


# ERGONOMICS

Presented by:



---

---

---


---

---

---

---

---



## Ergonomics

Dr. Kai Tiltmann, D.C., C.A.E.  
Certified Associate Ergonomist  
Qualified Medical Evaluator  
Work Injury Specialist

Du-All Safety  
45950 Hotchkiss Street  
Fremont, CA 94539  
USA

---

---

---


---

---

---

---

---



## Introduction to Ergonomics

- The study of the relationship between the work environment and the worker.
- Requires open communication and training.
- Benefits both the employee and the employer.

---

---

---

---

---

---

---

---



## Cost of Industrial Injuries

- 40% of work injuries result in lost work days
- Back injuries account for 20% of injuries
- Carpal tunnel syndrome account for 5%
- 60% of all injuries are musculoskeletal
- CA spent over 5.2 Billion on Workers' Compensation in 1997, and 26 billion in 2002.

---

---

---

---

---

---

---

---



## Risk Factors for Injuries

- Frequency
- Duration
- Static Posture
- Contact Stress
- Awkward Positions
- Vibration
- Temperature Extremes

---

---

---

---

---

---

---

---



## Neuromusculoskeletal Disorders

- Disorders involving the following anatomical structures:
  - muscles
  - tendons – provide joint movement / strain
  - ligaments – provide joint stability / sprain
  - nerves
  - bones

---

---

---

---

---

---

---

---



## Two Categories of Injuries

- Traumatic Injuries
  - sudden onset
  - immediate symptoms
  - easy to recognize
  - prompt treatment rendered
- Cumulative Injuries
  - gradual onset
  - symptoms develop over time, often years
  - harder to recognize
  - treatment delayed
  - difficult to treat in later stages

---

---

---

---

---

---

---

---



## Signs and Symptoms of Injuries

- Depending on the type and severity of injury, the following may included:
  - pain (sharp, radiating, burning, pinpoint)
  - swelling
  - redness
  - numbness
  - muscle weakness
  - muscle loss

---

---

---

---

---

---

---

---



## In the Event of an Injury

- Report the injury to management
- Seek appropriate treatment
- Return to work as soon as possible

---

---

---

---

---

---

---

---



## Back Pain and Lifting

- A leading cause of work related injury and disability in the US work force today is low back pain. A few simple steps can significantly reduce your risk of sustaining a work injury from improper lifting.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Plan ahead before lifting**
  - Knowing what you're doing and where you're going will prevent you from making awkward movements while holding something heavy. Clear a path, and if lifting something with another person, make sure both of you agree on the plan.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Lift close to your body**
  - You will be a stronger, and more stable lifter if the object is held close to your body rather than at the end of your reach. Make sure you have a firm hold on the object you are lifting, and keep it balanced close to your body.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Feet shoulder width apart.**
  - A solid base of support is important while lifting. Holding your feet too close together will be unstable, too far apart will hinder movement. Keep the feet about shoulder width apart and take short steps.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Bend your knees and keep your back straight**
  - Practice the lifting motion before you lift the object, and think about your motion before you lift. Focus on keeping you spine straight--raise and lower to the ground by bending your knees.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Tighten your stomach muscles**
  - Tightening your abdominal muscles will hold your back in a good lifting position and will help prevent excessive force on the spine.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Lift with your legs**
  - Your legs are many times stronger than your back muscles--let your strength work in your favor. Again, lower to the ground by bending your knees, not your back. Keeping your eyes focused upwards helps to keep your back straight.
  - Never bend your back to pick something up.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **Don't twist or bend**
  - Face in the direction you are walking. If you need to turn, stop, turn in small steps, and then continue walking.
- **Never twist AND bend to pick something up**
  - This significantly increases your risk of a back injury.

---

---

---

---

---

---

---

---



## Proper Lifting Tips

- **If you're straining, get help**
  - If an object is too heavy, or awkward in shape, make sure you have someone around who can help you lift.

---

---

---

---

---

---

---

---

## The Computer Workstation

- Although back safety is important, a large group of employees work with computers. There is no “heavy lifting” involved in computer use, but computer users can be exposed to other problems. A properly adjusted workstation is just as important as lifting properly and can avoid adverse health problems.

---

---

---

---

---

---

---

---

## The Computer Workstation

### Ergonomics Review



---

---

---

---

---

---

---

---

## The Computer Workstation

- Goal: With the appropriate furniture adjustments and ergonomic equipment, your computer workstation should accommodate the proper body postures.

---

---

---

---

---

---

---

---

## The Computer Workstation

### ■ Seating - Adjust the height of your seat to allow for:

- Feet to plant comfortably on the floor (or use a footrest).
- Knees bend at a 90 degrees angle or slightly greater.
- Thighs to rest parallel to the floor.
- Your calf muscles should not touch the seat pan (the part you're sitting on).

---

---

---

---

---

---

---

---

## The Computer Workstation

### ■ Seating - Adjust seatback position to allow for:

- Hips to be bend at 90 degrees or slightly greater.
- Have your back firmly in contact with the seat back. (Again, this should not result in your calf muscles contacting the end of the seat pan.)

---

---

---

---

---

---

---

---

## The Computer Workstation

### Chair Position



---

---

---

---

---

---

---

---

## The Computer Workstation

- **Mouse and Keyboard Height - Adjust your mouse and keyboard height to allow for:**
  - Hands at elbow height or slightly lower.
  - Forearms and hands to form straight lines.
  - Shoulders to be relaxed, with elbows hanging close to your sides.

---

---

---

---

---

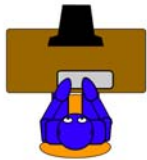
---

---

---

## The Computer Workstation

### Keyboard Position



Your keyboard should be between you and the screen, parallel to the front edge of your desk... and aligned with your fingers naturally on the home keys.

---

---

---

---

---

---

---

---

## The Computer Workstation

- **Monitor Placement - Adjust your monitor position to allow for:**
  - The top of the screen to align at or slightly above eye level.
  - Straight-forward monitor viewing.
  - Have monitor a comfortable distance from eyes (arms length away)
  - Keep an upright head posture with chin tucked in.

---

---

---

---

---

---

---

---

## The Computer Workstation

### Monitor Position



The top line of text on your screen should be at eye level and the screen should never be angled down.

---

---

---

---

---

---

---

---

## The Computer Workstation

- Frequently, the only thing that needs to be done to achieve proper ergonomic positioning at your workstation is set up the equipment properly.
- Minor adjustments can make a big difference in the comfort level while at your workstation.

---

---

---

---

---

---

---

---

## The Computer Workstation Review

### Ergonomics Review



---

---

---

---

---

---

---

---



## Healthy Work Habits & Practices

- Ensure proper use and adjustment of office furniture and equipment by performing ergonomic self evaluations.
- While performing daily tasks, do not exert more force than is really necessary.
  - Ex: Avoid pounding on keys while keyboarding.
- Practice developing proper postures for sitting, keyboarding, phone use, etc.

---

---

---

---

---

---

---

---



## Healthy Work Habits & Practices

- Maintain a constant awareness of preferred neutral body postures not only at work, but in all modes of your life. Your health follows you wherever you go.
- Avoid extended periods of continuous computer use by taking short breaks or performing other tasks intermittently between periods spent on the computer. (maximum of 30 minutes continuous computer use at any time)

---

---

---

---

---

---

---

---



## Healthy Work Habits & Practices

- Take **stretch/ exercise breaks** during your workday and integrate them into your daily life as well.
- Avoid direct or overly-bright lighting, but make sure you have enough light to comfortably and safely perform your job duties.

---

---

---

---

---

---

---

---

## Healthy Work Habits & Practices

- Taking a few simple precautions can significantly increase your work comfort and reduce the risk of injury. If you have additional questions, please contact Risk Management or Human Resources.

-----  
**THANK YOU**

---

---

---

---

---

---

---

---

## Questions

- Class: Ergonomics
- Instructor: Dr. Kai Tiltmann
- Contact: (510) 651-8289; [du-all.com](http://du-all.com)
- Fax Sign in sheets to (510) 651-8937



35

---

---

---

---

---

---

---

---