



Ergonomics Program Management

Ergonomics related claims account for more direct accident costs than any other category. You owe it to yourself, your co-workers, and your employees to develop a strong ergonomics program. This course introduces the student to the various steps in planning and implementing a successful ergonomics program. Emphasis is placed on analyzing and controlling workplace risk factors, medical management strategies and training.

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OSHAcademy Course 722 Study Guide

Ergonomics Program Management

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This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 722.

We hope you enjoy the course and if you have any questions, feel free to email or call:

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Course Introduction

er-go-nom-ics \, ûrg-go-'näm-iks

In 2008, more than 317,000 American workers experienced serious injuries due to overexertion or repetitive motion on the job. These work-related musculoskeletal disorders (MSDs) account for 29 percent of lost workday injuries. MSDs cost employers billions of dollars in workers' compensation costs.

See below for a compelling customer satisfaction story:

[Sysco Food Services](#) of Houston, Texas had serious ergonomic problems when OSHA inspected the company. In 1996, Sysco had 210 injuries with 3,638 lost workdays. Back injuries accounted for 40 percent of the injuries and more than half the cost. An OSHA inspector issued Sysco a citation and \$7,000 fine for failing to protect its employees from ergonomic hazards and set out an abatement plan for the company to follow.

Today, after implementing a formal ergonomics program under the direction of Sandra Carson, an occupational health nurse, Sysco's injury compensation costs have fallen by almost 75 percent and major back injuries have dropped from 76 a year to 21.

Ms. Carson says the \$7,000 penalty "was one of the best investments the company has made." Along with the citation, Ms. Carson says Sysco "received an analysis of our problem jobs as well as alternative controls to consider." The health and safety improvements have made Ms. Carson's branch one of Sysco's most profitable.

What are work-related musculoskeletal disorders (MSDs)?

Musculoskeletal disorders include a group of conditions that involve the nerves, tendons, muscles, and supporting structures such as intervertebral discs. They represent a wide range of disorders, which can differ in severity from mild periodic symptoms to severe chronic and debilitating conditions. Examples include carpal tunnel syndrome, tenosynovitis, tension neck syndrome, and low back pain.

Work-related Musculoskeletal Disorders are caused or made worse by the work environment. MSDs can cause severe and debilitating symptoms such as:

) pain, numbness, and tingling

-) reduced worker productivity
-) lost time from work
-) temporary or permanent disability
-) inability to perform job tasks, and
-) an increase in workers compensation costs

MSDs are often confused with ergonomics. Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of workers.

In other words, MSDs are the problem and ergonomics is a solution.

What are the risk factors for MSDs?

Risk factors for MSDs include:

-) repetitive, forceful, or prolonged exertions of the hands
-) frequent or heavy lifting, pushing, pulling, or carrying of heavy objects
-) prolonged awkward postures, and
-) vibration contribute to MSDs

Jobs or working conditions that combine risk factors will increase the risk for musculoskeletal problems. The level of risk depends on how long a worker is exposed to these conditions, how often they are exposed, and the level of exposure.

How common are MSDs?

MSDs of any cause are among the most prevalent medical problems. In 2008, sprain and strain injuries accounted for 39% of total injury and illness cases requiring days away from work. Soreness and pain (including the back) accounted for 11% of the total cases.

When looking specifically at work-related MSDs, the Bureau of Labor Statistics (BLS) reports MSD's accounted for 29% of all workplace injuries and illnesses requiring time away from work in 2008. 45 percent of sprains and strains were the result of overexertion. Also, in 40% of these

cases, the back was injured. In another 25% of the cases, a lower extremity (such as the knee or ankle) was injured.

NIOSH research and prevention

The National Institute for Occupational Safety and Health (NIOSH) is the only federal agency mandated to conduct research and train professionals to identify and prevent workplace hazards. The Institute is part of the Centers for Disease Control and Prevention. NIOSH conducts and funds a substantial amount of research on musculoskeletal disorders, currently a total of 80 projects on work-related MSD-related topics. A directory of all these projects has been published by NIOSH (DHHS [NIOSH] Publication No. 97-109). For more information on work-related MSDs or on other workplace safety and health issues call: 1-800-35-NIOSH (1-800-356-4674).

Module 1: Setting the Stage for Action

Introduction

Fred A. Manuele, author of [On the Practice of Safety](#), considers occupational ergonomics to be "the art and science of designing the work to fit the worker to achieve optimum productivity and cost efficiency, and minimum risk of injury." To best fulfill the goal to achieve these benefits through ergonomics, a sound program should be developed. A program that includes a written plan, education, training, and effective procedures to identify, analyze, and evaluate work for ergonomic risk factors.

As with other workplace safety and health issues, managers and employees both play key roles in setting the stage: developing and carrying out an ergonomics program. It's important that management understand the [benefits](#) of an effective ergonomics program.

Ergonomics as part of a company safety and health program

Ergonomics programs should not be regarded as separate from those intended to address other workplace hazards. Aspects of hazard identification, case documentation, assessment of control options, and health care management techniques that are used to address ergonomic problems use the same approaches directed toward other workplace risks of injury or disease. Although many of the technical approaches described in this course are specific to ergonomic risk factors and MSDs, the core principles are the same as efforts to control other workplace hazards.

Reactive vs. Proactive approaches

Proactive ergonomics activities emphasize efforts at the design stage of work processes to recognize needs for avoiding risk factors that can lead to musculoskeletal problems. The goal is to design operations that ensure proper selection and use of tools, job methods, workstation layouts, and materials that impose no undue stress and strain on the worker.



Essential considerations

Ergonomics issues are identified and resolved in the planning process. In addition, general ergonomic knowledge, learned from an ongoing ergonomics program, can be used to build a more prevention-oriented approach.

Management commitment and employee involvement in the planning activity are essential. For example, management can set policies to require ergonomic considerations for any equipment to be purchased and production employees can offer ideas on the basis of their past experiences for alleviating potential problems.

Planners of new work processes involved in the design of job tasks, equipment, and workplace layout, must become more aware of ergonomic factors and principles. Designers must have appropriate information and guidelines about risk factors for MSDs and ways to control them. Studying past designs of jobs in terms of risk factors can offer useful input into their design strategies.

Expressions of management commitment

Management commitment is a key and perhaps the most important controlling factor in determining whether any worksite hazard control effort will be successful. Management commitment is more than just "support." Support is merely talk, but real commitment is expressed by actually backing up that talk with action which takes time and money. Remember, support = talk and commitment = action!

Management commitment can be expressed in a variety of ways. Lessons learned from NIOSH case studies of ergonomic hazard control efforts in the meatpacking industry emphasize the following points regarding evidence of effective management commitment:

Policy statements are issued to:

- Ñ Treat ergonomic efforts as furthering the company's strategic goals
- Ñ Expect full cooperation of the total workforce in working together toward realizing ergonomic improvements
- Ñ Assign lead roles to designated persons who are known to "make things happen"
- Ñ Give ergonomic efforts priority with other cost reduction, productivity, and quality assurance activities

- Ñ Have the support of the local union or other worker representatives
- Ñ Allow full discussion of the policy and the plans for implementation
- Ñ Set concrete goals that address specific operations and give priority to the jobs posing the greatest risk

Resources are committed to:

- Ñ Train the workforce to be more aware of ergonomic risk factors for MSDs
- Ñ Provide detailed instruction to those expected to assume lead roles or serve on special groups to handle various tasks
- Ñ Bring in outside experts for consultations about start-up activities and difficult issues at least until in-house expertise can be developed
- Ñ Implement ergonomic improvements as may be indicated
- Ñ Provide release time or other compensatory arrangements during the workday for employees expected to handle assigned tasks dealing with ergonomic concerns

It's important to furnish information to all those involved in or affected by the ergonomic activities. Misinformation or misperceptions about such efforts can be damaging: If management is seen as using the program to gain ideas for cutting costs or improving productivity without equal regard for employee benefits, the program may not be supported by employees. For example, management should be up-front regarding possible impacts of the program on job security and job changes. All injury data, production information, and cost considerations need to be made available to those expected to make feasible recommendations for solving problems.

Employee involvement

Promoting employee involvement in efforts to improve workplace ergonomic conditions has several benefits. They include:

- Ñ enhanced worker motivation and job satisfaction,
- Ñ added problem-solving capabilities,

- Ñ greater acceptance of change, and
- Ñ greater knowledge of the work and organization.

Worker involvement in safety and health issues means obtaining worker input on several issues.

- Ñ The first input is defining real or suspected job hazards.
- Ñ Another is suggesting ways to control suspected hazards.
- Ñ A third involves working with management in deciding how best to put controls into place.

Employee participation in an organization's efforts to reduce work-related injury or disease and ergonomic problems may take the form of direct or individual input. A common involvement process is participation through a joint labor-management safety and health committee, which may be company-wide or department-wide in nature. Membership on company-wide committees includes union leaders or elected worker representatives, department heads, and key figures from various areas of the organization.

Increasing worker involvement

To increase worker involvement in identifying and solving ergonomics-related issues in the workplace, management must show commitment by doing the following:

1. Making sure ergonomics is a formal (written) part of the safety and health management system by developing ergonomics policies, programs, process, procedures and safe practices.
2. Sharing information about ergonomics and the results of inspections and workplace analysis.
3. Training both in ergonomic hazard recognition and control through active participation and group problem solving.
4. Positive recognition for those who participate in ergonomics as well as other safety activities.

No single form or level of worker involvement fits all situations or meets all needs. Much depends on the nature of the problems to be addressed, the skills and abilities of those involved, and the company's prevailing practices for participative approaches in resolving workplace issues.

Who should participate?

Ergonomic problems typically require a response that cuts across a number of organizational units. Hazard identification through job task analyses and review of injury records or symptom surveys, as well as the development and implementation of control measures, can require input from:

- Ñ safety and hygiene personnel
- Ñ health care providers
- Ñ human resource personnel
- Ñ engineering personnel
- Ñ maintenance personnel
- Ñ ergonomics specialists

In addition, worker and management representatives are considered essential players in any ergonomics program effort.

In small businesses, two or more of the functions noted on this list may be merged into one unit, or one person may handle several of the listed duties. Regardless of the size of the organization, persons identified with these responsibilities are crucial to an ergonomics program. Purchasing personnel in particular should be included, since the issues raised can dictate new or revised specifications on new equipment orders.

How best to fit these different players into the program could depend on the company's existing occupational safety and health program practices. Integrating ergonomics into the company's current occupational safety and health activities, while giving it special emphasis, may have the most appeal.

Taking a proactive approach to ergonomics is so important to the success of the program. Maximizing employee involvement is one of the keys to a successful proactive ergonomics program. When employees identify and help devise solutions, they gain a degree of ownership. We value what we own. Ownership increases the probability that "EC"(ergonomically correct ;-)
behaviors are performed when employees are not being directly supervised.

Module 1 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. A proactive approach to ergonomics would emphasize ____.**
 - a. Reduction in injury costs
 - b. Early return to work programs
 - c. Workstation design
 - d. Aggressive accident investigation

- 2. According to the text, all the following policies support an effective ergonomics program, except ____.**
 - a. Give ergonomic efforts priority with other activities
 - b. Assign lead roles to persons who are known to "make things happen"
 - c. Treat ergonomic efforts as furthering the company's strategic goals
 - d. Do not solicit the support of union or other worker representatives

- 3. Which of the following best illustrates a real commitment to an ergonomics program?**
 - a. Express your commitment to the ergonomics program in a newsletter
 - b. Telling others ergonomics is important
 - c. Training the workforce on effective lifting techniques
 - d. Telling others you will eventually implement a program

- 4. Ergonomic problems typically require a response that cuts across a number of organizational units.**
 - a. True
 - b. False

- 5. All the following actions result in increased employee involvement in the ergonomics program, except _____.**
- a. Written policy statement
 - b. Training in hazard identification and control
 - c. Sharing information and results
 - d. Withholding positive reinforcement

Module 2: Analyzing the Workplace

Gathering and Examining Evidence of MSDs

Once a decision has been made to initiate an ergonomics program, a necessary step is to gather information to determine the scope and characteristics of the problem or potential problem. A variety of techniques and tools have been used; many provide the basis for developing solutions to identified problems.

- Ñ Following up of worker reports
- Ñ Reviewing OSHA 300 logs
- Ñ Conducting symptom surveys
- Ñ Using periodic medical examinations
- Ñ Identifying Risk Factors in Jobs
 - Screening jobs for risk factors
 - Performing job analyses
 - Setting priorities

Conditions and Symptoms

What are some of the clues that MSDs are a real or possible workplace problem? Some signs are obvious while others are more subtle.

- Ñ OSHA Form 300 logs or workers compensation claims show cases of MSDs such as carpal tunnel syndrome, tendonitis, tenosynovitis, epicondylitis, and low back pain. Sometimes these records contain nonspecific entries like "hand pain," which may be an indicator of a significant health problem if severe or persistent.
- Ñ Certain jobs or work conditions cause worker complaints of undue strain, localized fatigue, discomfort, or pain that does not go away after overnight rest.

- Ñ Workers visiting the clinic make frequent references to physical aches and pains related to certain types of work exercises.
- Ñ Job tasks involve at risk activities such as repetitive and forceful exertions, frequent, heavy, or overhead lifts, awkward work positions, or use of vibrating equipment.

Here are some [other examples](#) of symptoms that should trigger evaluations.

If you uncover signs like these in your workplace, it might be a good idea to request a confidential evaluation by OSHA or insurer ergonomics consultant. Ergonomic evaluations may uncover significant problems and be very helpful in correcting them.

Other sources that could alert employers to potential problems include the following:

- Ñ Trade publications, insurer newsletters, or references in popular literature indicating risks of MSDs
- Ñ Cases of MSDs found among competitors or in similar businesses
- Ñ Proposals for increasing line speed, retooling, or modifying jobs to increase individual worker output and overall productivity

Following up on Worker Reports

Assuring that employees feel free to report, as early as possible, symptoms of physical stress is a key component of any ergonomics program. Early reporting makes it possible to begin corrective measures before the effects of a job problem worsen. When employees feel comfortable reporting their symptoms or other concerns, it indicates a high level of trust between labor and management.

As mentioned earlier, individual worker concerns that certain jobs cause undue physical fatigue, stress, or discomfort may be signs of ergonomic problems. Following up on these reports, particularly reports of MSDs, is essential. Such reports indicate a need to evaluate the jobs to identify ergonomic risk factors.

Reviewing OSHA Logs and other existing records

Inspecting OSHA 300 logs and plant medical records, as well as workers compensation claims, insurance claims, absentee records, and job transfer applications can yield information about the nature of MSDs. Finding workers in certain departments or operations experiencing more of

these problems than others would suggest some immediate areas for study with regard to possible risk factors.

Jobs with elevated rates of low back musculoskeletal disorders often also have higher risks for acute injuries due to slips and trips or other safety hazards. In these cases, acute musculoskeletal injuries may also be an important problem.

Conducting symptoms surveys

Interviews or [symptom surveys](#) can be used to identify possible MSDs that might otherwise go unnoticed. In addition to questions about the type, onset, and duration of symptoms, symptom survey forms may include a body map. The employee is asked to locate and rate the level of discomfort experienced in different areas of his or her body. The assumption is that any discomfort or symptoms may be associated with some increased risk for MSDs.

Using periodic medical examinations

A disadvantage of using OSHA logs or company medical information to identify possible cases of MSDs is the lack of specific or uniform medical information. This limitation may make identifying MSDs difficult. One optional approach to overcome this limitation is to have each worker undergo a periodic standard examination that includes a history and physical examination. Such an examination program should be designed and administered by a health care provider.

Module 2 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. What OSHA Form is most likely to help as a proactive tool used to uncover MSDs?**
 - a. OSHA 101
 - b. OSHA 300
 - c. OSHA Investigation Form
 - d. OSHA Inspection Report

- 2. According to the text, if you uncover signs of ergonomic hazards in your workplace, it might be a good idea to ____.**
 - a. implement a training program
 - b. assess for signs and symptoms
 - c. request a confidential evaluation
 - d. purchase safety belts

- 3. Proposals for increasing line speed, retooling, or modifying jobs to increase individual worker output and overall productivity should be analyzed to determine impact on the potential for MSDs.**
 - a. True
 - b. False

- 4. Jobs with elevated rates of low back musculoskeletal disorders often also have higher risks for acute injuries due to slips and trips or other safety hazards.**
 - a. True
 - b. False

- 5. A disadvantage of using OSHA logs or company medical information to identify possible cases of MSDs is the _____.**
- a. difficulty in locating the information
 - b. lack of specific or uniform medical information
 - c. understanding the information
 - d. relying on experts for the information

Module 3: Identifying Risk Factors

Screening for Risk Factors

Screening jobs for physical and psychological risk factors is very proactive and should involve one or more of the following:

- Ñ Walk-through observational surveys of the work facilities to detect obvious risk factors
- Ñ Interviews with workers and supervisors to obtain the above information and other data not apparent in walk-through observations such as; time and workload pressures, length of rest breaks, etc.
- Ñ Checklists for scoring job features against a list of risk factors

A great deal of research has been conducted to identify workplace factors that contribute to the development of musculoskeletal disorders. NIOSH has recently summarized the epidemiological studies that show a relationship between specific work activities and the development of musculoskeletal disorders.

According to the scientific literature, the following are recognized as important risk factors for musculoskeletal disorders, especially when occurring at high levels and in combination.

Physical risk factors include:

- Ñ awkward postures
- Ñ forceful exertions
- Ñ repetitive motions
- Ñ duration of exposure
- Ñ frequency of exposure
- Ñ contact stresses
- Ñ vibration
- Ñ other conditions

Let's take a closer look at each of these risk factors.

Physical Risk factors

Awkward postures

Body postures determine which joints and muscles are used in an activity and the amount of force or stresses that are generated or tolerated. For example, more stress is placed on the spinal discs when lifting, lowering, or handling objects with the back bent or twisted, compared with when the back is straight. Manipulative or other tasks requiring repeated or sustained bending or twisting of the wrists, knees, hips, or shoulders also impose increased stresses on these joints. Activities requiring frequent or prolonged work over shoulder height can be particularly stressful.

Forceful exertions (including lifting, pushing, and pulling)

Tasks that require forceful exertions place higher loads on the muscles, tendons, ligaments, and joints. Increasing force means increasing body demands such as greater muscle exertion along with other physiological changes necessary to sustain an increased effort. Prolonged or recurrent experiences of this type can give rise to not only feelings of fatigue but may also lead to musculoskeletal problems when there is inadequate time for rest or recovery. Force requirements may increase with:

- Ñ Increased weight of a load handled or lifted
- Ñ Increased bulkiness of the load handled or lifted
- Ñ Use of an awkward posture
- Ñ The speeding up of movements
- Ñ Increased slipperiness of the objects handled (requiring increased grip force)
- Ñ The presence of vibration (e.g., localized vibration from power hand tools leads to use of an increased grip force)
- Ñ Use of the index finger and thumb to forcefully grip an object (i.e., a pinch grip compared with gripping the object with your whole hand)
- Ñ Use of small or narrow tool handles that lessen grip capacity

Repetitive motions

If motions are repeated frequently (e.g., every few seconds) and for prolonged periods such as an 8-hour shift, fatigue and muscle-tendon strain can accumulate. Tendons and muscles can often recover from the effects of stretching or forceful exertions if sufficient time is allotted between exertions. Effects of repetitive motions from performing the same work activities are increased when awkward postures and forceful exertions are involved. Repetitive actions as a risk factor can also depend on the body area and specific act being performed.

Duration

Duration refers to the amount of time a person is continually exposed to a risk factor. Job tasks that require use of the same muscles or motions for long durations increase the likelihood of both localized and general fatigue. In general, the longer the period of continuous work (e.g., tasks requiring sustained muscle contraction), the longer the recovery or rest time required.

Frequency

Frequency refers to how many times a person repeats a given exertion within a given period of time. Of course, the more often the exertion is repeated, the greater the speed of movement of the body part being exerted. Also, recovery time decreases the more frequently an exertion is completed. And, as with duration, this increases the likelihood of both localized and general fatigue.

Contact stresses

Repeated or continuous contact with hard or sharp objects such as non-rounded desk edges or unpadded, narrow tool handles may create pressure over one area of the body (e.g., the forearm or sides of the fingers) that can inhibit nerve function and blood flow.

Vibration

Exposure to local vibration occurs when a specific part of the body comes in contact with a vibrating object, such as a power hand tool. Exposure to whole-body vibration can occur while standing or sitting in vibrating environments or objects, such as when operating heavy-duty vehicles or large machinery.

Other conditions

Workplace conditions that can influence the presence and magnitude of the risk factors for MSDs can include

- Ñ cold temperatures
- Ñ insufficient pauses and rest breaks for recovery
- Ñ machine paced work
- Ñ unfamiliar or unaccustomed work



Psychological Risk Factors

In addition to the above conditions, other aspects of work may not only contribute to physical stress but psychological stress as well. As long as we believe we have adequate control over all aspects of our job, we may experience normal stress. However, if we believe we have little control over job demands, we may suffer from distress with accompanying ill health and possible irrational behaviors. Under distress, the probability of an accident increases greatly.

Research is examining work factors such as performance monitoring, incentive pay systems, and unreasonable management production demands to determine whether these factors have a negative effect on the musculoskeletal system. Another related area of research is to determine which personal, work, or societal factors contribute to acute musculoskeletal disorders developing into chronic or disabling problems.

Using a checklist

The checklist is a formal and orderly procedure for screening jobs. Numerous versions of checklists exist in ergonomics manuals. When checklist data are gathered by persons familiar with the job, task, or processes involved, the quality of the data is generally better. This checklist illustrates three processes:

- Ñ *Assessment* - identify to determine if something is present.
- Ñ *Analysis* - take it apart to determine what it looks like, how it works.
- Ñ *Evaluation* - judge it against the best.

This checklist first assesses for risk factors by asking if something is present. You merely place a check in the appropriate box.

Using the checklist below, you can identify the general risk factors associated with the job you currently perform.

General Ergonomic Risk Analysis Checklist*

Manual Material Handling

1. Is there lifting of loads, tools, or parts?
2. Is there lowering of tools, loads, or parts?
3. Is there overhead reaching for tools, loads, or parts?
4. Is there bending at the waist to handle tools, loads, or parts?
5. Is there twisting at the waist to handle tools, loads, or parts?

Physical Energy Demands

1. Do tools and parts weigh more than 10 lb?
2. Is reaching greater than 20 in.?
3. Is bending, stooping, or squatting a primary task activity?
4. Is lifting or lowering loads a primary task activity?
5. Is walking or carrying loads a primary task activity?
6. Is stair or ladder climbing with loads a primary task activity?
7. Is pushing or pulling loads a primary task activity?
8. Is reaching overhead a primary task activity?
9. Do any of the above tasks require five or more complete work cycles to be done within a minute?

10. Do workers complain that rest breaks and fatigue allowances are insufficient?

Other Musculoskeletal Demands

1. Do manual jobs require frequent, repetitive motions?
2. Do work postures require frequent bending of the neck, shoulder, elbow, wrist, or finger joints?
3. For seated work, do reaches for tools and materials exceed 15 in. from the worker's position?
4. Is the worker unable to change his or her position often?
5. Does the work involve forceful, quick, or sudden motions?
6. Does the work involve shock or rapid buildup of forces?
7. Is finger-pinch gripping used?
8. Do job postures involve sustained muscle contraction of any limb?

Computer Workstation

1. Do operators use computer workstations for more than 4 hours a day?
2. Are there complaints of discomfort from those working at these stations?
3. Is the chair or desk nonadjustable?
4. Is the display monitor, keyboard, or document holder nonadjustable?
5. Does lighting cause glare or make the monitor screen hard to read?
6. Is the room temperature too hot or too cold?
7. Is there irritating vibration or noise?

Environment

1. Is the temperature too hot or too cold?
2. Are the worker's hands exposed to temperatures less than 70 degrees Fahrenheit?
3. Is the workplace poorly lit?
4. Is there glare?
5. Is there excessive noise that is annoying, distracting, or producing hearing loss?
6. Is there upper extremity or whole body vibration?
7. Is air circulation too high or too low?

General Workplace

1. Are walkways uneven, slippery, or obstructed?
2. Is housekeeping poor?
3. Is there inadequate clearance or accessibility for performing tasks?
4. Are stairs cluttered or lacking railings?
5. Is proper footwear worn?

Tools

1. Is the handle too small or too large?
2. Does the handle shape cause the operator to bend the wrist in order to use the tool?
3. Is the tool hard to access?
4. Does the tool weigh more than 9 lbs?
5. Does the tool vibrate excessively?
6. Does the tool cause excessive kickback to the operator?

7. Does the tool become too hot or too cold?

Gloves

1. Do the gloves require the worker to use more force when performing job tasks?
2. Do the gloves provide inadequate protection?
3. Do the gloves present a hazard of catch points on the tool or in the workplace?

Administration

1. Is there little worker control over the work process?
2. Is the task highly repetitive and monotonous?
3. Does the job involve critical tasks with high accountability and little or no tolerance for error?
4. Are work hours and breaks poorly organized?

*Adapted from The University of Utah Research Foundation; [Checklist for General Ergonomic Risk Analysis](#); available from [ERGOWEB](#).

Module 3 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The purpose of the walk-through observational survey is to ____.**
 - a. make sure OSHA doesn't find anything
 - b. detect obvious risk factors
 - c. look good to employees
 - d. catch employees using unsafe work practices

- 2. The quality of the checklist data collected is generally better when ____.**
 - a. interviews cover supervisors as well as workers
 - b. persons are familiar with the job, task, or process
 - c. employees providing data do not feel intimidated
 - d. any of the above

- 3. The checklist procedure provides a formal and orderly procedure for screening jobs.**
 - a. True
 - b. False

- 4. Force requirements may increase with ____.**
 - a. the speeding up of movements
 - b. use of bulky postures
 - c. decreased slipperiness
 - d. use of the whole-hand grip

5. Screening jobs for physical and psychological risk factors should involve ____.

- a. walk-through observational surveys of the work facilities
- b. interviews with OSHA consultants
- c. checklist for compliance with mandatory ergonomics rules
- d. contrasting workplace results with NIOSH standards

Module 4: Ergonomics Job Hazard

Introduction

Efforts to identify jobs or tasks having known risk factors for musculoskeletal problems can provide the groundwork for changes aimed at risk reduction. Even without clear medical evidence, screening jobs for musculoskeletal risk factors can offer a basis for early interventions.

An effective identification method is the Ergonomics Job Hazard Analysis which:

- Ñ breaks a job into its various elements or actions
- Ñ describes them
- Ñ measures and quantifies the ergonomics risk factors inherent in the elements
- Ñ identifies conditions contributing to the risk factors
- Ñ determines corrective measures

Job analysis is usually done by persons with considerable experience and training in these areas. While most job analysis has common approaches, such as a focus on the same set of risk factors described above, no "standard" protocol exists for conducting a job analysis to assess ergonomic hazards.

Most job analyses have several common steps:

- Ñ A complete description of the job obtained.
- Ñ Employees are often interviewed in order to determine if the way the job is done changes over time.
- Ñ During the job analysis, the job is divided into a number of discrete tasks.
- Ñ Each task is then studied to determine the specific risk factors that occur during the task.

- Ñ Sometimes each risk factor is evaluated in terms of its magnitude, the number of times it occurs during the task, and how long the risk factor lasts each time it occurs.

The tasks of most jobs can be described in terms of:

- Ñ The tools, equipment, machinery and materials used to perform the job. Their design can have enormous impact on the risk of injury.
- Ñ The workstation layout and physical environment. This establishes parameters and constraints on our posture, movement, etc.
- Ñ The task demands and organizational climate in which the work is performed. Works schedules, production quotas, psychosocial support can create fatigue, anxiety, and low morale that may increase the probability of injury or illness.

More procedures for collecting information on these components can include the following:

- Ñ Observing the workers performing the tasks in order to furnish time-activity analysis and job or task cycle data; videotaping the workers is typically done for this purpose
- Ñ Still photos of work postures, workstation layouts, tools, etc., to illustrate the job
- Ñ Workstation measurements (e.g., work surface heights, reach distances)
- Ñ Measuring tool handle sizes, weighing tools and parts, and measuring tool vibration and part dimensions
- Ñ Determining characteristics of work surfaces such as slip resistance, hardness, and surface edges
- Ñ Measuring exposures to heat, cold, and whole body vibration
- Ñ Biomechanical calculations (e.g., muscle force required to accomplish a task or the pressure put on a spinal disc based on the weight of a load lifted, pulled, or pushed)
- Ñ Physiological measures (e.g., oxygen consumption, heart rate)

- Ñ Special questionnaires, interviews, and subjective rating procedures to determine the amount of perceived exertion and the psychological factors influencing work performance

Setting Priorities

Jobs associated with cases of musculoskeletal problems deserve the highest consideration in follow-up efforts to identify ergonomic risk factors and implement control actions. Jobs in which current cases have been identified should receive immediate attention, followed by those in which past records have noted a high incidence or severity of MSDs despite the lack of current cases.

Priority for job analysis and intervention should be given to those jobs:

- Ñ In which most people are affected or in which work method changes are going to be taking place anyway.
- Ñ Associated with employee reports of fatigue and discomfort.
- Ñ Where screening efforts suggest the presence of significant risk factors for musculoskeletal disorders.

Ratings of high or extreme levels of risk factors, especially occurring in combination, may indicate a need for control actions. While appearing last in the priority order, taking steps to reduce apparent risk factors for musculoskeletal disorders is an important proactive approach.

There you have it! I hope you understand better how to conduct an ergonomics job hazard analysis and prioritize corrective actions.

Module 4 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The ergonomics job hazard analysis does all the following, except?**
 - a. Identifies conditions contributing to risk factors
 - b. Measures and quantifies ergonomic risk factors
 - c. Breaks down task into individual steps
 - d. Excludes employee involvement in the analysis

- 2. Ergonomics job hazard analyses are usually done by those who have considerable experience.**
 - a. True
 - b. False

- 3. Which of the following is not described in the text as an effective procedure for collecting information on the ergonomic components of a job?**
 - a. Still photos of work postures, workstation layouts, tools
 - b. Measuring tool handle sizes, weighing tools and parts
 - c. Conducting incident/accident investigations following a report of an MSD.
 - d. Determining characteristics of work surfaces

- 4. Fill in the blanks: Jobs in which _____ cases have been identified should receive _____ attention, followed by those in which past records have noted a high incidence or _____ of MSDs despite the lack of current cases.**
 - a. past, some, number
 - b. current, immediate, severity
 - c. all, primary, type
 - d. any, eventual, probability

- 5. No "standard" protocol exists for conducting a job analysis to assess ergonomic hazards.**
- a. True**
 - b. False**

Module 5: Controlling Risk Factors

Rid the job of risk factors

Analyzing jobs to identify factors associated with risks for MSDs lays the groundwork for developing ways to reduce or eliminate ergonomic risk factors for MSDs.

The Hierarchy of Hazard Control Strategies

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective controls. [ANSI Z10-2005, Occupational Health and Safety Management Systems](#), encourages employer employ the following hierarchy of hazard control strategies:

1. elimination
2. substitution
3. engineering controls
4. administrative controls
5. personal protective equipment

The idea behind this hierarchy is that the control methods at the top of the list are potentially more effective and protective than those at the bottom. Following the hierarchy normally leads to the implementation of inherently safer systems, ones where the risk of illness or injury has been substantially reduced. Let's take a closer look at the hierarchy of control strategies.

Controlling MSDs through elimination and substitution

Elimination and substitution, while most effective at reducing hazards, also tend to be the most difficult to implement in an existing process. If the process is still at the design or development stage, elimination and substitution of hazards may be inexpensive and simple to implement. For an existing process, major changes in equipment and procedures may be required to eliminate or substitute for an ergonomics hazard. Some obvious examples of elimination include eliminating the need to carry heavy containers by replacing them with smaller containers. You can substitute that old office chair with a new ergonomically designed chair.

These strategies are considered first because they have the potential of completely eliminate the hazard, thus greatly reducing the probability of an accident. Redesigning or replacing equipment or machinery may be expensive, but remember that, according to the National Safety Council, the average direct and indirect cost of a lost work time injury more than \$38,000 and most injuries in the workplace are ergonomics-related.

Controlling MSDs through engineering controls

The preferred approach to prevent and control MSDs is to design the job including:

- Ñ the workstation layout
- Ñ selection and use of tools
- Ñ work methods to take account of the capabilities and limitations of the work force

A good match, meaning the job demands pose no undue stress and strain to the person doing the job, helps ensure a safe work situation.

Engineering controls are preferred because they may completely eliminate the hazard. No hazard: No injury! They also do not rely on human behavior nor do they require continual oversight to work. Finally, engineering controls may save the company far more than the initial investment. Engineering control strategies to reduce ergonomic risk factors include the following:

- Ñ Changing the way materials, parts, and products can be transported. For example, using mechanical assist devices to relieve heavy load lifting and carrying tasks or using handles or slotted hand holes in packages requiring manual handling.
- Ñ Changing the process or product to reduce worker exposures to risk factors. Examples include maintaining the fit of plastic molds to reduce the need for manual removal of flashing or using easy-connect electrical terminals to reduce manual forces Modifying containers and parts presentation, such as height-adjustable material bins.
- Ñ Changing workstation layout. Examples might include using height-adjustable workbenches or locating tools and materials within short reaching distances.
- Ñ Changing the way parts, tools, machinery and materials are to be manipulated. Examples include using fixtures (clamps, vise-grips, etc.) to hold work pieces to relieve

the need for awkward hand and arm positions or suspending tools to reduce weight and allow easier access.

- Ñ Changing tool designs. For example, pistol handle grips can be used for knives to reduce wrist bending postures required by straight-handle knives or squeeze-grip-actuated screwdrivers to replace finger-trigger-actuated screwdrivers.
- Ñ Changes in materials and fasteners. For example, lighter-weight packaging materials to reduce lifting loads.
- Ñ Changing assembly access and sequence. For example, removing physical and visual obstructions when assembling components to reduce awkward postures or static exertions.

Controlling MSDs through work-practice and administrative controls

Work practice and administrative controls are closely related attempts to change behaviors. They are management-dictated work practices and policies to reduce or prevent exposures to ergonomic risk factors. Work practice and administrative control strategies include:

- Ñ Changes in job rules and procedures such as scheduling more rest breaks
- Ñ Rotating workers through jobs that are physically tiring
- Ñ Training workers to recognize ergonomic risk factors and to learn techniques for reducing the stress and strain while performing their work tasks

Although engineering controls are preferred, work practice and administrative controls can be helpful when engineering controls are not technically feasible. However, since work practice and administrative controls focus on eliminating or reducing exposure (not the hazard itself), they require diligent management, training, supervision, and enforcement to be effective. They work only as long as people behave! Common examples of administrative control strategies for reducing the risk of MSDs are as follows:

- Ñ Reducing shift length or curtailing the amount of overtime
- Ñ Rotating workers through several jobs with different physical demands to reduce the stress on limbs and body regions

- Ñ Scheduling more breaks to allow for rest and recovery
- Ñ Broadening or varying the job content to offset certain risk factors (e.g., repetitive motions, static and awkward postures)
- Ñ Adjusting the work pace to relieve repetitive motion risks and give the worker more control of the work process
- Ñ Training in the recognition of risk factors for MSDs and instruction in work practices that can ease the task demands or burden

Personal protective equipment

One of the most controversial questions in the prevention of MSDs is whether the use of personal equipment worn or used by the employee (such as wrist supports, back belts, or vibration attenuation gloves) is effective. Some consider these devices to be personal protective equipment (PPE).

In the field of occupational safety and health, PPE generally provides a barrier between the worker and the hazard source. Respirators, ear plugs, safety goggles, chemical aprons, safety shoes, and hard hats are all examples of PPE. Whether braces, wrist splints, back belts, and similar devices can be regarded as offering personal protection against ergonomic hazards remains open to question.

Although these devices may, in some situations, reduce the duration, frequency, or intensity of exposure, evidence of their effectiveness in injury reduction is inconclusive. In some instances they may decrease one exposure but increase another because the worker has to "fight" the device to perform his or her work. An example is the use of wrist splints while engaged in work that requires wrist bending.

On the basis of a review of the scientific literature completed in 1994, NIOSH concluded that insufficient evidence existed to prove the effectiveness of back belts in preventing back injuries related to manual handling job tasks [NIOSH 1994]. A recent epidemiological study credits mandatory use of back belts in a chain of large retail hardware stores in substantially reducing the rate of low back injuries [Kraus 1996]. Although NIOSH believes this study provides evidence that back belts may be effective in some settings for preventing back injuries, NIOSH still believes that evidence for the effectiveness of back belts is inconclusive. [More on back belts.](#)

Less controversial types of personal equipment are vibration attenuation gloves [NIOSH 1989] and knee pads for carpet layers [Bhattacharya et al. 1985]. But even here, there can be concerns. For example, do the design and fit of the gloves make it harder to grip tools?

There you have it! Almost everything you need to know about ergonomic control strategies, right? Well, not quite, but you do have a good introduction to them. Remember, ergonomics control strategies may not be immediately obvious. If you can't figure out an effective solution, don't forget to take advantage of an outside expert. Participating in the consultation process with an ergonomist is a real win-win for your company and an excellent education for you.

Module 5 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. All the following are ergonomics control strategies, except ____.**
 - a. Administrative Controls
 - b. Education Controls
 - c. Engineering Controls
 - d. Personal Protective Equipment

- 2. According to the text, which of the ergonomics control strategies is the most controversial?**
 - a. Engineering Controls
 - b. Education Controls
 - c. Administrative Controls
 - d. Personal Protective Equipment

- 3. Which of the following is not an advantage of employing engineering controls?**
 - a. They require continual oversight and management
 - b. They do not depend on correct human behavior to work
 - c. They can save the company far more than their initial cost
 - d. They can eliminate the hazard

- 4. Changing the tools, equipment, machinery, and materials used by an employee is an example of which control strategy?**
 - a. Engineering Controls
 - b. Education Controls
 - c. Administrative Controls
 - d. Personal Protective Equipment

5. Which of the following is not a characteristic of work practice and/or administrative controls?

- a. They require diligent management
- b. They work only as long as people behave
- c. The initial cost is usually higher than that for engineering controls
- d. They do not eliminate the hazard, only reduce exposure

Module 6: Implementing Controls

Implementing effective control strategies

Ideas for effective ergonomic control measures can be derived from a variety of sources:

- Ñ Employees/work teams who perform the jobs requiring control strategies
- Ñ OSHA agencies in some state have professional ergonomists that can evaluate and offer ideas for improving your ergonomics protection program
- Ñ Trade associations may have information about good control practices for addressing different problem operations within an industry
- Ñ Insurance companies that offer loss control services to their policyholders
- Ñ Private consultants and vendors who deal in ergonomic specialty services and products
- Ñ Visits to worksites and networking with other safety professionals known to have dealt with similar problem operations

The process of implementing controls normally consists of:

- Ñ trials or tests of the selected solutions
- Ñ making modifications or revisions
- Ñ full-scale implementation
- Ñ follow up on evaluating control effectiveness

Testing and evaluation

Testing and evaluation verify that the proposed solution actually works and identifies any additional enhancements or modifications that may be needed. Employees who perform the job can provide valuable input into the testing and evaluation process. Worker acceptance of the changes put into place is important to the success of the intervention.

Making modifications or revisions

After the initial testing period, the proposed solution may need to be modified. If so, further testing should be conducted to ensure the correct changes have been made, followed by full-scale implementation. Designating the personnel responsible, creating a timetable, and considering the logistics necessary for implementation are elements of the planning needed to ensure the timely implementation of controls.

Full-scale implementation

A good idea in general is that ergonomic control efforts start small, targeting those problem conditions that are clearly identified through safety and health data and job analysis information. Moreover, the control actions can be directed to those conditions that appear easy to fix. Early successes can build the confidence and experience needed in later attempts to resolve more complex problems.

Since full-scale implementation represents change in the workplace, it's important to communicate the importance of the change to all affected employees. Education and training are important components that should not be overlooked.

Follow-up evaluation

A follow-up evaluation is necessary to ensure that the controls reduced or eliminated the ergonomic risk factors and that new risk factors were not introduced. This follow-up evaluation should use the same risk factor checklist or other method of job analysis that first documented the presence of ergonomic risk factors. If the hazards are not substantially reduced or eliminated, the problem-solving process is not finished.

The follow-up may also include a symptom survey, which can be completed in conjunction with the risk-factor checklist or other job analysis method. The results of the follow-up symptom survey can then be compared with the results of the initial symptom survey (if one was performed) to determine the effectiveness of the implemented solutions in reducing symptoms.

Because some changes in work methods (and the use of different muscle groups) may actually make employees feel sore or tired for a few days, follow-up should occur no sooner than 1 to 2 weeks after implementation. A month is preferable. Recognizing this fact may help avoid discarding an otherwise good solution. If the follow-up evaluation uncovers new and unexpected risk factors in the task, it may be the result of introducing too many variables into the new procedure.

Long-term indicators of the effectiveness of an ergonomics program can include:

- Ñ Reduction in the incidence rate of musculoskeletal disorders
- Ñ Reduction in the severity rate of musculoskeletal disorders
- Ñ Increase in productivity or the quality of products and services
- Ñ Reduction in job turnover or absenteeism

The above-mentioned indicators offer bottom-line results in evaluating interventions that have been put into place. Other indicators may also be used that represent in-process or interim accomplishments achieved on the path to building an ergonomic program. For example, indicators could include the extent of the ergonomic training given the workforce, the number of jobs analyzed for potential problems, and the number of workplace solutions being implemented.

Module 6 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Which of the following is a valuable source of help in evaluating your ergonomics program?**
 - a. OSHA
 - b. Private consultants
 - c. Safety Suppliers
 - d. All the above

- 2. Testing and evaluation verify that the proposed solution actually works and identifies any additional enhancements or modifications that may be needed.**
 - a. True
 - b. False

- 3. A good idea is that ergonomic control efforts start small, targeting those problem conditions that are clearly identified.**
 - a. True
 - b. False

- 4. The process of implementing controls normally consists of all the following, except _____.**
 - a. trials or tests of the selected solutions
 - b. making modifications or revisions
 - c. subjective change strategies
 - d. full-scale implementation

5. It is preferable to allow a _____ between implementation of a change and the follow-up evaluation.
- a. day
 - b. week
 - c. month
 - d. year

Module 7: Medical Management

Introduction

Company health care management strategies, policies, and health care providers are an important part of the overall ergonomics program.

In general, medical management emphasizes the prevention of impairment and disability through early detection, prompt treatment, and timely recovery. Medical management responsibilities fall on employers, employees, and health care providers.



Employer responsibilities

The employer can create an environment that encourages early evaluation by a health care provider by:

- Ñ Providing education and training to employees regarding the recognition of the symptoms and signs of MSDs and the employers procedures for reporting MSDs
- Ñ Encouraging employees to report symptoms early so prompt evaluation by an appropriate health care provider can be provided
- Ñ Giving health care providers the opportunity to become familiar with jobs and job tasks
- Ñ Modifying jobs or accommodating employees who have functional limitations secondary to MSDs as determined by a health care provider
- Ñ Ensuring, to the extent permitted by law, employee privacy and confidentiality regarding medical conditions identified during an assessment

Employee responsibilities

Employees should participate in the health care management process by:

- Ñ following applicable workplace safety and health rules
- Ñ following work practice procedures related to their jobs

- Ñ reporting early signs and symptoms of MSD

Employees may be faced with conflicting job demands or requirements. Safe work practices or rules may conflict with pressures or incentives to be more productive.



Healthcare Provider Responsibilities

The healthcare provider can support the employer's ergonomics program by:

- Ñ Acquiring experience and training in the evaluation and treatment of MSDs
- Ñ Seeking information and review materials regarding employee job activities
- Ñ Ensuring employee privacy and confidentiality to the fullest extent permitted by law
- Ñ Evaluating symptomatic employees including:
 - Medical histories with a complete description of symptoms
 - Descriptions of work activities as reported by the employees
 - Physical examinations appropriate to the presenting symptoms and histories
 - Initial assessments or diagnoses
 - Opinions as to whether occupational risk factors caused, contributed to, or exacerbated the conditions
 - Examinations to follow up symptomatic employees and document symptom improvements or resolutions

Job Familiarity and Job Placement Evaluations

Health care providers who evaluate employees, determine their functional capabilities, and prepare opinions regarding work relatedness should be familiar with employee jobs and job tasks. With specific knowledge of the physical demands involved in various jobs and the physical capabilities or limitations of employees, the health care provider can match the

employee's capabilities with appropriate jobs. Being familiar with employee jobs not only assists the healthcare provider in making informed case management decisions but also assists with the identification of ergonomic hazards and alternative job tasks.

One of the best ways for a healthcare provider to become familiar with jobs and job tasks is by periodic plant walk-arounds. Once familiar with plant operations and job tasks, the health care provider should periodically revisit the facility to remain knowledgeable about changing working conditions. Other approaches that may help the healthcare provider to become familiar with jobs and job tasks include reviewing job analysis reports, detailed job descriptions, job safety analyses, and photographs or videotapes that are accompanied by narrative or written descriptions of the jobs.

Early Reporting and Access to Healthcare Providers

Employees reporting symptoms or signs of potential MSDs should have the opportunity for prompt evaluation by a healthcare provider. In general, the earlier symptoms are identified and treatment is initiated, the less likely a more serious disorder will develop.

Employers should not establish policies that discourage employees from reporting symptoms. For example, programs that link a manager's earnings to the number of employees reporting symptoms may discourage supervisors from allowing symptomatic employees to be evaluated by the health care provider.

It's extremely important an ergonomics reporting not be created in such a way which employees fear discipline or discrimination on the basis of such reporting.

Treatment

- Ñ Healthcare providers are responsible for determining the physical capabilities and work restrictions of the affected workers.
- Ñ The employer is responsible for giving an employee a task consistent with these restrictions.
- Ñ Until effective controls are installed, employee exposure to ergonomic stressors can be reduced through restricted duty and/or temporary job transfer.
- Ñ Complete removal from the work environment should be avoided unless the employer is unable to accommodate the prescribed work restrictions.

- Ñ Immobilization devices, such as splints or supports, can provide relief to the symptomatic area in some cases. These devices are especially effective off-the-job, particularly during sleep. They should not be used as prophylactic PPE to prevent the development of MSDs. Therefore, these devices should be dispensed to individuals with MSDs only by healthcare providers who have knowledge of the benefits and possible negatives of these devices.

Well, there it is: medical management in a nutshell. Coordinate with your healthcare provider to develop this component of the ergonomics program. When administered effectively, medical management can result in lowering costs and it sends a very positive message to employees - a message that says "we care!"

Module 7 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Which of the following is not one of the general medical management strategies to prevent impairment and disability?**
 - a. Early return to work program
 - b. Prompt treatment
 - c. Early detection
 - d. Timely recovery

- 2. Which of the following should be included in ergonomics program training?**
 - a. Symptoms of MSDs
 - b. Signs of MSDs
 - c. Procedures for reporting MSDs
 - d. All the above

- 3. According to the text, which of the following is not listed as a way employees should participate in the health care management process?**
 - a. Following safety and health rules
 - b. Following procedures
 - c. Suggesting treatment methods
 - d. Reporting signs and symptoms

- 4. One of the best ways for a health care provider to become familiar with jobs and job tasks is by periodic plant _____.**
 - a. drug testing
 - b. walk-throughs
 - c. incentive programs
 - d. training

5. The employer is responsible for giving an employee a task consistent with health care provider restrictions.

- a. True
- b. False

Module 8: Education and Training

Identifying and solving workplace MSD problems require some level of ergonomic knowledge and skills. Recognizing and filling different training needs is an important step in building an effective program.

For ergonomics, the overall goal of training is to enable managers, supervisors, and employees to identify aspects of job tasks that may increase a worker's risk of developing MSDs, recognize the signs and symptoms of the disorders, and participate in the development of strategies to control or prevent them.

The educational component of ergonomics training ensures employees are well informed about ergonomic hazards so they can actively participate in identifying and controlling exposures. To be "well informed," includes knowing why using ergonomically safe procedures are important.

Employers may opt to have outside experts conduct ergonomics education and training. If so, the outside instructors should first become familiar with company operations as well as relevant policies and practices before starting to present the training. Tailoring the instruction to address specific concerns and interests of the worker groups can enhance learning.

Ergonomics awareness training

The objectives for ergonomics awareness training are as follows:

- Ñ Recognize workplace risk factors for musculoskeletal disorders and understand general methods for controlling them.
- Ñ Identify the signs and symptoms of musculoskeletal disorders that may result from exposure to such risk factors and be familiar with the company's health care procedures.
- Ñ Know the process the employer is using to address and control risk factors, the employee's role in the process, and ways employees can actively participate.
- Ñ Know the procedures for reporting risk factors and musculoskeletal disorders, including the names of designated persons who should receive the reports.

Training in job analyses and control measures

The objectives for training in job analyses and control measures are as follows:

- Ñ Demonstrate the way to do a job analysis for identifying risk factors for musculoskeletal disorders
- Ñ Select ways to implement and evaluate control measures

Training in problem solving

The objectives for training in problem solving are as follows:

- Ñ Identify the departments, areas, and jobs with risk factors through a review of company reports, records, walk-through observations, and special surveys.
- Ñ Identify tools and techniques that can be used to conduct job analyses and serve as a basis for recommendations.
- Ñ Develop skills in team building, consensus development, and problem solving.
- Ñ Recommend ways to control ergonomic hazards based on job analyses and pooling ideas from employees, management, and other affected and interested parties.

Special considerations and precautions

Training objectives are not intended to have workers, supervisors, or managers diagnose or treat MSDs. Rather, the purpose is to instill an understanding of what type of health problems may be work related and when to refer employees for medical evaluation. The training should include what is known about work and non-work causes of musculoskeletal disorders and the current limitations of scientific knowledge.

Training should be understandable to the target audience. Training materials used should consider the participants educational levels, literacy abilities, and language skills. This may mean, for example, providing materials, instruction, or assistance in Spanish rather than English.

Open and frank interactions between trainers and trainees, especially those in affected jobs, are especially important. Employees know their own jobs better than anyone else and often are the source of good ideas for ways to improve them. At a minimum, employees must be given an opportunity to discuss ergonomic problems in their jobs as they see them and engage in relevant problem-solving exercises during the training.

Model Training Strategy

Step 1:

Introduction- The instructor tells the trainee about the training. At this time, the instructor emphasizes the importance of the procedure to the success of the production/service goals, invites questions, and emphasizes accountability.

Step 2:

Instructor show and tell- The instructor demonstrates the process. The instructor first explains and demonstrates safe work procedures associated with the task. In this step the trainee becomes familiar with each work practice and why it is important.

Step 3:

Instructor show and ask- The trainee tells the instructor how to do the procedure while the instructor does it. This step is actually optional, but it's important to include this step if injury is possible. There is an opportunity for the instructor to discover whether there were any misunderstandings, but protects the trainee because the instructor still performs the procedure.

Step 4:

Trainee tell and show- Now it's the trainee's turn. The Instructor has the trainee accomplish the procedure. The trainee carries out the procedure but remains protected because the he or she explains the process before actually performing the procedure.

Step 5:

Conclusion- The instructor recognizes accomplishment, reemphasizes the importance of the procedure, and how it fits into the overall process. The instructor also reviews the natural consequences (the injury/illness) and system consequences (reward/discipline) related to performance.

Step 6:

Document- The trainee certifies (1) training accomplished, (2) questions were answered, (3) opportunities provided to do procedure, (4) accountabilities understood, and (5) intent to

comply. The instructor certifies that the trainee has (6) demonstrated adequate knowledge and skill to complete the procedure.

If it isn't in writing...it didn't happen

OSHA requires that training be documented and, in some cases, certified. You can tell a compliance officer training occurred until your ears turn blue, but if it isn't documented, you may be hard pressed to adequately demonstrate that it actually occurred. So, as a last word, be sure you document that safety training took place. In your documentation both worker and trainer should certify at least:

- Ñ worker name, date, subject
- Ñ the worker demonstrated safe procedures to standard
- Ñ all questions were answered to worker's satisfaction
- Ñ worker will comply with safe procedures as a condition of employment

Take a look at this [sample training certification](#).

Module 8 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The overall goal of ergonomics training is to enable managers, supervisors, and employees to do all the following, except?**
 - a. Ensure compliance with safety and health rules
 - b. Identify job tasks that may increase risk of MSDs
 - c. Recognize signs and symptoms of MSDs
 - d. Develop control and prevention strategies

- 2. According to the text, employers should provide training to employees regarding _____ and _____ of MSDs.**
 - a. signs and symptoms, reporting
 - b. self-treating, reporting
 - c. reporting, rewarding
 - d. identification, self-treating

- 3. Identifying the departments, areas, and jobs with ergonomic risk factors requiring training can be done through?**
 - a. A review of reports
 - b. A review of records
 - c. Walk-through observations
 - d. All the above

- 4. Training objectives are intended to have supervisors and managers diagnose and/or treat MSDs.**
 - a. True
 - b. False

5. According to the text, open and frank interactions between trainers and trainees, especially those in affected jobs, are especially important because _____.
(Complete the sentence)

- a. employees are accountable for their behaviors and need to understand that policy
- b. employees know their own jobs and often are the source of good ideas
- c. employees generally lack common sense
- d. employees need to know the costs of ergonomic interventions