EMPLOYEE HANDOUT

MEDICAL OFFICE ERGONOMICS

Employer: ___________________________

Trainer: ___________________________

Employee: ___________________________

Date: ___________________________

Chapter 6  Medical Office Ergonomics
6.10 Introduction

Ergonomics, an applied science dealing with designing and arranging things people use so that the people and things interact efficiently and safely, is used to prevent musculoskeletal disorders (MSDs). These are also known as cumulative trauma disorders (CTDs), repetitive stress injuries (RSIs), and repetitive motion injuries (RMIs). However they may be labeled, injuries from repetitive stresses are the leading cause of injuries in the modern workplace. According to the Bureau of Labor Statistics, nursing aides, orderlies, and attendants reported the highest rates of MSDs of any occupational group, 226 per 10,000 workers in 2009 (the latest data available). Two other groups that are employed in health care settings also reported rates of overexertion injuries greater than 75 per 10,000 workers in 2009—janitors and cleaners (90.4 per 10,000 workers) and personal and home care aides (83.7 per 10,000 workers). Although not currently required by specific OSHA regulations, ergonomic stressors certainly are a recognized workplace hazard, and the general duty clause requires employers to eliminate known workplace hazards.

As stated above, the main focus of ergonomics is the prevention of MSDs. Repeated stresses combine over time to harm the muscles, tendons, ligaments, and other soft tissues. Examples include carpal tunnel syndrome, tendonitis, and chronic back pain. MSDs are now the most common type of workplace injury. In addition to being common, MSDs can be very serious. In extreme cases, they can even lead to lifelong disability. Basic awareness training in ergonomics can help you to avoid repetitive stress injuries, to recognize their symptoms if they do occur, and to obtain prompt, effective medical treatment.

In tending to patients, health care workers do not want to risk their own health in the process. Workers in the modern medical workplace are very vulnerable to ergonomic injuries.

6.11 Workplace Stressors

More specialized tasks, higher speeds, and increased workplace repetition are general characteristics of the modern workplace, and the medical industry is no exception. Indeed, health care workers face an especially high risk of musculoskeletal disorders (MSDs). OSHA has determined that as many as half of all health care workers would eventually sustain at least one work-related MSD.
Health care workers want their patients to get well, but they should not have to risk their own health in the process. The prevalence of obesity and its related health effects make the jobs of emergency medical personnel, hospital staff, and nursing care providers more physically demanding than they once were. In addition to direct patient-care activities that can expose employees to ergonomic hazards, health care workers face hazards from poorly designed workstations and office environments that are similar to those faced by office workers everywhere. Moreover, many health care workers (e.g., dentists and dental hygienists) engage in awkward and repetitive movements. This handout provides information that employees can use to protect their own health, while they work to restore the health of others.

6.12 Specific Risk Factors

In general, the more risk factors that are present in a job, the greater the danger of a musculoskeletal disorder (MSD) from the work. According to the National Institute of Occupational Safety and Health (NIOSH), the following factors may play a role in MSDs:

- **Awkward Postures**: Awkward postures place additional stress on the body and make it more susceptible to injury. Examples include performing procedures with the back bent or twisted (rather than straight); repeated or sustained bending or twisting of the wrists, knees, or hips; and active or prolonged work over shoulder height. The “comfort zone” for most workers is between the shoulders and the waist.

- **Forceful Exertions**: Forceful exertions place more stress on muscles, tendons, ligaments, and joints. Examples of factors that increase force requirements include the pinch grip (using only the index finger and thumb, not the whole hand), manipulating small objects with limited grip capacity, heavy or bulky loads, speedy movements, and awkward postures.

- **Repetitive Motions**: Motions that are repeated frequently over a prolonged period (e.g., an eight-hour shift) may prevent muscles from recovering from fatigue, especially if awkward postures or forceful exertions are involved. Researchers vary in their opinions of what is considered “repetitive.” Generally speaking, however, NIOSH regards a task cycle of less than 30 seconds as repetitive, depending on the task and body part involved. Repetitive motions are found throughout the workplace, but are perhaps most common in information processing and assembly-line-type work.

- **Duration**: Duration refers to the amount of time that a person is continually exposed to repetitive stress or other risk factors. Tasks that require use of the same motions or muscles for long periods increase the risk of fatigue.
• **Contact Stresses:** Repetitive or constant body contact with hard or sharp objects that are neither padded nor rounded may cause soft tissue damage, affect nerve function, and impede blood flow. Examples include stresses from using your hand as a hammer and resting an arm on the edge of a desk.

• **Vibration:** This includes both local and whole-body vibration. Local vibration may contribute to a variety of finger disorders. A prime example is stress from the vibration and torque of power tools. Whole-body vibration may lead to back pain and performance problems. An example of whole-body vibration is that from operating heavy-duty vehicles or large machinery.

• **Other Factors:** Other factors that may influence the likelihood or extent of MSDs include:
  - machine-paced work, which may provide insufficient pauses or rest breaks for muscles, tendons, and ligaments to recover, and
  - extreme hot or cold temperatures, which may increase fatigue and difficulty in gripping instruments or tools because of perspiration or the need to wear gloves.

**Non-Occupational Risk Factors**

There are a number of factors, other than your work environment, that can increase the risk of MSDs. Two of the most important are recreational activities and individual characteristics as follows:

• **Recreational Activities:** Many sports and recreational activities involve repetitive stresses that harm tendons, joints, muscles, and other soft tissues. In fact, tennis elbow (lateral epicondylitis) and golfer’s elbow (medial epicondylitis) are two common MSDs that are named after specific recreational activities. A non-work-related MSD may be worsened by job factors, or vice-versa. For example, a dentist with tennis elbow may find that working with heavy loupes and fiber optic lighting aggravates the injury.

• **Individual Characteristics:** A person’s genetics, gender, health status, and age may affect his or her susceptibility to MSDs, as follows:
  - **Genetics:** As with most injuries and illnesses, our genetic makeup often causes us to be more or less vulnerable to MSDs. For example, genetics can make someone more prone to degenerative disc disease and to a related back injury.
  - **Gender:** Women are more susceptible to certain ergonomic injuries than men. For example, studies show that carpal tunnel syndrome is three times more common in women than men.
  - **Health Status:** Obese and out-of-shape workers are more susceptible to back injuries and other MSDs. Diabetics also may be more susceptible to ergonomic injuries.
- **Age:** Older workers might seem more frail, but younger workers, who tend to take on heavier loads and make less use of mechanical aids, actually incur more injuries. However, osteoarthritis, degenerative disc disease, and other age-related conditions often increase an individual’s susceptibility to MSDs.

### 6.13 Body Parts Involved In MSDs

Musculoskeletal disorders (MSDs) generally affect a worker’s bones, muscles, ligaments, tendons, and other soft tissues in the back, neck, shoulders, arms, hands, and feet. MSDs can occur in many different places. However, there are certain “stress points” or “pressure points” (such as the lower back) that are most vulnerable to injury.

MSDs can include strains and sprains (stretching and tearing of ligaments), tendonitis (inflammation of tendons), nerve compression, and, in the most severe cases, muscular degeneration.

### 6.14 Common MSDs

Common musculoskeletal disorders (MSDs) include all of the following:

- carpal tunnel syndrome, which is compression of a nerve as it passes through the carpal tunnel in the wrist
- chronic back pain
- cubital tunnel syndrome, which is compression of a nerve as it passes through the notch of the elbow
- epicondylitis, which is inflammation of the tendons at the elbow
- Raynaud’s Syndrome or “white finger,” which is constriction of the vessels in the hands and fingers
- rotator cuff tendonitis, which is inflammation of one or more tendons at the shoulder
- thoracic outlet syndrome, which is compression of nerves and vessels between the neck and shoulder
- “trigger finger,” which is tendon inflammation that causes locking of the finger
6.15 Symptoms of MSDs

A variety of symptoms may be associated with musculoskeletal disorders (MSDs). The symptoms do not necessarily mean that you have an MSD, but your awareness of these symptoms can help reduce the incidence and severity of these injuries. The diagnosis and treatment of an MSD, like any injury, may be made only by a physician or other qualified health professional.

MSD symptoms may include the following:

- stiffness or soreness in joints or muscles
- pain, tingling, or numbness in hands or feet
- pain in wrists, shoulders, forearms, knees, neck, or back
- stabbing or shooting pains in arms or legs
- weakness or clumsiness in hands
- swelling, inflammation, or redness in affected areas
- fingers or toes turning white
- headaches
- blurred vision

If untreated, musculoskeletal injuries may result in permanent damage to muscles, tendons, nerves, and joints, and may lead to permanent disability.

6.16 Management Commitment and Employee Involvement

Management commitment and employee involvement are both essential to a successful ergonomics program. Management’s commitment involves:

- reviewing accident and injury reports to identify musculoskeletal disorders (MSDs) and ways to control them;
- using engineering and work practice controls to reduce risk factors for MSDs; and
- training employees in ways to avoid MSDs and to minimize their severity when they do occur.

No matter how great management’s commitment, however, a program cannot succeed without employee involvement. Take the basic principles for lifting materials and avoiding back injury. Employers can teach employees, but if employees do not bother to use what they are taught, the principles will not do them any good.
Workers are in a unique position to fight MSDs since they are the people on the front line who actually suffer the most from MSDs. Are there ways that you can do your job more efficiently, with less stress on your body? If so, suggest them to your employer. Not only do ergonomic solutions reduce injuries, they often improve employee efficiency and productivity as well.

Most importantly, immediately tell your employer about your aches and pains on the job, even minor ones, if you believe they are work-related. Your employer may be able to modify your job tasks or workstation to eliminate the problem. In addition, MSDs that are in the early stages of development may respond to relatively simple treatments, such as anti-inflammatory medications (ibuprofen, aspirin, etc.), stretching exercises, work modifications, and steroid injections. Delay can result in the need for surgery and even cause permanent disability.

6.17 Job Safety Analysis

One way to determine the effectiveness of engineering and work practice controls is to use a job safety analysis (JSA). Besides preventing injuries, JSAs can help in training and in improving productivity. Generally, management will attempt to prioritize job hazard analyses so that workers with actual problems are examined first, followed by those who are still healthy, but work in positions with a high incidence of musculoskeletal disorders (MSDs).

During a JSA, each task is broken down into separate steps. The task is then studied to identify ergonomic hazards. A JSA may involve:

- videotaping employees;
- measuring physical attributes of the work area and tools, such as:
  - work surface height and characteristics,
  - reach distance,
  - tool size, grip, and vibration, and
  - exposure to heat and cold; and
- using questionnaires and interviews.

It is important that you cooperate with your employer in completing any job hazard analysis. Information from employees is critical to the employer’s ability to design engineering and work practice controls to effectively minimize MSDs.
Engineering and Work Practice Controls

Your employer will attempt to reduce ergonomic hazards through engineering and work practice controls. An example of an engineering control would be providing adjustable workstations so that employees can work at an ergonomically comfortable height. Work practice controls involve changes in how work is done. An example would be requiring workers to take periodic breaks. By implementing changes in engineering and work practices, employers can help employees avoid excessive stresses that lead to injury. Further examples of engineering and work practice controls are given below.

Engineering Controls

Examples of engineering controls for health care employees include using the following:

- **powered mechanical devices** that assist with materials handling and lifting tasks
- **adjustable-height** countertops, beds, therapy tables, patient chairs, etc., that allow work to be performed at an ergonomically safe height (between the waist and shoulders)
- **shower stalls without a front lip**, which allows shower chairs to be pushed into and out of the stall
- **hand tools that help maintain neutral postures**, such as knives with angled handles that allow the wrist to remain straight while cutting food
- **stools, foot rests, cushioned shoes, anti-fatigue mats**, and other devices that reduce the strain for workers who must stand for long periods

Work Practice Controls

Work practice controls involve changes in the way that work is done to minimize ergonomic stressors. Examples include the following:

- **limiting the amount of lifting** that workers are required to perform
- **training workers in proper lifting techniques**, including the following:
  - keeping the load close to the body
  - lifting from waist-height when possible
  - using leg muscles for lifting
  - turning rather than twisting the body while bearing a load
- **using stretching exercises and work hardening** to strengthen and prepare muscles used in work tasks
- **scheduling breaks** to allow muscles, tendons, and ligaments to recover from repetitive stresses
As the central support area for the entire body, the lower back is very vulnerable to injury. The American College of Occupational and Environmental Medicine estimates that as many as 90% of adults will have at least one episode of back pain in their lives. The current direct and indirect cost of back injuries has been estimated at $50 to $100 billion per year!

Many workers associate a back injury with a specific one-time traumatic event. However, most back injuries are actually musculoskeletal disorders (MSDs) that result from the combined effect of many stresses and traumas. Usually, the event that seems like the sole cause of an injury is only the last in a long string of traumas.

The National Institute for Occupational Safety and Health (NIOSH) has identified five main risk factors for back injuries:

- heavy physical work
- lifting and forceful movements
- bending and twisting
- whole-body vibration
- static work postures

These various risk factors, individually or in combination, can cause muscles, ligaments, and tendons in the back to become stretched or torn, as well as cartilage in inter-vertebral discs (the “shock absorbers” of the spine) to bulge or rupture.

To protect your back from injury, use the following tips:

- **Minimize Stress from Patient Lifting:** In order to minimize stress when lifting patients:
  - review tasks to eliminate unnecessary patient lifting,
  - shorten the distances that patients must be lifted or carried, and
  - use mechanical devices and equipment (slings, trapeze lifts, lean-stand assist lifts, etc.) whenever possible.

- **Follow Proper Lifting Techniques:** When lifting:
  - lift with legs,
  - keep weight close to body and stand straight, and
  - pivot with the load rather than twist at the waist.

- **Strengthen and Stretch Muscles:** Recent studies indicate that poor physical condition and excessive body weight can greatly increase the risk of a back injury by stressing the lower back and increasing its curvature. Strong abdominal muscles, on the other hand, help to support the body and prevent back injuries.
By learning the best way to handle materials, you can minimize the strain on your back. Probably the most common and dangerous type of materials handling involves lifting. However, workers also may injure themselves by pushing or pulling materials or by slipping and tripping.

**Minimizing Stress from Materials Handling**

The Bureau of Labor Statistics has identified overexertion while moving an object as the cause of about 25% of all workplace injuries. The less you have to lift or move, the less the stress on your back. **When in doubt, don’t move a load that you feel is unsafe or too heavy.** Obtain help from a co-worker, use a mechanical assist (e.g., a dolly), or break the load down into smaller, safer loads.

Consider all of the following possible ways to reduce the strain from materials handling, as well as the possibility of a back injury:

- Combine operations to reduce the amount of materials handling.
- Keep products on an as-needed basis instead of stockpiling them for future use.
- Use mechanical devices and equipment (carts, dollies, pallet jacks, hoists, power lifts) for assistance whenever possible. Such assistance is especially recommended when moving objects over distances of 10 feet or more.
- Shorten the distance that materials must be moved.
- Store materials at waist height to reduce the distance that they must be lifted and to avoid unnecessary bending.
- Break a large load into several smaller loads.
- Enlist the assistance of co-workers whenever a load tests your lifting capacity.

**Using Good Body Mechanics**

When you lift, use proper techniques to minimize the risk of injury:

- Bend at the knees, not the waist.
- Lift with the legs.
- Keep head high and chin tucked in.
- Keep weight close to body and stand straight.
- Create a balanced base of support by using one foot ahead and one foot behind to get the weight in close.
• If an item to be lifted is located in a hard-to-reach place, then:
  - slide or move the object to you so you can lift it close to your body, and
  - keep an eye out for nearby obstructions.
• Don’t twist your back while moving material. Remember to always keep shoulders in
  line with hips and pivot with your whole body.
• Don’t reach with a heavy load.
• Don’t move the load away from your body to put it down.
• Don’t bend forward at the waist or lift with the back flexed (see Section 6.21).
• Don’t remain in the same position for a long period (see Section 6.23).

The importance of proper lifting techniques cannot be overemphasized. For example,
a worker who lifts 20 pounds at arm’s length, rather than keeping it close to the
body, increases the pressure on his or her back by a factor of ten!

Pushing Rather Than Pulling

Generally speaking, it is easier on your back to push something than to pull it. Pushing
provides greater leverage and control. Use your arms and legs for leverage to begin the
push. If you must pull something, keep the object by your side while pulling to avoid
twisting your back.

Reaching for Objects

When reaching for objects:

• Don’t reach for an object unless you are sure that you have the strength to lift it.
• Use a stepladder to reach objects above shoulder height. Don’t depend on inappropriate
  structures to support you (e.g., a shelf support, a storage rack, etc.). These could easily
give way if you pull or tug on them.
• Avoid awkward stretches while reaching. These stress your back and could cause you
to lose your balance.

Cleaning and Clearing Walkways

Slips, trips, and falls cause a significant number of back injuries. In fact, several studies
suggest that once a health care workplace implements an effective ergonomics program,
falls become the primary cause of work-related back injuries. Make sure that your intended
pathway is clear, level, and dry before you lift and move an object.
6.21 Bending and Twisting Motions

Certain movements and postures tend to place great stress on the back (see Section 6.22). Probably the two most notorious culprits are bending and twisting motions.

Bending at the waist involves a flexing motion that greatly magnifies the pressure on the back. **When you are fully bent over at the waist, the pressure on your back is 250% greater than when you are standing up and 500% greater than when you are lying down!**

Twisting motions are also hard on the back. An especially high risk exists if the twisting motion is performed while lifting or moving materials (see Section 6.20). If you need to turn, don’t twist. **Pivot** instead. Pivoting involves turning your shoulders and feet along with the load so that you keep it in front of you at all times.

One of the best ways to avoid bending and twisting motions, as well as awkward postures, is to perform your work within the “comfort zone.” For most people, this zone is between the waist and the shoulders. When working outside the zone is unavoidable, work breaks and stretching exercises help to reduce your risk of injury (see Section 6.23).

6.22 Posture

Improper bending and twisting motions are bad for our backs because they maximize the stress on the spine and supportive tissues. Think then how important the everyday posture of our bodies is for the health of our backs. People with poor posture stress their bodies on a regular basis. Indeed, medical professionals regard poor posture as an important cause of many back problems.

Millions of modern workers must stand on their feet all day. Millions more spend their days sitting in front of a computer. These “chair potatoes” often think that they are not at risk for a back injury because they sit at a desk all day. They are sadly mistaken. While sitting, the body is flexed at the base of the spine. This can put three times more pressure on your back (approximately 400 pounds) than simply standing up! The Back Association of Canada has found that the incidence of back pain is as high in people who sit for long periods of time as it is in people who lift all day.

Use the following tips to help avoid problems with your posture:

**Standing Posture**

- Contract abdominal muscles slightly to support spine. Do not tilt the pelvis forward.
- Place feet slightly apart, with one foot slightly in front of the other.
• Keep knees gently bent.
• Relax tense muscles.
• Keep head high and directly over shoulders. Make sure earlobes are in line with the middle of the shoulders. Keep the shoulders directly over the pelvis.
• Maintain natural or neutral posture of the spine. Your spine should look a bit like an “S” from the side: inward at the lower back, outward at the shoulders, inward at the neck.
• Stand, if possible, on a cushioned mat, especially if you work on a hard floor.
• Wear shoes with good support. **Don’t** wear high-heeled, hard-heeled, or platform shoes when standing for long periods.
• Try to elevate one foot by resting it on a stool or something similar. Switch feet every few minutes.
• **Don’t** stand for longer than 20 or 30 minutes without changing positions (see Section 6.23).

**Sitting Posture**

• Adopt a user-friendly chair and workstation that:
  - allows your feet to touch the floor,
  - allows your hips to stay a bit higher than your knees,
  - properly supports the natural curves of your spine, and
  - positions the work surface so that it is approximately “elbow high.”
• Sit close to your desk.
• Distribute your body weight evenly on both hips and between your pelvis and feet.
• Take frequent stretch breaks as needed (see Section 6.23).
• When sitting in a chair that rolls or pivots, turn your whole body rather than twist at the waist.

**Driving Posture**

• Use a back support or lumbar roll at the curve of your back so that the natural inward curve is supported.
• Make sure your knees are at the same level or higher than your hips.
• Move the seat close to the steering wheel to support the curve of the back. Position the seat close enough to allow your knees to bend and your feet to reach the pedals, but far enough away so that your elbows are in front of you when you hold the wheel. You should be a comfortable distance from the steering wheel because reaching increases the pressure on the lumbar spine and can stress the neck, shoulders, and wrists.
Rerative Movements and “Static Loading”

Most back injuries can be classified as musculoskeletal disorders (MSDs). Repeated stresses combine or “cumulate” over time to harm the muscles, tendons, joints, ligaments, spinal discs, and other parts that make up the musculoskeletal system.

Many people mistakenly believe that a single, sudden trauma, such as a car accident or a fall, causes the majority of back injuries. Although some back injuries do occur this way, most actually result from repeated strains and stresses over time. Even when it appears that a single trauma caused an injury, other events probably contributed to the problem. In addition, certain diseases of the joints, bones, and discs can predispose us to back problems, particularly as we age.

Taking Breaks/Changing Positions

Ergonomics, the science of work, teaches us how to do our jobs with less stress and strain in order to avoid MSDs. One of the biggest risks for MSDs is overloading a particular body part. This often happens when a person repeats the same motion over and over again. For example, half of all professional tennis players strain a particular tendon in their arms (suffering so-called “tennis elbow”) from repeating the same strokes. Similarly, golfers are subject to golfer’s elbow, which involves a different tendon.

Workers who repeat the same motions at their jobs are even more at risk than athletes, since the repetitive movements at work rarely have any of the benefits of physical exercise. Typists, for example, sometimes develop carpal tunnel syndrome, which afflicts a tendon in the wrist. Your back also is full of muscles, tendons, ligaments, and discs. If you repeat the same motions over and over again, you may damage these tissues and structures. This is especially true if the repeated motions also involve lifting or forceful exertions (see Section 6.20).

Another way to overload your back is to maintain the same posture (especially an awkward one) for a prolonged period. Technically, this is known as “static loading.” The body was designed to move; it does not function well when forced into the same position for long periods of time. The harmful effects include swelling, and reduced blood flow in the affected muscles. By not changing positions, you end up taxing specific body parts. **Don’t stand or sit in the same position for extended periods!**

If you must stand for a long period of time, there are a number of things you can do:

- Use a footstool for support.
- Shift your weight from one leg to the other.
• Stand on a padded platform.
• Wear low-heeled, soft-soled shoes.
• Take frequent short breaks.
• Remember to have good standing posture (see Section 6.22)

6.24 Body Strengthening and Stretching Exercises

One thing that you can do to reduce the possibility that you will suffer a musculoskeletal disorder (MSD), or to reduce the severity of any MSD you do suffer, is to do regular stretching and strengthening exercises that release the tension and improve flexibility in the joints and muscles that you use every day at your job. Choose from the exercises described below, which are adapted from exercises published by the Centers for Disease Control and Prevention as part of the U.S. National Physical Activity Plan, to address muscle groups that could use a break during your work day.

Lower Body Exercises and Stretches

Chair Squats

This exercise will strengthen your hips, thighs, and buttocks. Placing your weight more on your heels than on the balls or toes of your feet during this exercise can help keep your knees from moving forward past your toes. It will also help to use the muscles of your hips more during the rise to a standing position.

1. Stand in front of a sturdy, armless chair, with your feet slightly more than shoulder-width apart. Extend your arms out so they are parallel to the ground and lean forward a little at the hips.
2. Making sure that your knees never come forward past your toes, lower yourself in a slow, controlled motion, to a count of four, until you reach a near-sitting position.
3. Pause. Then, to a count of two, slowly rise back up to a standing position. Keep your knees over your ankles and your back straight.

Quadriceps Stretch

This stretch will help your quadriceps muscles (on the front of your thigh) relax and make them more flexible. Stand up straight, look straight ahead, and don’t lock your supporting knee while performing this stretch.

1. Stand next to a counter or sturdy chair with your feet about shoulder-width apart and your knees straight, but not locked.
2. With your left hand, hold the chair or counter for balance. Bend your right leg back and grasp your right ankle in your right hand until your thigh is perpendicular to the ground. Make sure you stand up straight—don’t lean forward. (If you can’t grasp your ankle in your hand, just keep your leg as close to perpendicular as possible and hold the bend, or place your foot on the seat of a chair positioned behind you.) You should feel a stretch in the front of the thigh.

3. Hold the stretch for a slow count of 20 to 30, breathing throughout.

4. Release your right ankle and repeat with the other leg.

**Hamstring and Calf Stretch**

Many people have tight hamstring and calf muscles in the back of the leg. This stretch will give these muscles more flexibility and make it easier for you to bend over. Keep your back straight and your head up as you lean forward toward your toes to do this stretch. Don’t stretch too far—this stretch should not be painful. You should feel the first part of this stretch in the back of your upper leg and the second part in your calf (the back of your lower leg).

1. Sit forward in a chair with your knees bent and feet flat on the floor.

2. Extend your right leg in front of you, placing your right heel on the floor and keeping your ankle relaxed. Don’t lock your knee. Slowly lean forward at the hips, bending toward your right toes. Try to keep your back straight.

3. Hold the stretch for a slow count of 20 to 30, breathing throughout.

4. Sit up straight again and flex your right ankle so that your toes are pointing up toward the ceiling. Again, lean forward at the hips, bending toward your right toes. Hold the stretch for a slow count of 20 to 30, breathing throughout.

5. Release the stretch and repeat with your left leg.

**Upper Body Exercises and Stretches**

**Wall Push-Ups**

This exercise is a modified version of the push-up you may have done in physical education classes. It is less challenging than a classic push-up and won’t require you to get down on the floor—but it will help to strengthen your arms, shoulders, and chest. Make sure not to round or arch your back while performing it.

1. Find a wall that is clear of any objects such as wall hangings, windows, etc. Stand a little farther than arm’s length from the wall.

2. Facing the wall, lean your body forward and place your palms flat against the wall at about shoulder height and shoulder-width apart.
3. To a count of four, bend your elbows as you lower your upper body toward the wall in a slow, controlled motion, keeping your feet planted.
4. Pause. Then, to a count of two, slowly push yourself back until your arms are straight, but don’t lock your elbows.

**Chest and Arm Stretch**

This simple reaching stretch will improve the flexibility in your arms and chest and in the front of your shoulders. Keep your back straight and look straight ahead while you perform this stretch.

1. Stand with your arms at your sides and your feet about shoulder-width apart.
2. Extend both arms behind your back and clasp your hands together, if possible. Pull your shoulders back.
3. Hold the stretch for a slow count of 20 to 30, breathing throughout.
4. Release the stretch and repeat.

**Neck, Upper Back, and Shoulder Stretch**

This easy stretch targets a group of muscles particularly vulnerable to tension and stress—the neck, back, and shoulders. Do it during any activity that makes you feel stiff, such as sitting at a desk or at a computer. You’ll find it rejuvenating. Don’t curve or arch your back during this stretch.

1. Stand with your feet shoulder-width apart, your knees straight but not locked, and your hands clasped in front of you.
2. Rotate your hands so that your palms are facing the ground. Then, raise your arms to about chest height.
3. Gently press your palms away from your body. You should feel a stretch in your neck, upper back, and along your shoulders.
4. Hold the stretch for a slow count of 20 to 30, breathing throughout.
5. Release the stretch and repeat.

### 6.25 Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS), a disorder affecting the hands and wrists, has probably received more attention in recent years than any other musculoskeletal disorder (MSD). The disorder can affect almost any worker who frequently repeats the same hand motions. Severe cases of CTS can cause great discomfort and impaired use of the hands and fingers.
The carpal tunnel itself is a tunnel in the wrist through which tendons extend to the hand. Repetitive stresses can damage these tendons and irritate the median nerve. This nerve irritation can cause tingling, burning, pain, or numbness in the wrist and in the specific areas served by the median nerve. The pain is often experienced at night. The pressure may also result in a lack of strength in the hand and in an inability to make a fist, hold objects, or perform other manual tasks. If the pressure continues, it can permanently damage the nerve, causing loss of sensation and even partial paralysis.

6.26 Tips for Preventing Carpal Tunnel Syndrome

Some of the steps that may help to prevent carpal tunnel syndrome (CTS) include the following:

- using stretching and rotating exercises of the hand
- using padded wrist rests
- using very short (e.g., 30-second) mini-breaks to relieve physical stress
- keeping wrists and elbows straight
- using hand pieces and medical instruments of the appropriate size with an appropriate grip

The ability to quickly recognize symptoms can also play an important role in minimizing problems from a CTS injury. Early on, CTS may respond to anti-inflammatory medications such as aspirin and ibuprofen, to steroid injections, to exercises and work restrictions, and to the use of soft braces. Once severe symptoms develop, surgery is often needed.

6.27 Workstations

Many types of employees perform their jobs at workstations. Ergonomically sound workstations that are tailored to the individual employee can help to prevent musculoskeletal disorders (MSDs). If you have an ergonomically sound workstation, you should be able to answer “yes” to all of the statements in the Desktop Computer User Checklist at the end of this handout. The checklist is based on Easy Ergonomics for Desktop Computer Users, which is published by Cal/OSHA.

6.28 Working Safely

By learning the basics of ergonomics and the signs of musculoskeletal disorders (MSDs), you can help to protect your health and increase workplace safety for your employer. In this area, as in so many others, the greater your involvement, the better your health.