ERGONOMICS

Repetitive Motion Injury Prevention

Making the job fit the person

Ergonomics is the science of workplace design that tries to make the job fit the person rather than the person fitting the job. **Ergo** means Work and **Nomos** means Rules. The premise of Ergonomics is to reduce physical strain by designing or modifying the work station, work methods, and tools to eliminate excessive exertion and awkward postures and to reduce repetitive motion. At its simplest, and often most effective, ergonomics reduces strain by cutting back on the stress and number of repetitive motions done on the job.

Early identification

The earlier you identify a repetitive motion problem, the more likely you are to be able to do something about it. Pay attention to any warning signs such as pain or soreness. Be especially alert to symptoms like numbness, tingling and apparent loss of strength of muscles. Cumulative Trauma Disorders (CTD's) are becoming more commonplace in the work world and are caused by repetitive movements over long periods of time, vibration from machinery and improper arm or body support. Even standing still for long periods or moving in awkward ways can be damaging. These often overlooked habits can result in disorders such as Carpal Tunnel Syndrome, Tenosynovitis, Tendinitis and various back problems. Cumulative Trauma Disorders: *Defined as those disorders that are caused, or aggravated by repeated exertions or movements of the body. They can occur in any part of the body but appear most frequently in the muscles and tendons of the upper limbs. Results in conditions of fatigue and inflammation.* These can sometimes be misdiagnosed as the same symptoms can be caused by elbow and neck pressure. Other health problems that can be avoided are eye strain and discomfort. When any of these symptoms appear, it is time to evaluate the job and look for ways to limit repetitive motions. If the problem persists or recurs, medical attention may be needed.

Repetitive Motion Injuries

Fatigue or tiredness in muscles and /or joints is your body's way of telling you to change your pattern of working. Doing the same motion over and over or using certain types of positions or grips can cause pain and inflammation.. Some of the common inflammations are:

Tendinitis - inflammation of the tendons. Can be caused by performing repeated motions incorrectly or in an awkward position.

Tenosynovitis - a condition in which both the tendon and its covering become inflamed. Can be caused by improper or repetitive bending of the wrist.

Carpal Tunnel Syndrome - painful squeezing of the median nerve in the wrist. Causes loss of grip, muscle pain, weakness, and numbness in the thumb and first two fingers. If after an appropriate period of time, test and medication do not work, surgery may be necessary.

Limit repetitive motions

The best form of prevention is to limit the time anyone spends doing the same motion over and over, whether it's packing, using a keyboard, using a hand or power tool, etc. To reduce your risks of Cumulative Trauma Disorders, avoid or minimize these physically straining activities:

Repetitive twisting movements, usually in combination with poor body position.

Exposure to cold, combined with repetitive motions.

Excessive standing with no chance to lean, sit, or comfortably reposition body.

Holding arms with no support.

Hand operation of vibrating machinery.

Repetitive physical force using shoulders, arms, legs, and back.

Repetitive motions using a bent wrist.

It is up to everyone to help identify poor ergonomic practices in the workplace. Managers, supervisors, employees, and health professionals should work as a team to correct existing ergonomic problems. When analyzing a specific job for ergonomic problems, the following points must be considered:

Weight of objects being handled.

Body positions.

Repetitions of certain movements or tasks.

How workers grip objects.

Engineering Controls is the preferred method of control. This should be accomplished through the following procedures:

Work Station Design: Work stations should be made easily adjustable and either designed or selected to fit the task, so they are comfortable for the worker using them.

Design for Work Methods: Work methods should be designed to reduce static, extreme and awkward postures, repetitive motion and excessive force.

Tool and Handle Design: A variety of sizes should be available to achieve proper fit and reduce ergonomic risk. The appropriate tool will be used to do a specific job.

Work Practices should include a program with key elements such as proper work techniques, employee conditioning, inspections, feedback, and maintenance.

Proper work techniques includes training on the correct lifting procedures and correct use of ergonomicaly designed work stations, fixtures, and tools.

Employee conditioning should include employees gradually being worked into a full workload as appropriate for their specific job. Employees reassigned to new jobs should also have a break-in training period.

Inspections shall be conducted periodically to ensure safe operating procedures are being followed.

Feedback will provide a system for employees to notify supervisors about conditions with potential ergonomic hazards. **Employees are instructed to report ergonomicaly related symptoms to their supervisors immediately**. These would include:

Numbing, burning, or tingling in your fingers.

Pain in your wrists.

Loss of grip or muscle weakness.

Fatigue or abnormal tiredness.

Pain in your back, legs, feet, neck or shoulders.

Maintenance should be the preventive program for monitoring mechanical equipment and tools to ensure they are in proper working condition.

Administrative Controls should reduce the duration, frequency, and severity of exposures to ergonomic hazards. Options to be considered:

Pacing - reducing the number of repetitions per hour.

Breaks - providing short rest periods to relieve fatigue.

Job rotation - rotate periodically to a different task involving different movements.

Exercise and techniques for prevention

Exercise is an important part of the prevention program. Fit people are less likely to experience physical problems and are more likely to recover quickly when they do.

Body stretch. Reach up.

Side Bends. Slow and easy.

Upper body twist. With hands on hips, twist to the right and then to the left. Repeat 4-6 times.

Shoulder shrugs. Inhale and bring shoulders to ears. Exhale and allow shoulders to drop.

Finger stretch. Spread your fingers wide. Hold for 5 seconds, relax. Repeat 3-5 times, alternate hands.

Wrist stretch. With opposite hand, gently pull your fingers back allowing wrist to bend. Hold for 3 seconds, Switch hands. Repeat 3-5 times.

Thumb stretch. Extend one hand and with the other hand, gently pull back on your thumb for 3 seconds. Relax. Repeat 3-5 times on each hand.

Finger squeezes. Make a fist around a firm yet soft ball, then squeeze towards your palm 5-10 times. Following this exercise, repeat finger stretch.

Shake. While standing or sitting, drop your arms to your sides. Gently shake out your arms and hands for a few seconds. Relax and repeat 3 times.

REMEMBER

Try to adjust your work area to fit your body. A comfortable work environment benefits both you and the university.

Stretching every few hours relieves physical tension and body aches. Stretching increases your productivity.

Change the pattern of your work so that you are not doing the same motion over and over.

If you can, lean or sit rather than stand for long periods of time.

Work with your wrists straight.

Lift by using your legs, arms and buttocks. Bend your knees and keep your head, back and hips in a straight line. Never bend over to pick anything up without first bending your knees. Never twist while lifting.

Report any physical signs of ergonomic stress to your supervisor immediately.