FUNDAMENTAL 55: Industrial Ergonomics



Key Takeaways:

– Recognizing the underlying principle of ergonomics in the workplace and core risk factors
– Learning the causes of CTDs
– Understanding common types of cumulative trauma disorders
– Connecting warning signs and symptoms with solutions and actions
– Learning ergonomic principles
– Understanding the elements of an effective ergonomic health and safety program

Course Description

Over time, poor ergonomics can lead to cumulative traumatic musculoskeletal disorders (MSDs) which strain our bodies. Numerous good reasons exist for analyzing the ergonomic health of your workforce; musculoskeletal injuries, once developed, can take people off of the job for life.

The Occupational Safety & Health Administration (OSHA) stated that industries with the highest musculoskeletal disorders rates include health care, transportation, warehousing, retail, and wholesale trade and construction.

Ergonomics refer to making the workplace conducive to the comfort and productivity of the employee. Implementing ergonomic principles helps everyone avoid on-the-job illness and injury, as well as improving worker job satisfaction through measures that provide a greater comfort, allowing people to perform assigned tasks more naturally.

Cumulative trauma disorders (CTDs) are caused by physical demands that exceed our maximum capacity, put strain on the body (tendons, muscles, nerves, joints, ligaments, cartilage or the spine), or disregard environmental factors like heat, humidity, noise and glare which can cause stress.Imagine a young man who moves heavy, awkward furniture on a daily basis, with poor technique and ignorance of future consequences from straining back muscles and bone beyond limitations. Over the years, his back becomes sore and gives out, jeopardizing the man’s livelihood and negatively impacting the employer’s workers compensation rating.

CTDs result from an accumulation of stress factors involving repetitive, forceful, or prolonged exertions; frequent or heavy lifting, pushing, pulling, or carrying of heavy objects; or prolonged awkward postures. One commonly cited issue is carpal tunnel syndrome, which can be alleviated by a bit of attention to ergonomics.

For your reference, here are ten general principles of ergonomics to evaluate the “fit” of a work area. Some of these principles relate to changes the worker can make and others suggest changes the employer could make.
1. Only work in a neutral posture. Make a conscious effort to maintain the natural “S” spine curve, whether sitting or standing.
2. Minimize excessive force. When available, use tools to help with pulling, pushing and lifting, and also use boxes that have handholds.
3. Place work tools in easy access. Set up your work area so things you use often do not require a stretch to reach.
4. Perform work only at proper heights. While sitting, such as at a computer, do most work elbow height.
5. Minimize excessive stressful motions. One simple method is to use power tools as much as possible. Analyze the work situation and make the necessary changes to eliminate excessive repeated motions.
6. Reduce fatigue and static load. Maintaining the same position over long periods of time creates static load and leads to fatigue and cramping. Also, using tools to keep parts in position and changing your body position can reduce static load.
7. Reduce the pressure of your body on other surfaces. For illustration, while squeezing a tool you create pressure points on your hands. Make sure to use a tool that is contoured to fit your hand or that has a cushioned grip to lessen the pressure.
8. Your work area must also be set up to have enough room so that you can work in a comfortable position without having your head, arms, elbows, knees or feet in unnatural or cramped positions.
9. Each day as you use your body, remember that we are meant to move, exercise and stretch. Your muscles must be used and strengthened and your heart rate must be elevated, on occasion. Throughout the day, change positions, stretch, and move often.
10. Keep a comfortable environment.

Follow these easy tips: maintain the “S” curve in your back when standing for long periods, it may help to put one foot on a footrest. Beware of relaxing into a “C” curve when sitting, this can put strain on your back. It is important to have good lumbar support in a chair to help maintain the proper curve in the small of your back.

While lifting or moving items, bending over in a “V” shape creates pressure on the back. If you frequently need to bend to lift items, seek mechanical means to reduce the amount of bending you must do. Make sure your neck is aligned with the rest of the spinal column, because prolonged twisted and bent positions are stressful. If necessary, adjust equipment to allow your neck to be in its neutral position. Make an effort to keep your elbows at their sides and adjust the work area height if necessary. You want to keep your wrists in neutral position with the hand in the same plane as the forearm. Lastly, seek out tools if needed to allow your wrist to assume this position.