

SAFETY BRIEF: COMPUTER WORKSTATION ERGONOMICS

Simply put, the term "ergonomics" means "the study of work." Ergonomics helps adapt the job to fit the person, rather than forcing the person to fit the job. Adapting the job to fit the employee can help reduce ergonomic stress and eliminate many of the potential ergonomic disorders. The objective of ergonomics is to adapt the job and workplace to the employee by designing tasks, work stations, tools, and equipment that are within the employee's physical capabilities and limitations.

Ergonomics focuses on the work environment and items such as the design and function of workstations, controls, displays, and lighting. It may include restructuring or changing workplace conditions to reduce stressors that cause musculoskeletal disorders and repetitive motion injuries. Poorly designed workstations place undue stress on employees' tendons, muscles, and nerves. Recognizing ergonomic hazards in the workplace is an essential first step in correcting the hazards and improving employee protection.

The primary goal of this program is to reduce employee injuries and illness, absenteeism, turnover, and to increase employee productivity and job quality. These goals will be accomplished through management leadership, employee education and participation, hazard identification, job hazard analysis, and training. It is critical that each employee gains an understanding of workplace ergonomics to self-identify potential risks. Since the COVID-19 pandemic, many employees are now working remotely at their own work stations. This presents a new challenge because these workstations may or may not be ergonomically configured. Therefore, the employee must have a basic understanding of a safe, ergonomically compatible workstation to alleviate undue stress on their body.

Though there are currently no ergonomic regulations, OSHA does provide recommended guidance. OSHA will however, still cite ergonomic injuries under the General Duty Clause of the Occupational Safety and Health Act, Section 5. The major workplace ergonomic risk factors to consider are:

- High Task Repetition
- Forceful Exertions
- Repetitive/Sustained Awkward Postures

MUSCULOSKELETAL DISORDERS (MSDs) are injuries or illness of soft tissues of the upper extremities (fingers through upper arms), shoulders and neck, low back, and the lower extremities (hips through toes). These injuries are primarily caused or worsened by workplace risk factors such as sustained and repeated exertions or awkward postures and manipulations. MSDs include disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, and spinal disks. MSDs generally develop gradually over a period of time and do not usually result from a single event. MSDs do not include injuries caused by slips, trips, falls, or other similar accidents. They can vary in severity from mild periodic symptoms to severe chronic conditions.



SYMPTOMS OF MSDs include numbness, tingling, burning, aching, pain, and stiffness—are physical indications that your employee may be developing an MSD. Symptoms can vary in their severity depending on the amount of exposure the employee has had. Often, symptoms appear gradually as

muscle fatigue or pain at work that disappears during rest. Usually symptoms become more severe as exposure continues (e.g., tingling continues when your employee is at rest, numbness or pain makes it difficult to perform the job, or pain is so severe that the employee is unable to perform physical work activities).



MSD RISK FACTORS

- repetitive and /or prolonged activities
- forceful exertions
- awkward postures, including reaching above the shoulders or behind the back
- twisting the wrists and other joints
- continued bending at the waist
- continued lifting from below knuckles or above shoulders
- twisting at the waist, especially while lifting
- lifting or moving heavy and/or awkward-sized objects
- prolonged sitting or standing, especially with poor posture
- lack of adjustable chairs, footrests, body supports, and work surfaces

WORKSITE ANALYSIS

Worksite analysis identifies problem jobs and risk factors associated with them. This essential preliminary step helps employers determine what jobs and workstations are the greatest sources of ergonomic stress. A thorough worksite analysis is important in order to successfully prevent or reduce the various ergonomic hazards a worker may be exposed to. Workers exposed to an ergonomic hazard may develop a variety of symptoms.

The primary means of preventing ergonomic hazards is the effective design of a job or workstation and of the tools or equipment used to perform job duties. Using information from the worksite analysis, an employer can establish procedures to correct or control ergonomic hazards. Correction can take place by using appropriate engineering controls, equipment design or redesign, work practices, administrative controls, and personal protective equipment.

ENGINEERING CONTROLS

The primary focus of ergonomic hazard abatement is making the job fit the person, not forcing the person to fit the job. Therefore, engineering controls are the preferred correction method. Employers can achieve this by ergonomically designing workstations and tools or equipment. If the work station is used by more than one employee, it will have to be adjustable for different body heights, sizes, weights, and reaches, whether sitting or standing.

One of the first principals in work station design is to consider the tallest employee and the employee with the shortest reach. Platforms can be used to raise shorter employees to the proper work height. Either sitting or standing, the employee should be comfortable at his or her work station. Arms should rest at the employee's sides and the employee's back and neck should be kept straight; therefore, the work level should be waist-high.

Workstations should be of an ergonomic design that accommodates the full range of required movements among workers. Moreover, the design should accommodate the employees who are actually using them to perform the job. The design of the workstation should permit the employee to adopt several different but equally safe postures that still permit performance of the job. Sit/stand work stations should be considered. If an employee has to stand for prolonged periods, a heavy rubber pad to stand on will help relieve neck, shoulder, back, and leg stress. Work tables and chairs should be height adjustable to provide proper back and leg support. The design should provide sufficient space for the knees and feet. Using seat cushions is acceptable to compensate for height variation when chairs or stools are not adjustable.

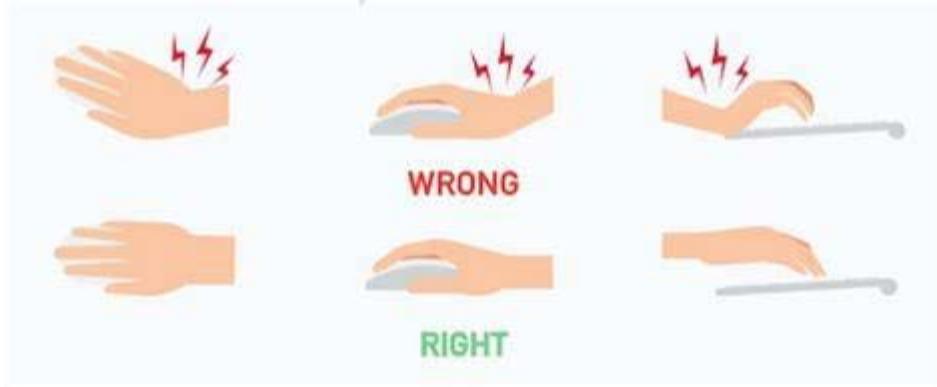


To avoid back injuries, the design should reduce or eliminate the need for overreaching or for carrying objects overhead. The design of workstations, jobs, or processes should also reduce or eliminate repeated manual lifting or twisting. Workstations that include monitors should be ergonomically designed for the computer. Workstations should have adjustable and detachable keyboards, display screens that tilt up and down, brightness, contrast controls, and flexible copy-holders that reduce the distance between the screen and the employee. Workstations should also have proper lighting and anti-glare filters to prevent glare from the monitor. The placement of the monitor in the workstation should minimize or diminish glare.

Eyestrain is the single largest category of complaints among terminal users. Eyestrain is often worse for employees doing "intensive" work—looking at an interactive terminal all day or continuously looking back and forth between a hard copy and the screen. Also, excessive overhead illumination that causes glare on the terminal can result in eye irritation, eye fatigue, headaches, and blurred vision. At present, however, there is no evidence linking terminal work to any permanent visual damage.

Armrests provide support for the wrists and forearms during prolonged keying and do not interfere with adjusting the chair or moving it close to the desk or work surface. The chair design should accommodate the height and contour of each employee. Similarly, the **placement of computer components** such as the monitor, keyboard, and work surfaces should be at comfortable heights so as to prevent pain and stiffness in the neck, arms, back, shoulder, wrists, and hands.

It is strongly suggested that **alternative style keyboards** be considered for employees who spend a large amount of time at computer work stations. Also, placement of keyboards on adjustable keyboard trays, rather than on desktops, allows for proper positioning and is especially useful at shared workstations. **Trackballs and wireless mice** are excellent alternatives to the traditional mouse and should be considered.



WORK PRACTICES

An effective program for ergonomic hazard prevention and control also includes procedures for safe and proper work practices that managers, supervisors, and employees understand and follow. Key elements of a good work practice program include implementing proper work techniques, employee training and conditioning, regular monitoring, feedback, maintenance, adjustments, and modification. At home workstations are no exception. Employees need to understand proper work practices to implement ergonomic work stations where they are conducting regular work functions.

ADMINISTRATIVE CONTROLS

Administrative controls also are an important element of an ergonomics program since they reduce the duration, frequency, and severity of exposure to ergonomic hazards. Providing frequent breaks or job rotation can reduce repetitive hand and body movements. Providing employees with short breaks every hour, when necessary, will help to reduce or avoid stress and back strain. The following are important elements of an ergonomic process:

- Provide management support
- Involve workers
- Provide training
- Identify problems early
- Encourage early reporting of any symptoms
- Implement solutions to control hazards
- Evaluate progress

TRAINING AND EDUCATION

Training programs can increase safety awareness among both managers and employees. The purpose of training and education is to provide employees with adequate knowledge about the ergonomic hazards to which they may have exposure. Employees are then better able to participate actively in their own protection. Suggestions and information from workers who are knowledgeable about ergonomic hazards can be very helpful in designing improved work practices to reduce ergonomic hazards.

A good ergonomic training program will teach employees how to properly use equipment as well as the correct way to do a variety of job tasks. Therefore, workers should receive training frequently. Employers should provide the appropriate controls or tools, as necessary, to reduce or eliminate injuries.

OSHA-Recommended Workstation Postures

Shoulders and Arms

- Keep your shoulders relaxed – not “shrugged-up” or “slumped-down”
- Keep your elbows close to your body
- Keep your work at elbow height

Head and Neck

- Avoid situations that require you to twist your neck, or bend it forward or backwards or side to side

Hands and Wrists

- Keep your hand straight and in-line with your forearms, don’t twist your hands
- Don’t work with your wrists pressed against sharp or hard edges

Back

- Stand straight and avoid situations that require bending forward or backwards, side to side, or twisting
- Use a chair that has good back support when working at tasks that require sitting

Feet and Legs

- For work that requires long periods of standing, use anti-fatigue mats
- Stand close to work surfaces to reduce reaching

Ergonomics makes good business sense. Musculoskeletal disorders account for approximately one-third of all occupational injuries and illnesses involving days away from work, but they are entirely preventable injuries. A good ergonomics program reduces costs to employers by reducing injuries, reducing absenteeism, reducing errors, and maximizing productivity.

Additional training is available through the AMLJIA Online University at www.amljia.org. Log on to the Online University and select the Workplace Ergonomics course. For more information about the Online University, contact the AMLJIA at 800-337-3682.