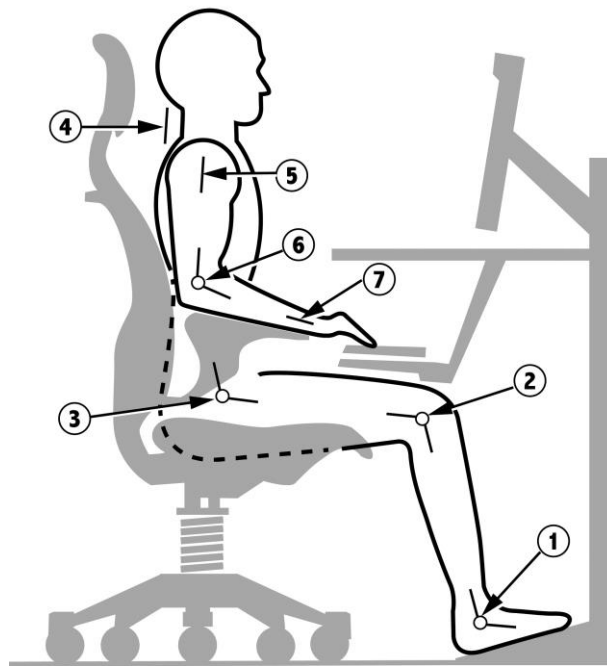


CSEA 2022 Occupational Safety & Health Conference

Reducing Computer Workstation Hazards Through Proper Set-Up and Design

Resource Materials



Produced by the



New York State Public Employees Federation

Funded in part by
the NYS Department of Labor Hazard Abatement Board
Occupational Safety & Health Training & Education grant



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Common MSDs:

- **Carpal Tunnel Syndrome (CTS):** One of the most disabling in terms of lost work days and costly MSD, however it is not the most common. CTS may be due to swelling of tendons as they pass through the carpal canal on the palm side of the wrist, leading to compression and ischemia (lack of oxygen) of the median nerve. Symptoms of CTS mainly occur at night and may consist of burning pain with numbness and tingling in the thumb, index, and middle fingers. In severe cases, CTS can result in weakness and wasting of the muscles at the base of the thumb.
- **Tendinopathy:** Micro-tears and fraying of the tendon that can be accompanied by pain over the muscle-tendon structure. Usually tendinopathy occurs around or near a joint and is an overuse injury.
 - ❑ At first the pain may feel like a localized dull ache or sharp pain.
 - ❑ Movement exacerbates the problem; it may then spread and become diffuse in nature.
 - ❑ It's usually is very tender to touch.
 - ❑ Hot and reddened skin may develop in more severe cases.
 - ❑ Results in weakness of grip and clumsiness.
- **Tenosynovitis:** Irritation and possible inflammation of the tendon sheaths covering the tendons.
 - ❑ May cause pain, redness, and difficulty moving.
 - ❑ Symptoms can include a crackling sound on movement of the tendon and/or locking of the tendon.
- **DeQuervain's Tenosynovitis:** Tenosynovitis that affects the tendons of the thumb as they pass over the thumb and wrist joints.
 - ❑ Pain with grasping and turning of the wrist, therefore leading to difficulty moving the thumb and wrist.
- **Trigger Finger:** A locking of one or more fingers in a bent position and inability to straighten it without external manipulation.
 - ❑ Caused by a groove developing on the tendon, tenosynovitis (irritation of the tendon) or nodule developing on the tendon sheath.
 - ❑ The muscles controlling the finger are strong enough to bend it, but too weak to straighten it against the resistance of the groove or nodule.
 - ❑ When the finger is straightened it may click.
 - ❑ When bent it may lock.
- **Epicondylitis** (frequently called Tennis elbow/Golfer's elbow): microtears and fraying of tendons where they connect to the elbow bone (epicondyle).
 - ❑ May not actually involve inflammation!!
 - ❑ Pain can occur from the elbow to the wrist when the upper limb is moved and may even occur during rest.
 - ❑ May be accompanied by a decrease in grip strength because of pain.
- **Myositis:** Inflammation and pain of the muscles, usually located in the neck and upper back.
- **Thoracic Outlet Syndrome:** A condition caused by the pinching or squeezing of the nerves and blood vessels between the neck and shoulder.



Qs & As: Vision Factsheet

Q: *What symptoms do computer users complain about most?*

A: Eye fatigue, headaches, blurred vision, dry or irritated eyes and dizziness are all symptoms of what many eye professionals call “computer visual stress.” As an operator positions their head for extended periods of time to avoid direct or reflected glare on their computer screen, she may also feel pain or stiffness in the neck, back and shoulders. Depending on the individual, problems may develop after only a couple hours of work or at the end of the workday. All of these symptoms may result in reduced levels of work efficiency.

Q: *What are the principal causes of eye discomfort?*

A: Both environmental and ocular factors may contribute to visual discomfort. Environmental exposures may include direct or reflected glare from windows and/or other light sources, improper positioning of a screen or document holder, a dusty screen or even abnormally circulating air currents from an improperly working ventilation system in the office environment. A visit to a vision professional may help identify an existing visual condition; she may also prescribe a prescription for corrective lenses.

Q: *How can vision problems be remedied?*

A: Once the sources of discomfort have been identified, it may be easy and inexpensive to fix. You can alleviate headaches from reflected glare on the screen by reducing or eliminating problematic light sources: cover the windows with blinds or drapes; reduce the intensity of overhead lights; install light focusing diffusers, baffles, louvers; use lights that direct brightness upwards (uplighting); relocate or shield task lighting; install monitor hoods; set workstations between lighting bays; place the screen perpendicular to windows. The top of the computer screen should be approximately 20-25 degrees below the horizontal gaze. To keep eyes from becoming dry, workers should use eye drops and remember to gently close their eyes frequently. Take frequent rest and recovery pauses throughout the day to give your eyes a rest.

Q: *Can prolonged computer use cause permanent eye damage?*

A: Scientific research has not found that short-term computer use causes anything other than temporary problems. The symptoms are acute and usually subside with sleep. Approaching about age 40, most people begin to experience a slow weakening of their eyes’ focusing mechanism. Coupled with extended computer time, your eyes become fatigued and irritated more quickly. This may signal a need for glasses sooner than an individual might otherwise require. Prolonged viewing of small characters on a screen will, however, adversely affect the ciliary muscles that control the eyes at any age.

Q: *What are the differences between computer operators who wear corrective lenses and those who don't?*

A: People with corrective lens may need an additional pair of glasses or an adjustment in their existing prescription. Bifocals pose a particular problem because they require users to lift their heads to view the screen, which can cause neck and back strain from constant and prolonged movement. Those who wear contact lenses may find their eyes tend to dry out more easily; gently closing the eyes more often can help. Computer operators may want to ask their vision professional about occupational eyeglasses for computer use.

Q: *What are occupational eyeglasses?*

A: Just as a welder or an auto mechanic may require particular corrective lenses for their particular tasks, people who use computers may benefit from being fitted with special lenses. These glasses substitute for ones that operators may use on an everyday basis. They may be single lens or bifocal, which would be split with a top lens for computer viewing and the bottom half for other near viewing. Vision professionals can also prescribe lenses with a progressive gradation.

Q: *Who qualifies for occupational eyeglasses?*

A: PEF and CSEA employees have obtained a benefit in their union contracts that allow them to receive occupational eyeglasses if they qualify: (a) The employee must be represented by the union; (b) The employee must require corrective eye wear to perform their job; (c) The employee will be required to complete a questionnaire about job-related vision requirements; and (d) The employee will require specialized testing to determine the need for occupational glasses.

NOTE: The inquiry regarding occupational eyeglasses must be in conjunction with the employee's routine vision care benefit, not sought at a separate time. The benefit is available once in any 24 month period.



Tools of the Trade Fact Sheet – Workstation Set Up

- Adjustable furniture and accessories are introduced into the workplace everyday.
- Some make claims to be “ergonomic” and offer more comfort.
 - Let’s examine some of the latest “Tools of the Trade.”

- **Chairs**
 - If you feel tension or stiffness in your back, neck or shoulders at the end of the day, it could be because your chair is not providing the support you need.
 - Features to look for:
 - ◆ Adjustability is essential to a comfortable chair.
 - ◆ A full backrest will provide good spinal support and reduce the muscle force needed to support your back.
 - ◆ Seat pans should have a well-rounded front cushion to avoid reducing circulation in your legs.
 - ◆ Armrests should be padded and adjustable for height and width:
 - ♣ Sometimes armrests can prevent the worker from getting close enough to the keyboard to achieve a comfortable position.
 - ◆ Chairs should have a five-legged base to provide stability.

- **Workstations**
 - Features to look for in workstations:
 - Adjustability is an important feature of any computer workstation.
 - If the station has two levels (one for the keyboard and one for the monitor), both levels should be easily adjustable.
 - The surface area should provide adequate space to place document holders adjacent to the monitor.
 - An adjustable keyboard tray should be made available for workers who do not have adjustable computer tables.
 - Look for workstations with rounded or padded edges to reduce mechanical compression of soft tissues.

Other equipment

- Other computer equipment is available that would enable a worker to modify their work space to eliminate awkward or static postures.
- When adjustable workstations are not available, footrests can help the petite workers support their legs:

- This promotes lower body circulation and reduces pressure in the lower back and pelvis.
- ❑ Document holders may attach to the monitor or be free standing:
 - Placing documents at approximately the same height and distance from the eyes as the screen can help prevent eyestrain.
- ❑ Wrists should not be placed on wrist rests when keying.
 - They increase mechanical compression of soft tissues and decrease circulation in the forearm, wrists and hands.
 - They promote awkward and static postures of the neck, upper back and shoulders by having operators reach over the wrist rest to access the keyboard.
- ❑ For tight workspaces, an adjustable monitor holder may be needed to raise or lower the monitor and also adjust for monitor depth:
 - While this may alleviate stress and strain in the neck, upper back and shoulders for taller operators, it will always lift the monitor up at least 4 inches from the desktop.
 - For petite operators, this can increase neck back bending (called cervical spine extension) and, if prolonged, may lead to trauma and attendant symptoms in this region.
- ❑ Shades, blinds, drapes, recessed lighting fixtures, lighting diffusers, screen hoods or removing a light bulb or two may be used to eliminate direct and reflected glare:
 - If possible, place your workstation between rows of overhead lights.
 - Positioning your workstation at a ninety-degree angle to windows may also eliminate reflected glare on your screen, although this may cause additional problems (e.g., direct glare).

More facts about equipment:

- Some adjustable (ergonomics) equipment has drawbacks or possibilities for misuse.
- Some ergonomic purchases can be avoided by thoughtful rearrangement, adjustment or modification of existing equipment
- Because not all products fit all people, you must be certain that you can return your purchase(s). Different companies have different return policies; make sure you're familiar with them. If you're not happy with your equipment, return it.
- Because chairs are somewhat custom fitted (for example, you may specifically pick the color and adjustability features of a chair), they are usually not returnable. You will have a greater chance of ensuring that the chair correctly fits you by examining several different chairs or models and, ideally, using a demonstration chair of your choice for 2 weeks.
- The most successful ergonomics program combines work practice (e.g. frequent rest and recovery and job enrichment) and engineering controls.



Qs & As About Laptops Factsheet

Q. Do laptop computers have worse ergonomics than desktop computers?

- A. Yes they do. Laptops are designed for placement on the lap, and to be lightweight and portable. Their smaller keyboards and attached screens result in more awkward postures in the upper limbs, neck and upper back.

Q. Are the MSD risk factors for laptops the same as for desktops?

- A. Yes, risk categories are the same; awkward postures, repetitive movements, static muscle loading, excessive typing and force. These concerns are more pronounced on laptops due to their small size, shape and use in temporary work areas.

Q. What are the main ergonomic problems with laptop computers?

- A. (a) Small keyboards are shorter in length than full-size keyboards. This results in greater wrist side and bending backwards. (b) The screen is attached to the keyboard. This results in too low a screen that can force the neck forward and downward, and rounds the shoulders. (c) Direct and reflected glare on screen results in adjusting it to a position to avoid glare. Often, the operator will also move to avoid glare. (d) Cursor controls, such as an “eraser” device or touchpad can be harder to use than a mouse. This results in awkward postures.

Q. How can the ergonomic problems of laptops be minimized?

- A. For short-term use:
- Be aware of laptop ergonomics: take frequent rest and recovery pauses.
 - Find a chair with adjustable and well padded spinal support. Retrofitting a lumbar pad into the backrest is not ideal because it often shifts position or falls when the operator moves. Velcro or strap attachments pose similar problems.
 - Position laptop to avoid glare: avoid window light on screen.
- B. For long-term use:
- Use a fully adjustable and well padded chair with spinal support; bring one to the worksite if necessary.
 - Use a computer-height table or desk that is shorter than a traditional office desk, or install an adjustable keyboard tray underneath a high table or desk.
 - Use an external, full-size keyboard, monitor and pointing device with the laptop. Buy a port replicator base for the laptop if it doesn't have the necessary ports to plug these full-size accessories into.
 - Organize the work so that rest and recovery pauses are built into the workday; this should result in frequent typing and vision rest and recovery pauses.



Workstation Evaluation Form



Good 1800MP520ME A11-00

Employee Name: _____ Date: _____

Work Location: _____ Start time: _____ End time: _____

Instructions: (1) Complete required information above and have the employee sign the sign in sheet. (2) Review the Recommended Computer Workstation Design resource sheet with the worker. (3) Ask the worker to begin typing as they would normally. Proceed with the assessment by completing this form. (4) Record observations and make recommendations accordingly. (5) Review results with the worker.

	<u>Yes</u>	<u>No</u>	<u>Corrected</u>
<u>Chair</u>			
Are feet on the floor or footrest?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the seat pan adjusted so that the hips and knees are parallel to the ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the backrest provide adequate lumbar support?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the chair adjustable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Keyboard / Mouse</u>			
Is the keyboard positioned so that elbows and wrists are parallel to the ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the keyboard positioned so that the wrists are straight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the keyboard positioned so the shoulders are relaxed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the mouse positioned so user does not have to reach?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Monitor</u>			
Is the monitor at an appropriate distance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the top of the monitor at or just below eye level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Work Area</u>			
Are frequently used items placed near the user?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there a document holder?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there adequate legroom?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Work Environment</u>			
Is adequate lighting provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the screen free of glare?			
<u>Work Practices</u>			
Does the employee spend more than 4 hours per day on a Computer?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the employee use other devices such as an adding machine or calculator?	<input type="checkbox"/>	<input type="checkbox"/>	

List any applicable work organization factors:

List any signs and symptoms the employee may be experiencing:

Workers comments:

Recommendations:

Assessor: _____

Background Information

Musculoskeletal disorders, such as carpal tunnel syndrome and back injuries, are the leading cause of lost work time and workers' compensation awards. Musculoskeletal disorders are preventable through proper workplace design and appropriate work procedures. A number of risk factors cause musculoskeletal disorders. Eliminating those risk factors will significantly reduce the chance of an injury.

Musculoskeletal Disorders: Risk Factors

Musculoskeletal disorders also referred to as Cumulative Trauma Disorders (CTDs) or Repetitive Strain Injuries (RSIs) are a family of muscle, tendon, and nerve disorders caused by one or more of the following RISK FACTORS:

Repetition: Keyboarding, thumbing through files, sorting mail.

Awkward and Static Postures: Keyboarding in a twisted position; holding the phone with your head and neck; typing with wrists bent.

Contact Stress: Resting wrists / forearms on sharp edges while keying; stapling using the underside of hand.

Force: Hole punching or stapling large stacks of paper; typing; pushing or pulling mail carts.

Heavy Lifting: Carrying or lifting boxes full of supplies or mail.

Fatigue: Insufficient or Infrequent rest breaks; any exertion done without adequate rest breaks between tasks.

Work Stress: Job satisfaction; lack of control over work organization; rapport with supervisors and co-workers.

Extreme Temperatures: Temperatures that are too hot or cold.

Vibration: Mailroom equipment or print shop equipment.

Recommended Workstation Set-up

To understand the best way to set up a computer workstation, it is helpful to understand the concept of neutral body positioning. This is a comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder (MSD).

Recommended Body Postures:

Hands, wrists, and forearms:

-Straight, in-line and roughly parallel to the floor.

Head:

-Level, or bent slightly forward, forward facing, and balanced.

Shoulders:

-Relaxed with **upper arms** hang normally at the side of the body.

Elbows:

-Close to the body and are bent between 90 and 120 degrees.

Feet:

-Fully supported by floor or footrest.

Back:

-Fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.

Thighs and hips:

-Supported by a well-padded seat and generally parallel to the floor.

Knees:

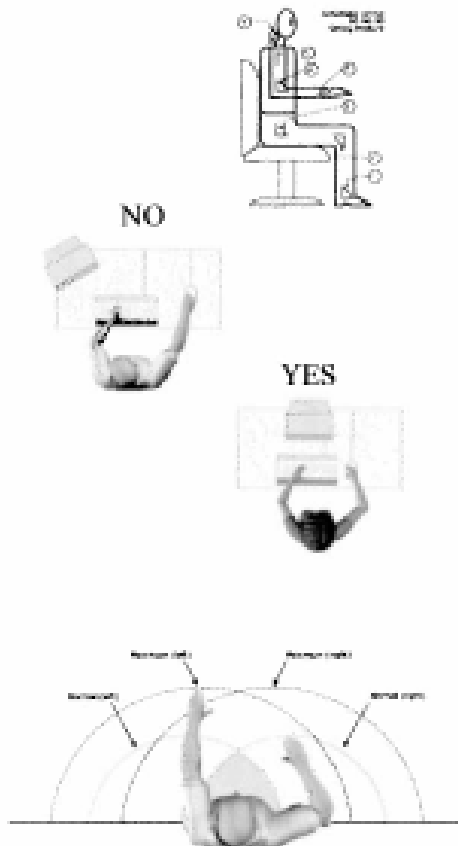
-Approximately the same height as the hips with the **feet** slightly forward.



Regardless of how good your working posture is, working in the same posture or sitting still for prolonged periods is not healthy. You should change your working position frequently throughout the day in the following ways:

Take micro-breaks by stretching your hands, fingers, arms and torso. Stand up and walk around for a few minutes periodically (this can be done while filing, faxing, obtaining needed supplies, and by making small adjustments to your chair or backrest).

Basic Components of the Computer Workstation



- **Chair**
 - Must be adjustable so workers can maintain recommended postures and must have adequate lumbar support.
 - The seat pan should be adjusted with the thighs parallel to the ground.
 - Feet must be firmly on the ground or on a footrest.
- **Keyboard / Mouse**
 - The *keyboard* should be adjusted keeping the forearms parallel to the ground and the wrists straight.
 - The *mouse* should be placed near the user so there is no need to reach, should be at the same level as the keyboard.
- **Monitor**
 - Must be directly in front of the user with the top of the monitor at or just below eye level.
- **Work Area**
 - The work area or desk should be adjustable, the area should be free of clutter with equipment that is frequently used positioned close to the user.
- **Work Environment**
 - Workstations should be set up to minimize glare, monitors should be perpendicular to windows and overhead lighting should be limited.

Warning Signs and Symptoms

There are number of various musculoskeletal disorders as a result of computer use. Many symptoms are similar but affect different body parts. Typical signs and symptoms of musculoskeletal disorders:

- | | | | |
|-------------|--------------------------------|-----------|----------|
| -Numbness | -Decreased Joint Motion | -Swelling | -Burning |
| -Sharp Pain | -Cracking or Popping of Joints | -Aching | -Redness |
| -Weakness | -Tingling | | |

Contact Information

If a problem arises contact: (add agency specific contact person or department)

Phone number: (add contact information)

E-mail: (add contact information)

Fax number: (add contact information)

NYS Occupational Health Clinic Network (OHCN)

https://www.health.ny.gov/environmental/workplace/clinic_network.htm

- State-based occupational health clinic network
- Experts in occupational medicine
- Injury & illness prevention programs
- Help workers achieve the best possible recovery
- Assist workers and their families with the stress caused by being sick or injured on the job
- Assist employers with medical monitoring and return to work programs
- Can bill directly to most major health insurance carriers



Ergonomic Information and Resource Websites

CSEA Occupational Safety & Health 518-257-1000

<https://cseany.org/osh>

The Occupational Safety & Health page contains information, factsheets, news and resource links on a variety of health & safety topics, including ergonomics.

PEF Occupational Safety & Health

<https://www.pef.org/members/health-safety/>

Health and Safety department page of the NYS Public Employees Federation.

NYS Governor’s Office for Employee Relations (GOER)

“Recommendations for an Agency Policy on Computer Workstation Ergonomics - Guidance for New York State Agencies”. The purpose of the document is to provide guidelines to aid a State agency in issuing a policy or practice statement or compare and update existing agency statements on the subject.

NYS DOL DOSH (PESH) Webpage

www.labor.ny.gov/workerprotection/safetyhealth/dosh_programs.shtm

NYS Department of Labor – information and compliance

AFL-CIO - Safety & Health on the Job

<https://aflcio.org/issues/workplace-health-and-safety>

Ergonomic information, resources and links to safety and health factsheets, hazard information, and more.

New York Committee for Occupational Safety and Health (NYCOSH)

<http://www.nycosh.org>

Welcome to the NYCOSH website, where you'll find news and information about on-the-job safety and health, plus more than four hundred links.

U.S. Department of Labor Occupational Safety & Health Administration

<http://www.osha.gov/SLTC/etools/computerworkstations/index.html>

This eTool* illustrates simple, inexpensive principles that will help you create a safe and comfortable computer workstation.

NIOSH – National Institute for Safety and Health

<http://www.cdc.gov/niosh/topics/ergonomics/>

A searchable bibliographic database of occupational safety and health publications, documents, grant reports, and journal articles supported in whole or in part by NIOSH.

Mayo Foundation

<http://www.mayoclinic.org/office-ergonomics/ART-20046169>

Office ergonomics: Your how-to guide - A comfortable work space can help you feel your best at work. Give your work space a makeover with this visual guide to office ergonomics.

University Websites

CUergo: Cornell University

<http://ergo.human.cornell.edu/>

Ergonomics research studies and class work by students and faculty in the Cornell Human Factors and Ergonomics Research Group (CHFERG). The focus is on ways to enhance usability by improving the ergonomic design of hardware, software, and workplaces, to enhance people's comfort, performance, and health.

UCLA Ergonomics

<http://www.ergonomics.ucla.edu>

Articles, workstation checklists, and links to a variety of Ergonomic resources.

Ergonomic Products

ErgoWeb

<http://www.ergoweb.com>

Volumes of useful ergonomics information. Subscription access to a sophisticated set of ergonomic job evaluation, analysis, design and redesign software through the ErgoWeb site.

Human Scale

<http://shop.humanscale.com/index.cfm>

Catalog of products to enhance home and corporate computer-intensive offices.

Steelcase Inc

<http://www.steelcase.com>

Ergonomic chairs, office furniture etc.

CORCRAFT

<http://www.corcraft.org>

CORCRAFT is the trade name of the Division of Correctional Industries, the manufacturing division of the Department of Correctional Services. Includes information on ergonomic chairs and office furniture.

Ergonomic Resources

Workrite Ergo

<http://www.workriteergo.com/>

Ergonomic and office products, including left-handed devices.

AliMed

<http://www.alimed.com/ergonomics/>

Ergonomic and Medical products.

3M Products

http://solutions.3m.com/wps/portal/3M/en_US/ergonomics/home/

Ergonomic products, comfort guides, etc.

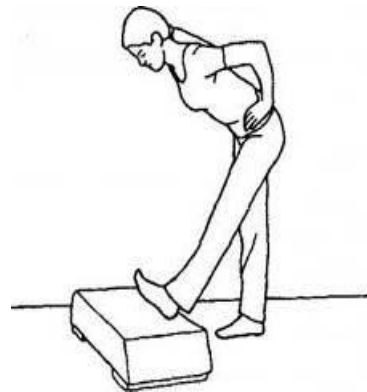


Office Stretching - Exercises You Can Do at Work

NYS Public Employees Federation
Health & Safety

Training Materials:

1. No Sweat Computer Fitness
2. Exercising at the Start of Work
3. Stress Reducing Office Maneuvers
4. Preventing and Relieving Carpal Tunnel Syndrome



*Funded in part by
the NYS Department of Labor Hazard Abatement Board
Occupational Safety & Health Training & Education Grant*

Eastern New York Occupational Health Programs

NO SWEAT COMPUTER FITNESS

EXERCISES AT THE WORKPLACE

Take a one minute mini-break each hour during your workday to do a few of these easy exercises- right in your workplace. They'll loosen up your muscles, keep you more alert, and make a big difference in how you work and feel!

Neck Exercises

- **Head Nods (Flexion)**- "Yes" motion
- **Head Tilts (side bending)**- Bring ear to shoulder
- **Head Rotation**- Turn head to the left, back to center, then to the right
- **Double Chin**- Bring chin to back (retract)



Figure 1: Double Chin

Eye Exercises

- **Eyes in a Box**- Look up, to the right, down, to the left, then back up, repeat in the opposite direction.
- **Yoga Clock**- Imagine a clock, move your eyes from the center of the clock to the 1, then back to the center and then to the 2, continue to do this clockwise all the way around the clock. Then do the same counter clockwise.
- **Palm your Eyes**- Lean your elbows on your desk; cup your hands and place them lightly over your closed eyes. Hold for a minute, while breathing deeply in and out.
- **Look Away**- Every half- hour, look away from the computer screen and focus for 10-15 seconds on an object at least 20 feet away.

Shoulder Exercises

- **Shoulder Rolls**- Lift shoulders up, in a smooth motion roll them forward, then down, then back, and up again. Repeat four or five times. Go in opposite direction by lifting up, roll back, then down, then forward, then up.
- **Shoulder Shrugs**- Lift Shoulders up towards the ears, hold for 5-10 seconds. Then release.



Figure 2: Shoulder Rolls

Arm Exercises

- **Arm Stretch**- Interlace fingers, turn palms, straighten arms out in front, then upwards.
- **Forearm Stretches**- You can integrate your desk: stand up place your hands (fingers up or down) on your desk. Lean forward and stretch.

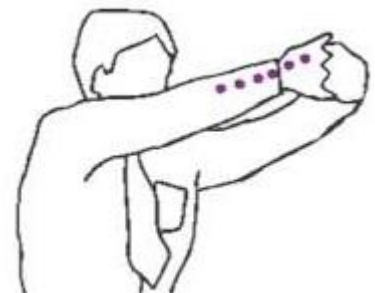


Figure 3: Arm Stretch

Hand Exercises

- **Wrist Rotating**- Rotate palm up and down.
- **Wrist Circles**- Make circles with fingers.
- **Wrist Shaking**- Shake up and down, then sideways.
- **Finger Stretch**- Spread fingers.
- **Thumb Stretch**- Pull back your thumb, pull it towards your palm.

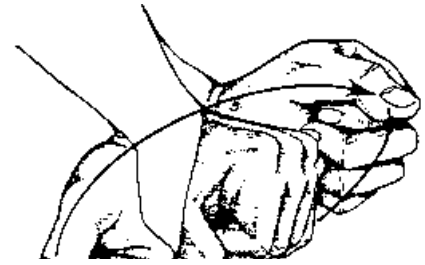


Figure 4: Wrist Circles

Back Exercises

- **Flexion in Standing**- Roll body towards knees- you can also start this exercise from a sitting position.
- **Disc Reliever**- Bend upper body backwards in a standing position; hands support the hollow of your back.
- **Elbow Press**- Press elbows backward in chest height.
- **Stretch Up**- Sit up straight and imagine you have a cable attached to the top of your head. Feel the cable slowly pull you up higher and higher. Hold for a few seconds. Relax.
- **Chair Back Stretch**- Lean forward to stretch, keep your head down and your neck relaxed, hold 10-20 seconds, and use your hands to push yourself upright.
- **Standing Back Stretch**- Stand with hands on your hips keeping your knees slightly flexed, gently turn your torso at the waist and look over your shoulder until you feel the stretch and hold 8-10 seconds. Repeat other side.



Figure 5: Flexion in Standing

Leg and Feet Exercises

Exercises for while you are sitting on your chair:

- **Swivel**- Rotate ankle clockwise. Repeat counter-clockwise.
- **Tip and Heel (Ankle Pump)**- Point with tip of toes and heels on the floor.
- **Upper Leg Stretch**- Stretch while you are sitting on your chair.

Exercises from a standing position:

- **Up and Down**- Stand next to your desk and slowly lift up on the tips of your toes several times.
- **Calf stretch and Achilles Stretch**- Stretch while hands lean on desk.



Figure 6: Tip and Heel or Ankle Pumps

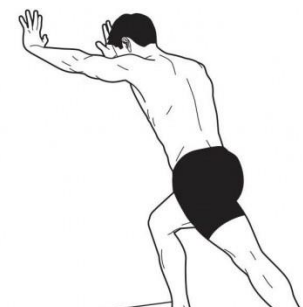


Figure 7: Calf Stretch

Exercising at the start of work, during breaks helps prevent carpal tunnel syndrome

A team of orthopedic surgeons has developed special exercises that can help prevent carpal tunnel syndrome (CTS). The exercises, which should be done at the start of each work shift and after each break, decrease the median nerve pressure responsible for CTS.

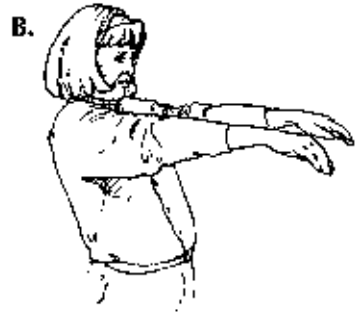
Dr. Seradge said that workers with hand-intensive jobs should do five-minute exercise warm-up before starting work, just as runners stretch before a run to prevent injury.

The exercises are:

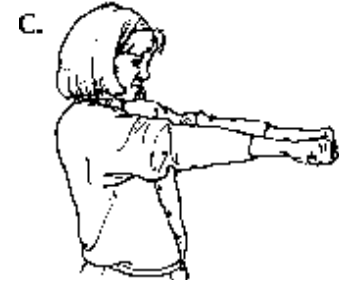
- a. Extend and stretch both wrists and fingers acutely as if they are in a hand-stand position. Hold for a count of 5.



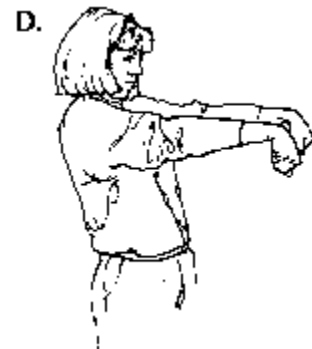
- b. Straighten both wrists and relax fingers.



- c. Make a tight fist with both hands



- d. Then bend both wrists down while keeping the fist. Hold for a count of 5.



e. Straighten both wrists and relax fingers for a count of 5.



f. The exercise should be repeated 10 times. Then workers should let their arms hang loosely at their side and shake them for a couple of seconds.



Depending on the type of work, employees should also do a slow isometric and isotonic exercise for posturing and toning of neck and arms, Dr. Seradge said.

In addition to keyboard operators, factory workers, and typists, also at risk for carpal tunnel syndrome are workers whose jobs require holding actions, such as barbers and bus drives.

“In the long run, daily exercises, combined with job modification, will save employers money that they would have had to spend on carpal tunnel syndrome surgery for workers,” said Dr. Seradge.

Co-authors of the study with Dr. Seradge are Medhi N. Adham, MD, and Wilafred L. Parker, P.A., both of Oklahoma City.

Source: Poser exhibit D-29, annual meeting, American Academy of Orthopaedic Surgeons, Feb. 25, 1996

STRESS-REDUCING OFFICE MANEUVERS

Performing this 5-minute stretching routine twice each day helps reduce stress and ease muscle tension

Wondering why your back is sore again? Can't figure out how you got that crick in your neck? You are not alone. Millions of Americans who suffer from back and neck pain are unable to identify a specific incident as the root of their discomfort. Surprisingly, it doesn't take bungy jumping, slipping on icy stairs, or moving a piano to bring on a backache. In fact, one of the most common causes of back and neck problems is simply doing too much of nothing at all.

"Many of us associate back and neck injuries with occupations that require heavy lifting and other strenuous tasks" says CINN occupational therapist Monika Robinson. "But sedentary jobs that necessitate sitting at a desk or computer terminal for extended lengths of time can also be very hard on your body. This type of sustained positioning can lead to constant muscle tension, joint strains, permanent muscle shortening, decreased circulation, and other damaging conditions that contribute to back and neck pain."

Are those of us who make a living glued to an office chair hour after hour, day after day destined for bad backs? "Absolutely not," says CINN physical therapist and Corporate Ergonomics Coordinator Elke Friedman. "You can counteract the negative effects of prolonged sitting by breaking up your day with brief, but frequent periods of activity."

Fortunately, you don't have to don sweats and gear up for a long workout to heed CINN's advice. The Institution recommends performing the following 5-minute series of stretches twice a day and supplementing this quick routine with hourly strolls around the office. Stretching, coupled with a minute or two of upright movement each hour, helps reduce stress, ease muscle tension and strain, improve circulation, and relieve pain.

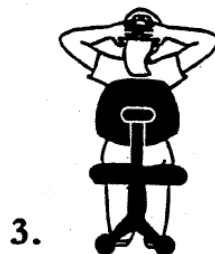
"Exercise alone won't always cure a serious back or neck ailment," cautions Elke. "If you are experiencing severe or persistent pain, you should consult a physician." However, if you are regularly bothered by twinges of discomfort, our stretches can help ward off these annoying episodes and keep you feeling great.



Reaching behind your back, clasp your fingers together with your palms facing in. Slowly rise and straighten your arms. Hold this position for several seconds, then slowly release. Repeat three times.



Raise your elbows while keeping your hips stationary. Twist your upper body at the waist to the right. Hold this position for several seconds then repeat on your left side. Repeat this stretch on each side three times.



Place your fingers behind your head and squeeze your shoulder blades together until you feel tension through your upper back, then slowly release. Repeat three times.



Stretch your right arm across your body. With your left arm pull your right elbow towards your left shoulder. Hold this position for several seconds, and then reverse arms. Repeat three times.



5.

Clasp your hands together above your head. While stretching your hands upward, slowly lean to the right side, then to the left. Do not arch your back, keep your knees slightly bent. Repeat three times.



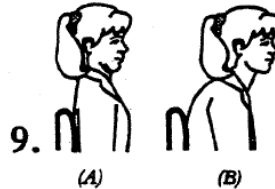
8.

Bring your right hand to your upper back from above while bringing your left hand to your upper back from below. Slowly move your hands as close together as possible and hold. Release after several seconds, then reverse arms. Repeat three times.



6.

Leans against a support with your right leg forward and your left leg back. Your right leg should be bent and your left leg should be straight. With the heel of your left leg on the floor, slowly move your hips forward until you feel a stretch in your left calf. Hold for thirty seconds before releasing, and then reverse legs. Repeat three times.

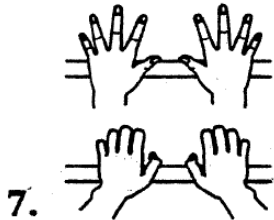


9.

(A)

(B)

Tuck your chin in slowly (A). Hold this position for two seconds, then release. This exercise counteracts the effects of leaning forward to stare at a computer monitor (B).



7.

Extend and separate your fingers until you feel the stretch. Hold this position for 5 seconds. Relax, then gently bend your fingers.



10.

Sit up straight and extend your legs out from your body. Hold this position for several seconds, then release. Repeat three times.

If you have any questions about the exercises on this sheet, please call a CINN ergonomics consultant at (312) 883-8558.

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Preventing and Relieving Carpal Tunnel Syndrome

According to one survey, nearly two million American workers have symptoms of carpal tunnel syndrome. The disabling condition often stems from long hours typing, driving, working on an assembly line, or performing other repetitive hand movements. Those activities can compress a nerve in the wrist, causing discomfort and weakness in the hand. In severe cases the hand may stop functioning altogether. But there are simple steps you can take to prevent the syndrome from occurring – and, in mild cases, to reverse existing damage before it becomes permanent.

Surgeons at The Hand Institute of the Orthopedic & Reconstructive Center in Oklahoma City have developed a set of 13 special exercises designed to relieve nerve pressure in the wrist. The six shown here provide a well-rounded sample. (To send for the full program, see side note at right.) If you think you may be susceptible to carpal tunnel syndrome, do the exercises three times a day – before and after work, and once midday. (Other factors that increase the risk of developing the syndrome include: arthritis, diabetes, hypothyroidism, obesity, pregnancy, and prior fractures in the wrist.)

More preventative tips:

- ❑ If you work at a keyboard, type with your wrists in a neutral position – not bent up or down. You can find a variety of wrist supports for that purpose in any office-supply store.
- ❑ Adjust your office chair so you can sit in a “90-90-90” position: With your feet planted on the

floor, there should be a 90-degree angle between your lower leg and your upper leg (at the knee), between your upper leg and your back (at the hip), and between your upper arm and your lower arm (at the elbow).

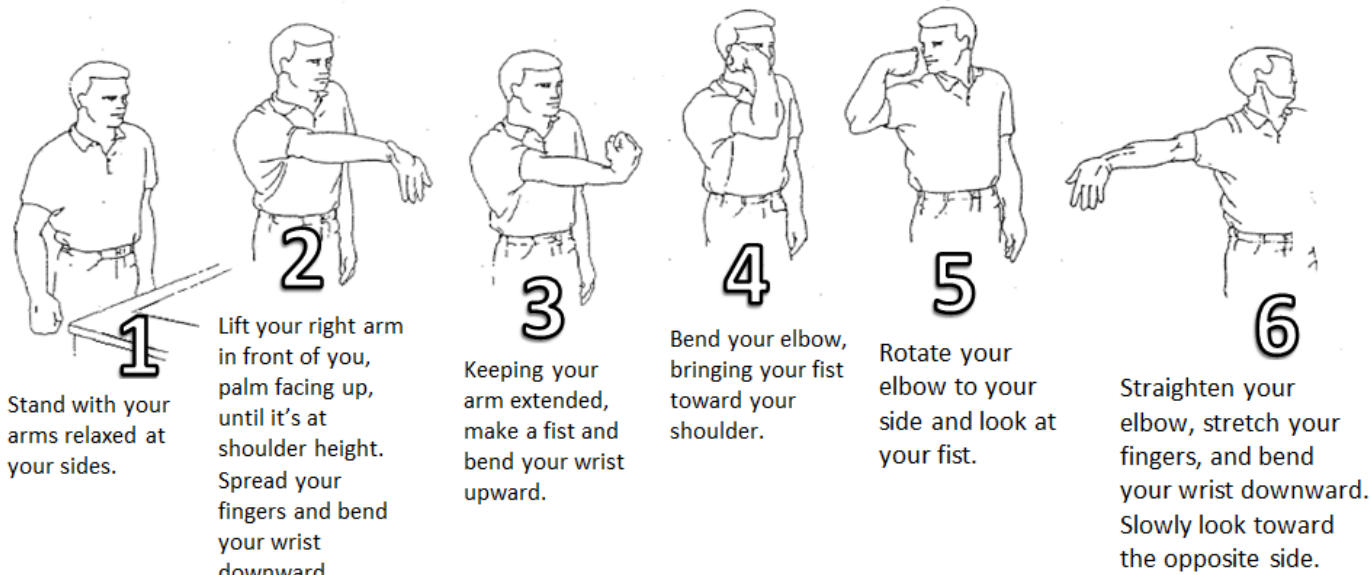
- ❑ If you frequently use vibrating power tools, such as a power sander or chain saw, put shock absorbers on the handles.
- ❑ If you must hold anything for long periods of time – a hand tool, a steering wheel, a pencil – relax your grip on the object and hold it loosely whenever possible.
- ❑ Rest your hands at least once a hour – especially if your work is highly repetitive.

If despite all those measures, you feel pain, numbness, or tingling in your fingers for more than a couple of days, consult a doctor about doing more intense exercises, wearing a wrist splint (usually at night), taking anti-inflammatory drugs, or getting cortisone injections. If those steps fail, surgery can usually erase symptoms within a month – although it can take three months to regain even reduced hand strength you had before surgery and two years to become markedly stronger.

For more information

Carpal Tunnel Syndrome exercise program. Send self-addressed, stamped envelopes to Houshang Seradga, M.D., Orthopedic & Reconstructive Center, 1044 S. W. 44th St., 6th floor, Oklahoma City, Oklahoma 73109

Hold each for a count of 10 seconds. Repeat steps 1-6 with both arms.



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Consumer Reports on Health

FEBRUARY 1998

