



DISTRICTS MUTUAL INSURANCE

Ergonomics for the Computer Workstation

Presented By:
United Heartland



Agenda

- How does ergonomics apply to DMI?
- Statistics/Examples
- Define Ergonomics
- Ergonomic Risk Factors
- Body Dimensions (Anthropometrics)
- Proper Workstation Set-up
 - Examples of Proper Set-up



DMI STATISTICS

- Since DMI inception, 56 repetitive motion claims have been submitted
- \$225K + incurred on these claims- average cost of \$4,000
- Claims were the result of working in an office environment and from other duties including kitchen/custodial tasks.



DMI STATISTICS (cont.)

- Repetitive keying and use of mouse and 10 key. Right wrist pain, loss of strength in wrist
- Repetitive motion, right wrist and thumb pain.
- Constant pain in wrist without relief. Possibly due to typing.
- Employee experienced left hand/wrist discomfort resulting from repetitive motion of lifting/keyboarding heavy computer equipment.
- Employee was using a personal computer, pain & tingling in right arm, right hand and some neck discomfort, carpal tunnel.



Services Available Through United Heartland

- Consultations with employees experiencing discomfort
- Analysis of workstation set up
- Recommendations to management
- Presentations to staff members on workstation set up



Who to Contact?



- Contact your United Heartland Loss Control Representative if you are interested in any of these services or have employees who may benefit from this type of workspace evaluation.



What is Ergonomics?

- The study of the relationship between people, their work, and their physical work environment.
- The major **GOAL OF ERGONOMICS** is to fit the job to the individual and promote healthy and safe work practices.
- Ergonomics also refers to assessing those work-related factors that may pose a risk of musculoskeletal disorders and recommendations to alleviate them



What are We Trying to Prevent?

- Injury...
 - Musculoskeletal Disorders
 - Repetitive Motion Disorders
 - Stress/Strain Injuries
 - NOT addressing acute injuries
- Poor Blood Flow
 - Outside factors to consider: Age, obesity, smoker, caffeine, etc.
- Eye Strain



What are Musculoskeletal Disorders?

- Injury to soft tissues of the upper extremity, shoulders and neck, lower back, and lower extremity that is primarily caused or exacerbated by risk factors, such as sustained and repeated exertions or awkward postures and manipulations.
- Examples:
 - Tendonitis
 - Epicondylitis
 - Rotator Cuff Tears
 - Low Back Pain
- Can occur over days, months, even years
- Can be one event that appears to cause problem, but is usually cumulative effects



Ergonomic Risk Factors

- Contact stress
- Awkward postures
- Repetitiveness
- Extremes
 - Far Reaching
 - Far viewing distances
 - Overuse



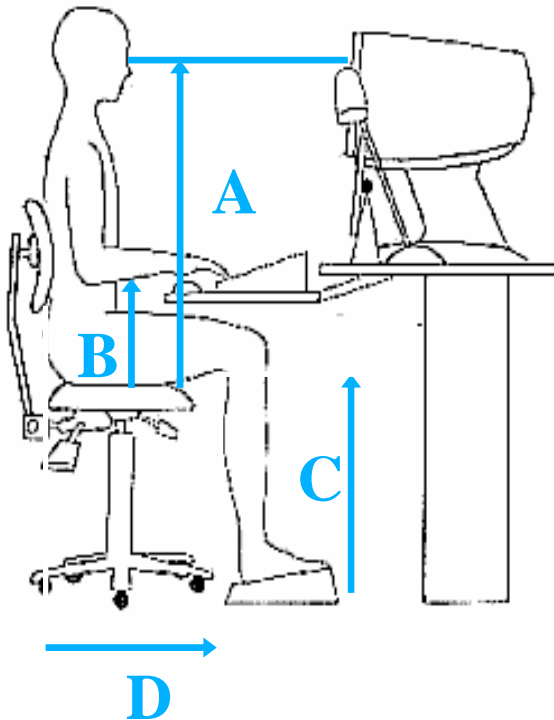
One Size Does Not Fit All...



One Size Does Not Fit All...



How These Measurements are Used



	5th Percentile	50th Percentile	95th Percentile
Female			
A. Eye Height	26.6"	28.9"	30.9"
B. Elbow Height	7.1"	9.2"	11.1"
C. Popliteal Height	14.0"	15.7"	17.4"
D. Popliteal Length	17.3"	19.0"	20.8"

	5th Percentile	50th Percentile	95th Percentile
Male			
A. Eye Height	28.6"	30.9"	33.2"
B. Elbow Height	7.5"	9.6"	11.6"
C. Popliteal Height	15.4"	17.4"	19.2"
D. Popliteal Length	18.0"	19.7"	21.5"

Setting Up a Computer Workstation

- Correct ergonomic position
- “Ideal” Set-up Includes
 - Feet flat against the floor
 - Back supported by chair
 - Arms positioned at 90-110 degree Angle
 - Monitor, keyboard, and chair all in line with each other



Looking at the Individual Aspects

- Work Surface Height
- Chair Set-up
- Positioning Armrests
- Keyboard Aspects
- Mouse Position
- Monitor Position
- Other Item Location



Individual Aspects

- Versatility is key
- Designed for 5% to 95%
- Use a checklist as a guide
- If someone else uses your work station, change the work station back to fit YOU



Work Surface Height

- Average desk height 27-30"
- Legs should have 3-4" clearance
- Need to adjust height based on person sitting in chair
- If using keyboard tray, need to have adequate clearance for legs



Work Surface Height

- Should allow for proper chair setup
 - ie, feet flat on the floor
- Should allow shoulders to be relaxed
- Should be set at elbow-rest height



Adjusting Your Chair

- Feet should be flat against the floor
 - Not on the coasters
- Thighs parallel to floor
- Back supported by chair
- 2-4 inches between the back of your leg and the front of the chair



What to look for?

- Legs pointed towards the floor
- Leg tucked under the other leg
- Feet on coasters
- Feet dangling

** If any of these things are apparent, then the chair needs adjustment



Adjusting Your Chair

- Do not need to be upright all the time
- Vary the position- upright, reclined, declined
- All maintain neutral position and reduce stress on hips and legs



Adjusting Armrests



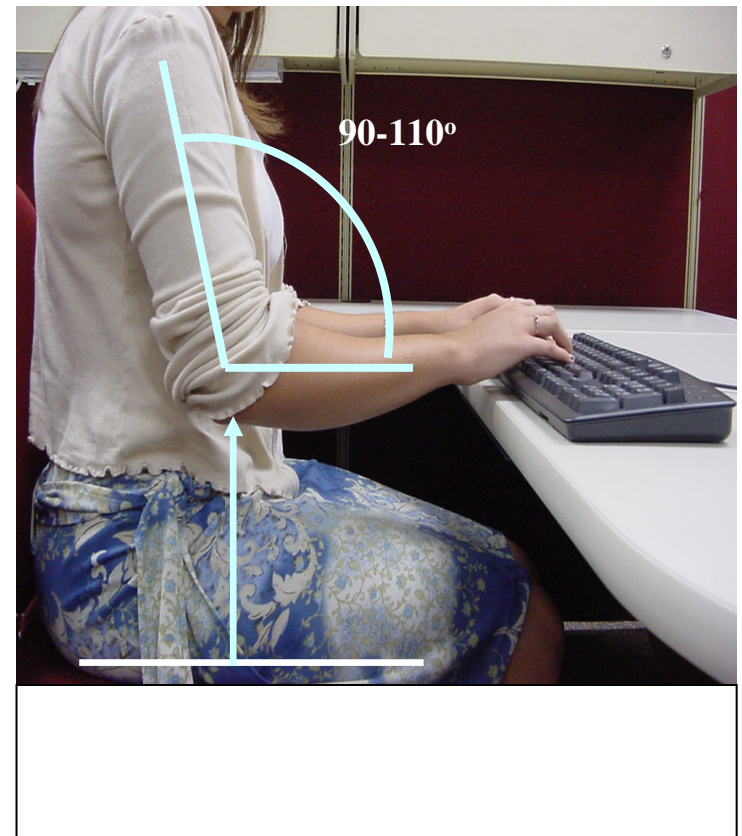
Relaxed

**Armrest
too High**

**Armrest too
High & Wide**

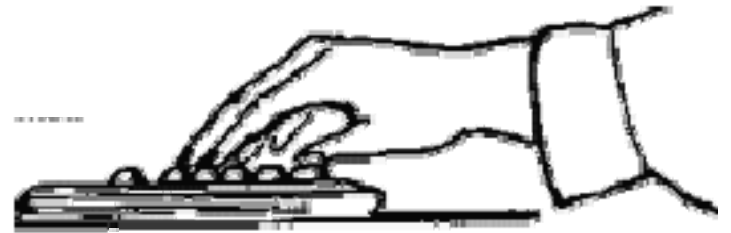
Keyboard Position

- Keyboard should be set at your elbow rest height
- Arms should be positioned between 90-110 deg.
- Wrists should be in a neutral position
- Avoid contact stress-consider wrist rest



Keyboard Position

- One common complaint with keyboard use is wrist discomfort
- neutral wrist posture is best



Neutral Position

Awkward positioning



Keyboard Positioning Examples



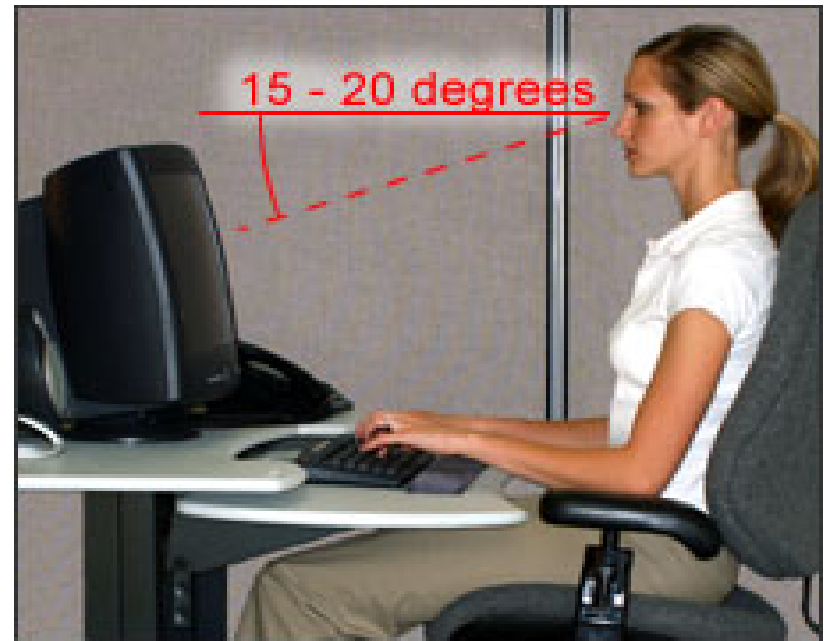
Keyboard too far
away



Keyboard too
close

Monitor Position

- Position top of monitor in line with eyes.
 - Natural line of sight is 10-20 deg below our eyes' horizontal
- Bifocal/trifocal wearers need monitor lower



Monitor Position

- Monitor should be directly in front of you
 - Monitor may be moved slightly to the side if performing data entry



Monitor Position

- Should be 20-40" from eyes
- Font should be large enough to read easily
- Position to reduce glare from windows and lights



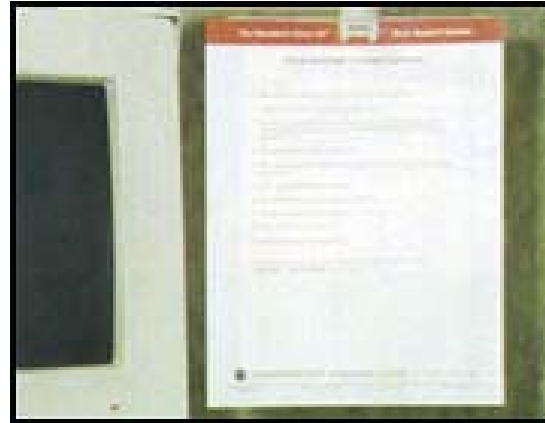
Monitor Position to Minimize Glare

1. Monitor perpendicular to window
2. Decrease lighting
3. Position in same direction as lights/preferably between
4. Blinds on windows to reduce glare



Document Holder

- Next to monitor or in front of monitor
- Same height as screen if on side
- Neck should be neutral
- Consider time spent looking at screen versus document



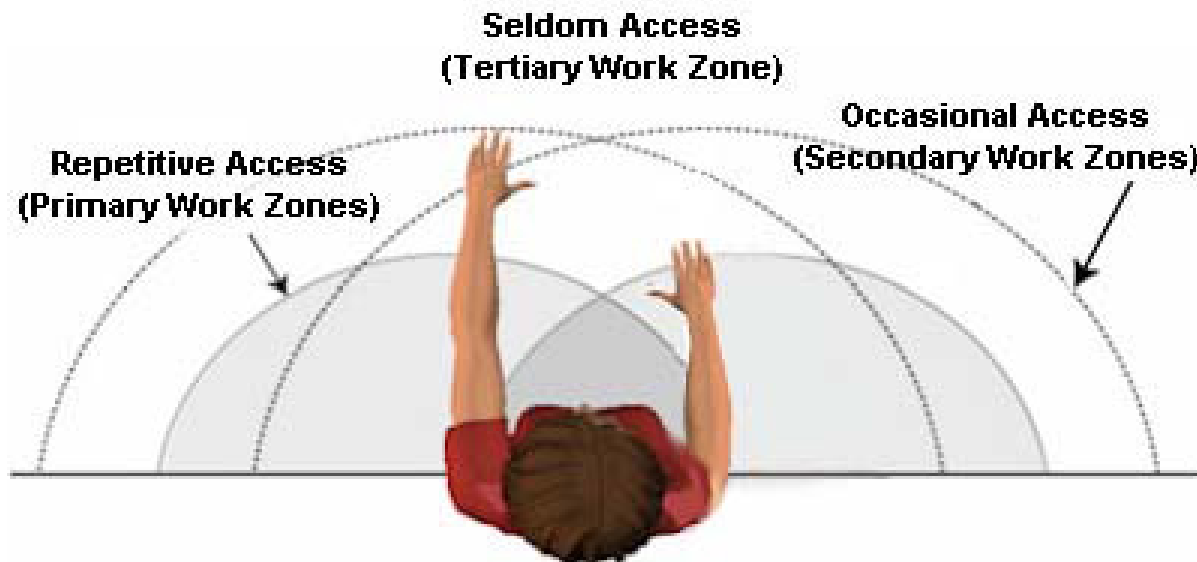
Mouse Positioning

- Next to keyboard
- Same level as keyboard
- In easy reaching distance
- Make sure the cord is not restricting movement
- If using wrist rest, make sure to use it properly



Other Item Location

- Move items used often into the Primary work zone.
- Items used less frequently but used almost daily should be placed in the secondary work zone.
- Material used occasionally such as reference material should be put in the seldom access zone.



Visual Discomfort

- Focusing on a close object for a long period of time
 - Take small 1-2 minute breaks every ½ hour to 1 hour
- Constant refocusing
- Improper lighting-glare



Lighting

- Computer screen should be perpendicular to windows
- Lighting in a computer workstation area should be half the luminance of a normal room
- People should be positioned in the same direction of the overhead lights
- Blinds are needed to block glare from windows



Movement is Important

- Take a small 1-2 minute break periodically
- Focus away from your monitor every half hour
- Get up from your workstation once an hour
 - Walking will get your blood flowing
- Stretch muscles throughout the day



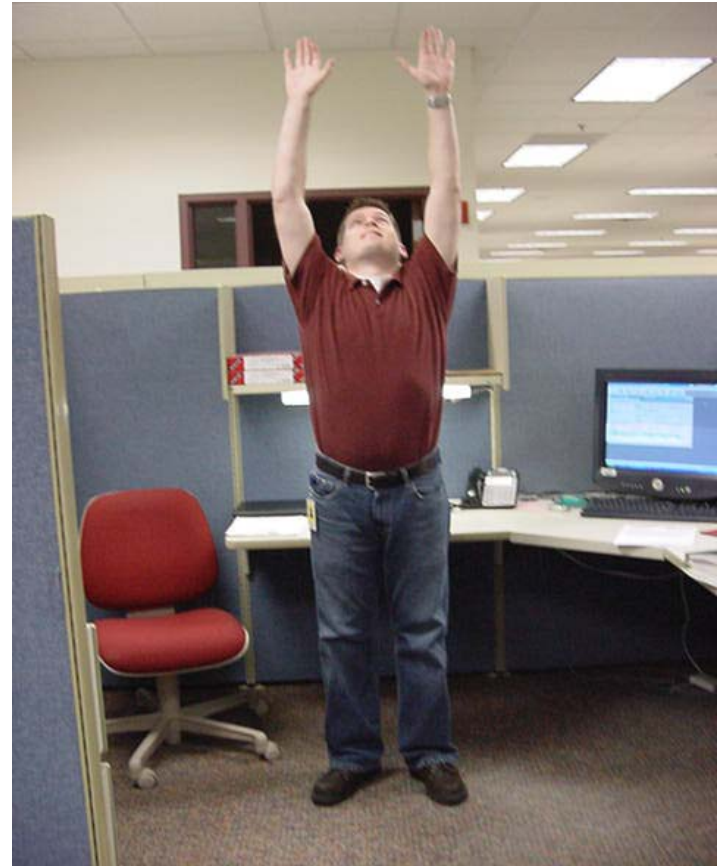
Stretching At Your Desk

- Shoulder Rolls
- Arm Circles
- Shoulder Shrugs
- Arm Stretches
- Back & Shoulder Arches
- Wrist, Hand and Elbow
 - Open/Close Hand Stretch
 - Wrist Flexion/Extension Stretch



Stretching Guidelines

- Never Stretch to a point of pain
- Hold stretches, do not bounce
- Go slow, hold for 3-10 seconds
- Perform simple stretches

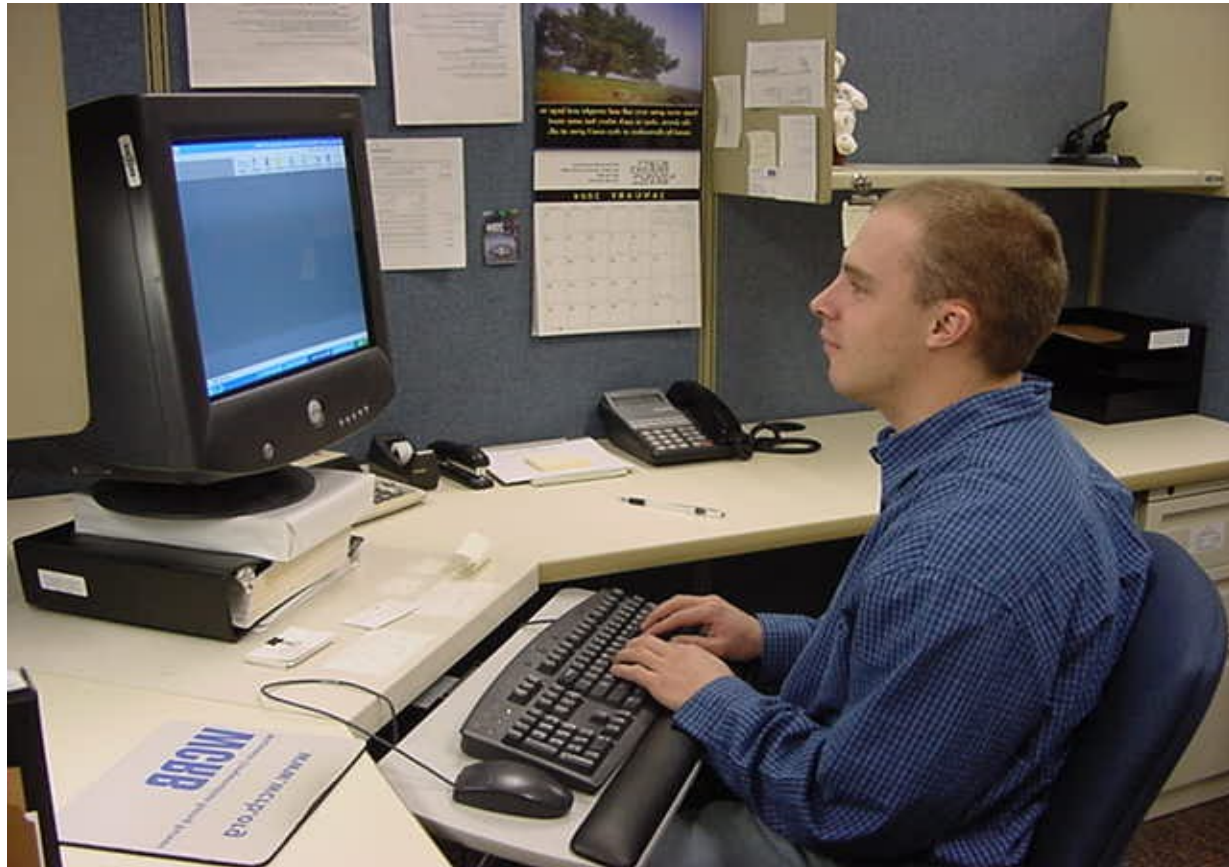




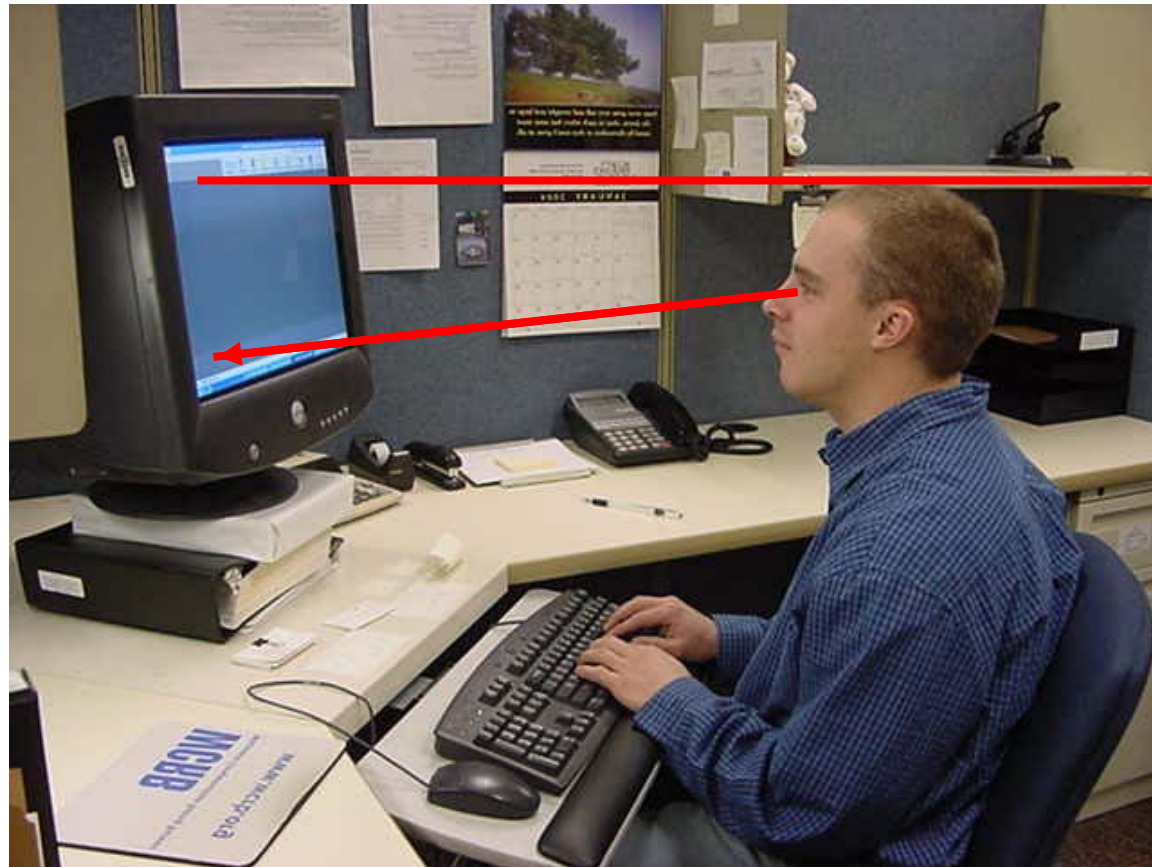
WORK STATION REVIEW



Where are the problems?



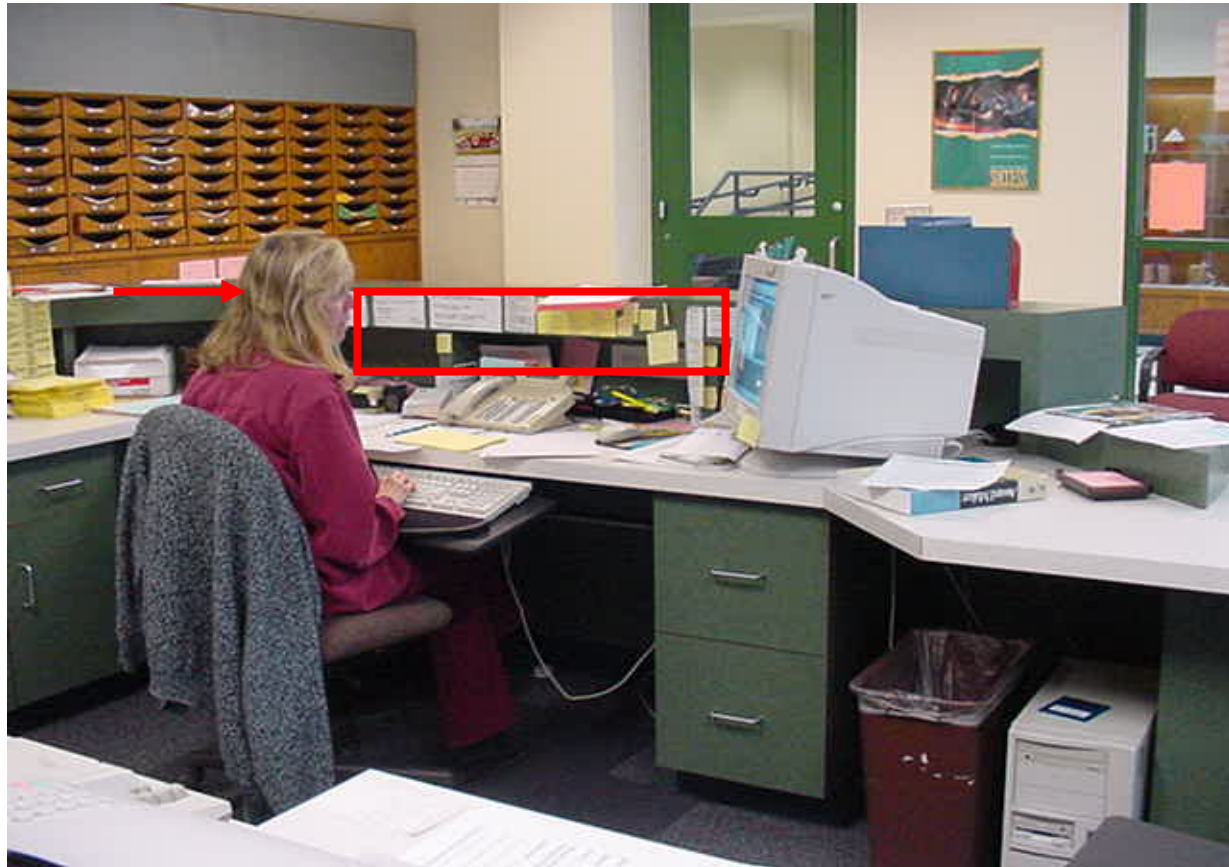
Answer:



Where are the problems?



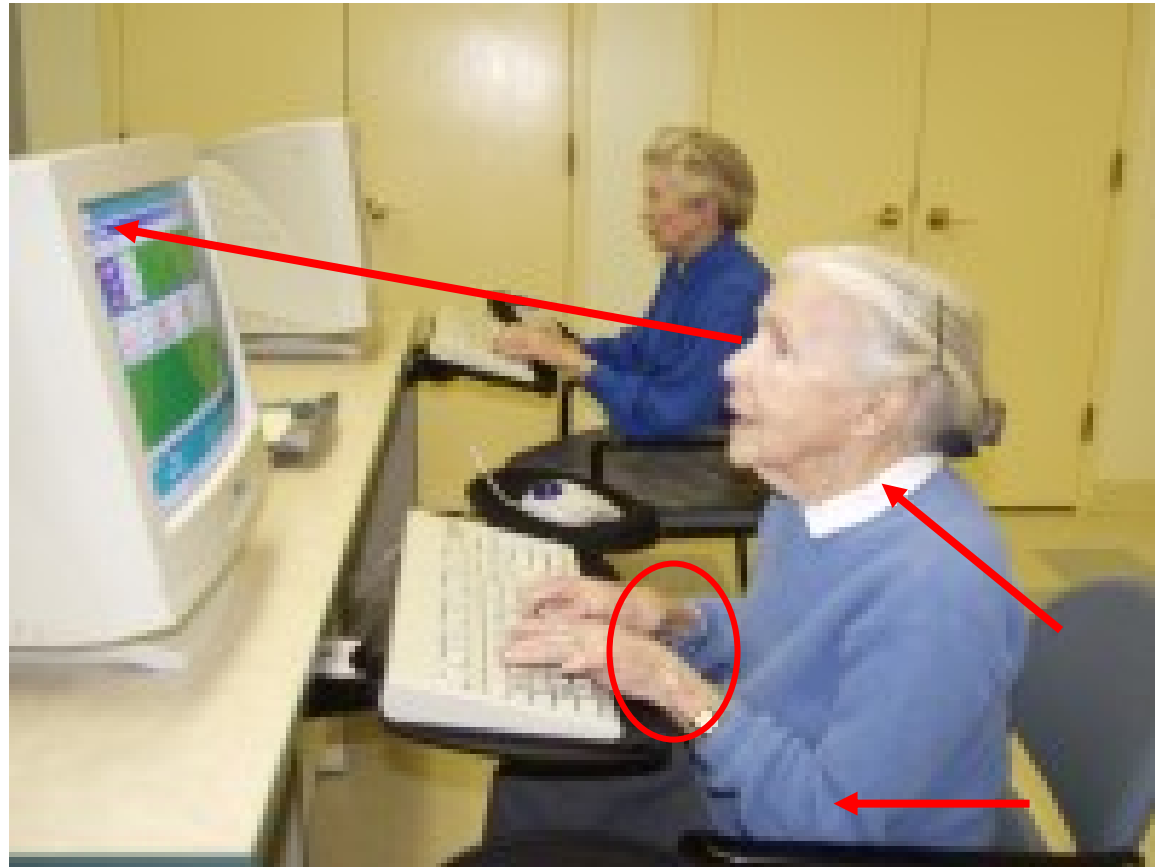
Answer:



Where are the problems?



Answer:



Where are the problems?



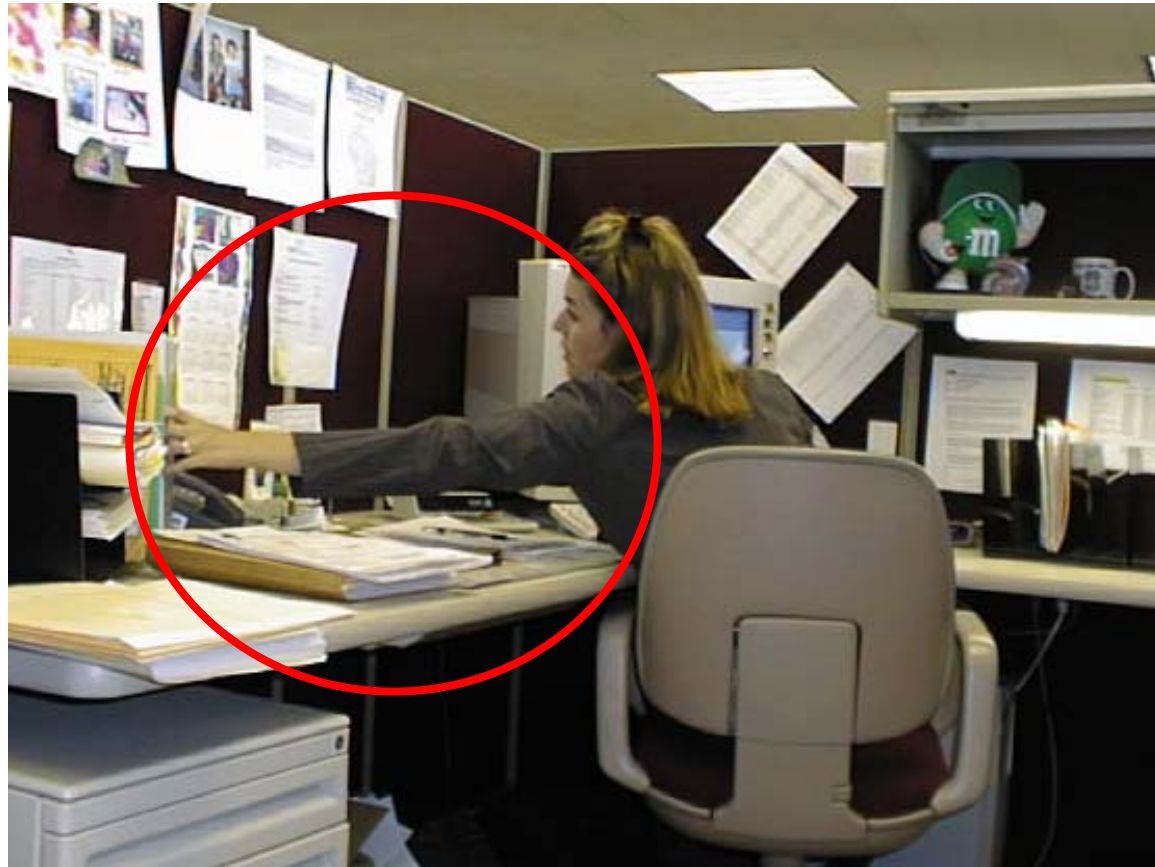
Answer:



Where are there problems?



Answer:



Correct Ergonomic Set up:

- Reduces potential for CTD
- Reduces potential for discomfort
- Reduces stress on the body
- Not THE answer to eliminate CTD, it is a KEY component



Summary

- To help reduce your chance of CTD's:
 - Keep moving – even perfect posture when held for too long can cause discomfort
 - Reduce repetition
 - Take breaks or vary tasks
 - Stay in neutral positions
 - Move/adjust your equipment to best fit you
 - Stretch periodically to get muscles out of position



QUESTIONS?

