

# **Office Ergonomics Handbook**

Recommended Workstation Layout  
Proper Lifting Techniques  
Healthy Stretches

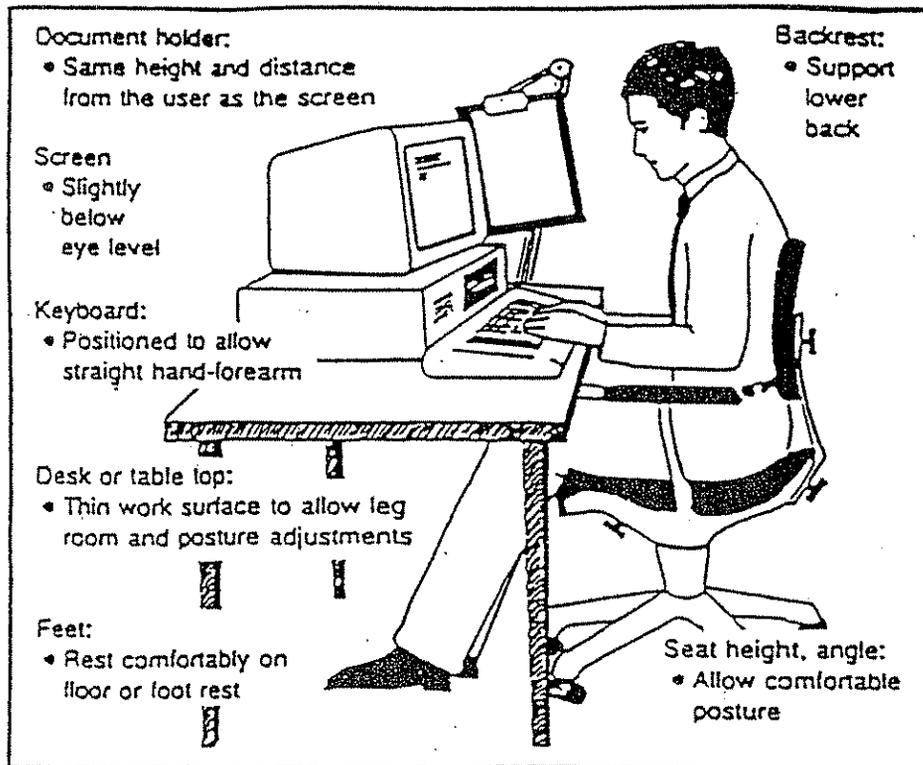
## **Purpose**

The purpose of this handbook is to provide guidelines to make you, the employee comfortable while at work. This in turn will avoid the possibility of acquiring a musculoskeletal disorder (MSD). A MSD is a disorder of the muscles, tendons, nerves, joints, cartilage, ligaments, or spinal discs. All of these disorders are preventable if the proper steps are taken to avoid them. These steps include taking short, intermittent breaks (30 seconds every 30 minutes), ergonomics (designing the job to fit you), proper body mechanics, stretching, and physical fitness, among others. Some of the risk factors of ergonomics include repetition, awkward postures, and work organization. You know your body better than anyone and should listen to what it has to tell you, especially regarding its discomforts. Being proactive by taking the preventative steps listed above and asking questions as soon as they come to you is the approach that should be taken.

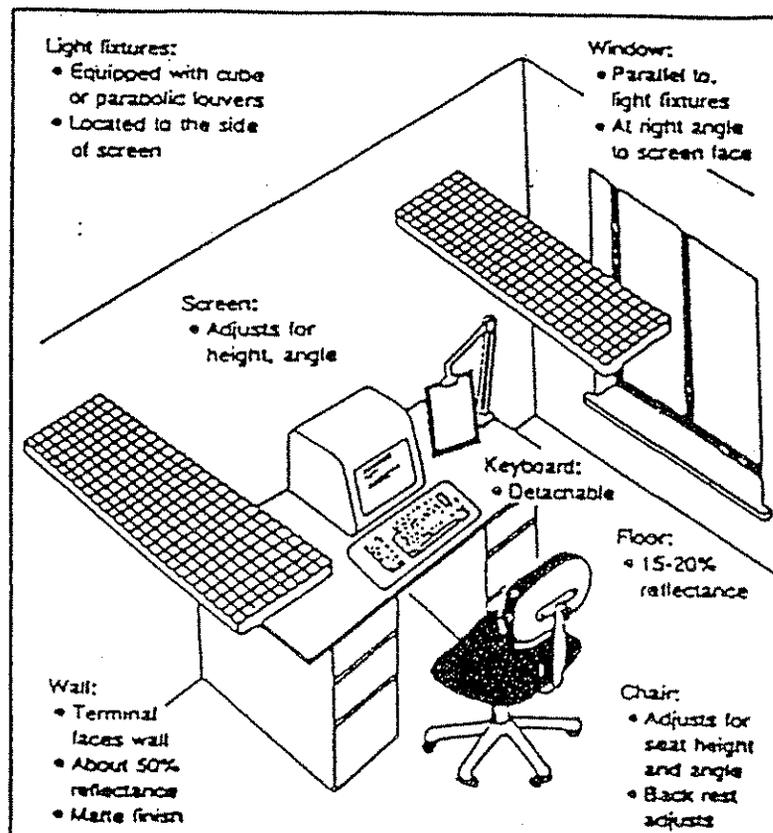
## **Main Ergonomic Concerns**

- Top of monitor at or just below eye level.
- Head and neck balanced and in-line with torso.
- Shoulders relaxed.
- Elbows close to body and supported.
- Lower back supported.
- Wrists and hands in-line with forearms.
- Adequate room for keyboard and mouse.
- Feet flat on floor.

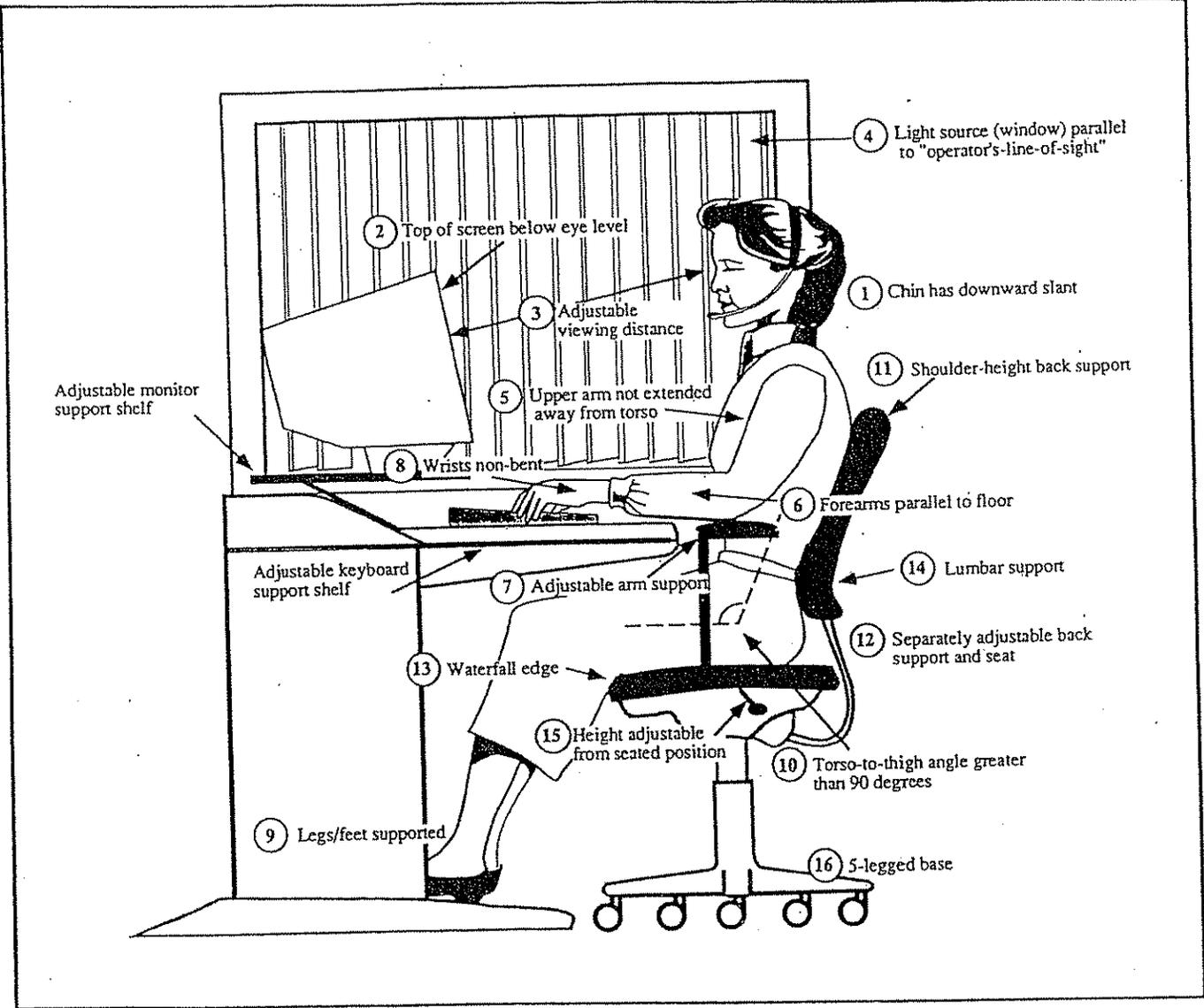
## WORKSTATION DESIGN



## WORKSTATION ENVIRONMENT



# OPERATOR WORKSTATION FEATURES



# WORKING WITH COMPUTER TERMINALS AND OFFICE ERGONOMICS

A practical checklist for ergonomics training in the office can help your employees work more comfortably and effectively.

## Adjust the Chair

- Adjust the height of the chair's seat so that thighs are horizontal, feet rest flat on the floor, and arms and hands are comfortably positioned at the keyboard.
- If the chair is too high, use a footrest. This takes pressure off the back of the thighs.
- Armrests should be adjustable up/down and inward/outward, and padded.
- Adjust the back rest so that it supports the lower back and fits the curvature of the spine. Seat pans should be adjusted for proper slope and comfort.
- Seat cushions should be firm, not soft.
- Utilize chair mat to decrease carpet resistance and provide more maneuverability.



## Adjust the Display

- Position the screen to minimize glare and reflections from overhead lights, windows, and other light sources. Place the screen so that windows are not directly in front of or behind the employee when seated.
- Adjust the display so that the top of the screen is slightly below eye level when sitting at the keyboard. The top of the screen should not be above eye level.
- Set the contrast or brightness of the screen at a comfortable level. (This may have to be done more than once a day, as the light in the room changes.)
- Where it is impossible to avoid reflections or adjust lighting, an anti-glare filter placed over the screen can be helpful. However, filters may affect the clarity of the image on the screen and should be tried only after other methods of reducing glare have been exhausted. An electrically grounded nylon micromesh glare filter is effective also in removing the static charge from a screen.

## Adjust Lighting

- Draw the drapes or adjust blinds to reduce glare.
- Adjust desk lamp or task light to avoid reflections on the screen. Light sources should come at a 90 degree angle, with low watt lights rather than single high watt.
- The task lighting should not be less than light at screen.
- Reduce overhead lighting (where possible) by turning off lights or switching to lower wattage bulbs.
- Use indirect or shielded lighting where possible.
- To limit reflected glare, walls should be painted a medium or dark color and not have reflective finish.

## Adjust Document Holder

- Position document holder close to screen and at the same level and distance from the eye to avoid constant changes of focus.
- Rotate position of document holder to opposite side of screen periodically.

## Work Smart

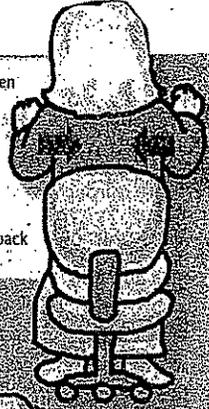
- Encourage employees to change position stand up or stretch whenever they start to feel tired. Encourage a soft touch on the keyboard, keeping hands and fingers relaxed and wrists and body in neutral positions.
- Become aware of other tasks such as manual stapling, sorting through large volumes, and mail sorting where repetition and awkward positions may contribute to repetitive motion injuries. Seek alternate ways to perform the tasks, reduce the load, or rotate jobs.

## Consider Posture

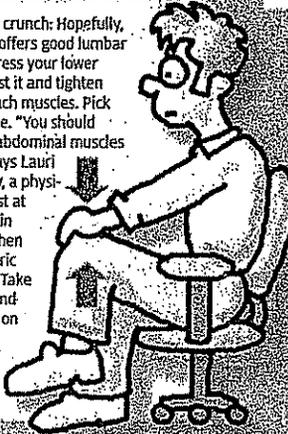
- The head should be straight and balanced over the spine while looking forward at the screen. Eliminate the flexed-neck position.
- Elbows should be bent at 90 degrees when hands are on keyboard.
- Wrists should be in a neutral position. Utilize wrist rests at the edge of the keyboard for support. Keyboards should be detachable from VDT.
- Utilize a back rest for support in lumbar area of back.
- Feet should rest flat on floor or a foot rest should be utilized.

# Ways to Stay Active at Work

Desk workers often have neck and upper back problems because of bad posture. To stretch those areas, pull your shoulder blades back and count to six.



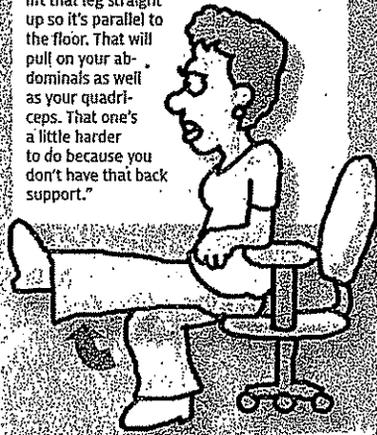
Abdominal crunch: Hopefully, your chair offers good lumbar support. Press your lower back against it and tighten your stomach muscles. Pick up one knee. "You should feel those abdominal muscles tighten," says Lauri TheinBrody, a physical therapist at UW Health in Madison. Then add isometric resistance. Take one hand and push down on the raised knee. Alternate knees.



"The corollary to that is stretching the stuff on the front side," Brody says. "So if you put your hands behind your head and pull your elbows back to open up your chest, that stretches some of that stuff in front."



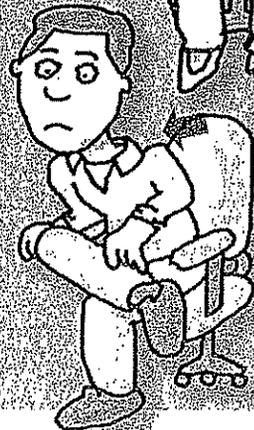
"Another version of that pulls in more leg muscles," Brody says. "Scoot out to the edge of your seat and begin tightening those abdominal muscles, straightening one leg out, tightening your thigh muscles, and lift that leg straight up so it's parallel to the floor. That will pull on your abdominals as well as your quadriceps. That one's a little harder to do because you don't have that back support."



Take one arm and raise it overhead. Lean to the side to stretch your trunk. Alternate.



"A really good hip stretch is to cross your legs like a guy does, with your ankle over your knee," says Brody. "Then, depending how tight you are, just leaning forward a little bit will get a really good stretch in your butt."



## *Twelve Principles of Ergonomics*

1. Position tools and materials within easy reach.
2. Work at proper heights to avoid excessive bending, stooping and/or reaching.
3. Reduce excessive forces and weight when lifting or carrying material.
4. Maintain neutral (straight) hand and wrist positions.
5. Eliminate or reduce repetitive and forceful movements of your hands, arms and shoulders.
6. Allow adequate recovery time after high levels of repetitive hand/wrist movements or lifting.
7. Eliminate or minimize direct pressure on your hands and arms from tools and/or from hard or sharp edges on work surfaces.
8. Adjust the height and position chairs, workbenches and other equipment to maintain good sitting and standing postures.
9. Provide adequate clearance and access to allow freedom of movement and proper body mechanics.
10. Maintain a comfortable working environment.
11. Change sitting and standing positions throughout the day to avoid muscle fatigue and stiffness.
12. Improve work organization and materials placement to enhance efficiency and to minimize body movements.

## **WARNING:**

Before performing any of the stretching exercises included in this handbook, if you currently have an injury to the body part you would be stretching, you should consult your physician and/or physical therapist. It is extremely important to check with your physician and/or physical therapist to make sure these exercises will not aggravate existing problems.

# HEALTHY STRETCHES

These stretches can be done every hour to relieve stress and muscle fatigue from sitting and working in a fixed position. Some can be performed more frequently if you feel the need. You will find that regular mini-pauses will help release stress, reduce fatigue and increase comfort. Frequent change of position is important when sitting for a long time. Shift around in your chair and periodically stand up and stretch.

If you have any pre-existing medical conditions such as arthritis or back pain, check with your doctor before doing these stretches.

For the best results when stretching, remember to:

- *Breathe* before each stretch. Breathe in slowly and deeply through your nose, then exhale completely through your mouth while stretching.
- Move *slowly*, stretch *gently*, and stop before you feel pain.
- *Maintain* each stretch for 5-10 seconds, breathing gently, and then relax.

## □ BACK



**Forward Trunk Bend** While sitting, slowly bend the upper body to the legs, arms outside of legs, and relax there for 5-10 seconds. Then sit up slowly.



**Back Extension - Sitting** Place hands on back at waist level and tuck chin in. Bend body backwards gently and hold 5-10 seconds.



**Back Extension - Standing** Place hands on back at waist level and tuck chin in. Bend backwards gently and hold 5-10 seconds.



**Side Bend** Sit erect with hands on sides of seat. Shift body to the right while bending the trunk to the left and hold 5-10 seconds. Repeat to the other side. Rock slowly from side to side three times.



**Cable Stretch** Sit erect, hands on knees, chin tucked in, and imagine there is a cable attached to the top of your head. Tighten stomach muscles and feel the cable slowly pull you up higher and higher. Hold for five seconds, relax, and repeat three times.

## □ HEAD AND NECK



**Head Turn** Turn head to one side and hold five seconds. Repeat to other side. Repeat three times.



**Head Tip** Tip head to one side, ear toward shoulder and hold five seconds. Then repeat to the other side. Repeat three times.



**Chin to Chest** Lower chin to chest and relax there 5-10 seconds.

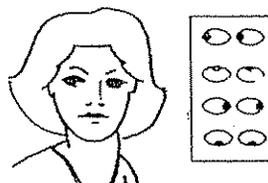


**Chin Glide** Head erect, eyes forward, glide head straight back and hold 5-10 seconds. Repeat three times.

## □ EYES



**Cup** Cup hands lightly over closed eyes. Hold for a minute, breathing slowly and deeply.

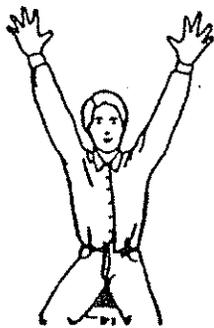


**Roll** Move eyes slowly to one side, up, other side, and down. Repeat three times.



**Refocus** Every 20 minutes or so, focus on an object at least 20 feet away for 5-10 seconds.

## SHOULDERS



**Overhead Stretch** Raise arms and reach for the ceiling. Hold for five seconds. Repeat three times.



**Forward Stretch** Stretch arms forward and reach for a wall and feel stretch across upper back. Hold for five seconds. Repeat three times.



**Backward Stretch** Stretch arms backwards, squeeze shoulder blades together and feel stretch across chest. Hold five seconds. Repeat three times.

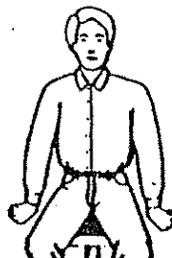


**Shoulder Roll** Circle shoulders back, up, forward, and down three times. Then circle shoulders forward, up, back and down three times.

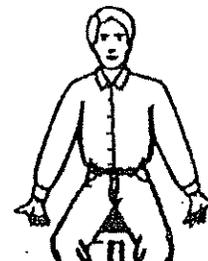
## WRIST



**Palm Stretch** With palms together in front of chest, gently press right fingers against left fingers and hold 10 seconds. Then press left against right.

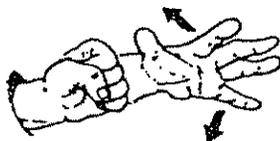


**Extensor Stretch** With arms hanging at sides, rotate forearms inward, make a loose fist and gently bend (flex) wrists. Hold five seconds.

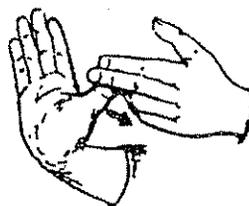


**Flexor Stretch** With arms hanging at sides, rotate forearms outward and extend wrists and fingers, palms facing the floor and fingers pointing backwards. Hold five seconds.

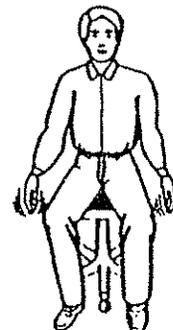
## FINGERS AND HANDS



**Finger Flare** Made a loose fist and then spread the fingers apart, keeping wrists straight. Hold five seconds. Repeat three times.

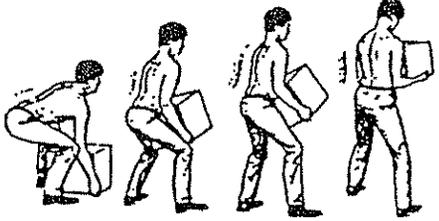


**Thumb Stretch** With one hand, gently stretch the thumb of the other hand away from the palm. Hold 5-10 seconds. Repeat with the other hand.



**Shake Out** With arms relaxed at the sides, gently shake out the hands.

## LIFTING TECHNIQUES

- 1. TEST THE LOAD AND GET HELP IF NEEDED.**  
Prior to lifting or moving an object, test the weight of the load to make sure it can be moved safely. Get help or use an assistive device if necessary, and communicate if two or more people are involved.
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- 2. PLAN THE MOVE.**  
Check the path of travel to destination of the load to make sure it is clear. Clear the path before picking up the load.
  - 3. USE A WIDE, BALANCED STANCE WITH ONE FOOT AHEAD OF THE OTHER.**  
A solid base of support reduces the likelihood of slipping and jerking movements.
  - 4. KEEP THE LOWER BACK IN ITS NORMAL ARCHED POSITION WHILE LIFTING.**  
Bend the knees and hips, not the back. With the normal curve of the lower-back "locked in," the forces are more evenly distributed on the bones and the muscles are in the strongest position to support the back.
  - 5. BRING THE LOAD AS CLOSE TO THE BODY AS POSSIBLE.**  
This reduces pressure in the spinal discs and stress on the low back muscles.
  - 6. KEEP THE HEAD AND SHOULDERS UP AS THE LIFTING MOTION BEGINS.**  
This helps to keep the arch in the lower back.
  - 7. TIGHTEN THE STOMACH MUSCLES AS THE LIFT BEGINS.**  
This causes the abdominal cavity to become a weight bearing structure, thus unloading the spine.
  - 8. LIFT WITH THE LEGS AND BUTTOCK MUSCLES AND STAND UP IN A SMOOTH, EVEN MOTION.**  
Using the strength of the legs to straighten the knees and hips as the lift is completed decreases the lower back stress. Rapid acceleration increases stress.
  - 9. MOVE THE FEET (PIVOT) IF A DIRECTION CHANGE IS NECESSARY.**  
This eliminates the need to twist at the waist, thus significantly reducing the stress on the supporting structures of the back.
  - 10. PUSH RATHER THAN PULL.**  
Lock your back in its normal curve and push with your legs.

## **Ways OSHA Recommends to Avoid Eye Strain**

- Place monitor directly in front of you at a minimum of your arm's length (20 inches) away. The maximum distance should be 40 inches to avoid straining to see smaller text.
- Top line of screen needs to be at or below eye level.
  - If you have bifocal or trifocals, the monitor should be placed lower than above recommendation where it's comfortable for the specific user. Another solution would be to raise the chair.
- Place monitor perpendicular to window (to the left or the right of you).
- If you work primarily from printing material, keep document holder directly in front of you and place monitor slightly to the left or right of this.
- Rest your eyes periodically by looking away and focusing on something far away (across the room).
- Don't forget to blink.
- If possible, work on alternate duties that do not involve working on your computer.

## **Conclusion**

The purpose of this handbook again is to provide guidelines to make you, the employee comfortable while at work to avoid the possibility of injury, as all injuries are preventable. Remember to be proactive by taking the preventative steps listed in this handbook and by asking questions as soon as they come to you. OSHA has a great link on their website as well that may be able to answer some of your questions at <http://www.osha.gov/SLTC/etools/computerworkstations/index.html>. Otherwise you can send an e-mail to [Erin.McGuire@wisconsin.gov](mailto:Erin.McGuire@wisconsin.gov) or call 608-264-9573 at your convenience.

Remember to...

Take a 30  
second  
break every  
30 minutes.

The purpose of this break is to stretch, relax your eyes and body, and to gather your thoughts.

## **References**

Ergonomics Program Standard, [www.osha.gov](http://www.osha.gov).

Human Performance Associates, Occupational Injury Prevention Services, Paul Fleer, M. Ed. 461 Berwyn Drive, Madison, WI 53711, 608-238-4426.

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