Ergonomics for Supervisors
VOLUME I
AN INTRODUCTORY MANUAL FOR THE
APPAREL AND FOOTWEAR INDUSTRIES

Ergo for Supervisors  
An AAFA-OSHA Alliance
Many companies in the apparel and footwear industries have made substantial efforts to reduce work-related injuries due to heavy lifting, repetitive motion, awkward and static work postures, vibrations, and other recognized ergonomic stressors. The results achieved by these companies demonstrate that there are effective and affordable ways for supervisors in the apparel and footwear industries to protect their employees from injury while maintaining, and in some cases, increasing quality, productivity and employee morale.

Supervisors have a very important role in helping find and control ergonomic problems. Their cooperation and involvement is vital to the success of any ergonomics program and to the safety and morale of their employees.

The OSHA — American Apparel & Footwear Alliance guidebook, Ergonomics for Supervisors, Volume I- An Introductory Manual for the Apparel and Footwear Industries, is designed to direct supervisors through the process of developing an effective ergonomics program. The manual was created through an Alliance between the Occupational Safety and Health Administration (OSHA) and the American Apparel & Footwear Association (AAFA). The Alliance is promoting safe and healthful working conditions for the apparel and footwear industries by providing AAFA members with information and guidance to help them protect employees' health and safety, particularly in reducing exposure to ergonomic hazards.

To develop this manual, AAFA formed a workgroup, which gathered and reviewed existing ergonomics practices in the apparel and footwear industries. AAFA also asked member companies for information on stressors present in their workplaces and for best practices, programs and processes that have successfully reduced exposure to these stressors.

This manual provides practical suggestions for supervisors to help reduce the number and severity of injuries by identifying, evaluating and controlling hazards, and using methods that have been work-proven in the apparel and footwear industries. The information is intended for supervisors in these industries. Other employers with similar work environments may find the information useful; however, care should be taken to ensure that ergonomics solutions are developed to meet the specific hazards and requirements of different work environments.

This manual is advisory in nature and informational in content. This document does not represent a new regulatory standard and imposes no new legal requirements. An employer’s failure to implement this manual is not a violation of the Occupational Safety and Health Act of 1970.

A Note from AAFA:
AAFA is committed to providing voluntary industry ergonomics guidelines to improve safety in member companies and throughout the industry. Employers are required to provide a safe and healthy workplace under the General Duty Clause, Section 5(a)(1) of the OSHA Act of 1970. As part of job safety and health programs, member companies may wish to develop voluntary ergonomics programs.

Any ergonomics program should be tailored by each company to meet the specific needs of its employees. Flexible voluntary guidelines that provide different options for different jobs are much more likely to result in reduced injuries. Therefore, AAFA's provision of, and member companies' use of, the guidelines provided in this manual is strictly voluntary. Member companies may need to tailor the suggestions in this manual to best fit their workplace and any applicable state laws relating to job safety and health.
# Chapter 1: Introduction to Ergonomics

- **What is Ergonomics?**
- **People Come in Different Sizes and Shapes**
- **Designing the Job for the Person**
- **Why Fitting the Job to the Person is a Good Idea**
- **The Ergonomics Team**
- **The Supervisor’s Role**
- **Chapter 1 Review**

## Chapter 2: Work Station Design

- **Looking at the Work Station**
- **Chairs**
- **Tables**
- **Controls and Displays**
- **Foot Controls**
- **Handling Materials**
- **Chapter 2 Review**

## Chapter 3: Musculoskeletal Disorders (MSD's)

- **Ergonomic Stressors**
- **MSD's and Where They Hurt**
- **Solutions to MSD Problems**
- **Controlling MSD Risk Factors**
- **Redesigning the Work and Tools**
- **Chapter 3 Review**
Chapter 4: Medical Management ...................................................... 43
Possible Signs of Muscle Pain and Discomfort .......................................................... 44
Early Intervention of MSDs .................................................................................. 45
Evaluation and Referral of MSD Symptoms ........................................................... 48
Self-Management ................................................................................................. 50
Transitional Duty Assignments ............................................................................. 51
Rehabilitation Programs ......................................................................................... 53
Chapter 4 Review .................................................................................................. 54
Chapter 5: The Work Environment ...................................................................... 55
The Work Environment ......................................................................................... 56
Noise ..................................................................................................................... 57
Vibration ............................................................................................................... 59
Lighting ................................................................................................................ 60
Ventilation ............................................................................................................. 65
Temperature ......................................................................................................... 66
Chapter 5 Review .................................................................................................. 68
Chapter 6: Communication ................................................................................... 69
Communication Process ......................................................................................... 70
Communication Barriers ....................................................................................... 73
Improving Communication Exercise .................................................................... 74
Self Evaluation ..................................................................................................... 77
Chapter 7: Training and Education ..................................................................... 78
Supervisor’s role in training ................................................................................ 80
Best practices ....................................................................................................... 81
Chapter 7 Review ................................................................................................ 82
Chapter 1: Introduction to Ergonomics

Have you ever bought a pair of shoes that did not fit? Most likely, they made your feet hurt, and you ended up throwing them away, giving them away, returning them, or putting them in the back of the closet.

Your shoes need to fit your feet. In the same way, your work station, tools, and job need to be designed to fit you and the way you work. If they do not fit, they can keep you from doing your best work, and can even hurt you.

This manual is about fitting the job to the person. It is written to help you ensure that the employees you supervise do their best job. It provides suggestions on how to help keep employees from having job-related musculoskeletal problems, and includes some ideas for helping employees practice self management for their own protection.
Making the job fit the person is the goal of a science called ergonomics. People who practice this science are called ergonomists.

Ergonomic Practitioners begin by studying people who are doing a particular job. They study people’s sizes, their shapes and the way their bodies work.

Ergonomic Practitioners study the jobs that people are doing and look for ways to make the jobs, the tools and the work areas fit the person better.

Ergonomic Practitioners study the jobs that people are doing and look for ways to make the jobs, the tools and the work areas fit the person better.

Ergonomics addresses problems such the following:

- work tables and chairs that are too high or too low
- lights that are not bright enough or that produce glare
- noises that are too loud
- jobs that put hands, arms, or backs into awkward positions.

These kinds of problems can cause pain and illnesses. Production levels and quality can go down. The role of an Ergonomics Practitioner is to suggest ways to adjust the workplace to correct problems like these.
People come in many different sizes, shapes and strengths. There is no such thing as “one size fits all.” We now need to consider design criteria for a global population and a very diverse work force.

Think about a very big person and a very small person who use the same work station on different shifts. If the work station is the right height for the big person, it will be too high for the small one. If it is the right height for the small person, the big person will have to hunch over to work.

Ergonomists recommend a work station that can be adjusted easily so that almost anyone can use it comfortably. Providing for adjustability in the design criteria is very important to insure maximizing ergonomic considerations.
Designing for People

The following drawings show sizes of body parts that are important in the design of a work station or job for a distribution employee.

♦ Full arm length shows how far a person can be expected to reach. If the person with the shortest arms can reach everything easily, other people can too.

♦ Forearm length approximates how far the work area should be from the person, which is usually 18 inches for a small operator.

♦ Thigh thickness shows how deep the space below the table needs to be for sit-down jobs. If the space is big enough to fit large thighs, smaller thighs will fit too.

♦ Lower leg length shows how far the seat of a chair should be from the floor. A person should be able to adjust the chair for short legs or long legs.

These are the body parts that a distribution employee’s work station needs to fit.
Employees’ body dimensions vary, so work stations need to be adjustable.

- A person’s height and size (how heavy or thin) show how tall and wide to make doors and openings. Most doors are built for tall, big people, so small or average height people can pass through with no trouble.

- Shoulder height shows how high is too high for reaching and placing.

- Elbow height shows how high a work station should be whether the person is standing or sitting down. If the work station is the right height for a tall person, a shorter person can stand on a platform to be at an acceptable height.
Designing the Job for the Person

Very fast hand and wrist movements, done repeatedly and with force, can cause tiredness, pain, weakness, and injury. These problems can happen if the job is not properly designed, or if the person has not received sufficient training.

♦ Jobs should be designed so that employees can keep their wrists straight and use as little hand motion as possible.
♦ Work methods should be analyzed to insure wrists and body segments are kept in neutral posture*.
♦ Employees should be trained to avoid using more force and movement than a job requires.

*Neutral posture is defined by using reference points in relation to adjacent body parts, and can vary depending on the joint in question. For every muscle group there exists an optimum position that will yield maximum force and minimize stress. For example, the neutral position for the hand/wrists/forearm is a straight-line alignment, and grip force is greatest in this position.

No posture can be maintained comfortably for an indefinite period of time, for this reason there is typically a “range” in which a position can be termed “neutral” (see page 16).
Why Fitting the Job to the Person is a Good Idea

Both the employees and the company gain from fitting the job to the person.

When the job and work station are designed to fit each person, the EMPLOYEE can expect the following:

♦ fewer aches and pains
♦ fewer illnesses and injuries
♦ more comfortable working conditions
♦ better morale
♦ higher productivity
♦ less fatigue.

When the job and work station are designed to fit each person, the EMPLOYER can expect the following:

♦ fewer employees missing work
♦ fewer employees getting sick or injured
♦ fewer worker compensation cases
♦ shorter training and learning periods
♦ fewer employees quitting or changing jobs
♦ more employees doing their jobs more effectively.
The Ergonomics Team

It has been demonstrated in many organizations that a team approach to implementing an ergonomics process can be very effective.

Ergonomics teams traditionally pull together representatives from all appropriate areas in a department or facility. Close communication and feedback between employees, supervisors, medical, engineering, and management personnel are vital when trying to maintain and demonstrate an ergonomics commitment. Teams bring into play the experience, talents and skills of the organization.

Teams can be assembled to accomplish a variety of goals including, but not limited to:

♦ Establishing, documenting and managing the overall ergonomics program

♦ Tracking trend information for hazard identification

♦ Identifying, prioritizing, analyzing, and correcting ergonomics hazards or workplace deficiencies.

When pursuing a team approach, first establish the structure of the team, then define its purpose and the goals it plans to accomplish. Other activities may be established as the team is defined. Activities may include, but are not limited to, the following:

♦ Selecting team members and defining the size of the team appropriate for size and structure of the facility

♦ Establishing roles and responsibilities of the members

♦ Determining the frequency of team meetings and new member selection

♦ Training the team to accomplish the established goals.
The Supervisor’s Role

As a supervisor, you have an important role to play on the team because you are with the employees in the workplace everyday. You are a key person to identify jobs with problems that might harm your employees’ safety and health. You also work with the ergonomics team on figuring out how to solve those problems. Then you help employees make the changes needed to solve their problems. For example, suppose the solution to an ergonomics problem is to use adjustable work stations. You need to be sure employees are making the right adjustments and using the work station in the proper way.

Supervisors are also involved in training. Training is part of the way you help your employees avoid ergonomics problems. Employees need to be trained to do their jobs productively, efficiently, and ergonomically. Employees trained in ergonomics can partner with management to reduce job-related ergonomic stresses.

The supervisor is a key person in identifying jobs with ergonomic problems.
4. Helping the person fit the job is the goal of ergonomics.

5. Work stations should be easily adjustable.

6. If the work station is adjusted for a tall person, it will be suitable for everyone.

7. Many companies use teams to solve ergonomic issues

8. The work environment does not have much of an effect on the employee.

*Answers on page 84
Chapter 2: Workstation Design

When work stations are poorly designed, employees may have to work in stressful postures during their work period. Their muscles can get tired, resulting in pain and discomfort. These problems can keep employees from completing their work or doing their best work. Painful, tired muscles can also happen when an employee does any of the following:

♦ uses one or more muscles too much or too often
♦ does something the muscles are not strong enough to do (for example, lifting heavy loads)
♦ uses muscles for a prolonged period (static muscle loading).

Some solutions are simple, like adjusting the work station height. Other solutions might call for major changes that only management can make, like buying new equipment. Whatever the solution, the job must fit the person.

Since you work directly with the people using the equipment, you need to know something about job design.

Different kinds of jobs require different types of work stations.

Some jobs require a lot of movement, reaching, and force. For jobs like these, it may be better for employees to stand rather than sit.

Other jobs require very precise work that is repeated. For these kinds of jobs, sitting may be better than standing.

When you are looking for ways to improve the workplace, look at how all the different parts of the work station fit together.
Looking at the Workstation

Both standing and sitting can cause muscle aches and pains if the work station is not well designed, especially if the employee does not move around much throughout the work shift.

In fact, what is best is a job that allows employees to switch back and forth between sitting and standing. Working this way allows employees to move and use different muscles.

Whether they work sitting or standing, employees should be able to work with their elbows down and close to the body most of the time. To allow them to do this, each operator’s machine, table or work area should be adjusted to the correct height for that employee. For most work, this is between elbow height and two inches below elbow height.

If the work is too far below elbow height, employees will have to stoop forward to reach their work. When necessary corrections are extreme, there may be less employee resistance if the changes to the workstation are implemented gradually.
Looking at the Workstation

Very precise work that is hard to see should be two to four inches above elbow height. But working at this height might mean that employees have to work with their elbows raised, which can make their shoulders and forearms uncomfortable. To help avoid problems like these, raised elbows should be supported with padded elbow rests. A tilted work surface can also be helpful in avoiding neck strain.

Materials and work should be located within 18 inches of the operator, to lessen reaching with extended arms.

Standing on hard floors can make a person’s feet and legs uncomfortable. One way to make employees more comfortable is to have them stand on anti-fatigue mats. A safe ergonomics mat should have beveled edges and should help spread out an individual’s weight more evenly on both feet.
Looking at the Workstation

Adjustable foot rails or foot rests can help employees rest first one foot, then the other. But a foot rest should not be used if it makes a person stand too far from their work, making an individual lean forward to reach the work. Foot rests are also not good if a standing employee uses a foot control or treadle.

- Employees should be able to work with the elbows down, close to the body.
- Employees should have to reach no farther than 18 inches to the front.
- Employees should be able to rest their arms, but not against sharp edges.
- Employees should not have to twist or bend to pick up or put down objects.
- Employees should not have to reach behind themselves.
- Where possible, the work should be designed so that employees change between sitting and standing throughout the work day.
Working sitting down can be more stressful than standing. In fact, seated employees whose workstations are poorly designed may be more likely to have problems with their backs, necks and shoulders than standing employees doing the same kind of work.

The following are some possible reasons:

♦ A person’s chair is poorly designed or adjusted. If employees are using pillows and pads, they may be telling you they have chair problems.

♦ The work table or machine is too high or too low.

♦ The foot controls are too close or too far away.

♦ The work area layout is poor. Cases and products are hard to reach.

The work area or employee may have other problems, including poor lighting and work that is hard to see.
When an employee sits in a seat that does not have a good back rest, the back muscles tire quickly and the employee will slump forward to relieve the muscles. This slumped posture puts stress on the ligaments that help to hold the spine in place and on the discs between the bones in the spine.
Seated Work

The person sitting in the chair is more likely to use good posture when the chair has a well-designed, padded back rest, and the seat tilts forward slightly.

A cushioned seat distributes a person’s weight so that no body part gets all the pressure. Chairs with a gently sloped or “waterfall” front edge also help prevent the chair’s edge from pressing into the thighs.

Having a chair with this kind of design is especially important for an employee who uses a treadle or pedals because this employee’s legs may have to be stretched out.

To provide proper support, the seat needs to be adjusted to the proper height. The proper height for chairs is one to two inches lower than the distance from the crease at the back of the person’s knee to the floor. The seat may be slightly lower when the employee uses a foot control.

Avoid pressing unevenly on the buttocks and thighs.

Provide proper support for the employee’s legs to avoid putting strain on them.
Posture

A well-designed chair helps a person have a good seated work posture. The following are some things you want a chair to do.

- Maintain the natural posture of the spine.
- When viewed from the side, the spine should make an S curve

An example of a better neutral posture position for work.

- The spine should not curve like a C, as it does when a person slumps forward.

An example of a risky slumped work posture.
If a person is very small, the chair may be too high even after you have made all the adjustments you can. The employee’s feet may not be able to rest firmly on the floor. If that is the case, give that employee needed leg support by adding a footrest to the work station.

When employees get new chairs, they must learn how to use them properly. They need to be trained on how to adjust their chairs to fit their bodies. As the supervisor, you should be sure that employees know how to use all the adjustments.

The chairs may feel strange at first. Employees may need a few days to get used to sitting on well-designed chairs.
Chair Features

Seat Shape

Padded seats help distribute weight evenly. Molded, rigid curved seats may not fit everyone and may cause focused contact stress.

Seat Material

The seat should be covered with a rough, textured, breathable fabric. This can help keep employees from sliding and sweating in the seat.

Ability to Swivel

Seats that turn while the base of the chair stays in one place are good because they allow employees turn to get bundles and pieces, rather than twisting to reach to the side or behind. Swiveling can also make it easier for employees to sit down and get up from the work station. Ample space must be provided in the work station to allow free movement of the swivel.

Wheels

Having wheels on the chair is good because they can help the employee reach different parts of the work station more easily. Unless wheels can be locked, they should not be used at work stations with treadles or pedals.

Arm Rests

Arm rests are good because employees can use them to rest their elbows while doing close work that is above elbow height. But arm rests should not be used if they are not adjustable.
Tables

Tables should be adjustable so that employees can work at or near elbow height. If the table is too low, employees will have to hunch forward, both to reach the work and to see it more clearly. This position puts strain on the back, neck and shoulder areas.

If a table is too high, employees will have to raise their shoulders to get their arms high enough to work. This posture tires the neck, shoulders and upper back muscles and results in muscle pain.

When working with large and bulky items, air flotation tables can be used.

If employees rest their arms on work stations or tables that have sharp edges, blood flow to the muscles can be cut off, causing pain and discomfort. To help keep these problems from happening, work station or table edges should be rounded or padded.

For sit-down work, the table should also be high enough to allow room underneath for the employee’s thighs and deep enough for their legs. The table top should never press on an employee’s thighs. Employees who use foot controls need more room than those who do not, so their legs can move easily.
Controls and Displays

Controls and displays are important because they give vital information about a process or machine to an employee, and also allow an employee to operate the machine in a safe and productive manner.

Displays and control panels should be at, or slightly below, eye level, and if possible, should be at an angle to ease user comfort and reduce potential for error.

Controls and displays should be located consistently and uniformly both in location and layout on similar equipment. The force required to operate controls must be within the strength capabilities of the least capable operator.

Muscular activity and repetitive or continuous control activities, such as operating levers, knobs, or switches, should not concentrate unnecessary stress on soft tissues of the hands or fingers.

Hand controls are best positioned between the shoulder and the elbow, particularly if frequently used.

The location and arrangement of both the controls and displays are critical in emergency situations. They must be clear and logical and give the operator a natural sense of diagnosing the problem and applying the proper procedure in responding to those problems.
Foot Controls

For standing work, it is often difficult to use foot controls. If, however, foot controls are used at a standing work station, they should be level with the floor and should work with little force, and the location should minimize awkward leg and foot postures.

Foot controls should also be fitted with guards so that equipment can not be started up accidentally.
Lifting heavy loads, twisting, turning, and bending can cause muscle strains and sprains. For example, reaching at arm’s length to pick up a full case can stress the back and shoulder muscles, especially if the person has to reach down often. This kind of repetitive stress might also irritate nerves in the shoulder.

To keep employees from having to do stressful reaching, place trucks and carts so that packages are at table height and are within 14 to 16 inches of the person. When the height requirement varies, a scissor lift table provides optimum positioning. The amount of material a seated employee picks up at one time should be as light weight as possible.

Following are some things that can be done to avoid material handling problems.

- **Use lift carts to raise materials whenever possible.**
- **Keep objects at the same level as the work surface so that they do not have to be lifted.**
- **Use carts to move materials.**
- **Keep loads as light as possible.**

Check wheels and casters regularly to make sure they are not damaged. If they are damaged, have the maintenance department repair or replace them.
Although there is much to improve in the workplaces, sometimes it is not possible to engineer all ergonomic hazards or risk factors out of a job. The responsibility of management is to review and analyze the variables within the workplace, and implement continual improvements to harmonize the person, task, machine, and environmental relationships. A successful ergonomics program will optimize the health, comfort and efficiency of each employee.
Chapter 2: Review

True or False

_____ 1. A job that allows employees to sit during the entire work shift is best.

_____ 2. When working, employees should keep their elbows down and close to the body.

_____ 3. Materials and work should be located within 14 to 16 inches of the employee.

_____ 4. Anti-fatigue mats will relieve stress to the person’s back, legs and feet.

_____ 5. Employees should adjust their chairs (such as height, arm rests, etc.) until they feel comfortable.

_____ 6. A foot control should be placed so that the employee can get as close to the work station or machine as possible.

_____ 7. As long as the employee can lift a case comfortably, the weight of the case would not be an ergonomic concern.

_____ 8. If foot controls are used for standing jobs, the control should be level with the floor.

_____ 9. When employees rest their arms on table edges, the table edges should be rounded or padded.

_____ 10. Very precise work that is hard to see should be two to four inches below elbow height.

*Answers on page 84*
Musculoskeletal Disorders (MSDs) are disorders involving the muscles, bones, nerves, tendons, ligaments, joints, cartilage, or spinal disks. The term “work-related musculoskeletal disorders” (WMSDs) refers to (1) MSDs to which the work environment and the performance of work contribute significantly or (2) MSDs that are made worse or longer lasting by work conditions. In general, MSDs develop when physical stressors overcome the body’s ability to heal and repair itself.

Physical risk factors in the workplace, or “ergonomic stressors,” along with personal characteristics and social factors, are thought to contribute to the development of MSDs. The NACE organization states that they:

“Recognize that there are non-occupational components (e.g., general health, non-work, leisure, play, and physical daily living activities) that also contribute to the development and occurrence of MSDs. To reach outside the work arena, these components are best addressed by educating the workforce concerning such non-work hazards.”

This guideline addresses only physical factors in the workplace.

Work-related MSDs may occur in the form of cumulative or acute trauma disorders.
Musculoskeletal Disorders

MSDs can result from exposure to repetitive, forceful, or awkward tasks over a period of time. Each stressful situation may result in micro-traumas to a specific region of the body, such as a muscle or tendon. Without adequate recovery, the accumulation of micro-traumas results in pain, discomfort, numbness, reduced strength and/or inhibited dexterity. Symptoms of MSDs typically cannot be associated with one specific event in time. Examples of some of the more common MSDs that can occur in the work place are listed below.

- **Medial Epicondylitis** (often called golfer’s elbow) is associated with repetitive forward bending of the wrist while gripping and turning the forearm force (manual screwdriver action).
- **Lateral Epicondylitis** (often called tennis elbow) is associated with repetitive gripping exertions with the wrist bent backwards.
- **Carpal Tunnel Syndrome** is a group of signs and symptoms with multiple risk factors creating swelling within the carpal tunnel of the wrist. This can cause swelling around the tendons, squeezing the median nerve, resulting in pain and numbness.
- **Raynaud’s or Vibration Syndrome** is a circulatory disorder that is also called “white finger syndrome,” and is associated with direct contact with a vibrating source. Symptoms such as pain and whitening of hands and fingers are exacerbated by cold and vibration.
- **Thoracic Outlet Syndrome** can be caused by several different problems. Nerves and blood supply passing through the shoulder may be pinched, which then causes pain and/or numbness down the arm and to the fingers.
- **Low back pain** of cumulative origin is thought to be accelerated due to work activities involving repetitive lifting and awkward postures, such as bending forward and forceful exertions.
Acute traumas, such as lacerations, fractures, strains, sprains, contusions, or bruises, can generally be attributed to an isolated instantaneous event. These traumas are often easier to diagnose and treat because the causative stressors and affected body regions are more readily identified. Acute traumas considered “ergonomics-related” include such injuries as muscle strains, low back pain, lumbar strains, and other back concerns.

Factors that increase risk for MSD development are called ergonomic stressors. The ergonomic stressors that apparel industry workers may face include the following situations.

♦ Strained muscles can occur when a muscle is overloaded resulting in the partial tearing of fibers. Scar tissue may form, which can cause chronic tension and make the muscle susceptible to re-injury. Common muscle strains occur in the shoulders, upper arms, forearms, and lower back.

♦ Lower back pain of acute origin is generally attributed to muscle strains of the lumbar region. Poor lifting mechanics, heavy loads and/or repetitive exertions are often cited as activities that precede the acute injury. In many cases the specific cause of acute lower back pain is unknown.
**Ergonomic Stressors**

**Force**—Force is the physical effort required to lift, push, pull, grasp, and pinch items in the work environment. A certain amount of force is required to handle and control equipment, tools, raw materials, and finished products. We will use magnitude and frequency to evaluate the level of stress.

**Static Postures**—Assuming and holding any posture for a long period of time can place stress on the body, particularly if the posture is non-neutral. Static postures can accelerate the development of fatigue and discomfort.

**Repetition**—This stressor occurs when workers perform the same motion or series of motions continually or frequently. Repetition can be measured by counting cycles in a standard period, such as a minute or hour.

**Awkward Postures**—Body postures that deviate from normal resting or neutral positions place unnecessary stress on muscles, tendons and bones. Examples of awkward postures include reaching above shoulder height or out and away from the body, kneeling, leaning over an assembly or sanding table, bending the wrist, and twisting the body while lifting.
Ergonomic Stressors

**Vibration**—This term refers to physical exposure to a vibration source, such as a tow motor operator or a hand tool. We evaluate vibration exposure by looking at the magnitude, the frequency, and the duration of exposure.

**Contact Stress**—Physical contact between the body and sharp edges of tools, workstations, equipment, and products can cause compression of blood vessels and nerves.

**Environmental Factors**—Environmental factors include: cold, heat, light, noise, and moisture. All of these factors define a work environment and should be evaluated individually for hazards.

**Multiple Stressors**— Many jobs combine multiple stressors in a single job. The combination of multiple stressors within a job or work task can increase risk of injury.

An employee who has hurt a tendon or its cover might have one or more of the following symptoms:

- sharp or dull pain
- burning feeling
- swelling
- crackling or popping sounds when the part that is hurt moves
- loss of some or all use of the part that is hurt.
Risky Positions

♦ Reaching behind

Better Position

♦ Putting work to the side or in front
♦ Holding the elbows close to the body
♦ Raising the elbows away from the body
Risky Positions

- Bending the wrist away from the thumb

- Bending the wrist toward the thumb

- Bending the wrist up

- Bending the wrist down

Better Positions

- Holding the wrist straight
This upper-body map shows which MSDs hurt which parts of the body.

The first signs of Carpal Tunnel Syndrome happen at night. Therefore, employees might not link the pain with their work. As the disease gets worse, the signs start to happen during the day too.
Solutions to MSD Problems

In order to reduce the risk of MSDs or find ways to help employees who have MSDs, you and your manager will need to make a plan. If your facility has an ergonomics team, the whole team should work on the plan.

Your role in helping protect employees is a key one. You are the person who sees your employees working every day. You know what jobs they are doing and how they do them. So, you are a key person in spotting potential problems.

First, you might find it helpful to answer these questions:

From which jobs do people get MSDs?
Your company’s human resources department and medical department keep these records and may be able to give you this information.

In which jobs do employees complain the most, miss work, and make excuses to get away from the work?

Does the job include any of the risk factors of MSDs?

Document results and prioritize jobs
Controlling MSD Risk Factors

Once you have identified a job that is causing problems, talk to your manager and the ergonomics team. It might be possible to change the equipment or the way the task is done to get rid of the risky position.

You have an important role in preventing and controlling MSDs. Your role is to help management and the engineering departments as much as possible. You will help them make the changes they decide are needed. You will make sure the changes are used and function properly.

Because of your important role, you need to know what methods are commonly used in the apparel and footwear industry to control MSDs.

The best method is to redesign the job or the tools to reduce risk, or so that the employee can use a better posture with less force and repetition. If the job cannot be redesigned, administrative controls such as job rotation or job enlargement may be necessary.

To catch medical problems early, watching and checking employees can do a lot to control MSD problems.

Training is a key part of any program to control and prevent MSDs. Teaching and training should never be the only ways you deal with MSD risk factors. They should be used to support changes to the work and tools.

To control or minimize MSD risk factors, management should use the following four program elements:

1. Worksite Analysis
2. Hazard Prevention and Control
3. Medical Management
4. Training and Education.
Redesigning the Work and Tools

Here are some examples of useful tools and techniques to minimize stressors:

♦ Clamps and guides might help take the place of a person’s hands to hold or guide packages or cases.

♦ Machine modification and the use of attachments can sometimes help employees by doing parts of a job that can cause pain.

♦ Tilting the table might help cut down on the amount a person uses a bent wrist.

♦ Sitting in properly designed chairs allows a person to use more natural positions.

♦ The handles of scissors, clippers, irons, trimmers, and cutters should be shaped so that the employee can use a straight wrist.

♦ A tool’s handle should be long enough so that its end does not cut into the employee’s palm.

♦ Cutting tools, such as scissors, need to be sharp. Dull tools can make an employee use too much force to make a cut.

♦ Tools and equipment should be kept from vibrating. By following the manufacturer’s maintenance recommendations, you may be able to prevent or reduce vibration. If not, your company will have to ask the manufacturer for advice.

Part of your job is to teach your employees to use smooth movements and to use as little force and repetition as they can. You need to keep an eye on them every day so that you can spot poor work practices early and correct them before employees get hurt.

Training is particularly important for new employees. These employees often use more force and motion than is needed to do a task. They need to be trained to do the work properly before they are put under the pressure of everyday production demands.

Employees need to know the signs and symptoms of MSDs. That way, if they have a problem, they can report it right away.

Then they can be treated quickly so that the MSD does not get any worse.
Chapter 3: Review

I. Ideal Working Position: Put R in the blank if you believe the position to be risky and I in the blank if you believe the position to be ideal.

II. If you have observed any of the following behaviors in your facility, place a check by that item.

   _____ Using homemade aids or tools
   _____ Modifying company supplied tools
   _____ Using wrist or finger wraps
   _____ Slumping, rubbing neck or hands, sighing, shifting positions, or other signs of fatigue

*Answers on page 84*
Some supervisors worry that telling employees about MSDs will “give them ideas.” They fear that some employees will pretend to have a MSD or that an “outbreak” will occur.

Of course, that could happen. But a much bigger danger is that you may not find out about a MSD until it is too late to easily help the employee.

Talk frankly with your employees about MSDs and be sure they learn the facts. They are probably hearing about MSDs in the news and from other employees. You can reassure them, prevent the spread of rumors or other misperceptions, and clarify questions they may have.
Possible Signs of Muscle Pain and Discomfort

You need to encourage your employees to tell you about problems that might be signs of MSDs. Watch your employees. You can sometimes see them give signals that their muscles hurt. Some clues may include the following:

♦ rubbing or shaking a particular body part, such as the hands, arms or neck

♦ changing positions, such as shifting around in the chair

♦ making excuses to get away from the work

♦ using aids, such as pillows, foam, or wrist wraps.

The parts of their bodies where employees feel muscle aches and pains can give you clues about workplace and job design.
Early Intervention of MSDs

Proper medical management is necessary to insure early identification, evaluation, and treatment of signs and symptoms and to aid in their prevention.

Employees should be instructed to promptly report early signs and symptoms of MSDs to their supervisor.
Prompt attention to signs and symptoms of MSDs are important for two reasons:

♦ to reduce the severity of the illness
♦ to meet legal obligations of record-keeping.

Employers must document work-related injuries and illnesses for both OSHA recordkeeping and worker’s compensation purposes. Many cases that are recorded in the OSHA system are also compensable under the state worker’s compensation system, while many others are not. The two systems, however, have different purposes and scopes. The OSHA recordkeeping system is intended to collect, compile, and analyze uniform and consistent nationwide data on occupational injuries and illnesses. The worker’s compensation system, in contrast, is primarily intended to provide medical coverage and compensation for workers who are killed, injured, or made ill at work. The compensation coverage varies from one state to another.

While the cases captured by the OSHA system and worker’s compensation sometimes overlap, there are many instances when they do not. For example, many injuries and illnesses covered by worker’s compensation are not required to be recorded in the OSHA records. Such a situation would arise, for example, if an employee were injured on the job, sent to a hospital emergency room, and was examined and x-rayed by a physician, but was then told that the injury was minor and required no treatment. In this case, the employee's medical bills would be covered by worker’s compensation insurance, but the case would not be recordable under OSHA rules.

Employers are no longer required to separate MSDs from other recordable injuries and illnesses. They are all reported on the OSHA 300 form.
Sample OSHA 300 form
Evaluation and Referral of MSD Symptoms

When an employee begins to experience symptoms of a MSD, one of two courses of action will be taken.

Follow the description below that best describes your facility.

Are health care providers available at your facility?

Yes

Employee reports to supervisor

Supervisor refers to in-house health care provider

Screening assessment
Non-invasive examination
Conservative treatment
Self-management
Video taping of employee at job
Workstation adjustments

Physician referral

No

Employee reports to supervisor

Supervisor refers to Human Resources Department

Internal monitoring

Video taping of employee at job
Workstation adjustments

Physician referral
Medical Process

After a non-invasive examination is performed, the health care provider may recommend conservative treatment. If mild symptoms and no physical signs are present, conservative treatment may include the following:

- Ibuprofen
- Acetaminophen
- Cold pack/moist heat
- Exercise
- Wrist motion instruction
- Counseling.

A doctor, or a nurse working with a doctor, must diagnose and treat MSDs. Usually a doctor will prescribe medicine and rest, or a temporary change of duties. Moving an employee into a job that does not require as much strength or use of the hands until the employee is completely well is often an effective way of treatment. This is called light duty. Sometimes, however, employees do not get completely well with this form of treatment, especially if they did not get treatment early enough. Then the doctor may recommend surgery or other therapy.

After a non-invasive examination, the health care provider may recommend conservative treatment.
Self-Management

Being aware of risk factors associated with a person’s job, as well as ergonomic stressors associated with a person’s leisure activities, is extremely important in controlling and eliminating MSDs.

In reducing the possibility of developing a MSD, the employee should take the following actions:

♦ be careful when engaging in a leisure activity such as tennis, baseball, bowling, or gardening
♦ begin and maintain an exercise program
♦ get sufficient rest to allow muscles and tendon groups to recover
♦ maintain a proper diet.
Transitional Duty Assignments

Every effort should be made to return employees, who are temporarily unable to perform their regular duties due to work-related injury or illness, to the work environment. Non-value added work situations should be avoided.

Management of the Transitional Duty Program may vary somewhat by company, but will normally involve a physical assessment by a plant nurse or other health care provider. The safety manager (or plant designee) will also be involved to insure there is no negative impact on the employee’s safety or plant safety through the new job assignment or change in duty requirements.

It is best if the affected employee can be placed within their regular section/department with supervision and monitoring to insure the duties are consistent with physical limitation recommendations.
Return to Work Program

Returning an employee, who is suffering from an occupational illness or injury, to the workplace maintains a degree of muscle conditioning and work hardening that is important when returning to full duty. Transitional-duty assignments help sustain employee morale and self-esteem because the injured worker can maintain social contacts with co-workers. Maintaining a normal work schedule improves the reconditioning/rehabilitation period and allows the supervisor to keep lines of communication clear. Days away from work (lost time days) are also held to a minimum.

The safety professional, ergonomist, or other qualified person should analyze the physical procedures used in the performance of each job, including lifting requirements, hand grips, and frequency of repetitive motion. Positions with ergonomic stress should be identified and labeled.

For such jobs, the ergonomic risk should be described. This information will assist health care providers and plant personnel in recommending assignments to transitional-duty jobs.

The ergonomist and health care providers should develop a list of jobs with the lowest ergonomic risk.

The transitional-duty job should not increase ergonomic stress on the same muscle-tendon group.
Rehabilitation Programs

Personalized rehabilitation programs may be tailored for specific plant or work-team needs using the assistance of physical therapists, community rehabilitation centers, or local health care providers. This personalization of in-plant rehabilitation programs encourages responsible rehabilitation during a potentially difficult period, and allows improved control over the employee’s return to work.

Rehabilitation at the employee’s plant site is often preferred to the rehabilitation offered by an outside agency or office.
Chapter 4: Review

I. The following information is an incomplete list of actions that can be taken if signs or symptoms of an illness are reported. Number the steps according to whether your facility has a medical facility.

Are health care providers available at your facility?

YES
— screening assessment
— physician referral
— employee reports to supervisor
— supervisor refers to medical
— conservative treatment

NO
— videotaping of employee at job
— physician referral
— self-management
— employee reports to supervisor
— workstation adjustments

II. True or False

____ 1. The supervisor has the responsibility of referring the employee to the medical department or personnel department (for locations without health care professionals).

____ 2. The preferred method of employee rehabilitation is by an outside agency or office.

____ 3. Often rubbing or shaking the hands, arms or neck could be a signal that an employee’s muscles are hurting.

____ 4. A doctor, or a nurse working with a doctor, must diagnose and treat MSDs.

____ 5. Employees should be encouraged to wait and make sure signs and symptoms do not go away before reporting to their supervisor.

____ 6. Conditions classified as MSDs must be recorded on the OSHA-300 log as occupational illnesses.

*Answers on page 85*
Sometimes, conditions that are part of the workplace can affect how people do their jobs. Evaluation and control of these conditions can help people do their jobs safer and better.

**Five work environment conditions include the following:**

- Noise
- Vibration
- Lighting
- Ventilation
- Temperature extremes.
The Work Environment

Jobs should be designed so that people can see and hear easily. Employees use both their eyes and ears to run their machines.

They use their **EYES** to read instructions, to track machines, tools, parts, and work, and to look for defects.

Workers use their **EARS** to learn by talking with co-workers. They also listen to their machines to tell whether they are working properly.

- The plant floor needs to be well lit and clear of obstructions.
- At the work table, light needs to shine on the work area.
- Employees must be able to see the work area without leaning or bending.
- The work area needs to be free of glare.
- Instructions must be easy to read.
- The noise level should be low enough so that employees can talk in normal voices. If the work area is too loud, ear protection must be provided.
Workplaces contain both meaningful sounds and extraneous noise. You do not want to get rid of meaningful sounds because people use them to gather many kinds of information. For example, by listening to a machine, employees can tell if it is running properly.

Other sounds are not meaningful to those hearing them and should be corrected. These extraneous sounds are called **noise**.

Loud or sudden noises can distract people, making it hard for them to concentrate on their work. A noisy work place can increase fatigue and chances for mistakes and injuries. Very loud noises can even damage hearing.

The loudness of sound is measured in units called decibels. Measuring exact noise levels can be very complicated and should be done by a trained professional.

OSHA has specific rules and programs to protect employees who are exposed to noise levels greater than 85 decibels for a full shift, or for eight hours.

If you suspect your work place is too noisy, or if you think a machine is making too much noise, report the problem to your safety department.
Reducing Noise Level

There are several ways to reduce noise levels.

♦ Often it is possible to enclose a noisy motor or piece of equipment in a sound-absorbing box.

♦ Sometimes the noise level can be reduced if the noise-producing equipment is put into a separate room or if special noise-absorbing panels are hung from the ceiling.

♦ Keeping equipment in good running condition can help too. Sometimes machines are noisy because they need maintenance.

It is best to use methods like those listed in the box on this page to solve noise problems. But if these are not possible, employees’ hearing must be protected by noise-reducing ear muffs and/or ear plugs. In this case, it will be your job to be sure that your employees are wearing them and using them properly.
Vibration

Vibration is often associated with noise in the workplace since the two usually come from the same operation. Many times if the vibration is eliminated, the noise is reduced.

The two common types of vibration are whole body and segmental.

Whole body vibration results when the whole body is subjected to mechanical vibration, for example, from a supporting surface such as a forklift seat.

Segmental vibration occurs when only part of the body, such as the hand or hands operating a grinder, is in direct contact with the vibrating machine.

Employees who are subjected to vibration can suffer the following injuries:

♦ injury to bones
♦ injury to soft tissue
♦ injury to joints
♦ injury to circulation.

The most disabling vibration illness is Raynaud’s Syndrome, also called “dead fingers” or “white fingers.” This circulatory illness occurs mainly in the fingers of the hand used to guide a vibrating tool.

The following are guidelines to reducing vibration:

♦ performing periodic maintenance
♦ keeping moving parts lubricated
♦ mounting equipment on firm, solid foundations
♦ ensuring floors, walls and other structural features do not vibrate and transmit vibrations
♦ using rubber or plastic bumpers, flexible mountings and couplings, or resilient flooring.
Employees sometimes complain that there is not enough light on their work stations, or that they must look into bright spots caused by misplaced lighting or reflections off shiny surfaces. People need to be able to see clearly what they are doing. Depending on the type of operation, tasks may require either task lighting or area lighting. In both cases, shading of the task should be avoided. Visual tasks in the industry vary in degree of difficulty depending on size, contrast (between detail and the surrounding area), luminance (size of area that is illuminated) and the time available for seeing. The smaller a task size, the more difficult it is to see. Tasks of low contrast, such as inspecting for a gray stain on gray cloth, are more difficult to see than higher contrast tasks such as a dark gray stain on white cloth. Also, it can be harder to perform an inspection task if inspection time is insufficient.
Task Lighting

Some work stations have small task lights mounted on or near the machine. These are meant to be pointed at the area that the employee needs to see most clearly. Often, these lamps are not aimed correctly and the light they provide is often not bright enough.

Area Lighting

Area lighting should be used to light the room evenly. Fluorescent lights are usually used to provide a soft light that is relatively free of shadows.
General Lighting Guidelines

It is important to realize that working with inadequate light is a strain on the eyes and is emotionally taxing as well. Lighting levels which are too low increase safety hazards, and decrease productivity due to interference, errors, or fatigue.

Short focal distances affect posture. People bend forward to bring objects into focus. The focal distance of prescription lenses should be adequate for the work required.

As most people get older, they do not see as well as they once did. Around age forty, their eyes may start to have a harder time focusing on close objects. Older employees may need stronger lighting to see more clearly. It is important to stress the importance of having their vision tested regularly.

As a supervisor, you should check work stations for the following:

- Both the area lighting and the task lighting are strong enough that the employee can see clearly without leaning forward
- The task lighting is aimed just in front of the work
- Enough area lighting is falling on the work station so that there is not much contrast between light and dark areas
- If possible, there should be more light when dark fabrics are used than when light-colored fabrics are used
- Work stations are arranged so that there is no glare from windows and lights.

Adjusting where the task lights are pointing or changing bulb sizes might solve lighting problems. If not, you may ask an expert to take more precise measures and suggest improvements.
Glare

Glare comes from bright spots of direct light or light reflecting off of shiny surfaces.

Glare in people’s eyes can result in the following:

♦ poor quality

♦ reduced productivity

♦ safety concerns, and

♦ eye fatigue.

Lights and work stations should be placed so that employees are not bothered by glare.

Direct glare gets into a worker’s eyes from lights or windows.

Indirect glare reflects into a worker’s eyes off shiny surfaces.
Lighting Recommendations

These lighting recommendations are intended to provide guides for lighting levels desirable from an overall operational standpoint. The American National Practice for Industrial Lighting recommendations include:

<table>
<thead>
<tr>
<th>Area</th>
<th>Foot-candles on tasks*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing manufacture (men’s)</td>
<td></td>
</tr>
<tr>
<td>Receiving, Opening, storing, shipping</td>
<td>30</td>
</tr>
<tr>
<td>Examining (perching)</td>
<td>2000**</td>
</tr>
<tr>
<td>Sponging, winding</td>
<td>30</td>
</tr>
<tr>
<td>measuring</td>
<td>30</td>
</tr>
<tr>
<td>Piling up and marking</td>
<td>100</td>
</tr>
<tr>
<td>Cutting</td>
<td>300**</td>
</tr>
<tr>
<td>Pattern marking, preparation of trimming, piping, canvas and shoulder pads</td>
<td>30</td>
</tr>
<tr>
<td>Fitting, bundling, shading stitching</td>
<td>30</td>
</tr>
<tr>
<td>Shops</td>
<td>100</td>
</tr>
<tr>
<td>Inspection</td>
<td>500**</td>
</tr>
<tr>
<td>Pressing</td>
<td>300**</td>
</tr>
<tr>
<td>Sewing</td>
<td>300</td>
</tr>
</tbody>
</table>

*Minimum on the task at any time.

**Can be obtained with a combination of general lighting plus specialized supplementary lighting. Care should be taken to keep within the recommended luminance ratios. These seeing tasks generally involve the discrimination of fine detail for long periods of time and under conditions of poor contrast. The design and installation of the combination system must not only provide a sufficient amount of light, but also the proper direction of light, diffusion, color and eye protection. As far as possible it should eliminate direct and reflected glare as well as objectionable shadows.
Ventilation

Ventilation is one of the most important engineering controls used for improving or maintaining the quality of the air in the workplace. Ventilation is a method of controlling the environment with air flow. Two types of ventilation found in many facilities are general ventilation and local exhaust systems.

General ventilation refers to flushing the workplace with a constant supply of fresh air. Air conditioning systems accomplish this with air that has passed through a filtering system before returning to the workplace or by bringing outside air into the system.

A local exhaust system includes the use of hoods or enclosures and ductwork leading to an exhaust fan or an air cleaning device for discharge to the outside air. Many companies use a local exhaust system to collect air contaminants at or near their source of generation.

When properly designed and installed, a good ventilation system often adds to the productivity and the general well-being of employees.
Temperature extremes in the workplace may subject employees to environmental stresses that can be eliminated or controlled.

Certain types of work require exposure to heat and humidity or cold. The effects of exposure to such environmental conditions depend on the following circumstances:

♦ intensity of temperature extremes
♦ duration of the exposure period
♦ tasks involved
♦ persons performing the tasks
♦ presence of other stresses.

Temperature extremes may cause psychological and physiological stresses in employees.

Employees working in hot and humid areas may become irritable, suffer fatigue, have less of an ability to concentrate, and make numerous errors. Prolonged exposure to high temperatures and humidity is a common cause of heat fatigue, heat exhaustion, or heat stroke.

All heat related emergencies should be treated promptly. **Heat stroke is the most life threatening condition and requires urgent medical attention.**

The body as a whole is not as efficient at withstanding cold temperatures as it is with warm temperatures. The body can tolerate very little exposure to cold without the protection of appropriate clothing.
Temperature Control Measures

General safety and health measures for hot and cold workplaces should include the following:

♦ adequate training

♦ adequate acclimatization periods

♦ rest periods in comfortable areas

♦ decreasing the physical work of the task

♦ changing the amount of time of exposure

♦ altering the environment with heaters or fans, whichever is appropriate for the conditions

♦ personal protective equipment
Chapter 5: Review

True or False

_____1. Heat stroke is more serious than heat exhaustion and heat fatigue.

_____2. A task light should illuminate an area approximately 20 ft. x 20 ft.

_____3. Local exhaust systems are used to collect air contaminants at or near their source of generation.

_____4. Segmental vibration can cause injury to circulation and lead to Raynaud’s syndrome.

_____5. Exposure to vibration is frequently associated with exposure to noise.

_____6. Humidity levels do not impact a worker’s ability to complete a job.

_____7. When correcting a noise problem, personal protective equipment would be better than job rotation.

_____8. A good example of whole body vibration would be using an electric hand drill.

_____9. The loudness of sound is measured in units called decibels.

_____10. The body is less able to adjust to cold than to heat.
As a supervisor, you need to communicate frequently with your employees about ergonomics, either in groups or on a one-on-one basis. Ergonomics training, ergonomic team meetings, and job planning are all part of ergonomics communications and provide significant opportunities for you to do the following:

♦ represent management’s and your personal commitment for a safe and healthy work environment
♦ listen to ideas and concerns of the employees
♦ act on employee suggestions.
Remember to always get feedback and make sure that your message is understood. In order for you and your employees to communicate effectively, employees must understand the intent and meaning of the message. In addition, intentions and consequences must be shared. The diagram below depicts this process of shared and open communication.
Forms of Communication

There are three methods of communication:

1. two-way communication
2. one-way communication supplemented by the receiver, and
3. one-way communication.

Two-way communication is the most desired form of communication. As discussed on the preceding page, two-way communication allows the sender and receiver freedom to offer feedback until the meaning of the message has been shared.

One-way communication supplemented by the receiver does not allow for feedback for clarification. This form of communication serves as a request, by the sender, for information from the receiver.

Some examples of one-way communication supplemented by the receiver include the following:

- supplying information requested by the sender,
- the sender asking for an opinion without further interchange of ideas
- the receiver supplying data or reports as requested.

Methods of Communication

- Two-Way Communication
- One-Way Communication
  - Supplemented by the Receiver
- One-Way Communication
The least desirable form of communication is one-way communication. This form of communication does not allow for the receiver to offer any feedback. The following are examples of one-way communication:

- receiver getting written instructions
- warning signs
- posters
- letters.

In one-way communication, the receiver may only know from what department the communication came and not know the identification of the sender. This is frustrating for the receiver in that feedback is almost impossible.
Communication Barriers

Even under the best of circumstances, effective communication barriers can be present. Although two-way communication is attempted by the supervisor and employee, shared meaning may not be achieved because of many reasons. The following are some possibilities:

♦ The supervisor has not had experience dealing with MSD illness. For example, the supervisor does not take immediate action when an employee presents signs or symptoms of what could be an MSD illness.

♦ The employee does not have enough knowledge to explain an ergonomic problem. For example, the employee believes that a non-ergonomically friendly workstation accommodates him/her and does not understand that prolonging a necessary adjustment can create problems.

♦ The supervisor has an attitude of intolerance. For example, the supervisor feels an employee is a “trouble maker” or “chronic complainer” and dismisses complaints.

♦ An employee’s emotions cloud what should be an objective ergonomic decision directed at improving the working conditions. For example, the employee feels “picked on” when the supervisor asks the employee to remove pillows or foam from his/her ergonomic seat.

♦ There is a cultural or language difference between the supervisor and employee which may cause barriers that need to be considered.
Practicing effective communication skills is essential to improving your relationship with employees. On the next three pages are techniques that can be used to improve communication. As one can see, each of the six techniques has an example following the description. Use the blank spaces under the examples to write your own ergonomics communication statement for each technique.

1. Clarifying Statements
   ♦ to check the accuracy of a message
   ♦ to understand clearly
   ♦ to hear the message repeated

**Example:** Employee: “I’m not sure I understand how to adjust the work station. Please go over the directions again.”

**Your Example:**
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

2. Expansion for Increased Dialogue
   ♦ when a person wishes to add something to a discussion

**Example:** Supervisor: “I understand you are having some pain in your shoulder during the night, so I would like to know…”

**Your Example:**
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
3. Elaboration

♦ when a person desires more information from the sender

**Example:** Supervisor: “I would like to hear more about your leisure activities.”

**Your Example:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Personal Recognition

♦ using a person’s name when communicating with them (this technique should be used in conjunction with all other techniques)

**Example:** Supervisor: “I’m really pleased with the progress the ergonomics team is making, Susan.”

**Your Example:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. Support Statements
♦ when a person wishes to tell another that he/she agrees with a statement

**Example:** Supervisor: “I agree with your opinion concerning the changes in your workstation.”

**Your Example:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

6. Reflections
♦ to summarize the dialogue up to a particular point in the discussion

**Example:** Employee: “So, I am supposed to report pain and soreness to you before going to the medical department?”

**Your Example:**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
### Chapter 6: The Supervisor as a Communicator

#### A Self-Evaluation

How do you rate in communication? Use the checklist below to rate your performance and to determine the areas in which you need to practice.

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Often</th>
<th>Occasionally</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do I initiate conversation about observations I make, good or bad?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>2. Do I listen when an employee is talking?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>3. Do I keep an open mind as a listener?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>4. Do I become impatient with “chronic complainers”?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>5. Do I allow time for clarification to messages?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>6. Do I believe employees feel comfortable initiating conversation with me?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>7. Does my body language express interest when listening?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>8. When communicating, do I use the employee’s name to show personal recognition?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>9. Do I use language appropriate for the employee’s level of knowledge?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>10. Do I do most of the talking when communicating?</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>
Chapter 7: Training and Education

Training and education are critical components of an ergonomics program. All employees should be given formal instruction on ergonomic hazards associated with their jobs and should participate in an ongoing educational process to maintain awareness and involvement.

Learning a skilled job is not easy.

For successful training, several conditions must be met.

♦ The employee must want to learn.
♦ The training program must be written in a language and at a level of understanding appropriate for the individual.
♦ What is to be learned must have meaning to the employee.
♦ The employee needs to practice the task.
♦ The employee needs information about how to do the task better.
♦ The employee needs to be recognized for doing the job well.
♦ The employee needs to learn at a pace that fits the task and his/her skill level.

Employees need several different kinds of training.

♦ New employees need training to learn how to do their jobs.
♦ Employees who have been on the job for a while need on-going training to identify and correct bad habits.
♦ When employees take on new tasks, they need training to learn new skills.
♦ Employees need training to learn how to use new equipment.
♦ All employees need training to learn how to do their jobs safely.
Educational Methodologies

Educational methodologies used in the training program need to be varied to meet the needs of all employees.

These methods should include the following:
- implementing programs that are personalized to the divisions
- hands-on practice sessions
- using a variety of visual aids such as video tapes, slides, overhead transparencies, and/or photographs
- relying upon printed materials such as manuals, handouts, postings
- interviewing employees
- observing work practices.

Visual aids are important because people tend to learn much more quickly when they are shown something than when they are told about it. For example, drawings or photographs of proper hand positions and movement can help trainees understand how to do a task properly. Trainees should have job guides at their work stations during training so that they can look at them as needed.

For best results, the aids should be photographs and drawings that show the right way to do the task. They might also include easy-to-read instructions.
Supervisor’s Role in Training

Since learning is a continual process, supervisors should maintain some consistency and reiteration in the educational process. The supervisor should take the opportunity to re-educate the employees on any condition which could contribute to an injury or illness.

Often, an employee may forget the details of the training program. In this case, the supervisor is in a position to do the following:

♦ look for signals that an employee might be experiencing discomfort. For example, the usage of wrist supports, rubbing wrists or shoulders, and frequent breaks, are all apparent signs
♦ spot an incorrect work method
♦ recognize the need for a work station adjustment
♦ initiate an evaluation of methods and/or workstations
♦ review reporting procedures for pain and soreness
♦ promote self-management techniques such as rest, exercise, etc.
In order to improve conditions in the workplace, a constant updating of equipment and methods should be a part of the ergonomic effort. What is termed “best practices” are those improvements in workstation design and work methods that are identified through the best technology currently available. The following are some examples of best practices:

♦ casing work stations
♦ computerized ordering/inventory
♦ conveyors to eliminate manual materials handling.

The division’s ergonomics manager should share these best practices with all distribution plant managers and/or safety managers for evaluation and consideration.
Chapter 7: Review

I. True or False

___ 1. People tend to learn more quickly when they are shown something rather than told about it.

___ 2. It is not necessary to evaluate a training program.

___ 3. Best practices are improvements made in the workplace.

___ 4. Employees should be trained on procedures for reporting pain and soreness.

___ 5. Retraining is usually not necessary when employees take on a new task.

II. Listing

1. List three ways a training program might be evaluated.

   1. _____________________________________________________

   2. _____________________________________________________

   3. _____________________________________________________

2. Based on your experience training employees, list two educational methodologies that you believe to be most effective.

   1. _____________________________________________________

   2. _____________________________________________________

*Answers on page 85*
Closing Thoughts

As a supervisor, you have a very important role in helping find and control ergonomic problems. Your cooperation is vital to the success of your ergonomics program and to the safety and morale of your employees.

Knowing there is no simple, short-term solution to ergonomic problems increases the importance of the concept “designing the work place to fit the worker.” Ergonomics is everyone’s concern. A dedicated and positive attitude toward ergonomics requires “team participation” from everyone, and results in a better, more enjoyable work environment for all.

The American Apparel & Footwear Association is committed to helping promote work environments that are safe and healthy for all employees.
Chapter 1: Review Answers

**Multiple Choice:** Choose the best answer to the following questions:

1. E
2. E
3. D

**True or False:**

4. False
5. True
6. False
7. True
8. False

Chapter 2: Review Answers

**True or False:**

1. False
2. True
3. True
4. True
5. False
6. True
7. False
8. True
9. True
10. False

Chapter 3: Review Answers

![Diagram of hand positions]
Chapter 4: Review Answers

True or False:
1. True
2. False
3. True
4. True
5. False
6. True

Chapter 5: Review Answers

True or False:
1. True
2. False
3. True
4. True
5. False
6. False
7. True
8. False
9. True
10. True

Chapter 6: Self Evaluation

Chapter 7: Review Answers

True or False:
1. True
2. False
3. True
4. True
5. False

1. List three ways a training program might be evaluated.

- Interviewing employees
- Pre/Post tests
- Observing work practices

2. Based on your experience training employees, list two educational methodologies that you believe to be most effective.

- Using visual aids
- Hands-on practice sessions