

## **MAJOR PROGRAM POINTS**

# **"WORKING ERGONOMICALLY IN THE OFFICE"**

**Part of the "GENERAL SAFETY SERIES"**

**Quality Safety and Health Products, for Today...and Tomorrow**

# Outline of Major Points Covered in the "Office Ergonomics" Course

The following outline summarizes the major points of information presented in the course on "Office Ergonomics". The outline can be used to survey the course before taking it on a computer, as well as to review the course when a computer is not available.

- **One of the things that we all have in common is that we are all different. It may sound like double-talk, but it's true.**
  - Although we are all members of the same species, and we tend to have physical features in common, in many ways we differ sharply.
- **People can vary greatly in:**
  - Height.
  - Weight.
  - The size of their hands and fingers.
  - The length of their legs.
  - Hearing ability.
  - How well they can see.
- **But even though each of us is different, we often live in a "one-size-fits-all" world. For example:**
  - Office desks don't come in numbered sizes, like clothes do.
  - Computer mice tend to be for right-handed people only.
  - Some chairs, no matter how they're adjusted, are just too large or small for certain people.
- **You might think of these problems as minor annoyances, but they're not.**
  - In fact, a serious mismatch between you and your work environment could hurt you, perhaps permanently.
- **The science of ergonomics deals with these issues.**
  - It's goal is to adapt the workplace to the needs of the individual worker so as to prevent health problems.

- **While ergonomics is a specialized field of study, anyone can learn useful ergonomic techniques.**
  - Practiced on a regular basis, these can improve your work performance and your health.
- **In this course, we'll teach you about some of these methods.**
  - But before we do, it's important that you understand something about how the human body works.
- **All of the ailments we'll look at involve injuries to:**
  - Tendons.
  - Muscles.
  - Nerves.
- **Tendons attach muscles to bones. In fact, they allow muscles to move bones.**
  - Of course, tendons would be useless without muscles.
- **Muscles are the source of all body movements.**
  - Your muscles are at work all the time, even when you're sleeping.
- **Nerves are to the human body what electrical wiring is to a car or any other machine.**
  - Nerves convey electrical impulses from your brain to your muscles, telling them what to do.
  - Any movements that you make... whether they are voluntary, like picking up a pencil, or involuntary, like the beating of your heart... result from nerve activity.
- **Problems with tendons, muscles and nerves occur when they are subjected to stresses they cannot adapt to.**
  - The chances of this become much greater when you and your work environment are mismatched.
- **Repeatedly typing with your wrists pressed flat against your desk can:**
  - Inflammate the tendons in your wrists and the backs of your hands.
  - Damage nerves, resulting in permanent numbness in your fingers.

- **Sitting incorrectly for long periods of time can:**
  - Cause painful pinched nerves.
  - Result in circulation problems.
- **Using a mouse continuously without a break can:**
  - Injure the muscles and tendons in the ball socket where your upper arm attaches to your shoulder.
- **The general term for medical conditions such as these is "musculoskeletal disorders" (MSDs).**
  - While musculoskeletal literally means "related to muscles and bones," it also applies to body parts that help muscles work (such as nerves), as well as tissues attached directly to bones (such as tendons).
- **Now that you know the basics of musculoskeletal disorders, let's look at the most common MSDs found in the office.**
  - Carpal-tunnel syndrome.
  - Backstrain.
  - Tendinitis.
- **Carpal-tunnel syndrome (also referred to as CTS) is a potentially-debilitating condition of the hand and wrist that affects millions of office workers every year.**
- **Carpal-tunnel syndrome begins when repeated stress on wrist tendons makes them swell.**
  - This increases pressure in the carpal tunnel, because the bones and ligaments that make up the tunnel are not able to stretch to make room for the swelling.
  - As a result, the median nerve is squeezed against the top of the tunnel.
- **Eventually, the pressure becomes so great that the nerve can no longer function normally. At this point, numbness will occur in your:**
  - Thumb.
  - Index finger.
  - Long finger.
  - Ring finger.

- **This numbness will quickly be followed by pain, which can spread from your hand up your arm to your shoulder or neck.**
  - Without treatment, it will become increasingly difficult to grasp objects.
- **The good news is that carpal-tunnel syndrome is preventable.**
  - In most cases, you can protect your wrists and hands by just slightly changing the way you work.
  - For example, taking regular breaks from repeated hand movements can give your hands and wrists time to rest.
  - Performing a variety of duties during the course of a day, instead of focusing on just one, also works (such as alternately typing and filing).
- **No matter what, if you work at a computer it's important not to type continuously for hours at a time.**
  - A good rule-of-thumb is to do things other than keyboard work for at least two minutes out of every fifteen.
  - Something as simple as this can ward off repetitive stress disorders.
- **When you must do a lot of typing, make sure to adjust the height of your chair so that your forearms are level with your keyboard.**
  - This keeps you from flexing your wrists as you type, a major cause of CTS.
- **Also, don't rest your wrists on hard surfaces for long periods.**
  - This can also irritate your tendons.
- **Reducing the amount of force or pressure you use to type can help as well.**
  - Don't pound the keyboard if you don't have to.

- **Strengthening your hands and wrists through the use of exercises is another effective way to prevent carpal-tunnel syndrome.**
  - There are three exercises that you can do as you work, and no special equipment is required.
- **To do the "Finger Stretch", spread the fingers of both hands far apart.**
  - Hold this position for five seconds, relax and then repeat two more times.
  - This loosens the tendons of the wrist before they become irritated.
- **The "Wrist Circle" is another effective exercise.**
  - With both arms stretched outward, draw a circle with your fingertips.
  - Make five movements to the left, then five to the right.
  - Like the Finger Stretch, the Wrist Circle can decrease wear and tear on your wrists, if performed two or three times during your work day.
- **The "Thumb Stretch" is a bit different from the previous two exercises, because it focuses mainly on the thumb.**
  - With your right hand outstretched in front of you, gently pull your thumb down and back until you mildly feel the stretch.
  - Be gentle with yourself, don't overstretch, and stop immediately if you feel any pain.
  - Hold your thumb for five seconds, relax and then repeat the exercise twice more.
  - After this, do the same set of exercises with your left hand.
- **The Thumb Stretch helps to prevent carpal-tunnel by maintaining your ability to grip objects, something that is often lost in advanced cases of CTS.**
- **There are many products on the market today, such as wrist pads that are supposed to prevent carpal-tunnel syndrome. And some of them may actually work.**
  - But many people have developed full-blown carpal-tunnel syndrome even though they were using these aids.

- **Simply purchasing new tools is not enough. The most effective way to protect yourself from carpal-tunnel syndrome is to develop better work habits, such as:**
  - Taking frequent breaks.
  - Performing anti-CTS exercises on a daily basis.
  
- **As we've seen, CTS is an ailment of the hands and wrists, two parts of our body that we often take for granted.**
  - The next medical condition that we'll look at also affects a part of the body that most people don't think about until it's too late... the back.
  
- **Backstrain is the source of most of the low back pain in the United States.**
  - Usually, it's a dull ache concentrated in the so-called lumbar region located just above your buttocks.
  - The site of the strain is often tender to the touch, and a small lump or knot may appear in the center of the painful area.
  
- **If your back muscles are strained it can result in constant pain, because these muscles are used every day in motions such as:**
  - Rising from a seated position.
  - Lifting any object.
  - Turning your upper body.
  - Bending from side to side.
  
- **Among office workers, backstrain is typically the result of:**
  - Bending forward at the waist while lifting things.
  - Bad posture while working in a seated position for an extended period of time.
  
- **Incorrect lifting (from the waist) increases the distance between your spine and the object you are moving, placing your back muscles under a lot of stress.**
  - The best lifting technique is to bend at your knees and pull the item toward your body... then lift.
  - The proper technique for holding an object is to stand erect while clasping it to your body.

- **In both cases, you are using your spine in the same way that a building uses a column, to provide the object with maximum support.**
  - In contrast, when you bend from the waist you are only using part of your spine to support the object and could strain your back in the process.
  
- **In a similar way, slouching at your desk for an extended period of time can harm your back as much as bad lifting. The reasons are the same:**
  - A straight spine distributes your weight along its entire length, while a bent spine concentrates this force in a single area, usually the lower back.
  - This is why maintaining good posture while you are working at a computer is so important.
  
- **In addition to keeping your back straight, there are a number of other things you can do to prevent backstrain.**
  - Make sure that your chair has a good lumbar support, and that the back forms a 90<sup>0</sup> angle with the seat.
  - Adjust your computer monitor so that its top is slightly below the level of your eyes (this prevents up-and-down neck movements).
  - Keep your knees at a 90<sup>0</sup> angle, with your feet flat on the floor or a foot support (this forces your back into an erect position).
  
- **As with carpal tunnel syndrome, taking frequent breaks is also an effective way to prevent backstrain... and so is exercise.**
  - Many back exercises can't be done during the workday because they involve lying on the floor.
  
- **Fortunately, exercising once a day, before going to work, can be just as effective.**
  - Begin your daily routine with the Pelvic Tilt.
  - Next, do five to ten Bent-Knee Sit-Ups.
  - The Hamstring Stretch requires you to keep one leg straight in front of you and the other bent.
  - Finally, do a few Leg Lifts.

- **While carpal-tunnel syndrome and backstrain can be painful and potentially debilitating, they affect only specific areas of the body.**
- **Tendinitis is an ailment that can strike you almost anywhere. Simply put, tendinitis is the inflammation of a tendon.**
  - Any tendon can be become irritated and swollen, but the tendons around a joint are the ones that are affected most often.
  - Symptoms of tendinitis include pain and stiffness, both of which are aggravated by movement.
- **In the office, tendinitis of the hands, arms and shoulders is common, because these are the parts of the body that are used the most in a white-collar environment.**
  - Like carpal-tunnel syndrome, however, tendinitis can be avoided in most cases.
  - And because tendinitis is a close relative of CTS, it shouldn't be surprising that one way to prevent tendinitis involves exercises.
- **People who wouldn't dream of jogging or working out without warming up think nothing of sitting down at their desks and starting to type with cold hands and wrists.**
  - In fact, warm-up and stretching exercises are essential to keeping hands, wrists, arms and shoulders tendinitis-free.
- **Let's look at some exercises designed specifically to prevent tendon wear:**
  - Simply rubbing your hands together until your palms and fingers heat up, followed by massaging the back of each hand, can warm up your muscles and tendons prior to typing.
- **The "Fingertip Press" is another simple anti-tendinitis exercise that can remove tightness in your hands and wrists.**

- **As you warm up, be sure not to forget your upper arms and shoulders.**
  - One way to keep these parts of your body limber is the "Imaginary Dumbbell Lift."
  - To do this exercise, hold both of your hands in front of you.
  - Then slowly raise and lower them, as if you were lifting small dumbbells.
  
- **Another upper-body exercise involves sitting with your back straight while lifting your shoulders as high as you can.**
  - Hold this position for a second, then bring your shoulders forward. Again, hold for approximately a second.
  - Next, push your shoulders down, hold one second, then pull them in the direction of your back, and hold for a second.
  - Return your shoulders to their normal position.
  - Then repeat the exercise in the opposite direction.
  
- **But exercise is only a part of the story.**
  - As with other ergonomic conditions, changing a few minor habits now can help you to avoid tendinitis, and save you pain in the future.
  
- **Preventing tendinitis in your hands can be as simple as teaching yourself to use keyboard commands rather than mouseclicks wherever possible.**
  - For instance, you could use the arrow keys or the page buttons to navigate through a document instead of pointing with the mouse.
  - This might seem awkward at first, but it decreases the number of repetitive, side-to-side motions you make with your wrists.
  - These are a prime source of hand tendinitis.
  
- **Two other ways to decrease your chances of developing tendinitis in your hands as you use a computer include:**
  - Varying the fingers that you use to press the space bar.
  - Pressing the keys more gently.

- **When using a mouse, move your whole arm, rather than making side-to-side motions with your wrist.**
  - You can also use a trackball, which doesn't require wrist movement at all.
- **If you are left-handed, use a mouse specifically designed for the left hand.**
  - Prolonged use of a right-handed mouse could cause circulation problems.
  - If you share a computer, use a straight-sided mouse that can be comfortably held by either hand.
- **The position of your head is crucial to preventing shoulder tendinitis.**
  - Your face should be tilted downward slightly as you work, at an incline of  $5^{\circ}$  to  $30^{\circ}$ .
  - This puts the least amount of stress on your upper body.
- **To avoid shoulder and upper arm tendinitis, your elbows should be at an angle of no less than  $70^{\circ}$ , and no more than  $135^{\circ}$ .**
  - For some short individuals, placing their arms and legs in the proper position at the same time can be difficult.
  - If you have this problem, choose the position that accommodates your arms first.
  - This will align you with your desktop.
- **After you arms are positioned, use a footrest to get you legs set properly.**
  - Your primary goal is to make sure that your torso is at a  $90^{\circ}$  angle to your thighs.
  - This relieves tension on the back, shoulders, abdomen and neck.
- **As you work, keep your lower back fully supported.**
  - This helps maintain the natural forward curve of your spine and relieves stress on your shoulders.
  - If you need help, use a lumbar cushion, a pillow or even a rolled-up towel to keep your back straight.

- **When your work requires you to stand, you should still try to keep your forearms at a right angle to your upper arms.**
  - Raise your work surface or use a platform, if necessary.
- **Whatever you do, never lean over a work surface for an extended period of time.**
  - This strains your upper back, shoulders and arms.
- **Remember, don't bend down to reach your work... bring the work up to reach you.**
  - At times, this may mean working at a draftsman's table, which can be raised, rather than a conventional desk.
- **Once your arms are in the proper position, be sure to keep your back straight... no slouching.**
- **Remember, humans weren't designed to be on their feet all day long.**
  - If your job requires a lot of standing, be sure to sit down during your breaks.
- **There are some ergonomic principles that should be applied whether you are sitting or standing.**
  - To start, be cautious about reaching for things.
  - Frequent over-stretching can cause chronic injuries, such as tendinitis.
  - To prevent this, organize your tools and materials so they are 14 to 18 inches away.
- **We've just discussed several common work-related ailments, all of which can be avoided if you have a basic knowledge of ergonomics.**
  - You've also seen that making your work area ergonomically sound can be as easy as organizing your materials differently and changing a few small habits.
- **But there is no end to the useful ergonomics tips you can pick up. We've covered only a little bit of the information that's out there.**
  - To learn more, consult health-related websites and magazines.

**\* \* \* SUMMARY \* \* \***

- **The most common musculoskeletal disorders (MSDs) found in offices today are:**
  - Carpal-tunnel syndrome.
  - Backstrain.
  - Tendinitis.
  
- **These ergonomic problems are caused by injuries to:**
  - Tendons.
  - Muscles.
  - Nerves.
  
- **Problems that put you most at risk include:**
  - Awkward postures.
  - Repetitive movements.
  - Unnatural motions.
  
- **To counteract these problems, you can:**
  - Take breaks.
  - Do stretching exercises.
  - Maintain good posture while you work.
  
- **Ergonomics isn't rocket science. There is a lot that you can do to have a positive effect on your work environment.**
  
- **By putting safety first, and doing your job in the most ergonomic way possible, you'll not only be more comfortable and more productive... you'll be healthier as well.**