



Ergonomics for the Computer Workstation

Presented By:

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What Will Be Covered

- Define Ergonomics
- Ergonomic Risk Factors
- Body Dimensions (Anthropometrics)
- Proper Workstation Set-up
 - Examples of Proper Set-up
- Summary



What is Ergonomics

- The scientific study and the application of anthropometrics (body measurements) and human behavior to design systems, objects, and environments for human interaction
- 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...
 - Cumulative Trauma Disorders
 - Repetitive Motion Disorders
 - Stress/Strain Injuries
 - NOT addressing acute injuries
- Poor Blood Flow
- Eye Strain



What are Cumulative Trauma Disorders (CTD's)

- Small traumas to muscles, joints, and tendons that over time may add up to large traumas
- Can occur over days, months, even years
- Can be one event that appears to cause problem, but is really cumulative effects



Examples of CTD

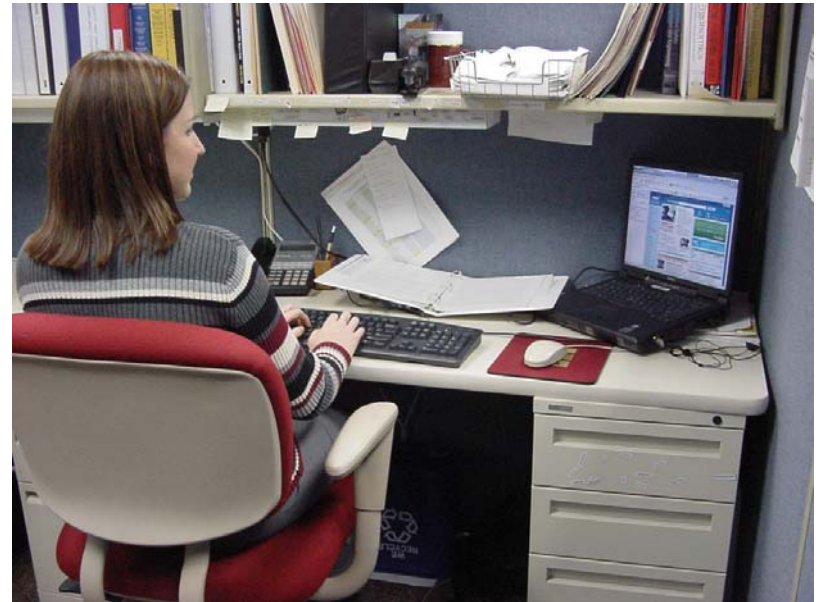


- Trigger Finger/Thumb
- Carpal Tunnel Syndrome
- DeQuervain's Syndrome
- Intersection Syndrome
- Tennis/Golfers' Elbow
- Rotator Cuff Tears
- Back Strains & Sprains
- Tenosynovitis/Tendonitis

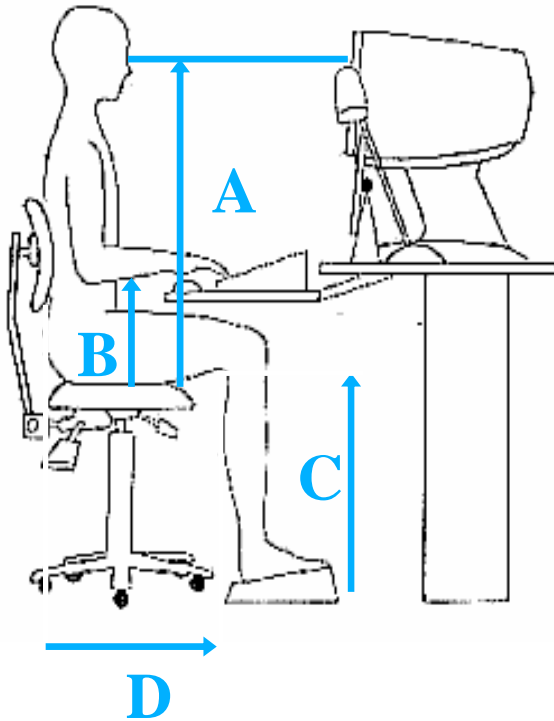


Ergonomic Risk Factors

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



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 deg. 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



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



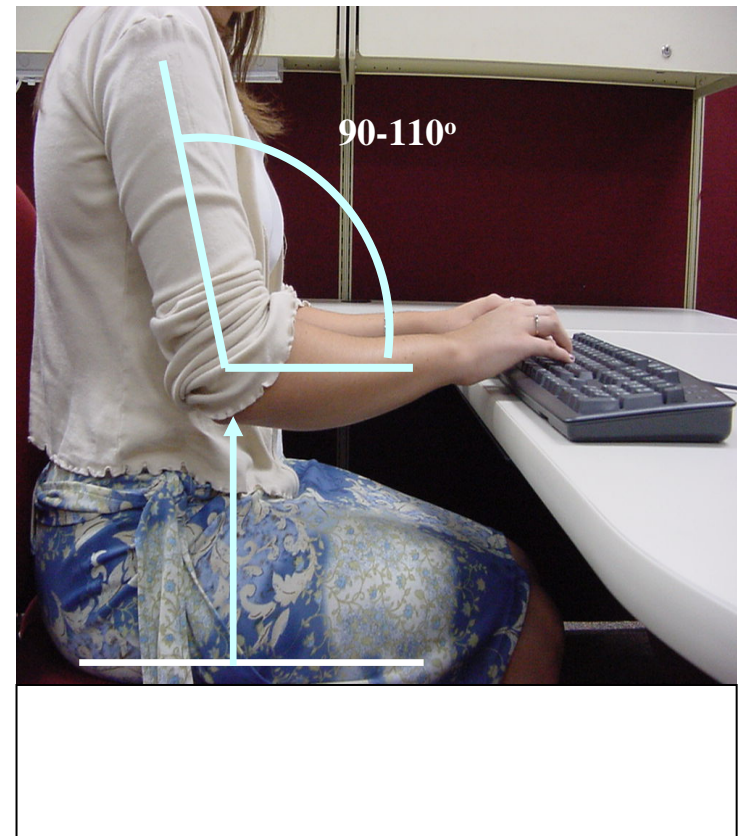
Relaxed

**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 Positioning Examples



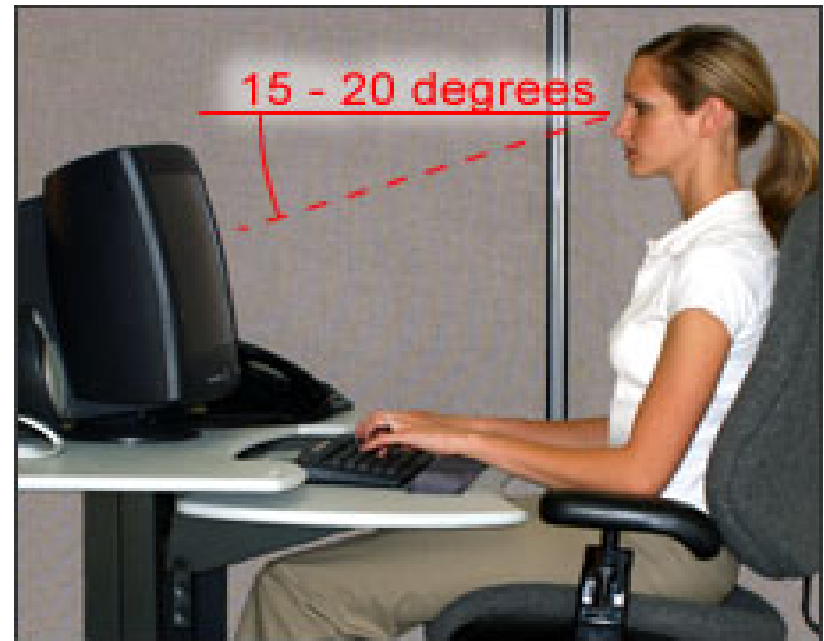
Keyboard too far
away



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



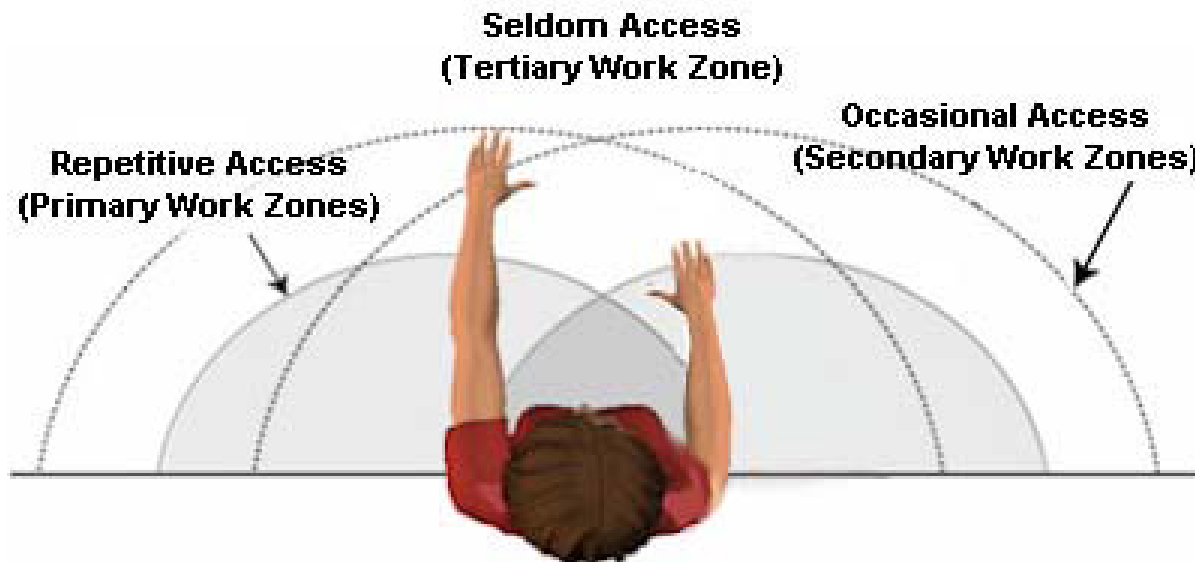
Mouse Positioning

- 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

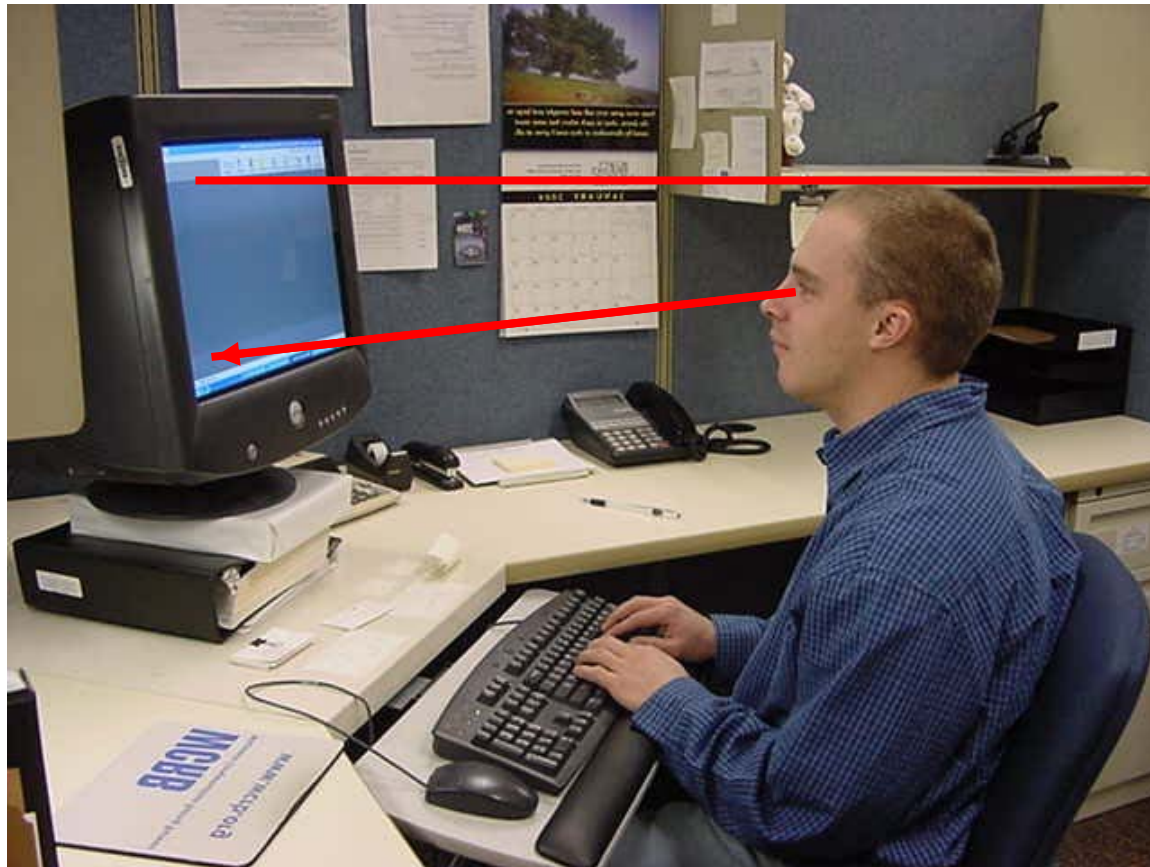
- Move items used often into the Primary work zone.
- Items used less frequently but used almost daily should be placed in the secondary work zone.
- Material used occasionally such as reference material should be put in the seldom access zone.



Where are the problems?



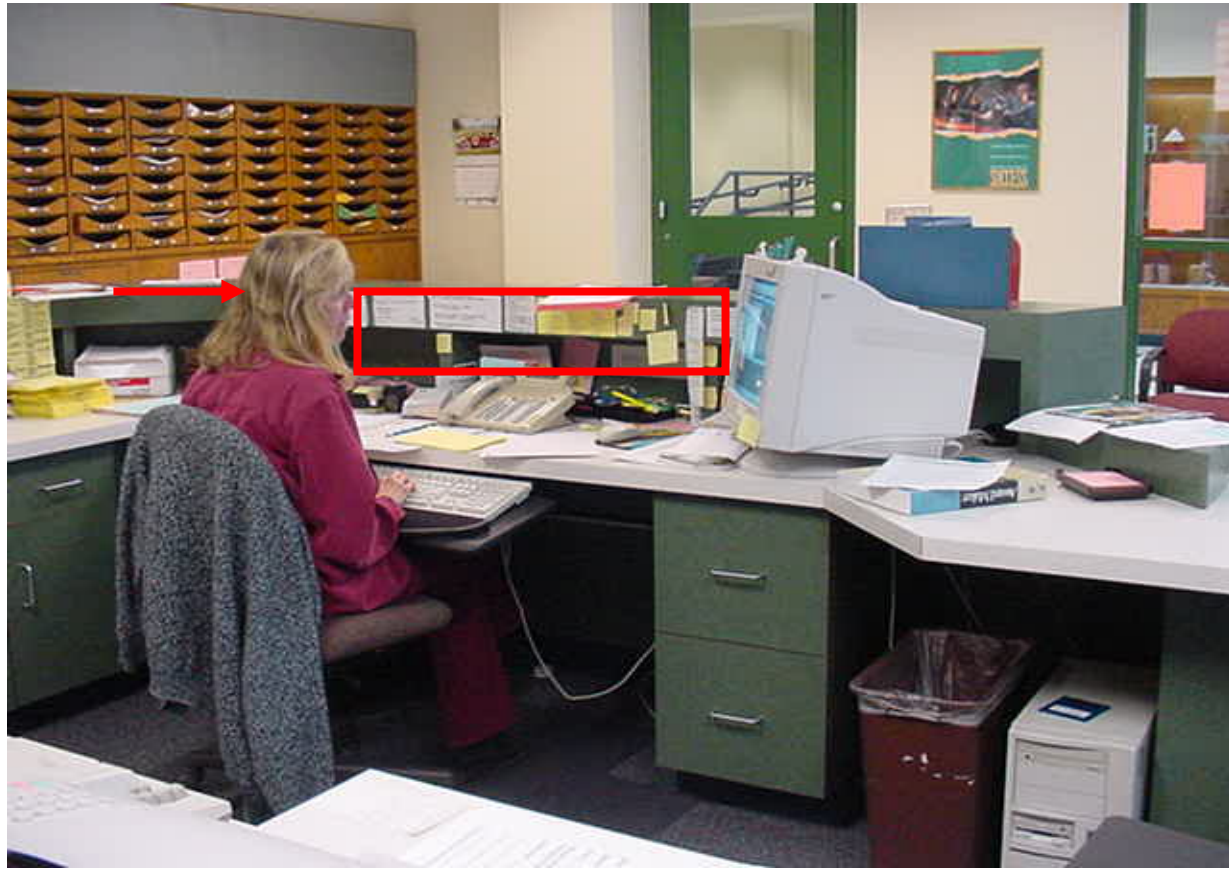
Answer:



Where are the problems?



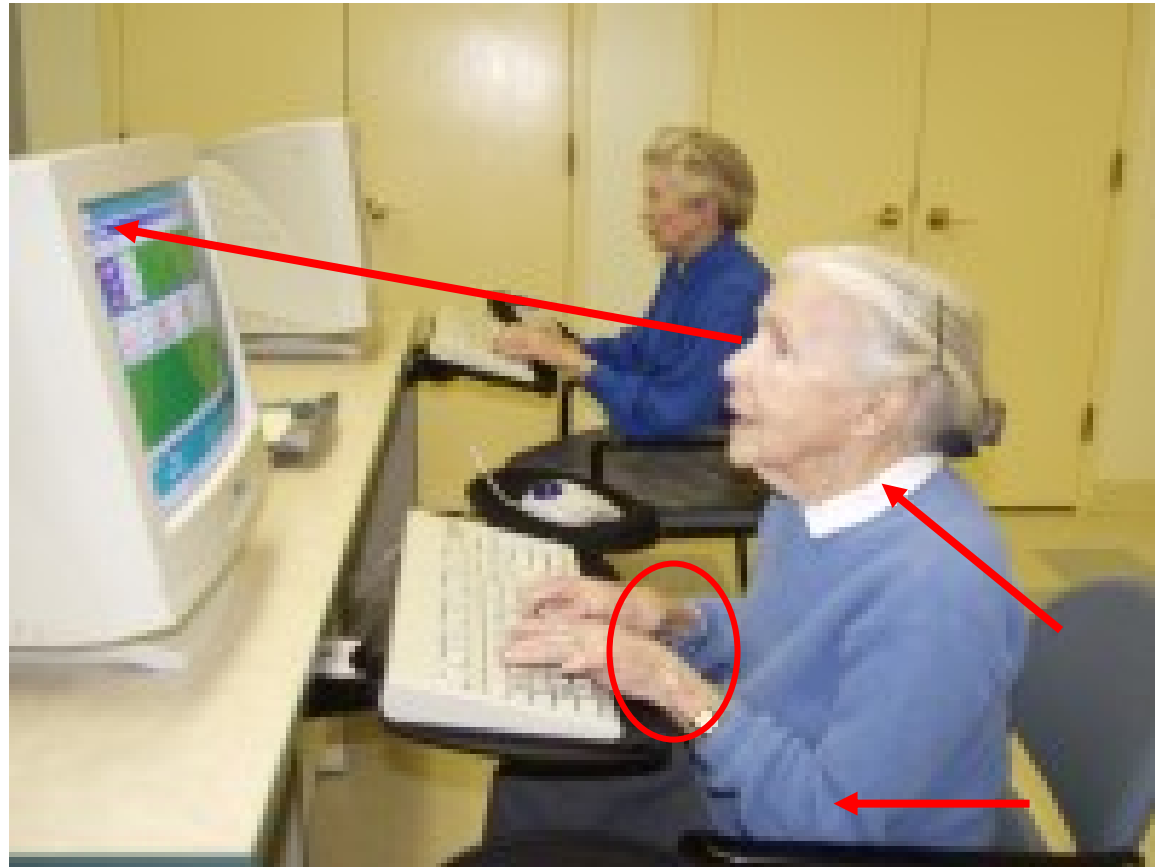
Answer:



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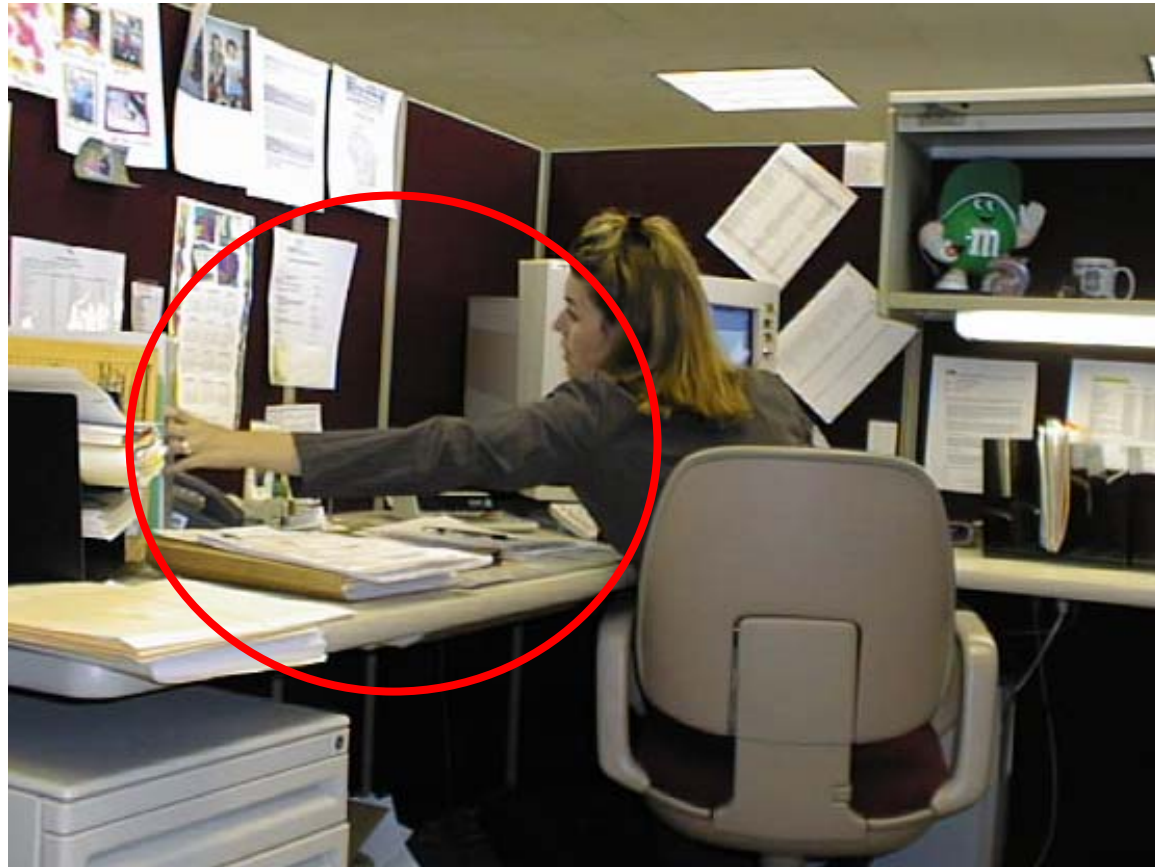
Answer:



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?

