



# Environmental Safety in the Workplace

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A Relias Course revised for Shiawassee Health & Wellness



# Learning Objectives

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Upon completion of this course, you will be able to:

- Identify hazards associated with electrical work.
- Describe proper workplace and workstation ergonomics.
- Identify how to avoid back injuries.



# Your Role is Staff Safety

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Each staff member has a personal responsibility in recognizing safety hazards and preventing accidents.

Doing the following can help you prevent environmental hazards where you work:

Come to work well rested. When you are tired, you are more likely to be careless or miss seeing a hazard.

Don't be in too much of a hurry. Take smaller steps and watch for warning signs such as "WET FLOORS." If you have to walk on a wet floor, take it easy.



# Why Do Accidents Happen?

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The following are possible reasons why an accident may happen at your work site:

- Standing on an unstable object.
- Burned out lights in stairwells and hallways.
- Cords stretched across the floor and boxes or carts cluttering walkways.
- Ice or water in entrances and on walkways.
- Wet floors or puddles.



# Preventing Accidents

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Most accidents can be prevented if you do one of two things:

- ✓ Correct the problem.
- ✓ Report the problem.

Remember...

You should report any problems by contacting the appropriate person who can arrange to have it removed.



# Responding to Accidents

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If an accident does happen, remain calm. Notify your supervisor immediately and follow the facility's policies on accident and injury reporting.

If you are seriously injured or think you might have broken bones, do not move - moving could make an injury worse. Call for help and/or wait for someone to come to help you. Be sure to tell them what caused your accident so they can remove or report the problem.

If another person is injured, wait for someone to assist you before lifting or moving an injured person, to avoid hurting yourself. Use First Aid procedures if your training is current and call 911 if the injury looks serious.



# Responding to Accidents

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If the person is seriously hurt or unconscious, wait with the injured person while someone calls 911 for help. If there is any possibility of a back, neck, or head injury, the injured person should not be moved.

Once you have taken care of an injured person, report and document the accident/injury. If you know the cause of the accident, report it so the problem can be resolved..

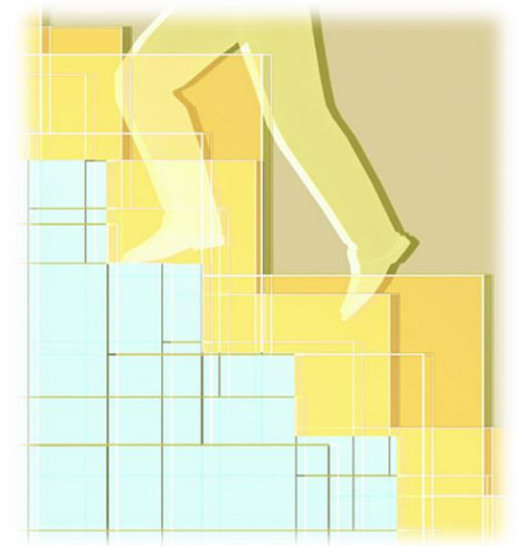


# Preventing Trip, Slips and Falls

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Environmental hazards which can cause trips and falls include:

- Slippery or wet floors.
- Uneven floor surfaces.
- Lifting in confined spaces.
- Cluttered or obstructed work areas/passageways.
- Poorly maintained walkways or broken equipment.
- Inadequate lighting, especially during evening shifts.





# Preventing Trip, Slips and Falls

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Good work practice includes implementing work practice controls to help prevent slips/falls such as:

- Eliminate uneven floor surfaces.
- Create non slip surfaces in toilet/shower areas.
- Immediate clean-up of fluids spilled on floor.
- Safely working in cramped working spaces-avoiding awkward positions, using equipment that make lifts less awkward.  
Eliminate cluttered or obstructed work areas.  
Provide adequate staffing levels to deal with workload.



# Safe Client Transportation

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Know your facility's policy on transportation of clients. If you are driving your facility's vehicle, make sure that it is well maintained.

The gas tank should always be half full. You should have a fully charged cell phone and a charger in your possession. Be sure you have the address of your destination and the route that you will take. A first aid/emergency kit should be in the vehicle. Never leave clients in a vehicle unattended. Finally, know the facility policy for reporting accidents.



# During Transportation:

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- All passengers must wear seat belts
- All passengers must remain in their seats.
- Children less than 4 years old or 40 pounds must have an infant safety seat. Those 8 years or younger or less than 4'9" must have a booster seat.
- Lock all doors and keep the windows up.
- Maintain a safe distance when stopped at a stoplight or stop sign.
- Drive defensively: Assume the other driver does not know what he is doing.

## **Parking your vehicle:**

- Park in a well lit area.
- Avoid isolation.
- Park so you have a good view of the situation.



# Ergonomics

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Ergonomics is about the design and arrangement of things so people and things interact safely and efficiently. The study of ergonomics is used to design things like chairs or work areas, so that the job gets done well and the worker is safe from injury.

Workers should know about ergonomics so they can:

- Avoid repetitive motions that cause repetitive stress injuries.
- Maintain proper body alignment.
- Set up their work area to prevent personal injury.



# Work Processes: Potential Hazards

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Even when the design of the workstations is correct and environmental factors are at their best, users can face risks from task organization which can intensify the impact of other risk factors, such as **repetition**.

Additionally, failing to recognize **early warning signs** could allow small problems to develop into serious injuries.

Addressing task organization factors and medical awareness may help minimize the risk of developing **musculoskeletal disorders (MSDs)** and stop the progression to injury.



# Repetition

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Many computer workstation tasks are highly repetitive. You may perform the same motions repeatedly at a fast pace and with little variation. When motions are isolated and repeated frequently for prolonged periods, there may be inadequate time for your muscles and tendons to recover.

Computers require little task variation. Users can stay in their chairs and type or perform mouse work for an almost unlimited amount of time. Under these conditions, a proficient typist can easily perform more than 18,000 keystrokes per hour. These repetitive motions can lead to tendon and tendon sheath injuries, especially if the wrist is bent during the activity.



# Repetition - continued

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Similar repetitions occur when using a pointing device such as a mouse. Here, the hazard may be greater because the motions are often concentrated in only a few fingers of one hand.

A computer operator may remain in essentially the same posture for an entire shift. This forces a few isolated muscles to repeatedly activate to accomplish a task such as holding the head up or focusing on a computer screen.

A poorly designed workstation may cause you to repeatedly reach to use a mouse or answer the phone. This can fatigue the muscles of the shoulder and irritate the tendons.



# Reducing Repetition

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You can reduce repetition by properly arranging the workstation and its components.

For example, a mouse that is placed close to the keyboard should minimize repetitive reaching.

However, even the best designed workstation can not eliminate all highly repetitive motions, especially for data input. For this reason, it is extremely important to maintain good posture by providing adequate adjustability at the workstation.

You should perform all hand tasks with the wrist in a straight, neutral posture to allow the tendons to slide easily without interference.





# Reducing Repetition - continued

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**The following work process suggestions may also help reduce repetition.**

**Task Rotation** - Minimize long blocks of uninterrupted computer time by doing other non-computer tasks such as photocopying, phone work, cleanup, etc.

**Job Enlargement** - If you must perform a variety of tasks, when possible, intersperse them throughout the work day.

**Stretch or Exercise** - When taking breaks, look away, stretch, get up, or go for a short walk.

**Micro Breaks or Rest Pauses** - Build short micro pauses into computer use sessions. Frequent short breaks are desirable. Every hour, take a five-minute break from computer tasks. These brief pauses provide time for muscles and tendons to recover.



# MSD Signs and Symptoms

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It is important to report signs and symptoms as early as possible to prevent serious injury or permanent damage. Users at risk for MSDs associated with computer use may experience some of the following signs or symptoms:

- Numbness or a burning sensation in the hand.
- Reduced grip strength in the hand.
- Swelling or stiffness in the joints.
- Pain in wrists, neck, or back.
- Reduced range of motion.
- Dry, itchy, or sore eyes.
- Blurred or double vision.
- Aching or tingling.
- Cramping.
- Loss of color in affected regions.
- Weakness.



Although these symptoms may not necessarily lead to an MSD, if experienced, the user should make an evaluation of their working positions and their workstation layout.



# Awkward Postures

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Maintaining good postures, such as straight wrists, elbows close to the body, head straight and in-line with the torso, is often difficult because of a misalignment between the user and the computer components and accessories.

## **For Example:**

- A monitor positioned too high can cause you to tilt your head back, which fatigues the neck and shoulder muscles.
- A keyboard tray that is too small can cause you to move the mouse to a position of the desk that requires you to reach to perform mouse tasks. This pulls the elbow away from the body and can cause you to support your arm in an elevated position for an extended period of time.
- A keyboard that is too low causes you to bend your wrists at extreme angles, which can cause the finger tendons and tendon sheaths to bend around the bones of the wrist.



# Awkward Postures - continued

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**Working in awkward postures can irritate or strain the bone-tendon-muscle connections.**

- Muscles can be stretched or compressed causing them to be inefficient and resulting in possible fatigue and overexertion.
- Non-neutral postures can pull and stretch tendons, blood vessels, and nerves over ligaments or bone where they can become pinched and restricted.
- Tendons and their sheaths can rub on bone and ligaments, which can lead to irritation and fraying. This can lead to swelling within confined areas such as the carpal tunnel, which then restricts nerves and blood vessels.
- Tingling and numbness of the fingers and hands as well as pain from tendonitis and tenosynovitis (inflammation of a tendon sheath) can result.



# Contact Stress

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Contact stress can occur either internally or externally. Internal stress occurs when a tendon, nerve, or blood vessel is stretched or bent around a bone or tendon.

External contact stress occurs when part of your body rubs against a component of the workstation, such as the chair seat pan or edge of the desk. Nerves may be irritated or blood vessels constricted as a result.

You can experience contact stress to your forearms when you rest them on the leading edges of work tables or, if the nerves in the forearm are affected, your fingers and hands may tingle and feel numb, similar to the feeling when you hit your "funny bone".

To help solve these problems, carefully select wrist rests, chairs, and desk surfaces. Take frequent rest and stretch breaks to minimize the amount of contact stress that you may experience. Adjust your workstation to maintain neutral wrist postures.



# Prolonged Periods of Activity

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Computer work, whether it's for a job or for fun, may appear to be a low effort activity when viewed from a total body perspective, but maintaining postures or performing highly repetitive tasks for extended periods can lead to problems in localized areas of the body.

For example, using a mouse for a few minutes should not be a problem for most users, but performing this task for several uninterrupted hours can expose the small muscles and tendons of the hand to hundreds or even thousands of activations (repetitions).

There may not be adequate time between activations for rest and recuperation, which can lead to localized fatigue, wear and tear, and injury. Likewise, maintaining static postures, such as viewing the monitor for a prolonged period of time without taking a break, can fatigue the muscles of the neck and shoulder that support the head.



# Possible Solutions

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Provide variation in tasks and workstations so there is time to recover from the effects of activity. There are several ways to provide recovery time for overused muscles.

Utilize an adjustable workstation so users can easily change their working postures. The use of easily adjustable furniture, for example, allows you to frequently change seated postures, which allows different muscle groups to provide support while others rest.

Ensure that there is enough work space so you can use each hand alternately to perform mouse tasks. This allows the tendons and muscles of the free hand to rest.

Substitute keystrokes for mousing tasks, such as Ctrl+S to save, Ctrl+P to print. Especially if your job is highly mouse intensive.



# Let's Review

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## **Terms that have been discussed so far:**

**Ergonomics** - Ergonomics is about the design and arrangement of things so people and things interact safely and efficiently. The study of ergonomics is used to design things like chairs or work areas, so that the job gets done well and the worker is safe from injury.

**Workstation Adjustment** - A properly adjusted workstation can help minimize awkward postures. Place the monitor in front of you at a height where you can look straight ahead and not tilt your head forward or backward. Place frequently used items, such as keyboards and pointing devices where you can reach them easily. Adjust and arrange keyboard trays and chairs so you don't have to bend your wrists up, down, or to the side.

**MSD Signs and Symptoms** - Users at risk for musculoskeletal disorders associated with computer use may experience some of the following signs or symptoms: numbness in hands and wrists, cramping, weakness, swelling or stiffness in joints, aching or tingling, blurred or double vision, and reduced range of motion in shoulder, neck or back.





# Review - continued

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**Repetition** - Many computer workstation tasks are highly repetitive. You may perform the same motions repeatedly at a fast pace and with little variation. When motions are isolated and repeated frequently for prolonged periods, there may be inadequate time for your muscles and tendons to recover. Combining repetitive tasks with factors such as awkward postures and force may increase the risk of injury. You can reduce the chance for injury by readjusting your workstation and its components.

**Awkward Postures** - Maintaining good postures, such as straight wrists, elbows close to the body and head straight and in-line with the torso is often difficult because of a misalignment between the user and the computer components and accessories. For example, a monitor positioned too high can cause you to tilt your head back, which fatigues the neck and shoulder muscles.



# How to Prevent Electrical Accidents

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Electrical accidents appear to be caused by a combination of three factors:

- 1. Unsafe equipment and/or installation,**
- 2. Workplaces made unsafe by the environment, and**
- 3. Unsafe work practices.**

There are various ways of protecting people from the hazards caused by electricity. These include: insulation, guarding, grounding, electrical protective devices, and safe work practices.

**The following are clues that an electrical hazard exists:**

- Tripped circuit breakers or blown fuses.
- Warm tools, wires, cords, connections, or junction boxes.
- GFCI that shuts off a circuit.
- Worn or frayed insulation around wire or connection.



# Electrical Safety Dos

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## DO:

- Keep cords out of the way of traffic.
- Take electrical equipment with faulty cords or visible wires out of service and have them checked.
- Look at plugs for loose or broken pins or for any melted areas.
- Unplug equipment by handling the plug itself and not the cord.
- Take electrical equipment out of service and report it if the equipment smells "hot", has smoke coming out of it, is not working properly, or has had a liquid fall into it.
- Use a multi-outlet strip if more than two items need to be plugged into the same outlet.



# Electrical Safety Don'ts

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## **DO NOT USE EXTENSION CORDS:**

- Use plugs with broken pins or with only two pins.
- Pull on an electrical cord to unplug equipment. Pulling can damage the cord.
- Roll heavy furniture or other equipment, over an electrical cord. This can break the wires and damage the cord.
- Use electrical equipment in wet areas.
- Touch electrical equipment with wet hands.
- Plug too many appliances into a wall outlet.



# Back Injuries

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Your back or spinal column is the main support structure for your body. It carries most of the body's weight and is the main pathway of the nervous system.

Back injuries are one of the most common types of injuries in the workplace and also one of the most common reasons that people miss work.

Did you know that 50-70% of all workers will have some kind of lower back pain at least once?

A single back injury can affect you for the rest of your life. Besides the pain it causes, the injury can also keep you from doing many of the things you like to do.

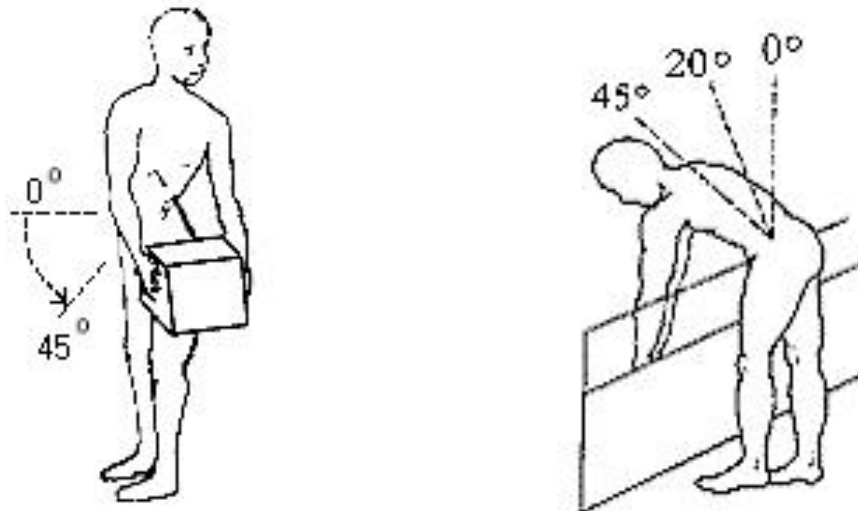


# Awkward Postures

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One reason for back injuries is as a result of using awkward postures.

Awkward postures occur with twisted, hyper-extended or flexed back positions. Increased potential for employee injury exists when awkward postures are used when handling or lifting equipment or clients/residents.

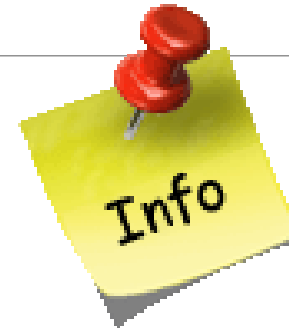


# Awkward Postures Include:

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Twisting while lifting.

- Bending over to lift.
- Lateral or side bending.
- Back hyperextension or flexion.



Forces on the spine increase when lifting, lowering or handling objects with the back bent or twisted. This occurs because the muscles must handle your body weight in addition to the weight of the patient/residents being lifted.

More muscular force is required when awkward postures are used because muscles cannot perform efficiently.

Fixed awkward postures (i.e., holding the arm out straight for several minutes) contribute to muscle and tendon fatigue, and joint soreness.

To be considered a risk factor, awkward postures need to last more than 1 hour continuously or for several hours in the work shift.



# Possible Solutions to Awkward Postures

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Good work practice recommends avoiding awkward postures while lifting or moving patients/residents.

Use safer lifting techniques.

- Use assist devices or other equipment whenever possible.
- Use team lifting as needed.





# What are Some Other Back Stressors?

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Exposure to back stressors in healthcare workplaces occurs not only during client/resident handling tasks but while performing other tasks as well in the kitchen, laundry, engineering, and housekeeping areas of facilities, for example during:

- Transporting of equipment
- Moving food carts or other heavy carts
- Pouring liquids out of heavy pots or containers
- Reaching into deep sinks or containers
- Using hand tools
- And during housekeeping tasks



# Decreasing Back Injuries

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Use work practice techniques to decrease the possibility of having a back injury.

**For example:**

- Use transferring equipment: Strains and sprains can occur if you transfer equipment like iv poles, wheelchairs, oxygen canisters, respiratory equipment, dialysis equipment, x-ray machines, or multiple items at the same time.
- Place equipment on a rolling device if possible to allow for easier transport, or have wheels attached to the equipment. Push rather than pull equipment when possible. Keep arms close to your body and push with your whole body not just your arms.
- Assure that passageways are unobstructed.
- Attach handles to equipment to help with the transfer process.
- Get help moving heavy or bulky equipment or equipment that you can't see over.
- Don't transport multiple items alone for example if moving a patient/residents in a wheelchair as well as an IV pole and/or other equipment get help, don't overexert yourself.



# References

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The content of this course was taken from the following web OSHA web site:

[http://www.osha.gov/dcsp/compliance\\_assistance/quickstarts/health\\_care/index\\_hc.html](http://www.osha.gov/dcsp/compliance_assistance/quickstarts/health_care/index_hc.html)



# Congratulations!

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You have finished reviewing the course content.

Remember: this course is NOT complete until you pass the final exam/test and complete the survey.

