

# Workplace Ergonomics

UAH Office of Environmental  
Health & Safety

# Overview

- What is Ergonomics
- Ergonomic Statistics
- The Benefits of an Ergonomic Program
- Ergonomic Related Injuries and Their Causes
- Identifying Ergonomic Risk Factors
- Office Ergonomics
- What You Can Do To Prevent Injury

# What is Ergonomics?

- Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of employees. ( U.S. Dept.of Health)
- Ergonomic principles are used to improve the “fit” between the worker and the workplace.
- A practical approach to Ergonomics considers the match between the person, the equipment they use, the work processes, and the work environment.
- A persons capabilities, physical attributes and work habits must be recognized to improve ergonomic factors in the workplace.

# Ergonomic Statistics

- 90% of all office workers use personal computers.
- In 1997 work related musculoskeletal disorders (MSD's) reached 275,000 cases.
- Carpal Tunnel Syndrome comprises 13% of all workplace injuries.
- Women outnumber men 3:1 sustaining Carpal Tunnel Syndrome.
- MSD's account for \$20 billion in direct costs each year and \$100 billion in indirect costs.

# Benefits of an Ergonomic Program

- Decreased injuries, illnesses, and workers' compensation costs.
- Increased efficiency at work.
- Increased physical well being.
- Decreased absenteeism and turnover.
- Increase in employee morale.



# Ergonomic related injuries

May be called:

- CTD's (cumulative trauma disorders)
- RSI's (repetitive stress injuries)
- RMI's (repetitive motion injuries)

Which are all considered:

- MSD's (musculoskeletal disorders)
- MSD's can affect muscles, tendons, nerves, joints and spinal disks.

# Common types of MSD's

- Tendonitis
- Carpal Tunnel Syndrome
- Tennis Elbow
- Neck and Back injuries
- Strains/Sprains
- Bursitis
- Thoracic Outlet Syndrome
- Trigger finger

# Risk factors and causes of MSD's

- Repetition
- Force
- Awkward Posture
- Static Posture
- Contact Stress
- Temperature Extremes
- Vibration
- Psycho Social

# Identifying Risk Factors

- Conditions or circumstances that increase the chances of developing a MSD.
- The likelihood of developing an injury is dependent on the frequency and duration of exposure to risk factors.
- Both occupational and personal risk factors can affect an individuals well being at home or work.

# Repetition

- Occurs when the same or similar movements are performed frequently.
- Repetition can also occur when different tasks are performed if those tasks have the same movements.
- Injury may result from repetition when the tissues do not have adequate time to recover.

# Force

- Force is the amount of physical effort required by a person to do a task or maintain control of tools or equipment.
- A pinch grip produces 3-5 times more force on the tendons in the wrist than a grip with the whole hand.
- With excessive force the muscles are contracting much harder than normal, this can lead to stress on the muscles, tendons and joints.

# Awkward Posture



- Is a deviation from the “neutral” body position.
- A “neutral” body position is safest and most efficient position in which to work.
- Awkward posture puts stress on muscles, tendons and joints.

# Static Posture

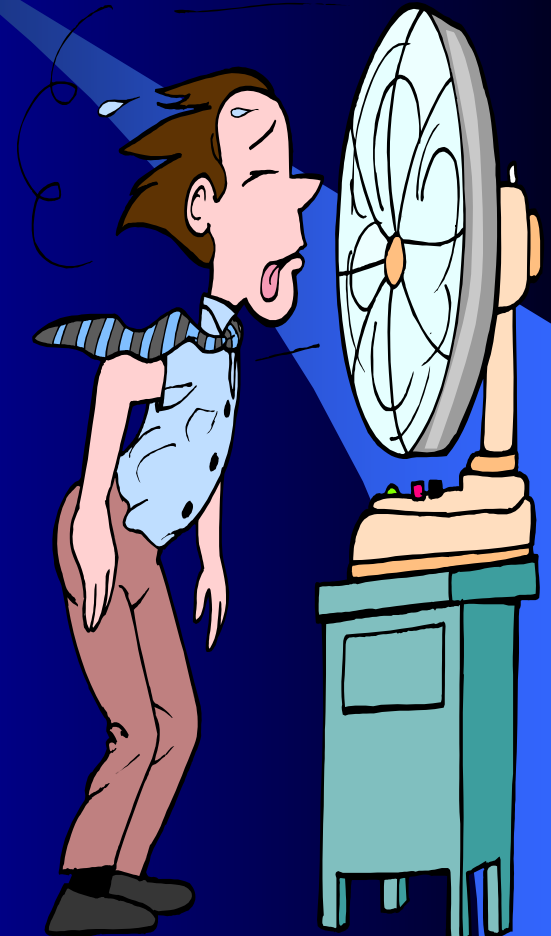
- Static posture occurs when one position is held for a prolonged period of time.
- The muscles will become fatigued from a lack of blood flow during a static posture.
- This fatigue can lead to discomfort and even injury.

# Contact Stress

- Contact stress is caused by any sharp or hard object putting localized pressure on a part of the body.
- Contact stress will irritate local tissues and interfere with circulation and nerve function.

# Temperature Extremes

- Environmental conditions such as extreme heat or cold can place stress on tissues.
- Extreme cold constricts blood vessels and reduces sensitivity and coordination of body parts.
- Excessive heat can result in increased fatigue and heat stress.



# Vibration

- Exposure to vibration can occur while using power tools or while driving equipment.
- Vibration from power tools can place stress on the tissues of the fingers, hand and arms.
- Whole body vibration from driving puts stress on the spinal tissues.



# Psycho-social Issues

- Stress, boredom, job dissatisfaction and anxiety can contribute to the possibility of developing a MSD.
- Psycho-social issues can create increased muscle tension and reduce a person's awareness of work technique.



# Office Ergonomics

- By applying ergonomic principles to the office setting, risk factors are minimized, productivity is increased, and overall workplace quality is improved.
- The workstation must be adjusted to promote a neutral position while a person works.
- When adjusting a workstation, keep in mind that all of the equipment interacts. Making one adjustment may alter another.

# Adjusting the Workstation

- Adjust Posture.
- Adjust reach requirements.
- Adjust focal requirements.

# Adjust Posture

- Sitting Postures
  - Upright Sitting
  - Declined sitting
  - Reclined sitting
- Standing Postures
  - Standing at work station
  - [Hyperlink](#) (p. 3)

# Correct the Environment

- Check lighting, noise and temperature.
- Check work pace and stress levels.
- Check work processes.

# Improve Posture and Habits

- Modify wrist/hand motions
- Improve neck and back postures
- Consider personal preferences

# What you can do to prevent injury.

- Develop an Ergonomics program.
- Take proper breaks.
- Health and Fitness.
- Be aware of your hobbies away from work.

# When Ergonomics are improved in the workplace:

- We work smarter, not harder.
- Quality, comfort and safety make us more productive and happy people.
- Stay Healthy and Safe, Take action!!!