Office Ergonomics

According to the Occupational Safety and Health Administration—OSHA—many office workers report work-related musculoskeletal disorders—or MSDs—every year. For some, the problem becomes so severe that they suffer a lot of pain and have to take time off from work for treatment and recovery. But the good news is that you don't have to be one of those who develop MSDs on the job. By understanding basic ergonomic principles and applying them to your job, you can minimize MSD risk factors, avoid stresses and strains on your body, and keep healthy and safe as you work.

What Is Ergonomics and Why is it Important to You?

Let's begin the session by answering a basic question. What is ergonomics?

Ergonomics is the science of fitting the task to the worker performing the task. This is rather a new idea. In your grandfather's day, it was the other way around. There were few accommodations to make the work more comfortable for workers.

The next question is why is ergonomics important to you? The goal of ergonomics is to reduce injuries and illness caused by stress and strain on the job. Ergonomics helps keep you safe and healthy.

Ergonomics involves engineering and administrative controls. For example, office ergonomics may include engineering or designing the layout of your computer workstation so that your exposure to ergonomic risks is reduced. The way or sequence in which a task is performed may also be changed to help reduce risk factors.

Administrative controls, on the other hand, include such things as alternating between tasks that expose you to risk factors and other tasks to reduce exposure to hazards. Another method might be rotating employees through jobs with higher risk factors so that each employee is exposed to the risks for only a short period each day. For example, a job with heavy data processing might be shared by four employees who perform other duties when not doing data processing.

What are MSDs?

The risk of injuries and illness we spoke about in the previous slide involves a medical condition known as musculoskeletal disorder, or MSD, for short. MSDs are disorders involving the nervous system or soft tissue in the fingers, wrists, elbows, shoulders, neck, back, and knees. MSDs are caused by stress and strain due to activities that you perform on the job

(keyboarding, sitting for long hours in an awkward position, and so on). Affected body tissues include:

Muscles;
Tendons and ligaments;
Joints;
Cartilage;
Blood vessels; *and*
Nerves.

What are the Risk Factors?

There are five risk factors for MSDs. Prolonged exposure to any of these risk factors in your job puts you at risk of an MSD.

For office workers, the first three risk factors are the most common; for example:

Repetition might include daily and lengthy use of a keyboard and mouse.

Awkward postures might include extending arms to type or sitting forward with shoulders hunched.

Contact stress might include soft tissue damage by contact with a hard surface, such as leaning against a counter, pressing your wrists against the edge of your desk while you type, or continual use of a stapler or hole punch.

Force and vibration are usually more associated with production or construction jobs. But force might be an issue for an office worker who does a lot of lifting of heavy files or office supplies, who spends a lot of time pushing or pulling heavy file drawers, or performs other activities that require the use of force, which stresses specific muscle groups.

Think about your job. Do any of these ergonomic risk factors apply to your job?

For office workers, the most common symptom that an MSD might be developing is pain or swelling in the:

Hands, wrists, or forearms;
Fingers;
Elbows;
Shoulders;
Neck; *or*
Back

What Will the Pain be Like?

The type of pain you experience will vary depending on the type of MSD and the type of injury you have suffered. For example:

Tightness might occur in muscles or tendons from overuse.

Stiffness might occur from damage to joints or cartilage.

Discomfort can occur from damage to any of the nerves or soft tissues.

Soreness may occur from overused muscles or tendons.
Burning may occur from damage to blood vessels or nerves.

Tingling can occur from damage to nerves.

Coldness may occur from damage to blood vessels.

And numbness might occur from damage to nerves or blood vessels.

Have you ever experienced any of these symptoms over a prolonged period of time? Such symptoms could be a sign of a developing MSD.

You might notice that you or a co-worker is developing an MSD by outward signs such as:

- Swollen or inflamed joints;
- Vigorous shaking of hands and wrists during work in an effort to restore circulation;
- Unconscious massaging of hands, wrists, or arms; or
- Cradling of arms to give extra support or to hold the arm in a position that reduces pain.

Carpal tunnel syndrome is probably the best known to office workers. Carpal tunnel involves compression of the median nerve in the wrist. The median nerve provides the sense of touch for the fingers, where it passes through the wrist and into the hand. Carpal tunnel is usually the result of repetitive motion such as keyboarding.

Tendinitis is the inflammation of a muscle or tendon caused by repeated overuse.

Tenosynovitis involves inflammation of or injury to the synovial sheath surrounding a tendon. Tenosynovitis is usually the result of excessive motion.

Thoracic outlet syndrome involves compression of nerves and blood vessels as they travel form the neck, under the collar bone, through the armpit, and down into the arm. This MSD is often attributed to repetitive arm extension and slouching.

De Quervain's disease is an inflammation of the tendon sheath of the thumb. It is usually caused by forceful gripping or twisting motions of the hand. This MSD is more common among production workers than office workers.

Trigger finger also involves tendons and tendon sheaths in the fingers and is associated with using tools with hard handles. Again, this MSD affects production workers more than office workers.

What Should You Do If You Experience Symptoms?

If you notice any signs or symptoms of a developing job-related MSD, report the problem immediately – both to your supervisor and to your doctor.

Early reporting allows you to begin taking steps to proper treatment, beginning with a medical evaluation. The sooner you begin treatment, the more likely you are to make a complete recovery, and the sooner you can get rid of the pain and discomfort.

Early reporting also allows us, with your help, to take steps toward reducing or even eliminating risk factors that are causing the MSD. That way the problem won't become worse, and you won't risk re-injury.

Computer Workstation: Head & Shoulders

When working on the computer, keep your head vertical and facing forward.

Holding your head off-balance – for example, leaning it to the side – puts stress on your neck and shoulders.

Minimize head rotation by putting your work – the information you are using while you type – in front of you.

Make sure that your shoulders are relaxed. Keeping your shoulders raised or hunched for long periods puts stress on your muscles, blood vessels, and nerves. If you keep your shoulders in a relaxed, neutral position, you can reduce the stress and decrease the risk of developing an MSD.

Also, keep your arms tucked in close to your body and hanging relaxed.

Avoid extended reaching. Objects on your desk such as staplers and other items that you use frequently should be within easy reach. Repetitive reaching all day with your arms or leaning forward all the time to reach items can contribute to MSDs.

Computer Workstation: Elbows & Wrists

You also need to take care of your elbows and wrists while working on the computer.

Elbows should be positioned comfortably, hanging in a relaxed fashion below the shoulders and not extended outward from the body.

Elbows should not extend forward or backward from the shoulders. Wrists should be kept in a straight line with the lower arms.

Hands flexed down or up, or bent inward or outward, will put pressure on the nerves and soft tissues in the wrists and could result in carpal tunnel syndrome.

Computer Workstation: Legs & Feet

The position of your lower body while you work on the computer is also important in preventing MSDs.

Your knees should be comfortably bent about 90 degrees. The angle doesn't have to be exact, as long as you are comfortable.

Your thighs should be approximately parallel to the floor.

Adjust your chair at a comfortable height to allow your knees and legs to be comfortable.

Remove any obstructions under your workstation to your legs and feet so that you can maintain a comfortable working position.

Your feet should be resting flat on the floor or on a footrest. Although it is good to change the position of your feet occasionally, you don't want to be on your toes or heels for extended periods.

Think about your posture when working on the computer. Do you follow the ergonomic rules described in this and the previous two slides?

Chair Adjustments: Seat Surface

A comfortable, ergonomically designed chair is critical when working at a computer workstation for extended periods every day.

The seat surface should be properly padded and comfortable, even after sitting for 30 to 60 minutes. The seat should also be at least an inch wider than your hips and thighs.

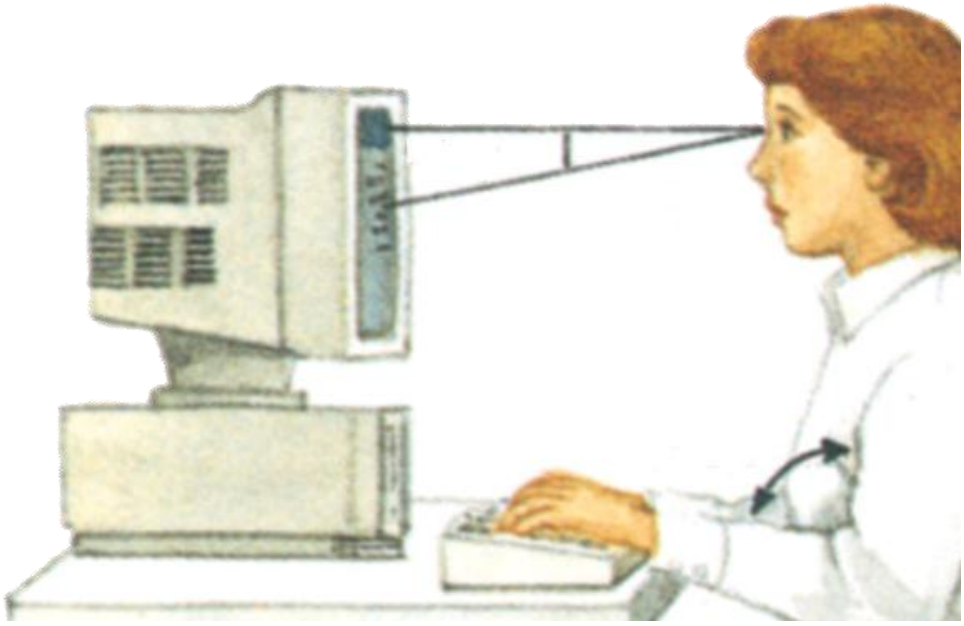
To determine the proper length of the seat, sit with your back against the back support. In this position, the front edge of the seat should be about an inch from the back of your knee.

Also, the front edge should be contoured so that you are not subjecting the back of your legs to contact stress with a hard corner of the front of the seat.

As we said in the previous slide, the chair height must be adjustable so that your feet can rest on the floor or on a footrest.

Some seat surfaces can also be tilted to help maintain a balanced posture. You may, for example, prefer a seat that is tilted slightly forward so that you can easily reach the keyboard and supplies on your workstation. Or you may want the seat surface tilted back to help you stay seated against the back support.

The Computer Monitor



The position of your computer monitor is also important in avoiding MSDs. The monitor should be positioned directly in front of you so that you don't have to turn your head to look at it.

The monitor should also be about an arm's length away to prevent eyestrain. Sit back in your chair as you would while working and reach toward the monitor. You should be able to touch it with your fingertips.

The monitor must be adjusted for height as well. With your head level, your eyes should be aligned with a point 2 to 3 inches below the top of the screen. You shouldn't have to tilt your head up or bend your neck down to see the screen. If necessary, tilt the monitor back slightly to prevent glare.

Place any documents you are using in a document holder and position the holder as close to the monitor as possible. This will prevent unnecessary turning of your head to read documents related to your computer activity.

Neutral Keyboard Position

We have talked about some of this information before, but a little review now won't hurt. Keeping a neutral keyboard position while typing is one of the most important things you can do to prevent carpal tunnel syndrome and other MSDs.

Keep your elbows close to your body and bent about 90 degrees while using the keyboard. Avoid reaching toward the keyboard or allowing your elbows to extend away from your sides.

Adjust the height of your keyboard so that you wrists are flat and in line with your forearms. Your hands should not be angled up or down or turned in or out. Working in these positions would put stress on nerves and blood vessels.

Don't rest your wrists on a wrist rest when typing. This puts pressure on the carpal tunnel. Use the wrist rest only during a typing pause.

Think about the position of your elbows, wrists, and hands as you work on the computer. Do you always maintain a neutral position to prevent injuries?

Using a Mouse

Most people consider the keyboard to be the main contributor to computer-related MSDs. However, the mouse, when used improperly, can also contribute to injuries.

Control the mouse movement from your elbow. Controlling the mouse with wrist movements will put strain on your nerves, blood vessels, and other soft tissue in your wrist.

Keep your wrist straight in the neutral position as you manipulate the mouse. Move or turn your elbow slightly to make mouse movements.

Also position your mouse properly. Here's how: Sit back in your chair and relax your elbows.

Lift your mouse hand up, pivoting your elbow, until your hand is just above elbow level. This is where your mouse should be located. You should not have to reach or extend your arm or body to use the mouse.

If you start to feel stress in your mouse arm or elbow over time, switch the mouse to the other side. It may take a little time to get used to manipulating the mouse with your other hand, but the change can relieve the stress in your normal mouse arm and elbow.

Do you use your mouse correctly to avoid developing an MSD?

Using a Laptop

Working on a laptop can present ergonomic problems because the monitor and keyboard are not separated, which means you can usually achieve, either good neck and head posture while working or good wrist and hand posture, but not both.

If you use a laptop occasionally or for short periods, it is probably best to sacrifice neck posture than wrist posture.

Sit back in a comfortable chair and position the laptop so that you can maintain a neutral wrist position. Angle the screen to avoid neck strain as much as possible.

If you use a laptop exclusively, position the laptop screen as you would a workstation monitor – directly in front of you and at a comfortable height.

Use a separate keyboard and mouse to prevent strain while keyboarding and mousing for long periods of time.

Break Time

Taking enough of the right kinds of breaks from keyboarding is another important way to prevent MSDs.

Minibreaks are not breaks from work. Rather they are very short breaks from using typing or mousing muscles. During a minibreak, allow your hands to relax in a flat and straight posture. Use the wrist rest to relax your wrists for a few moments.

Rest breaks are longer periods in which you actually take a break from work. During a rest break, get up from your workstation and move around a little. Get a drink of water, or do a different task for a few minutes. You should take a short break from computer work at least every hour.

You also need to rest your eyes periodically. Take an eye break every 15 minutes or so and look away from the monitor for a minute at something across the room. This allows your eye muscles to relax. Also, blink rapidly for a few seconds to refresh your eyes. When typing, you might not blink, as much as normal and your eyes can become dry and sore.

Exercises

Here is another way to help prevent MSDs. Simple exercises can strengthen muscles and allow overworked areas to stretch. You can do them during work breaks and at the end of the day.

To exercise your hands, try finger extension. Make a fist, then extend and spread your fingers.

To stretch out wrists, hold your arms out in front of you and bend wrists up and down.

To relieve tight shoulder muscles, shrug your shoulders and then roll your shoulders forward and back. 

Here is another shoulder exercise called the blade pinch. With elbows out, move your arms back to bring your shoulder blades together.

And one more for the shoulders. Reach your arms over your head and stretch, bending from side to side.

Go ahead and take a couple of minutes to try each of these exercises.

Now, let's look at some exercises for the neck, back, and arms.

To stretch your neck:

Do the head nod! Just nod your head up and down a few times, slowly.

Turn your head slowly from side to side.

Tilt your head gently toward each shoulder.

For your back and arms:

Begin with your hands behind your head and then bring your shoulder blades together.

Here is one for the back and arms. Sit in a chair and bend forward and try to touch the floor.

Next, also while sitting, grasp one knee with both hands and pull it up toward your chest. Switch knees and repeat.

Finally, stand up, place your hands on your hips, and bend backwards slowly and gently.

Go ahead, and take a couple of minutes to try each of these exercises.

Focus on Your Posture

Now let's review some of the MSD prevention tips we have been talking about. You have probably figured out by now that the real key to preventing work-related musculoskeletal disorders is to focus on your posture while you work.

Keep your elbows at your sides and your forearms parallel to the floor or tilted slightly downward to prevent nerve compression at the elbow.

Keep your wrists in a neutral position while keyboarding to prevent stress to the carpal tunnel. Choose a comfortable chair with good back support, and position yourself close to the keyboard so that you don't have to extend your arms.

Keep your feet flat on the floor or on a footrest.

Position your monitor and work documents so that you can keep your head and neck straight and facing forward, with minimal head turning while working.

And finally, relax your shoulders.

A good, comfortable work posture can be a big help in preventing MSDs.

Key Points To Remember!

Here are the main points to remember from this session on office ergonomics:

Most office workers are at risk for work-related MSDs.

MSDs are caused by stress and strain on your body while you work.

We use engineering and administrative controls to minimize the risks.

You can help by following safe work practices and reporting any MSD symptoms.

This concludes the office ergonomics training session.

Now Take the Ergonomic Quiz for Credit!