

ERGONOMICS FOR THE 21ST CENTURY

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

ATTENDANCE RECORD: Document the date of your presentation as well as identify the program participants. The attendance record may be copied as needed.

INTRODUCTION

In the field of ergonomics, there have been a number of improvements and advancements lately. Ergonomics is the science of arranging and adjusting the work environment to fit the employee's body. It applies to every job and every type of workstation. Your company has incorporated ergonomics into its safety program, but it is each employee's responsibility to make sure that he or she is aware of ergonomic hazards and takes the steps to reduce them.

This video explains to viewers the basics of ergonomics and the steps they can take to prevent ergonomic hazards from causing injury. Topics include Carpal Tunnel Syndrome, the computer workstation, correct postures, exercises for preventing ergonomic problems and employee responsibilities.

PROGRAM OUTLINE

ERGONOMIC BASICS

- Ergonomics really started to emerge during World War II, when engineers began working with airplane pilots to see if the cockpits could be engineered better.
- The principles they applied to making flying more comfortable are factored into almost everything we use today: automobiles, kitchen appliances, tools, machinery and computers.
- Optimal work performance is obtained when products, equipment, workstations and work methods are designed that keep human capabilities and limitations into consideration.
- Ergonomics can be applied to every job and type of workstation, such as work benches positioned at the appropriate heights and employees using lifting devices rather than straining the back and other parts of the body.

CARPAL TUNNEL SYNDROME

- Every time a tendon moves in a finger, it moves through a tunnel that serves as a sheath for the tendons.
- If the tendons aren't positioned properly, they may scrape on or be irritated by the sides of the tunnel. This can occur when the hands and wrists are bent or crooked and not in the neutral position.
- You will feel some pain, sensation or tingling to let you know there's a problem. This is the time to evaluate your posture and stop whatever is causing the irritation.
- These tendon inflammations and discomfort usually occur before Carpal Tunnel Syndrome sets in.
- Carpal Tunnel Syndrome is described as a squeezing of the median nerve as it runs into the hand. The nerve is squeezed by swollen tendons surrounding it as they cross through a bony passage or Carpal Tunnel at the inside of the wrist.
- Signs of a potential problem may include tingling of the hands and wrists, tightness, discomfort, stiffness, or soreness. Also, you may feel a burning in the hands, wrists, fingers, forearms or elbows.
- These signs can range from the feeling of mild discomfort to pain that keeps you up at night. Clumsiness or loss of strength and coordination in the hands can also be indicators.
- The first thing you should do if you are experiencing these symptoms is to correct your typing technique and posture and also make sure your workstation is positioned properly. Good work habits should correct the majority of the problems.
- If the discomfort persists, report it to your employer. The longer you wait, the more damage can occur.

REASONS FOR REPETITIVE STRESS INJURIES

- Many reasons exist for injuries related to computer use.
- One major reason for the increased number of injuries related to computer use is that computers are now allowing us to do more tasks without getting up from our desks.
- As an example, a manual typewriter at one time required using a return carriage, white-out for mistakes, breaks for paper installation and getting up from the desk to file papers. In other words, you were forced to do many things in addition to typing.
- Taking short "micro-breaks" during your workday will save you from potential hazards associated with computers and workstations.
- The hazard is using computer word-processing with relatively motion free, long duration, continuous and precise muscular activity.
- The old typewriter offered users an opportunity for micro-breaks even though this activity wasn't considered a break at all, but just work that had to be done.

THE COMPUTER WORKSTATION

- Factors included in the computer workstation include the person, the lighting of the work area, furniture, the computer and others.
- Proper lighting is designed to reduce glare and bright reflections from your screen, nearby glass or shiny surfaces. This may require more than one adjustment since light conditions change during the day.

- Keep your monitor screen clean.
- Many people make the mistake of putting the monitor, the keyboard or both off to one side of the desk. If you perform more than a few minutes of keyboarding a day, the keyboard and monitor should be placed directly in front of your normal sitting position.
- The screen should be 18 to 30 inches from your eyes (or about arm's length). The top of the monitor should be at eye level because the eyes are at their most comfortable position straight-ahead, but slightly downward.
- When your head is in a neutral position, less force is placed on your neck and back. If your head is higher than your monitor and you have to look down, you're using more muscular or lever arm force than you are in the neutral posture.
- The same applies for your arms and wrists. If they are in a neutral position, less force is used.
- The neutral position for your forearms is to have them parallel to the floor and the arms not outstretched.
- Your back and hips should be at 90 degrees with each other and feet on the floor or some other surface.
- The neutral position for the wrists is straight, not twisted to the right or to the left.
- When your body changes to something other than a neutral position, you're exerting force in that area. The more force you use the more likely you'll irritate tendons, muscles, ligaments and other parts of your body.
- To help protect your eyes, you should look away from the computer and focus on an object that is at least 20 feet away about every 30 minutes.
- You may be uncomfortable with these adjustments initially, as old habits are hard to break. The goal is safety and injury prevention: these recommended adjustments will help accomplish this goal.

COMPUTER COMPONENTS

- At many workstations, it's common to see the keyboard in proper position above the knees but the mouse on a higher and more forward countertop. The mouse should be on the same level as the keyboard so mouse use doesn't create a twisted or reaching posture.
- The contrast and brightness levels on the monitor should be adjusted to create the brightest screen without blurring. Black characters against a light gray background are often the easiest on the eyes for long periods of time.
- Frequently used items should be within arm's reach from your keyboarding position. A document holder should be at the same height and distance as the screen so your eyes don't need to change focus so often.
- Frequent telephone use requires a headset so you can avoid bending the neck while on the telephone. Don't hold the telephone squeezed between the neck and shoulder as many injuries begin with nerve damage or irritation in the neck or shoulders.
- The healthiest position for your wrists while typing is neutral. Neutral means the knuckles, wrist and top of the forearm forming a straight line. This position cannot be achieved with most commercial wrist pads.

- For this reason, typing is best performed from a “floating” position. Frequent rest, micro-breaks, and time away from the keyboard becomes necessary with floating wrists because it tends to emphasize shoulder muscle contraction.
- Don’t forget to use the lightest possible finger pressure during keying. Banging on the keyboard is detrimental to your health.

SITTING POSTURES

- The elbows should form a 90-degree angle while “hanging” at your sides from the shoulders. If you use chairs with armrests, be aware that they rarely allow this position.
- The seat height should allow the proper upper body posture. The upper body posture is most responsible for reducing risk of injury.
- Feet should be flat on the floor. If the proper height of the seat doesn’t allow for the feet on the floor, a footrest can be used. This allows the lower legs to be vertical and thighs horizontal.
- The chair backrest should have firm support for the inward curve of the lower spine and the outward curve of the upper spine. Whether you need upper body support to help keep your torso and head vertical is up to you.
- The seat of the chair should be large enough to accommodate frequent changes in position and firm enough to allow your weight to be supported through the buttocks.
- When you sit in one position for a long period of time, blood flow is restricted. Your body needs activity so you should change your sitting position at least every 15 minutes.
- Active breaks should be taken at least every 30 minutes, especially for those who perform more than two or three hours of typing a day. An active break occurs when you stop typing to do other things, such as making phone calls, filing papers or getting a drink of water.
- An active break should include specific exercises that should be performed during micro-breaks while seated at your workstation.

BACK STRAINS/SPRAINS

- Back strain is a general term used for a pulled or torn muscle.
- A back sprain refers to stretched or torn ligaments.
- The same types of poor lifting practices we discussed earlier can lead to these ailments.

EXERCISES

- Raising your forearms and pointing your hands to the ceiling performs the shoulder blade squeeze. Push your arms back, squeezing your shoulder blades together. Hold for at least five seconds and repeat about three times.
- To perform the eye palming technique, place your elbows on your desk, cup your hands and close your eyes. Place your eyelids gently down onto your palms. Hold this position for about one minute while breathing deeply and slowly. Then slowly uncover your eyes.
- The arm and shoulder shake is simply that. Drop your hands to your sides, then shake your relaxed hands, arms and shoulders gently for at least five seconds. Repeat three times.

- Spanning is placing your arms straight in front of you and spreading your fingers as far as possible for at least five seconds. Repeat this exercise five times.
- These are a few key exercises, but there are many more. Try to find the best ones that work for you.

SAFETY PROGRAM OBJECTIVES

- The objective of your company's safety program is to make sure that employees fully understand their job responsibilities in preventing accidents.
- If you're having problems, strains, sprains or other forms of injuries, there is always a better way of doing things.
- Take a look at your work area and make suggestions on how to improve the ergonomics of performing your job.
- The company can provide the proper equipment, facilities, policies and procedures, but when the race is finished, the outcome is up to you. You're the only person who has control of your safety behavior.
- We'd like to encourage you to participate in our safety program and be your own ergonomic engineer. If you need any assistance, ask your supervisor.

PREPARE FOR THE SAFETY MEETING OR TRAINING SESSION

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

Place or secure extension cords to prevent them from becoming a tripping hazard.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to show viewers how to avoid injuries caused by poor ergonomic practices.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Lead discussions about workstations and procedures at your facility that could lead to ergonomic problems and how they can be avoided. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewer will be able to explain the following:

- What Carpal Tunnel Syndrome is and what to do for its symptoms;
- How the computer workstation should be set up to avoid ergonomic problems;
- What the proper posture is for sitting at a computer workstation;
- What exercises should be performed to prevent ergonomic injuries.

ERGONOMICS IN THE 21ST CENTURY
REVIEW QUESTIONS

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. There is no way to know if you are experiencing problems that could lead to Carpal Tunnel Syndrome.
 - a. true
 - b. false

2. About every half hour, you should look away from your computer monitor to an object at least 20 feet away.
 - a. true
 - b. false

3. Your mouse should be positioned _____ keyboard.
 - a. on a higher level than the
 - b. on a lower level than the
 - c. at the same level as the

4. You should rest your arms on the armrests of your chair no matter what angle it forms with the elbows.
 - a. true
 - b. false

5. Active breaks should be taken at least every _____.
 - a. 30 minutes
 - b. hour
 - c. two hours
 - d. three hours

6. If you sit in one position for long periods of time, you should change your sitting position at least every 15 minutes.
 - a. true
 - b. false

7. The company can provide all the safety equipment and procedures available, but the person responsible for your safety is _____
_____.
 - a. the company safety director
 - b. your supervisor
 - c. you

ANSWERS TO THE REVIEW QUESTIONS

1. b

2. a

3. c

4. b

5. a

6. a

7. c