

ERGONOMICS EMPLOYEE TRAINING: *Preventing Musculoskeletal Disorders*

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

As tools, technology and processes in the workplace change, so must the methods and practices used to prevent workplace injuries. To keep employees safe and injury-free, companies set up a program to prevent injuries that result from repeated motions, vibrations and forces placed on our bodies while performing various job actions. These injuries are known as musculoskeletal disorders or MSD's. They often occur when certain tasks are done for extended periods of time and they can be aggravated by the use of excessive force or poor posture by the employee. Your company's ergonomic program is designed to best fit the work environment to the human body to prevent these types of injuries.

This video focuses on the three main components of a successful ergonomics program: developing a knowledge of musculoskeletal disorders, reporting their signs and symptoms and controlling ergonomic hazards. Topics include types of musculoskeletal disorders, importance of reporting MSD signs and symptoms, determining MSD incidents and risk factors, the purpose of the job hazard analysis and the measures to be taken to control ergonomic hazards.

PROGRAM OUTLINE

BACKGROUND

- Preventing injuries is the purpose of the company's ergonomic program. This program, like other safety programs, requires employee participation to be successful.
- The program consists of three main components:
 - 1) Developing a knowledge of musculoskeletal disorders, including their signs and symptoms;
 - 2) Reporting these signs and symptoms so proper action can be taken;
 - 3) Controlling ergonomic hazards that are found to exist.

MUSCULOSKELETAL DISORDERS

- A musculoskeletal disorder is a disorder that affects a part of the body's musculoskeletal system, which includes bones, nerves, tendons, ligaments, joints, cartilage, blood vessels and spinal discs.
- Factors than can contribute to musculoskeletal disorders include heredity, physical condition, previous injury, pregnancy, poor diet and lifestyle.

TENDONITIS

- A common musculoskeletal disorder is tendonitis. This occurs when a tendon and its lining become inflamed. Tendons help attach muscle to bone to allow movement of a joint.
- When tendons are inflamed, pain, swelling and tenderness occur in the joint area. Also, stiffness and a decreased range of motion can occur.
- Some specific types of tendonitis include Trigger Finger, which affects the ring and middle finger and DeQuervains Syndrome, which affects the base of the thumb.
- Epicondylitis affects the elbow and is also known as tennis elbow or golfer's elbow depending on which tendons are involved.

NERVE COMPRESSION

- Nerve compression is another common type of musculoskeletal disorder.
- Nerves that transmit signals from body parts to the brain are located throughout the body. They often run through small tunnels and between vertebrae in the spine.
- Various conditions can cause nerves to become squeezed, pinched or compressed. This can result in shooting pain, numbness, weakness and loss of coordination.
- Sciatica occurs when the sciatic nerve in the spine becomes compressed. Symptoms appear in the back of the leg and side of the foot.
- Carpal Tunnel Syndrome occurs when swelling causes the median nerve in the wrist to become compressed.

OTHER TYPES OF MUSCULOSKELETAL DISORDERS

- Symptoms of Tension Neck Syndrome are neck stiffness and pain. This disorder is mainly caused by poor posture.
- Raynaud's Phenomenon is a loss of blood circulation which results in whitening and numbness of the fingers.
- Torn muscles and sprained ligaments are also considered musculoskeletal disorders.

SIGNS AND SYMPTOMS OF MSD'S

- Being familiar with the signs and symptoms of MSD's allows us to recognize and report potential problems.
- The following are some of the signs and symptoms of MSD's:
 - a) a decreased range of motion, such as restricted or limited movement in the joints (knee, elbow, wrist, neck or shoulder);
 - b) abnormal formation of extremities, such as curled fingers or toes;
 - c) a noticeable decrease in grip strength, making it difficult to hold and lift objects;
 - d) a loss of muscle function or control, which can cause feelings of heaviness or clumsiness in the affected area;
 - e) fingers or toes turning white;
 - f) sensations such as pain, numbness, tingling, burning, cramping or stiffness.
- If you experience these types of warning signs, you should report them right away.

IMPORTANCE OF REPORTING MSD SYMPTOMS

- Failing to report symptoms of musculoskeletal disorders can lead to increased inflammation and increase the severity of the disorder.
- As the condition worsens, pain tends to radiate to different parts of the body. This makes a proper diagnosis more difficult.
- Without proper treatment, a condition that could have healed easily can develop into a chronic injury.
- When reporting possible musculoskeletal disorders, specific information needs to be given. At a minimum this will include the physical symptoms, the worker's job description and the date the symptoms first appeared.
- All employees will be given specific instructions on the company's reporting procedures. Only through prompt and proper reporting can appropriate medical treatment and preventive action be taken.

DETERMINING MSD INCIDENTS

- When beginning the process of controlling possible MSD hazards, two important determinations must be made concerning the reported symptoms and the job tasks in question.
- First, it must be determined if the reported signs and symptoms are, in fact, due to a work-related musculoskeletal disorder.
- Because many symptoms of MSD's are also symptoms of normal aches and pains, OSHA has established guidelines for determining work-related musculoskeletal disorders. If a work-related MSD has occurred, it is referred to as an MSD incident.
- An MSD incident has occurred if the reported signs and symptoms meet any of the following conditions:
 - a) the condition is work-related and medical treatment beyond first aid is required to treat the symptoms;
 - b) the condition is work-related and the affected employee requires restricted duty or time away from work to recover;
 - c) the condition is work-related and the reported signs and symptoms last more than seven consecutive days.

DETERMINING MSD RISK FACTORS

- The second step toward controlling possible ergonomic hazards is to determine whether the job in question has MSD risk factors. These factors are work conditions that may increase the risk of musculoskeletal disorders.
- Force is an MSD risk factor. Some tasks require pushing, pulling, lifting, squeezing or other physical action to do the work.
- Awkward posture occurs when ideal body position is not maintained while performing work. Examples include reaching behind, twisting, kneeling or reaching overhead.
- Repetition is performing the same motions over and over again. The level of risk depends on speed, duration and the number of muscle groups used.
- Vibration usually occurs when using powered tools or equipment. The action of the tool transmits vibrations through the hand and arm and into the body.

- Contact stress can occur when body parts are forcefully pressed into a hard surface or edge and soft body tissue is pinched or crushed. Examples include the stress placed on the knees when kneeling or on the thighs by repeatedly leaning into the edge of a counter or table.
- The temperature of the work area may also be a risk factor. Extreme cold temperatures reduce blood flow, dexterity and muscle strength while extreme heat can cause rapid muscle fatigue.
- You must be able to recognize MSD risk factors so you will know when preventive measures should be used.
- You should also understand the difference between a risk factor and a hazard. The presence of risk factors does not necessarily make a job hazardous.
- When work is performed properly while using approved control measures, a job with risk factors can be done safely. Ergonomic control measures are used to control MSD risk factors and prevent them from becoming hazards.

JOB HAZARD ANALYSIS

- If an MSD incident occurs while a job with risk factors is being performed, a job hazard analysis will be conducted to determine what control measures are needed.
- This combination of events is referred to as an action trigger because it triggers further action to be taken.
- The job hazard analysis is performed to determine whether the MSD risk factors present a hazard to the employee performing the job.
- This process includes talking with employees who perform the job. Employees give valuable information about job tasks and actions.
- In addition, actual job function will be observed so data can be gathered on the specific risk factors involved. Part of this data will include magnitude, frequency and duration of exposure.
- Magnitude is a measurement that reflects the amount of effort or strength required to do the task.
- Frequency is a measure of speed and indicates how often a task is performed during a unit of time.
- Duration is the length of time the sequence of actions is performed continuously.
- Each of these measurements are taken into account when assessing a job for MSD hazards.

ERGONOMIC CONTROLS

- When the job hazard analysis indicates the presence of an ergonomic hazard, measures will be put in place to control the hazard.
- Engineering controls are physical changes to the job that reduce ergonomic hazards. These may include such things as redesigning the workstation to better fit the employee; changing the type, style or use of tools; or, adding equipment to the job to assist employees.
- Because engineering controls are not practical in many cases, it is often necessary to use administrative controls to address a hazard.
- Administrative controls are changes in the way work is assigned or scheduled to reduce the frequency or duration of exposure.

- This may include periodically rotating employees from one job to another to reduce time spent performing specific tasks; enlarging the scope of a job so an employee can participate in related job tasks rather than constantly performing the same tasks; and, reducing the pace of work to reduce the frequency of exposure.
- Work practice controls are techniques used by employees to control ergonomic hazards. Each of us must take responsibility for our own safety by performing tasks in the safest possible manner.

WORK PRACTICE CONTROLS

- Maintaining neutral posture while performing job tasks is an example of work practice controls.
- Neutral posture for the wrist is 10-15 degrees of extension with either the thumb to the side when keyboarding or with the thumb up while using tools.
- Never work with the wrist flexed downward or to either side.
- Neutral position for the shoulders and arms is obtained when the upper arm hangs straight down and forms a 90 degree angle at the elbow. Working with arms raised too high or too low causes added strain.
- Neutral posture for the back is when the spine maintains its natural shape and lumbar curve. This is very important when lifting, but is also critical when standing or sitting as well.
- Neutral posture also includes keeping the head and neck centered over the shoulders rather than twisted or bent. This often means adjusting your work area so the primary work focus is centered in front of you.
- Other examples of work practice controls include team lifting to reduce back strain and taking quick breaks to interrupt repetitive tasks. These breaks, sometimes called micro or recovery breaks, are taken at your workstation to break up periods of repetitive tasks.
- Because every job task is different and every employee is unique, ergonomic control measures must be designed for a specific task and often for a specific employee.
- If you have any questions about your job tasks or the company's ergonomic program, 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 explain the three main components of the company's ergonomic program so that employees will know how to control ergonomic hazards and how to respond to symptoms of MSD's.

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

Lead discussions about specific job duties at your facility that involve MSD risk factors and what can be done to prevent these factors from becoming hazardous. 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:

- The various types of musculoskeletal disorders that can affect the body;
- The importance of reporting MSD symptoms;
- How MSD incidents risk factors are determined;
- The types of controls that are used to control ergonomic hazards.

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REVIEW QUESTIONS

Name _____ Date _____

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

1. Which of the following can be affected by a musculoskeletal disorder?
 - a. nerves
 - b. tendons
 - c. muscles
 - d. all of the above

2. Which of the following is caused by nerve compression?
 - a. Sciatica
 - b. Trigger Finger
 - c. Raynaud's Phenomenom
 - d. Tension Neck Syndrome

3. The presence of MSD risk factors on a job indicates the job will always be hazardous.
 - a. true
 - b. false

4. Studying a job to determine the ergonomic control measures needed is known as _____.
 - a. a control mechanism
 - b. an action trigger
 - c. a hazard prevention implementation
 - d. a job hazard analysis

5. Restricting the amount of time performing a job task is considered an administrative control.
 - a. true
 - b. false

6. Redesigning the workstation to better fit the employee is an example of which type of control?
 - a. engineering controls
 - b. administrative controls
 - c. work practice controls

7. Why is it often difficult to properly diagnose an MSD when symptoms have gone unreported and worsened over time?
 - a. the pain in the affected area usually goes away even though the area is permanently damaged
 - b. the inflammation in the area decreases and is difficult to detect
 - c. the pain in the affected area tends to radiate to other parts of the body
 - d. none of the above

8. Each employee is responsible for reporting signs as symptoms of MSD's as well as using work practice controls to control ergonomic hazards.
 - a. true
 - b. false

ANSWERS TO THE REVIEW QUESTIONS

1. d

2. a

3. b

4. d

5. a

6. a

7. c

8. a