



SECTION 13- ERGONOMICS

- 13.1 Ergonomic Procedure**
- 13.2 Video Display Terminal (VDT) Checklist**
- 13.3 Neutral Position**

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13.1 ERGONOMIC PROCEDURE

A. Objective

To prevent the occurrence of work-related musculoskeletal disorders (MSD) at Harper College. To inform College personnel about MSD and the risk factors that can cause or aggravate them. The program strives to promote continuous improvement in the workplace including proactive action to minimize the likelihood of injury. The program will identify design principles that prevent exposure to risk factors and stresses education and action on individuals' parts. The program is established to ensure ongoing and consistent management leadership and employee involvement.

B. Scope

This ergonomics program covers musculoskeletal disorders (MSD) in backs, upper and lower extremities. This includes back injuries, cumulative trauma disorders, repetitive strain disorders, etc. These guidelines apply to all College jobs that require more than two hours per day of: performance of the same motion every few seconds such as computer keyboard entry. Other job tasks that require fixed or awkward position (kneeling, twisted or bent back, overhead work, stooping), or use of vibrating or impact equipment or any job-requiring manual handling of 25 pounds or more will be evaluated on a case by case situation.

C. References

Department of Labor, Occupational Health and Safety Administration (OSHA) Proposed Ergonomic Protection Standard, Federal Register, 1995.

D. Procedure

Reporting of Injury: Known or suspected musculoskeletal disorders (MSD) should be reported the same as any other non-life threatening injury as outline in *Section 5 Incident/ Injury Management-* of this EH&S Procedure Manual.

Injury Prevention: This program outlines several ways to work to prevent MSD:

- **Engineering Controls** are the preferred method of controlling ergonomic stresses. Engineering controls include a wide variety of ways to design a workstation so that the workstation can be adjusted to fit the person and the task.

Some of the following questions should be asked:

1. How will the workstation or computer be used? Who will be using the workstation or computer? If the computer will only be used by one person then the workstation can be set to that person's size and shape, but if the workstation is shared the workstation will have to flexible to adjust to all sizes that use the workstation.
2. What kind of computer will be used? If a desktop is used (where keyboard is separate from the monitor) most guidelines are set for desktop computers. Laptop computers are difficult to get the user in a "neutral position" and recommendations include: docking stations, external monitor and keyboards for use over an extended period of time.
3. Tools used for tasks shall be designed to prevent or reduce chronic muscle contractions, awkward finger, hand and arm positions, repetitive forceful motions, vibrations, and excessive gripping, pinching or pressing with the hand and fingers.



4. What furniture will you use? Make sure the computer and accessories are placed on stable surfaces with adequate room. What chair will be used? A chair should be comfortable to sit in and provide lumbar support.
 5. Keep frequently used items placed closest to the user so that they can be conveniently and comfortably reached.
 6. Tasks performed by the employee shall be designed to prevent extreme postures, repetitive motion, excessive force and static work.
 7. Use the Video Display Terminal (VDT) Workstation Checklist to help identify correct workstation set-up.
- **Administrative Controls** when applied will be beneficial in the reduction of exposure duration, frequency and severity of exposure.

Some administrative controls include the following:

- Reduce the number of repetitive motions.
 - Reduce the force or physical exertion applied to any part of the body.
 - Rotate employees to different tasks. When rotating an employee to a different task, that new task must use a different group of muscles, tendons and nerves.
- **Personal Protective Equipment (PPE)** such as gloves, padding, clothing and or other equipment shall be designed for the intended purpose and employees must be trained in the care and use of PPE. See *Section 6 Personal Protective Equipment* of this *EH&S Manual* for additional information.

Note: Braces, splints and back belts are NOT considered PPE and when use shall only be at the direction and under the supervision of the employee's treating physician.

E. Training

The Manager of Environmental Health & Safety or a designated training representative will provide training.

Training will cover the following:

1. Harper's Ergonomic Program and the employee's role in the program.
2. The signs and symptoms of MSD and how to report injury or illness.
3. The risk factors of MSD
4. Awareness of safe work practices including work methods and techniques the employee can use to minimize the risk of suffering a MSD. Including but not limited going over the VDT Workstation Checklist.

F. Helpful Hints: Arranging Your Workstation

Since the settings for most workstation components are interdependent, a specific sequence of adjustments is not defined. Generally, changing one workstation setting may affect the requirements of other workstation settings, and create the need to modify those other settings. This process is repeated until a satisfactory set up is reached. The following lists the general steps and specific arrangements, which will create a comfortable VDT workstation.

1. Start with an adjustable chair. Adjust your chair seat-pan height to match your individual dimensions. Raise or lower your chair so that your feet reach the floor comfortably. Select a comfortable recline and make sure the backrest supports your lower back. If your chair has adjustable armrest, select an armrest height that allows you to fully relax your shoulders. If other workstation arrangements are satisfactory,



armrests are usually not necessary. However, some employees may prefer armrests. Chairs should have separate seat and backrest tilt mechanisms, offering a wide range of combined settings.

2. Position your monitor so that the top of the monitor is at least several inches below eye level. Your line of sight to the monitor should be downward. If the monitor is too high, you could: remove the CPU from under the monitor and set the monitor directly on top of the desk or table and/or adjust the desk or table height to further lower the monitor.
3. Position your monitor so that it is close enough to be easy for you to read, but as far away as comfortable. Often, the viewing distance will be at least 20 inches and may be as much as 40 inches depending on the monitor size and character or font sizes produced by your software. Use your software's features to modify character sizes as needed.
 - a. If direct or reflected glare is a problem, adjust your monitor's tilt to remove the glare. If glare is still a problem, you may need to modify the location of your workstation in relation to light sources or windows. Select an arrangement in which the monitor screen is at a ninety-degree angle from light sources or windows. A glare-reducing filter can also be helpful for cutting down glare.
4. Place your keyboard in the keyboard tray and adjust the height to match your individual dimensions. Be sure that your hand/wrist can align with your forearm when typing. To accomplish this, you can raise or lower the keyboard height, and tilt you keyboard up or down (positive or negative slope). By tilting the keyboard with the back of the keyboard lower than the front you can lower your arms closer to your lap and more fully relax the shoulders. The induced hand/wrist posture is very comfortable for many people. Some users may prefer their keyboard flat, without being tilted.
 - a. Some points about keyboard tray settings: Be sure that there is adequate thigh clearance space underneath the keyboard tray. Some keyboard trays have adjustment levers or knobs underneath which can interfere with thigh clearance or may be bumped easily with the knee. Modify settings on the keyboard tray until you can work without feeling pain or discomfort at the wrist. Often, small or subtle changes to your keyboard height or tilt can make a large difference in hand/wrist comfort over time.
5. Attach a mouse pad to the right or left of your keyboard tray, depending on whether or not you are right or left handed. The mouse pad should rest at approximately the same height and location as your keyboard, not located on top of a desk, which forces you to reach up and out to perform work with the mouse.
6. Readjust aspects of the workstation, which have been altered by the steps above. As you make changes to your workstation, you may need to revisit some components to readjust them as you repeat the process.
7. Obtain and use a headset if you need to talk on the telephone while typing or keying.
8. Very short employees may require a footrest. If feet do not reach the floor after all adjustments are made, an adjustable footrest can be used.
9. Use a copyholder to create additional desktop space or to improve head/neck posture for reading copy.
10. Provide adequate space for other tasks such as writing, reading copy, or dialing the telephone. Position materials within easy reach depending on the frequency of expected use. For example, if the job entails making frequent phone calls, position your telephone within easy reach of your left or right hand-depending on whether you are left or right handed.
11. Stretching and exercises can make you feel better. Do them periodically throughout your day.



12. Bifocals or trifocal lens wearers may need special glasses for VDT work. Your eye doctor can advise you.

AFTER COMPLETING THE HELPFUL HINTS COMPLETE THE VDT WORKSTATION CHECKLIST.



13.2 VDT WORKSTATION CHECKLIST

Employee's Name: _____ Date: _____

Department: _____ Ext.: _____

OSHA's VDT (Video Display Terminal) Checklist

WORKING CONDITIONS	YES	NO
The workstation is designed or arranged for doing VDT tasks so it allows the employee's.....		
A. Head and neck to be about upright (not bent down/back).		
B. Head, neck and trunk to face forward (not twisted).		
C. Trunk to be about perpendicular to the floor (not leaning forward/backward).		
D. Shoulders and upper arms to be about perpendicular to floor (not stretched forward) and relaxed (not elevated).		
E. Upper arms and elbows to be close to body (not extended outward).		
F. Forearms, wrists, and hands to be straight and parallel to floor (not pointing up/down).		
G. Wrists and hands to be straight (not bend up/down or sideways toward little finger).		
H. Thighs to be about parallel to floor and lower legs to be about perpendicular to floor.		
I. Feet to rest flat on floor or be supported by a stable footrest.		
J. VDT tasks to be organized in a way that allows employee to vary VDT tasks with other work activities, or to take micro-breaks or recovery pauses while at the VDT workstation.		
SEATING	YES	NO
The chair...		
1. Backrest provides support for employee's lower back (lumbar area).		
2. Seat width and depth accommodate specific employee (seat pan not too big/small).		
3. Seat front does not press against the back of employee's knees and lower legs (seat pan not too long).		
4. Seat has cushioning and is rounded/ has "waterfall" front (no sharp edge).		
5. Armrests support both forearms while employee performs VDT tasks and do not interfere with movement.		



KEYBOARD/INPUT DEVICE	YES	NO
The keyboard/input device is designed or arranged for doing VDT tasks so that ...		
6. Keyboard/input device platform(s) is stable and large enough to hold keyboard and input device.		
7. Input device (mouse or trackball) is located right next to keyboard so it can be operated without reaching.		
8. Input device is easy to activate and shape/size fits hand of specific employee (not too big/small).		
9. Wrists and hands do not rest on sharp or hard edge.		
MONITOR	YES	NO
The monitor is designed or arranged for VDT tasks so that...		
10. Top line of screen is at or below eye level so employee is able to read it without bending head or neck down/back. (For employees with bifocals/trifocals, see next item.)		
11. Employee with bifocals/trifocals is able to read screen without bending head or neck backward.		
12. Monitor distance allows employee to read screen without leaning head, neck or trunk forward/backward.		
13. Monitor position is directly in front of employee so employee does not have to twist head or neck.		
14. No glare (e.g., from window, lights) is present on the screen, which might cause employee to assume an awkward posture to read screen.		
WORK AREA	YES	NO
The work area is designed or arranged for doing VDT tasks so that...		
15. Thighs have clearance space between chair and VDT table/keyboard platform (thighs not trapped.)		
16. Legs and feet have clearance space under VDT table so employee is able to get close enough to keyboard/input device.		
ACCESSORIES	YES	NO
17. Document holder , if provided, is stable and large enough to hold documents that are used.		
18. Document holder , if provided, is placed at about the same height and distance as monitor screen so there is little head movement when employee looks from document to screen.		
19. Wrist rest , if provided, is padded and free of sharp and square edges.		



**Harper College
Environmental Health & Safety Procedure Manual**

<p>20. Wrist rest, if provided, allows employee to keep forearms, wrists and hands straight and parallel to ground when using keyboard/input device.</p>		
<p>21. Telephone can be used with head upright (not bent) and shoulders relaxed (not elevated) if employee does CDT tasks at the same time.</p>		
<p>GENERAL</p>	<p>YES</p>	<p>NO</p>
<p>22. Workstation and equipment have sufficient adjustability so that the employee is able to be in a safe working posture and to make occasional changes in posture while performing VDT tasks.</p>		
<p>23. VDT Workstation, equipment and accessories are maintained in serviceable condition and function properly.</p>		
<p>PASSING SCORE = “YES” answer on all “working postures” items (A-J) and no more than two “NO” answers on remainder of checklist (1-23).</p>		
<p>If you DO NOT pass the checklist call the Manager of Environmental Health & Safety at Facilities Management to set up a workstation evaluation.</p>		
<p>If you have reported any pain or discomfort associated with your workstation, call the Manager, Environmental Health & Safety to set up a workstation evaluation.</p>		



13.3 NEUTRAL POSITION

