CSUDH

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

Ergonomics

California State University
Dominguez Hills

ENVIRONMENTAL HEALTH AND SAFETY

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Introduction

Ergonomics is the science of fitting a workplace to a user's needs to increase efficiency and productivity and reduce discomfort. Musculoskeletal disorders (MSD's) are injuries and disorders that affect the human body's movement or musculoskeletal system – muscles, tendons, ligaments, nerves, discs, blood vessels etc.

Purpose

The goal of the campus ergonomics program is to improve employee wellbeing through the reduction of workplace discomfort and the identification and control of ergonomic hazards that may result in MSD's. California Code of Regulations (CCR), Title 8 §5110 also requires the campus to have an ergonomic program.

Components of the program include:

- Worksite analysis/assessment
- Hazard prevention and control
- Training and education
- Medical management

Responsibilities

Managers

Managers shall:

- Inform employees of the ergonomic program and encourage their participation.
- Provide adequate funding and purchase the recommended ergonomic equipment.
- Work with EHS and Workers Compensation as required to implement corrective actions.

Employees

Employees shall:

- Contact EHS to obtain an ergonomic assessment. EHS will provide an Ergonomic Inquiry Form.
- Complete the form and have the appropriate administrator sign the Ergonomic Inquiry Form and return the completed form to Environmental Health & Safety.
- Participate in the ergonomic assessment with the outside vendor.
- When applicable, such as a request for a different chair or other office workstation item, employees may request to visit the Ergonomics Laboratory at WH 142-A with EHS to try out recommended equipment.
- Properly use equipment and employ proper working techniques.
- Monitor themselves for and report to their supervisor early signs and symptoms of MSD's.
- Participate in ergonomic training when provided.
- Implement recommendations provided by EHS and Workers Compensation departments.

Environmental Health and Safety

EHS shall:

- Provide the Ergonomic Inquiry Form to the employee upon request for an ergonomic assessment.
- Send the completed Ergonomic Inquiry Form to the outside vendor. The vendor will contact the employee to set up an appointment for an ergonomic assessment.
- Send the completed ergonomic assessment report to the employee and supervisor. Copy the W/C Associate Director when applicable, such as for an accommodation or as a result of a workplace injury or illness.
- Visit the Ergonomics Laboratory with the employee to try out recommended equipment if needed.
- Provide general ergonomics training to employees.
- Analyze trends in injuries and take action to mitigate.

Workers Compensation

Workers Compensation Benefits are managed by Humane Resource Management and are provided when an injury or illness occurs in course and scope of the employee's employment. Human Resource Management shall:

- Work as needed with supervisors and employees on accommodation needs.
- Train and guide supervisors on ADA regulations as related to ergonomics.

Prevention

Prevention is the key to reducing workplace MSD's. This includes the use of good body mechanics, good ergonomic design (engineering controls), and the use of administrative controls. Early intervention makes a difference when symptoms such as pain, numbness, tingling, or tenderness in the fingers, hands, arms, or muscle pain in the back, shoulders, or other parts of the body from lifting or other body motions, are identified. It is important for employees to report early signs and symptoms to their supervisor.

Workstation Assessment

The workstation assessment evaluates employee's computer workplace and makes recommendations on equipment and posture to reduce or eliminate biomechanical stress. Workstation assessments can be requested at any time.

Ergonomic self-assessment and good practices

Placement Zone

The placement zone is the area in which an employee performs most routine tasks, whether repetitive movements (e.g., typing at a keyboard) or less frequent movements (e.g., lifting). Work should be arranged to be within easy reach and usual work located within 12 inches of the employee. Frequently used materials should be located within arm's distance from the operator employee (18 inches at the maximum). Such an arrangement reduces potential stress to the back, shoulders, and arms by avoiding awkward postures and positions.

Wrist Rest

- When resting use a wrist rest for support to help maintain a neutral wrist.
- Use a wrist rest for cushioning to protect the wrist from resting on a hard or sharp work surface.

Chair

Some of the key items to consider in an ergonomic chair are:

- Use a chair that is stable, mobile, swivels, and allows for operator movement.
- Use a chair that provides proper lower back support. The back support should be easy to adjust backward, forward, up, and down. A properly adjusted chair is important to help reduce or prevent stress on the back.
- Use a chair that has an adjustable seat height. Raise or lower the chair to a comfortable height such that the thighs are parallel to the floor and the knees are at a 90 – 110 degree angle. Rest the feet flat on the floor or use a footrest.
- Use the armrests if they allow maintaining elbows at a 90 – 100 degree angle. If the armrests obstruct sitting posture, then adjust the armrests, or get a chair that allows proper posture, or use a chair without armrests.
- Use a chair with an adjustable seat plan allowing the back of the legs to not contact the front of the seat pan.

Work Surface

- Adjust the work surface so that the keyboard is at the correct height to maintain proper posture (i.e., elbows at keyboard height with the forearms parallel to the floor).
- Use a table large enough to hold the keyboard, monitor, wrist rest, mouse or trackball, and a document holder for all necessary documents.
- Keep adequate clearance under the table for leg length, knee height, and thighs.

Monitor

- Position the monitor directly in front of you.
- Position the monitor at a comfortable viewing distance from the eyes, typically at arm's distance (18-24 inches but may vary due to monitor size and corrective lenses); the proper viewing height should reflect the top of the display screen at 2" to 3" above the users eye level height; and the viewing angle should be approximately 15-30 degrees below the horizontal line of sight.
- Use a monitor that tilts and rotates.
- Use a monitor that has adjustable contrast and brightness.
- Adjust the contrast to a high level and the brightness to a low level to minimize or prevent eyestrain.
- Keep the screen clean because dust reduces character clarity and reflects light.
- Adjust and position the monitor to minimize glare and reflections from overhead lights, windows, etc. or use anti-glare screens.

Keyboard

- Position the keyboard directly in front of you.
- Position the keyboard approximately at elbow height.
- Adjust the keyboard angle to a comfortable position; a slight negative angle should exist for the keyboard placement to allow for maximum comfort and neutral positioning of the user's hands on the keyboard.
- The control to adjust the angle is located at the rear of the keyboard.
- Hands should glide over the keys. Use a light touch for typing, keeping the hands and fingers relaxed.

Other Input Devices

- When using a mouse, trackball, or special keypads, place the wrist in a neutral position.
- When using a mouse, trackball, or special keypads, rest the arm and hand close to the body and at a natural elevation - not reaching forward or raising the shoulder.
- Locate the input device adjacent to the keyboard so it can be accessed without stretching or leaning over to one side.
- Use the whole arm to move the input device instead of just the wrist.
- If the arm is resting on the table edge (hard work surface) when using the mouse or trackball, then use a mouse pad rest to provide cushion.

Document Holder

- Use a document holder that has an adjustable height.
- Use a document holder large enough to support the documents the operator uses.
- Position the document holder beside and parallel to the display screen.
- Position the document holder at the same height and distance as the display screen. Such positioning minimizes the amount the operator has to turn his/her head to look from the document to the display screen and reduces eye muscle fatigue by maintaining the same focal distance.
- Document holders that rest under the monitor and have an angled platform in line with the screen and operator are also acceptable.

Footrest

A footrest may be necessary if the operator cannot rest his/her feet comfortably on the floor.

- Use a footrest that has an adjustable height and heel stop.
- Use a footrest that is large enough to allow for operator movement.

Eyewear

Employees should have eye check-ups on a regular basis.

Exercises

- For the eyes, look away from the work to a distant point at least every hour.
- For the body, stretch the neck, shoulders, back, legs, arms, and fingers at least twice a day. Stand up and walk around often to increase blood flow circulation. Refer to the stretches on this program for reference as needed

Industrial Ergonomics

When ergonomics is applied at an industrial work area (e.g., workshops, labs, and equipment repair areas) it is referred to as "Industrial Ergonomics." It can encompass all other workstations except a general office workstation. The MSD risk factors are still relevant, only the setting is different. As mentioned previously, good body posture should always be employed to minimize muscle tension and body strain.

Manual Material Handling

Manual material handling involves sitting, lifting, lowering, and carrying objects; it may also involve getting up and down from a standing position. All of these movements involve using the back. To avoid the risk of developing back problems, ergonomic principles should be applied while using the back. If ergonomics is ignored, daily stresses on the muscles, joints, and disks in the back can eventually cause a MSD in the back. For objects that are too heavy or bulky for safe manual handling by employees, mechanical lifting devices must be used for lifting and moving.

When Lifting Objects

To minimize the risk of developing an MSD in the back, employees should follow these guidelines:

- Keep the back/torso erect with the natural curve of the spine intact.
- Keep the load close to the body.
- Lift and carry a heavy load with two hands instead of one.
- Bend at the knees to lift objects, not the back.
- Store loads above knee heights, but below shoulder height.
- Avoid bending forward or backward or twisting while lifting or carrying the load.
- Do not lean forward, backward, or to either side without support.
- Avoid lifting, pushing, or pulling a load that is too heavy. Always get assistance when needed. The maximum weight of the load that can be handled will vary for each employee.

Preventing Back Injuries:

- Avoid lifting, bending, or reaching whenever you can. Use a cart, dolly, cranes, hoists, lift tables, and other lift-assisting devices.
- Place objects off the floor, ideally waist high.
- Test the weight of an object, before lifting, by picking up a corner.
- Get help if the load is too heavy for you to lift it alone.
- When lifting an object:
    1. Take a balanced stance, feet shoulder width apart.
    2. Squat down to lift, get as close as you can to the object
    3. Get secure footing and a good grip, and then hug the load.
    4. Lift gradually using your legs, keeping the load close to you and keeping the back and neck straight.
    5. Once standing, change directions by pointing your feet and turn you whole body. Avoid twisting at the waist.
    6. To put a load down, use these guidelines in reverse.

Hand Tools

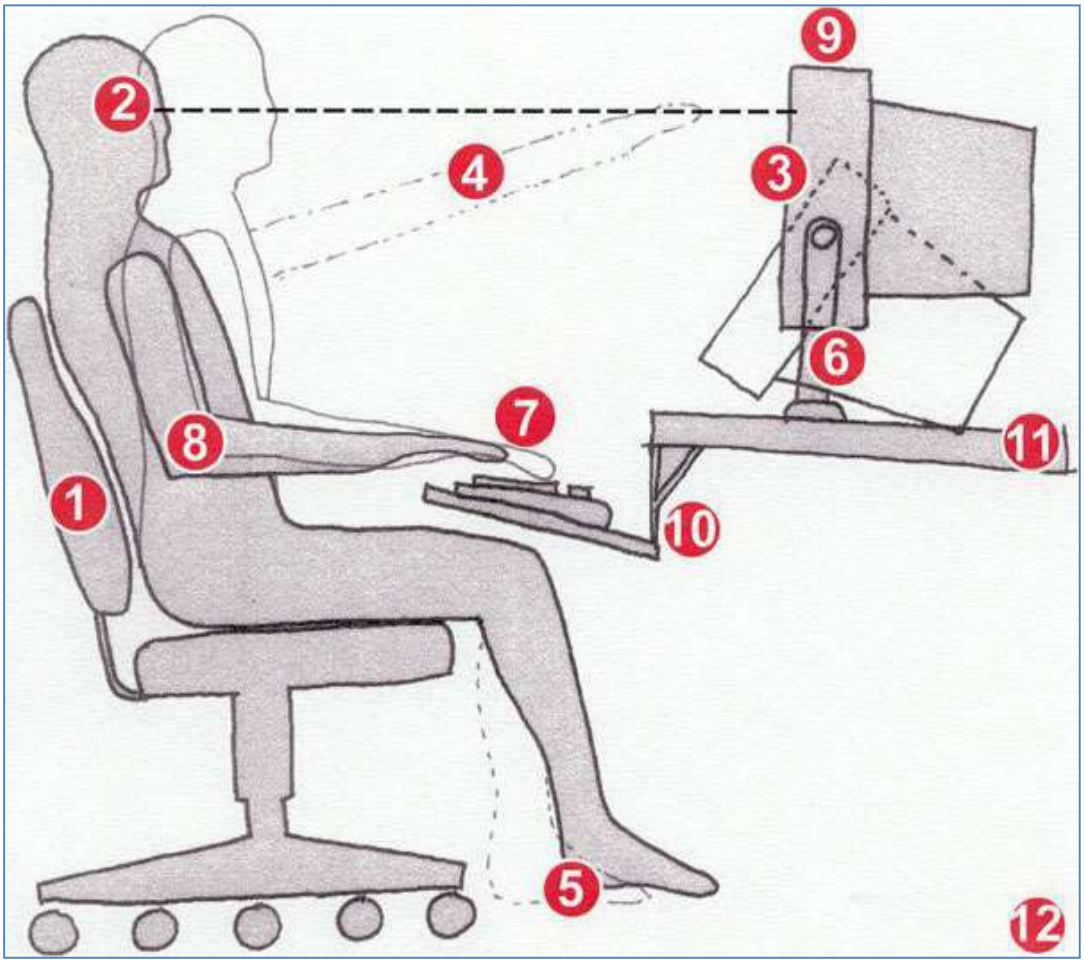
Improper hand tool selection or improper use of tools can cause MSD's. Hand tools should fit the employee's hand; employees with small hands or who are left-handed may need tools designed for them. Hand and wrist posture are important because they affect how much force the muscles must produce to hold objects. When selecting and purchasing hand tools, these guidelines should be followed:

- Select tools that allow the wrist to be held straight and that minimize twisting of the arm and wrist. Good working posture can be maintained when properly designed tools are used.
- Select tools that allow the operator to use a power grip, not a pinch grip. Minimal muscle force is required to hold objects in a power grip posture. The pinch grip requires excessive fingertip pressure, and can lead to a MSD.
- Avoid tools that put excessive pressure on any one spot of the hand (i.e., sides of fingers, palm of the hand)**.**
- For power or pneumatic tools, select tools with vibration dampening built in whenever possible. Provide personal protective equipment such as gel-padded-padded gloves to reduce exposure to vibration.

Ergonomic & Injury Prevention cost sharing program

For industrial applications, EHS in collaboration with W/C and RM, have created a cost sharing program to help support equipment, PPE or processes that promote neutral postures and reduce RSI's that can lead to a MSD. If you have an idea of a process or equipment that will make your job tasks safer, please inform your supervisor or manager to begin the application process. For more information about this program please visit the EHS resources page and click on the Injury Program cost sharing program located here https://www.csudh.edu/ehs/resources/

Twelve Tips for an Ergonomic Computer Workstation



1. Use a good chair with a dynamic chair back and sit back in this
2. Top of monitor casing 2-3" (5-8 cm) above eye level
3. No glare on screen, use an optical glass anti-glare filter where needed
4. Sit at arms length from monitor
5. Feet on floor or stable footrest
6. Use a document holder, preferably in-line with the computer screen
7. Wrists flat and straight in relation to forearms to use keyboard/mouse/input device
8. Arms and elbows relaxed close to body
9. Center monitor and keyboard in front of you
10. Use a negative tilt keyboard tray with an upper mouse platform or downward tiltable platform adjacent to keyboard
11. Use a stable work surface and stable (no bounce) keyboard tray
12. Take frequent short breaks (microbreaks)