combinations can be altered. These adjustments can have a profound impact on viewer comfort and productivity. Our University IT department is ready to help you.
* Display images on the screen should appear stable and free of any distortion, flicker or jitter. Blinking screen characters or the cursor may contribute to eye fatigue. If adjustable, blinking characters should not vary at more than 2 hertz (2 cycles per second).
* Clean your monitor regularly. Use a lint-free, non-abrasive cloth and a non-alcohol, non-abrasive cleaning solution or glass cleaner to minimize dust. If you wear bifocal, trifocal, or progressive lens glasses, it's especially important to properly adjust your monitor height. Avoid tilting your head back to view the screen through the lower portion of your glasses; this could lead to muscle fatigue in your neck and back. Instead, try lowering your monitor to bring the screen into focus without tipping your head. You may want to consider using monofocal glasses (also called single-vision or focal length lenses) that are specially made for computer use. Your eye doctor will need to know the height, distance, screen size, and general use of your computer to help prescribe the correct glasses.

For the sight impaired, there are several types of magnifying glare filters. Generally, these devices remove glare and also magnify the object plane by a factor of two, without distortion.

For users who enter data, a document holder, located near and at the same height as the monitor, should be integrated into the workstation. If the visual targets are spaced apart in direction or distance, the eye must be continuously redirected and refocused, while sweeping from one target to another. This may contribute to eye fatigue.

For a visual aid in setting up your workstation with monitors. Please refer to appendix D.

* 1. **Font Sizes**

The sizes of characters are an often overlooked consideration when determining how far/close the monitor and hard copy should be placed from the viewer.

Various organizations specify various character sizes such as minimum character height of 9 pt for legibility, with a preferred height of 11 or 12 pt for readability and legibility. One of the problems that you may run into is that often hard-copy documents normally have smaller type sizes - 8 pt to 10 pt. When placed in close proximity to the screen at such distances, visual discomfort may result. Many people will have difficulty reading and hunch forward to better see the hard-copy text, which may result in eyestrain.

The important point is that in many cases you may need to compromise on the placement of the monitor and the reference material, taking into account the type size and the image quality found on the visual targets and of course, your visual acuity. For those of you who perform multiple tasks involving different software, re-adjustments of your monitor and your documents may be needed throughout the day.

Here are some type sizes for comparison:

This is 8-pt. type

This is 10-pt. type

This is 12-pt. type

This is 14-pt. type

This is 16 pt. type

This is 20-pt. type

* 1. **Foot Rest**

If one’s knees are positioned much higher or lower than the hips and they are not evenly supported, uncomfortable pressure will be exerted against the legs and the buttocks. Therefore, in a large number of cases a foot rest is required to keep the back of the person’s thighs parallel to the floor, while, at the same time, providing foot support. A proper position promotes blood flow to the lower legs, which in turn helps prevent fatigue.

Keep in mind that you do not want the furniture, however accurately positioned, to restrict free and reactive movement. The footrest should help promote exercise. A good footrest will tilt, rock, and adjust in height. It should have a textured surface to prevent slipping.

The office of Environmental Health and Safety has made the following recommendations to University personnel who require a footrest.

 Mind Reader comfy footrest, Black.

 Height-Adjustable Tilting footrest

 Provided by Staples.

* 1. **Chair Mat**

In some cases a chair mat is required to eliminate static build-up / discharge. Additionally, and perhaps more importantly, they support easy chair movement over pile carpets. They are extremely beneficial to people confined to wheelchairs, as they promote increased maneuverability. From an ergonomic standpoint, the chair mat should be “gripper” backed to prevent them from sliding across the surface and have beveled edges on its entire perimeter for easy roll on / roll off. Keep in mind that the thickness of the carpeting will influence your selection of the best chair mat.

Usually a standard weight mat is used with carpets and padding whose thickness is 5/8 inch or less. An intermediate weight mat is used with carpeting and padding 3/8 inch or less. A deluxe weight mat is used for carpeting and padding greater than 5/8 inch.

* 1. **Anti-Fatigue Mat**

In those cases where extended periods of standing is a factor, floor mats are available to relieve those stresses exerted on the spine and back muscles as they are translated through the heels and knees. Antifatigue matting may very well be the simplest and most effective way to reduce “standing worker fatigue.” Once thought of exclusively in terms of their advantages in the factory, we now find them in the office environment at copier machines, service counters, lecterns, and at archival stations.

The logic used to select the proper antifatigue mat is the same as that applied to the chair mat, with the exception of considering the mat’s basic structure. The concept behind the antifatigue mat is that it reduces the hardness of the already carpeted floor. They will be at least 3/8 inches thick. They may be made of closed vinyl foam, molded rubber, or rubber sponge. The top surface can vary from a non-skid abrasive to an attractive fabric. As a general rule, when a mat can be easily rolled up or flexed, it should offer a high comfort level.

* 1. **Document Holder**

As with monitor positioning, distance and viewing angle are critical for comfort when viewing source documents during computer work. Many computer users find a document holder useful, particularly if they work primarily from source documents. If the source documents are placed laying down on top of your desk, the head will continuously "bob" up and down as one reads the source document and views the monitor screen. Over an extended period of time, this can lead to neck and shoulder muscle fatigue (pain).

There are three ways to place a document:

* Place the document to the side of the monitor;
* Place the document in-line with the monitor;
* Place the document standing up on the table top.

When a document holder is properly positioned, as described below, this muscle fatiguing motion is not required.

If you use a document holder stand, position it at a height that is comfortable for you, close to the screen so that it will be the same distance from your eyes.

Position the desk lamp or task light (if you use one) so that it illuminates the source documents without causing glare on the monitor screen or your document. Add just enough light so that you can see the document clearly; the illumination on the source document should be kept to a minimum so that the lighting contrast between the screen and the document is minimized.

* 1. **Telephones and Cell Phones**

People who are likely to use the phone and the keyboard at the same time should either use a headset or their workstation should be isolated from coworkers so that the speakerphone may be utilized. Under no circumstances should the office worker cradle the telephone between the shoulder and neck. Doing so might lead to tension and nerve pinching. This is because the nerves that control the arms and hands originate in the neck area of the spine. While the telephone shoulder rests offer some relief, they too should not be used as a substitute for the headset or the speakerphone.

There are several telephones designed specifically for the hearing and / or sight impaired.

#### **Office Storage Furniture**

There are many classes and configurations of storage furniture. Whether you select a wood veneer bookcase, a four-drawer filing cabinet or one of the new multi-media storage units, the basic essentials and concerns remain the same.

A storage device with doors tends to reflect much more light than one without. Therefore, if you chose to use such furniture, it is important that you locate the furniture so it does not reflect the light back onto the workstation. This problem increases with the height of the device, as it not only picks up more light, but also tends to pick up light from multiple light sources.

Frequently used objects need to be stored close to the workstation and should be easily accessible. Imagine an area defined by the intersection of the radius of each arm extending outward side to side from the upright shoulder position and rotating until they touch somewhere in front of you. It is within this “zone” that the objects, equipment, and files most often used should be stored. Heavy objects should be stored at or below waist level regardless of the frequency of use. This is not only true because it ensures that the office worker will not reach up for heavy objects, but also because it tends not to affect the balance of the particular storage device. This is particularly true with filing cabinets. Storing the heavier files in the lower drawers not only ensures that the cabinet will not “tip” over, but the drawer slide mechanisms work better. Under no circumstances should the office worker open two drawers at the same time.

1. **General Work Environment**

# **Background Noise**

Ambient sound levels should not be higher than 55 decibels (dBA). To give you an idea of how loud this is, an alarm clock is approximately 60 decibels. A normal conversation and soft background music is approximately 50 decibels.

* 1. **Lighting**

In any office it is important to ensure that lighting is adjusted to a comfortable level. Lighting preferences vary among individuals and are affected by age and work tasks. Because of the computer, we no longer need, nor is it advisable, to brightly illuminate the office. Too much light can be as visually fatiguing as too little. The best level of illuminance for video display terminal work that also uses paper documents is 300 to 400 lux (30 to 40 foot-candles). If paper documents are not used, the level of illuminance should be 200 lux (20 foot-candles) or lower. Reflective light on the monitor screen from office lighting, as well as that energy reflected from desktops and other pieces of office furniture, passes directly to the user’s eyes.

New lighting technology utilizes highly efficient reflective surfaces within the light structure to maximize the lamp output. It is extremely important to ensure that these overhead lights are not positioned so as to directly reflect the “lamp image” onto the work area. (You are viewing the maximum lamp output if, when looking at the light structure, you can see the lamp configuration reflected directly back onto you.) Years ago light was used to illuminate the work surface.

In today’s office, the computer gives off its own light. In addition to the “light” output of the computer monitor, the office worker, because his or her head is in a more upright position, will be processing much more energy from the windows as well as the overhead lighting. The contrast between the light output and the ceiling need to be minimized. Overhead lighting can be reduced by switching to lower wattage bulbs or by the installation of diffusers. In some cases, vertical blinds are superior to horizontal blinds in that they allow the office worker to redirect the light away from them without affecting the amount of light entering the office. As a general ergonomic rule, the more time a person spends on the computer, the more “muted” should be the office lighting.

* 1. **Task light**

Every workstation should have a task light. Because harsh light spots increase eye strain and fatigue, the lamp needs to have an antiglare screen that does not impede the lamp’s ability to deliver a broad area of uniform low glare light across the immediate work surface. The lamp should have an adjustable arm that permits both height and angle adjustments. The lamp base needs to be weighted to maintain stability when the lamp is positioned at its extremes.

Lamps can be purchased using halogen, fluorescent, or incandescent bulbs. Lamps are available that utilize a combination of fluorescent and incandescent. In general, the halogen lamps allow the user to better focus the light’s energy on the work, but the light is harsh and generates more heat. The fluorescent lamp offers the greatest potential for providing the necessary light. See Appendix A for different types of task lamps.

* 1. **Temperature and Humidity**

Temperature and humidity should be within comfortable ranges. A relative humidity level between 40% and 60% is generally desirable for most workers in office environments. Under no circumstances should the temperature and humidity be allowed to vary by an amount greater than 20% over a one hour time period.

### **Personal**

The office environment should be comfortable to the person utilizing the office. By comfortable, we mean mentally as well as physically. Pictures, plants, knick-knacks, etc., all have an important role to play in a proper work environment. **An office worker’s potential to obtain an ergonomic injury IS affected by their attitude toward their** **job and their** **surroundings.** While this is very important, it is also important to understand that many of these personal “touches” bring on their own set of problems. Pictures reflect light. Watering plants near electrical outlets or devices is unsafe. Knick-knacks attract dust. Encouraging the office worker to bring a little of their home to the work place is a good thing. However, it is a good thing that needs to be managed with both individual and group safety as the ultimate arbitrator

Office workers should be encouraged to take rest / exercise / change of task breaks. A common recommendation is 2 to 3 minutes off every 20 minutes. Keep in mind that sitting in a chair is a repetitive task.

### **Health**

There is an abundance of data that suggests that a person’s health (mental as well as physical) is a major contributor to the potential of suffering an ergonomic injury. All supervisory personal need to create an environment whereby all workers understand the impact their health plays on potential ergonomic injuries, and one that encourages the office worker to seek help. The most important health fact to keep in mind is that there is a long period of time between the symptoms of an ergonomic injury and the actual injury. Everybody involved has time to carefully and intelligently prevent these types of injuries. An overview of health issues is given in Appendix B.

4. **Sitting and Standing at Work**

 4.1 **Problems with Excessive Sitting**

 Sitting for more than 1 hour at a time has been shown to change our metabolism. Which allows for fat in our body to be stored rather than metabolized. Extensive sitting has also been shown to increase heart disease risks. Therefore people have been using the standing desk model to allow for more muscle activity.

 4.2 **Problems with Excessive Standing**

 But, standing to work has long known to be problematic, it is more tiring, for men with ischemic heart disease it increases the progression of carotid atherosclerosis because of the additional load on the circulatory system. Prolonged standing at work also increases the risks of varicose veins and accounts for more than one fifth of all cases of working age. So standing all day is unhealthy. The performance of many fine motor skills also is less good when people stand rather than sit. Ergonomists have long recognized that standing to work is more tiring than sitting to work. Standing requires ~20% more energy than sitting. Standing puts greater strain on the circulatory system and on the legs and feet. Consequently, in industry we provide employees with ergonomic anti-fatigue to stand on, with anti-fatigue footwear, and with chairs to allow them to sit down during rest breaks.

 4.3 **Resolutions**

 Sit to do computer work. Then every 20 minutes, stand for 8 minutes and move for 2. This is not a hard rule. However, every 20-30 minutes take a posture break and stand and move for a couple of minutes. Simply standing is not sufficient enough movement. The active motion of moving is what gets blood circulation through the muscles. There are multiple studies that shows that you do not need to do vigorous exercise, such as jumping jacks, to gain the benefits. Just walking around is sufficient enough. With that in mind, you should build in a pattern of creating greater movement and routine movement in your work place.

**Appendix A**

**ADDITIONAL FURNITURE**

**And**

**OFFICE SUPPLY INFORMATION**

**Office Chairs**

Some manufactures / distributors classify office chairs in terms of the tasks that the user is most likely to perform.

* Occasional Task Chairs are used for those applications where light task work is performed such as training, conferences, etc. These are ideal chairs for multiple temporary users.
* Multiple Task Chairs are used for those office workers who do not stay at any one given task for long periods of time. You would consider using these chairs for management level, and secretary/receptionist workers.
* Continuous Task Chairs are used when a full day’s work involves a single range of motions. They would be ideal for people involved with data entry, telemarketing, or customer service.

Some manufacturers classify office chairs in terms of the job title of the user, i.e., executive, manager, secretary, etc. It is easy to sacrifice ergonomic requirements when you let the title dictate your reasoning process. You may purchase good ergonomic chairs in any of these “status orientated” chair groups. You need to focus on the basic ergonomic principles.

Some manufacturers / distributors classify chairs in terms of the size of the user. It is generally a good idea to focus on these types of chairs for users who find themselves in the extremes of the different size groups.

* Small: Less than 5’ 6’’ in height and weighing less than 250 pounds
* Medium: 5’6’’ to 5’11’’ in height and weighing less than 250 pounds
* Large: Taller than 6” and weighing between 200 and 350 pounds

**Ergonomic Keyboards** – As technology develops, the following devices will offer the potential to reduce ergonomic injuries and / or help the ADA worker:

 - Contoured keyboard

 - Fixed split keyboard

* Adjustable split keyboard
* Programmable keyboard ADA functions
* Cordless
* Stand alone keypad

**Ergonomic Platforms** –These platforms raise and lower the keyboard over a 3-inch range on 3-minute intervals. The intent is to improve circulation and reduce tension and muscle fatigue.

### **Ergonomic Mouses – As technology develops, the following devices will offer potential to reduce ergonomic injuries and / or help the ADA worker:**

* Foot mouse
* Adjustable
* Cordless
* Touch Pad

#### **Task Lighting**

* Computer Mounted Lamp – Reduces glare on monitor screen and lights the area immediately in front of the monitor
* Polarizing Task Lamps - Comes with an antiglare screen
* Panel System Long Arm Lamps – Mounts directly to “Hayward” panels that utilize slotted standards
* Panel System Lamps – Mounts directly to the top of the “Hayward” panels
* Document Holder Task Lamp – Mounts directly onto the document holder and illuminates the document

### **Telephone Head Set**

Headsets come with either one or two “ear muffs” (speakers). The adjustable headband can go over the head or under the chin. A clothing clip keeps the headset wire out of the way.

The unit comes with an amplifier that remains next to the standard telephone. In most cases, the headset can be easily disconnected from the amplifier to allow freedom of motion. Many monaural head sets come with a noise cancellation feature.

###### **APPENDIX B**

**HEALTH ISSUES**

**Health Issues**

Computer-intensive tasks can cause muscle strain in the neck, shoulders, back, elbows and wrist, as well as eyestrain, headaches and fatigue. The good news is that it is possible to prevent or greatly reduce the aforementioned problems.

The most frequently reported visual problems include eye fatigue, eyestrain, difficulty in focusing, burning or irritated eyes, watery and red eyes, and blurred vision. These problems can be attributed to:

* Focusing the eyes on a close object for a long period of time;
* The constant refocusing of the eye when the source document and the screen are placed at different focal locations;
* Improper lighting.

Ergonomic disorders are disorders of the musculoskeletal and nervous system occurring in either the upper or lower extremities, including the lower back. These disorders, also known as Cumulative Trauma Disorders (CTDs) may be caused by repetitive motions, forceful exertions, sustained or awkward positioning of the body or mechanical compression of the hand, wrist, arm, back, neck, shoulder and leg over extended periods of time. Activities associated with the onset of CTDs arise from ordinary movements that may include repetitive bending, twisting, gripping, reaching and pushing, etc. These activities, by themselves, are no more hazardous at work than at home. What makes them hazardous is the chronic repetition and the awkward manner in which the tasks are performed without rest or sufficient recovery time. **Cumulative** indicates that these injuries develop gradually over periods of weeks, months, or even years as a result of repeated stresses on a particular body part.

Each repetition of an activity produces some trauma or wear and tear on the tissue and joints. The word **trauma** signifies bodily injury from mechanical stresses. The term **disorders** refer to physical ailments or abnormal conditions.

The majority of health issues arise from improperly designed workstations, the lack of sufficient recovery time between tasks, and the lack of employee awareness of the hazards associated with computer usage. By following guidelines that are discussed in this booklet, you can reduce the chance of injury or illness. When workstations are well designed, posture is improved, strain is not placed on a particular group of muscles, and comfort is increased.

**APPENDIX C**

**To Adjust an Ergonomic Chair**:

1. Stand in front of the chair.
2. Adjust the height so that the highest point of the seat is just below the kneecap.

- Your thighs should be parallel to the floor when you sit.

- This allows you to place your feet on the floor, ensuring good

 circulation in the legs.

1. Sit so that the clearance between the front edge of the seat and the upper part of the legs behind the knee is at least one finger width.
2. Adjust the back height to provide support to the lumbar or lower back area.

- This will help you to maintain correct posture and reduce back pain.

1. Adjust the seat angle by unlocking the mechanism to tilt the seat forward or rearward.

- This minimizes pressure on the underside of the thighs and reduces

 tension on back muscles.

1. Adjust the angle of the seat back so that it provides firm support to your back.

- This helps to reduce back fatigue.

1. Adjust the armrest width and height so that your arms rest lightly on them when your arms are comfortably close to your body and your forearms are parallel to the floor.
2. Adjust the chair height **upward** so that your forearms and hands extend out to the middle row of the keyboard, while remaining parallel to the floor.

- Be sure that there is enough space between the top of your thighs and

 the underside of the work station.

**NOTE:** If in step 8 you would need to adjust your chair downward to have enough space between the top of your thighs and the underside of the workstation, you must raise the workstation to achieve the required end result.

1. If, after step 8, your feet cannot rest flat on the floor or if there is pressure underneath the thighs, you will need to use a footrest to make the chair adjustment complete.

**APPENDIX D**

**Visual Representation of the Workstation.**





**APPENDIX E**

**Ergonomics: Self-Assessment Checklist**

The goal of this self-assessment is to help you set up your workstation for optimal comfort and performance. It also provides a good understanding of what needs to be remedied.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | The office Chair | Yes | No | N/A | Suggested actions we can take.  |
| 1 | Can the height, seat and back of the chair be adjusted to achieve the posture outlined below? |  |  |  | 1: Obtain a fully adjustable chair.  |
| 2 | Are your feet fully supported by the floor when you are seated? |  |  |  | 1: Lower the chair.2: Use a footrest |
| 3 | Does your chair provide support for your lower back? |  |  |  | 1: Adjust chair back.2: Obtain proper chair.3: Obtain lumbar roll.  |
| 4 | When your back is supported, are you able to sit without feeling pressure from the chair seat on the back of your knees? |  |  |  | 1: Adjust the seat pain. |
| 5 | Do the armrests allow you to get close to your workstation? |  |  |  | 1: Adjust armrests. |



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Keyboard and Mouse | Yes | No | N/A | Suggested Actions |
| 6 | Are your keyboard, Mouse and work surface at your elbow height? |  |  |  | 1: Raise/lower workstation2: Raise or lower keyboard3: Raise or lower chair.4: Add a keyboard tray. |
| 7 | Are frequently used items within easy reach? |  |  |  | 1: Rearrange workstation. |
| 8 | Is the keyboard close to the front edge of the desk allowing space for the wrist to rest on the desk surface? |  |  |  | 1: Move keyboard to correct position. |
| 9 | When using your keyboard and mouse, are your wrists straight and your upper arms relaxed? *Note: The keyboard should be flat and not propped up on keyboard legs as an angled keyboard may place the wrist in an awkward posture when keying.*  |  |  |  | 1: Re-check chair, raise or lower as needed.2: Check posture.3: Check keyboard and muse height. |
| 10 | Is your mouse at the same level and as close as possible to your keyboard? |  |  |  | 1: Move mouse closer to keyboard.2: Obtain a larger or different keyboard tray. |
| 11 | Is the mouse comfortable to use? |  |  |  | 1: Rest your dominant hand by using the mouse with your non-dominant hand for brief periods.2: Investigate Alternate mouse options.  |



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| --- | --- | --- | --- | --- | --- |
| Item | Work Surface | Yes | No | N/A | Suggestion Actions |
| 12 | Is your monitor positioned directly in front of you? |  |  |  | 1: Reposition Monitor |
| 13 | Is your monitor positioned at least an arm’s length away? |  |  |  | 1: Reposition Monitor |
| 14 | Is your monitory height slightly below eye level?  |  |  |  | 1: Add or remove monitor stand.2: Adjust monitor height |
| 15 | Is your monitor and work surface free from glare? |  |  |  | 1: Windows at side of monitor.2:Adjust overhead lighting.3: Cover windows.4:Obtain antiglare screen |
| 16 | Do you have appropriate light for reading or writing documents? |  |  |  | 1: Obtain desk lamp.2: Place on left if right handed- place on right of left handed.  |
| 17 | Are frequently used items located within the usual work area and items which are only used occasionally in the occasional work area? |  |  |  | 1: Rearrange workstation.  |



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Breaks | Yes | No | N/A | Suggested Actions |
| 18 | Do you take postural breaks every 20 minutes? |  |  |  | 1: Set reminders to take breaks |
| 19 | Do you take regular eye breaks from looking at your monitor? |  |  |  | 2: Refocus on a different area every 30 minutes.  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Accessories | Yes | No | N/A | Suggested Actions |
| 20 | Is there a document holder either beside the screen or between the screen and keyboard if required? |  |  |  | 1: Obtain a document holder.  |
| 21 | Are you using a headset or speakerphone if you are writing or keying while talking on the phone? |  |  |  | 1: Use a headset or speakerphone while talking on the phone. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Laptop | Yes  | No | N/A | Suggested actions |
| 22 | In the event of using a laptop computer for prolonged periods of time. Do you have access to the following?* A full sized external keyboard and mouse.
* A docking station with a full sized monitor or laptop stand?
 |  |  |  | 1: Please request to obtain accessories.  |

Following the completion of this checklist, please submit to the university’s Environmental Health and Safety team. For further evaluation and discussion of options.

**Person Completing Assessment**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** |  | **Position** |  |
| **Signature** |  | **Date** |  |

**WCSU Ergonomic Specialist**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** |  | **Position** |  |
| **Signature** |  | **Date** |  |
| **Comments/ Recommendations** |  |