



UNIVERSITY OF COLORADO COLORADO SPRINGS

Office Ergonomics University of Colorado Colorado Springs

Environmental Health and Safety



University of Colorado
Colorado Springs

Ergonomics

Ergonomics is the scientific study of human work. It considers the physical and mental capabilities and limits of the worker as he or she interacts with tools, equipment, work methods, tasks and the working environment.



Prevention of Injury

- Ergonomics reduces the risk of injury by adapting the work to fit the person instead of forcing the person to adapt to the work.
- In addition to injury prevention, ergonomics is also concerned with enhancing work performance, by removing the barriers that exist in many work places that prevent employees from performing to the best of their abilities.

Common Risk Factors

- **Repetition**
- **Static Loading or Sustained Exertions**
- **Awkward Postures**
- **Mechanical Contact Stress**
- **Using Force**

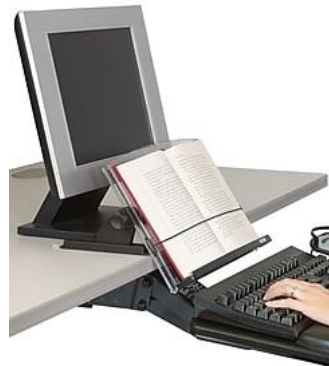
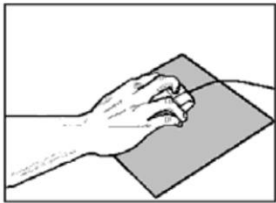


Repetition



Repetitive Computer Work:

- Typing at the keyboard
- Moving and clicking the mouse
- Looking back and forth between the monitor and source documents



Helpful Tips:

- Keep mouse and keyboard close and in neutral position for your wrists.
- Use a keyboard and mouse in the right size and shape that best fit your hands and typing style.
- Utilize a document holder to place document either right next to or right below screen.

Repetition



Repetitive Office Work:

- Flipping through files and paperwork
- Using a calculator
- Writing by hand
- Stapling and three-hole punching by hand
- Talking on the phone

Helpful Tips:

- Purchase automatic staplers or three-hole punches
- Place calculator nearby work station
- Use calculator size and shape best fit for you hands and use a stand to prop it up
- Place files and paperwork level on desk so wrists are in neutral position while flipping through
- Utilize a headset for your phone

Static Loading or Sustained Exertions

Computer Work

- Holding the hands in place above the keyboard or mouse
- Holding down the Shift key
- Keeping the head still while reading from the monitor
- Sitting still for long periods of time

Helpful Tips:

- Frequently switch sitting position
- Take a break every hour to perform stretches or walk around
- Utilize a hand or wrist rest that holds hands above the keyboard to remove stress
- Occasionally print a document to read in order to give your eyes a break from the computer screen

Static Loading or Sustained Exertion

Office Work

- Looking down at documents laying flat on the desk
- Sitting upright without back support
- Holding the handset while talking on the telephone
- Holding boxes in the hands while carrying them long distances

Helpful Tips:

- Be sure to use the back support on your chair.
- Utilize a headset for extended phone use.
- Use carts or dollies to carry boxes long distances.



Awkward Postures

Computer Work

- Typing with bent wrists
- Turning the head to the side to view the monitor
- Reaching up and over the keyboard to use the mouse
- Leaning over to type in data from papers laying flat on the desktop

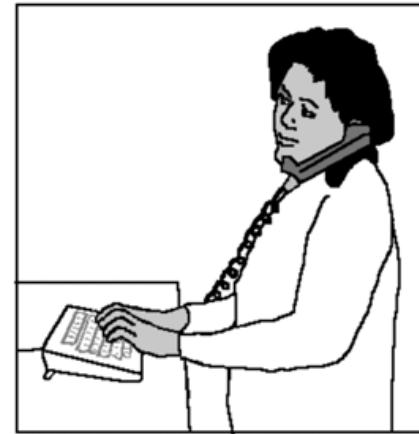
Office Work

- Slouching or leaning forward in the chair
- Cradling the phone between the ear and the shoulder
- Elevating the arms when writing on a work surface that is too high
- Bending at the waist to load copy machines

Awkward Postures



Reaching forward to use the mouse



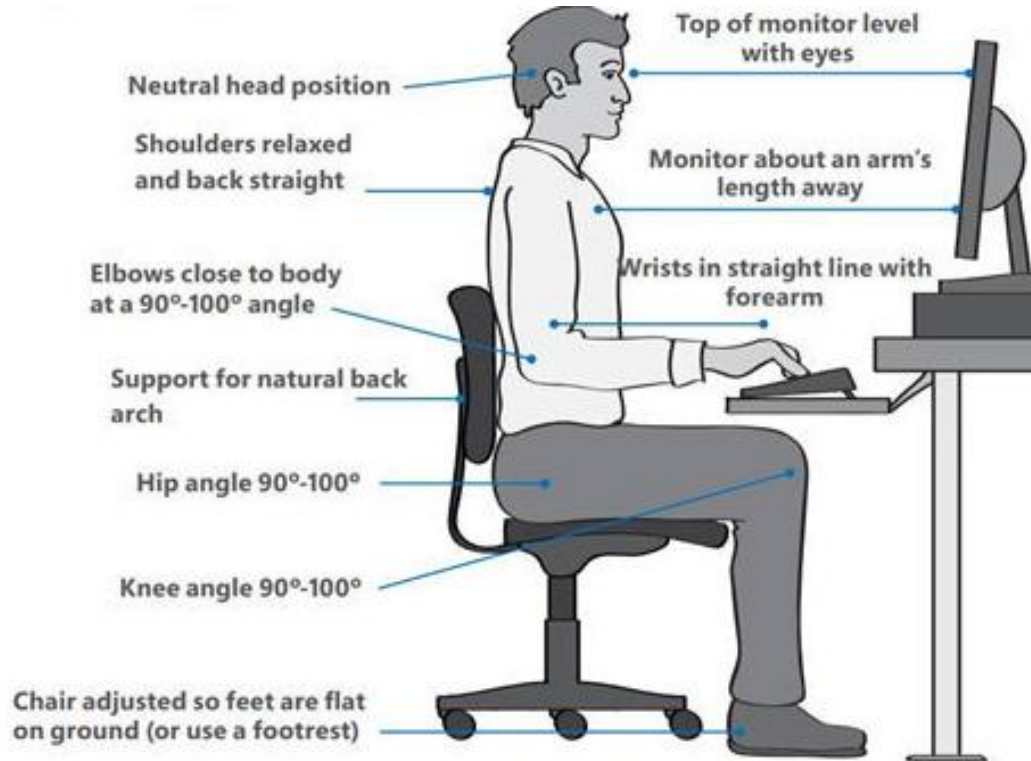
Hunching one shoulder to cradle the phone



Looking down at papers laying flat on the desk

Recommended Desk Set-up

- Monitor should be slightly below eye level and an arm's length away.
- Wrists should have minimal bending.
- Frequently used items should be placed close to work station.
- Should have a stand to hold documents if frequently copying from paper to computer.



Mechanical Contact Stress

Computer Work

- Resting wrists on the desk edge while typing or using the mouse
- Leaning the elbows on hard chair armrests or work surfaces
- Typing with palms resting on the hard lip of a keyboard tray

Office Work

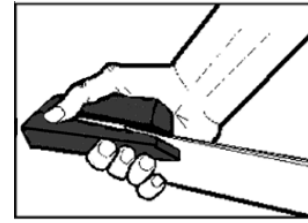
- Using rubber stamps with handles that press into the palm of the hand
- Using scissors with hard, metal handles
- Sitting in a chair that places pressure on the backs of the thighs

Mechanical Contact Stress

- **Avoid Mechanical Contact Stress by:**
 - Using a soft wrist/hand support while typing
 - Make sure office supplies have rubber or plastic grips
 - Adjust the height of your chair and place feet firmly on the ground to avoid pressure points on legs



Force



Stapling by hand can require high forces

Computer Work

- “Dragging and dropping” with the mouse
- Gripping the sides of the mouse tightly
- “Pounding” on the keyboard

Office Work

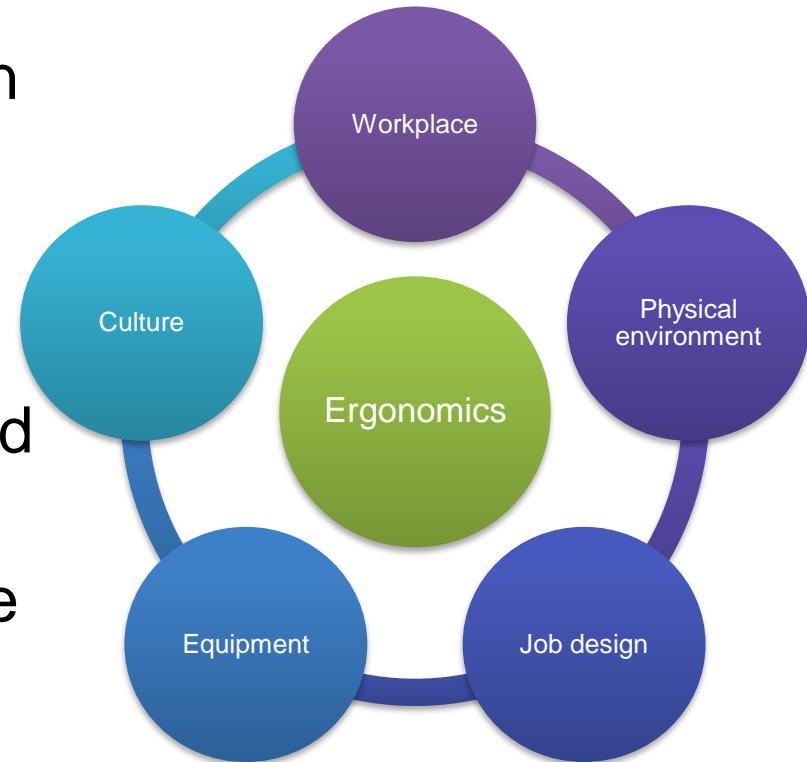
- Grasping thick file folders or manuals
- Stapling or stamping by hand
- Opening 3-ring binders
- Lifting heavy manuals with one hand

Force

- **Avoid using force by:**
 - Use a keyboard with shallower keys so there isn't a need to press down so hard on each key
 - Keep mostly electronic files and only utilize paper copies when absolutely necessary
 - Utilize binders with ring openers attached
 - Use two hands when lifting heavy objects
 - Get as close as possible to objects when lifting them

Ergonomics Tips

- Neutral posture at your workstation
- Change postures **frequently**
- Practice neutral posture while seated
- Pay attention to overall posture and adjust as needed
- There is no single “correct” posture for everyone
- Stretch before and during work



Ergonomics Tips

- **Organizing your work area**
- **Keep these items in your easy reach zone:**
 - Frequently used items
 - Items that require finger dexterity to use (keyboard, mouse, telephone)
 - Items that require hand force to use (stapler, 3-hole punch, staple remover)
 - Heavy objects (large binders, manuals, telephone books)

Eye Strain From the Computer is Caused By:

- Lack of blinking
- Close work
- Visual angle
- Monitor location
 - Height
 - Distance
- Document location
- Corrective lenses



Environmental Factors

All of these can contribute to poor ergonomics and must be considered



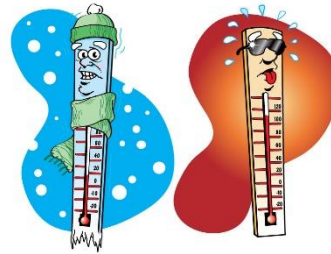
Lighting



Noise



Glare



Temperature



Humidity



Space

Administrative Factors

- Staffing and scheduling
- Rest breaks
- Recovery pause
- Alternate tasks
- Stretch and exercise breaks



10 Quick Exercises You Can Do At Your Desk

CHAIR DIPS

Place a chair behind you. Hold the seat with both arms behind you. Get in a squat, lower yourself and raise yourself up. Do as many reps as you can.



5

SQUATS

Bend your knees and bring your butt to the floor. Then stand back up. Do as many as squats you can.



4

QUAD STRETCHES

Stand up and bring your ankle towards your back. Hold your ankle and pull it towards your glutes. Feel the stretch for 20 seconds and repeat with the other leg.



3

DESK PUSHUPS

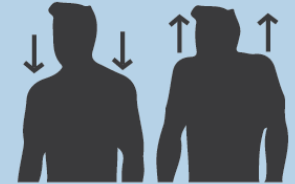
Lean against your desk and do as many pushups as you can. Maintain good form



2

SHOULDER SHRUGS

Raise your shoulders towards your ear and lower them. Rotate your shoulders forward and backwards. Do 10 reps.



1

LEG LIFTS

Sit upright on a chair and stretch out one leg. Hold it outstretched for 10 to 20 seconds and lower it. Do 10 reps and repeat with the other leg.



6

HEAD ROTATIONS

Rotate your head clockwise for a minute and then anti-clockwise for another minute. Feel the stretch.



7

HAMSTRING STRETCH

Put your leg up outstretched on a desk or chair and lean forward. Try and touch your toes. Hold the stretch for 10 to 15 seconds and repeat with the other leg.



8

WRIST STRETCHES

Stand up and place your palms on the desk with the fingers pointing towards you. Lock your elbows and lower your body a little so that you feel the stretch. Hold for 10 to 15 seconds.



9

NECK STRETCH

Place your hands behind your head, interlock your fingers and gently pull your head down. Feel the stretch in your neck. Hold for 15 to 20 seconds.



10



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