University of Massachusetts
UMASS Lowell

DEPARTMENT OF WORK ENVIRONMENT

Ergonomics Training for Office Workers In Nursing Homes

Agenda

1. Introduction, Training Overview
2. What is Ergonomics?
3. Musculoskeletal Disorders
   - A. Where does your body hurt?
   - B. Why does your body hurt?
4. Ergonomics and Office Work
5. Assessing your workstation and work activities

This material was produced under Grant Number: SH-22314-11-60-25 from the Occupational Safety and Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

OBJECTIVES

The objectives of this training are to:

1. Define and share an understanding of ergonomics for office workers with participants
2. Help participants recognize that there is a wide range of musculoskeletal disorders
3. Understand the general ergonomic risk factors that may apply to office workers
4. Introduce ergonomic hazard analysis to evaluate workstation set up and working techniques
5. Introduce checklist for conducting workstation assessment

Employees who complete this training will be able to:

1. Define and share an understanding of ergonomics in the workplace
2. Describe musculoskeletal disorders
3. Recognize risk factors for cumulative trauma
4. Evaluate their present workstation set up and working technique for ergonomic risks
5. Make adjustments to improve workstation layout
6. Make recommendations to occur after the assessment

University of Massachusetts Lowell
UMASS

Ergonomics Training for Office Workers in Nursing Homes

What is Ergonomics?

Ergonomics refers to changing the job, not the worker: "the science and the art of fitting the job and the workplace to workers' needs, to take advantage of the workers' strengths, capabilities and individual tendencies, and to recognize natural individual limitations in order to prevent injury."

Greek root:
The word "ergonomics" is from Greek:

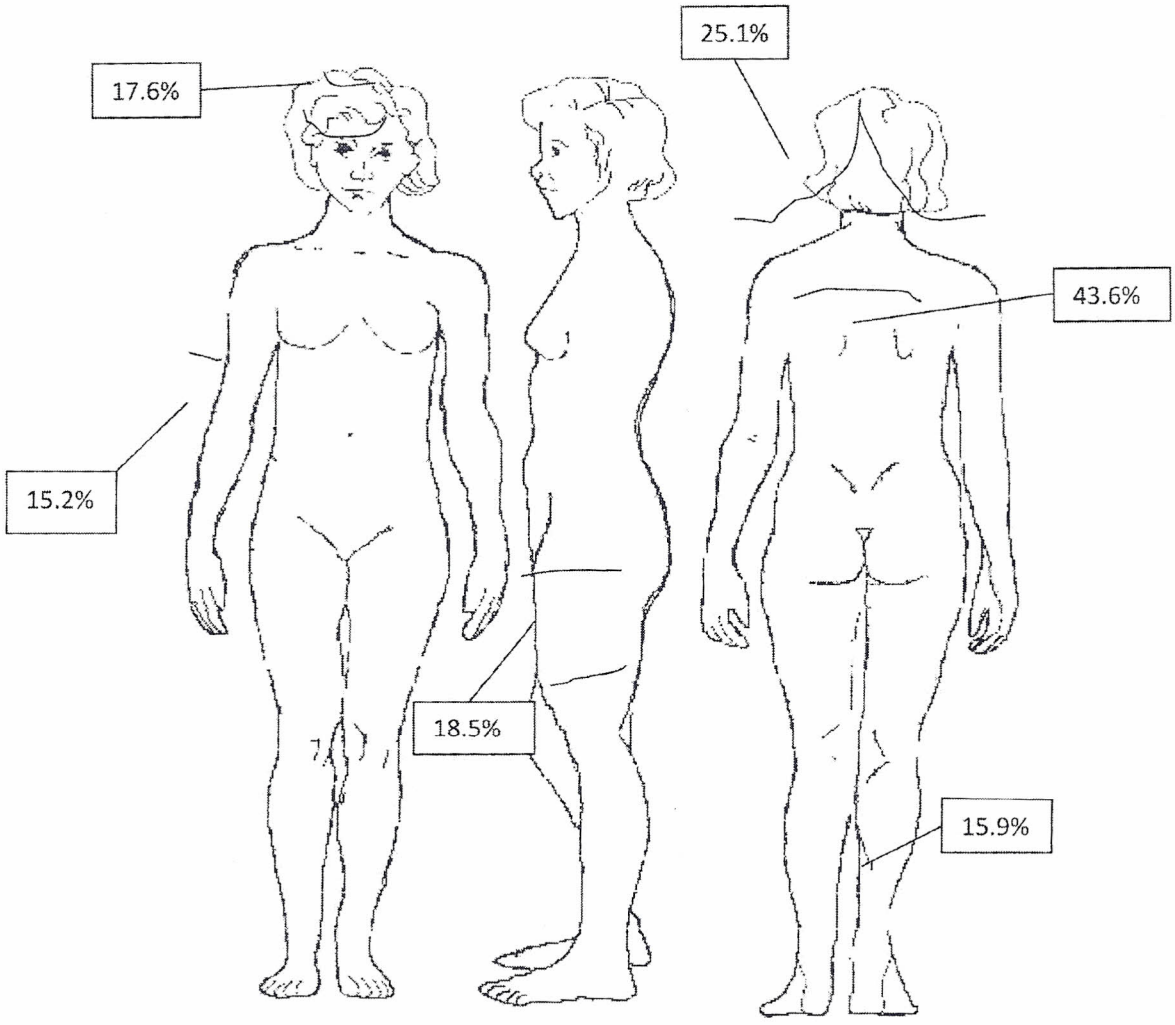
- "ergo" means "work,"
- "nomics" means "laws pertaining to, or measure."

Ergonomics is "the laws pertaining to work, the measure of work."

Ergonomics understands that there are **physical limits** to being human: **Limits to...**

- How much force can be sustained by our muscles, joints, tendons and ligaments
- How much ENERGY we need to work
- How much STRESS we can take
- How many things we can CONCENTRATE on at once

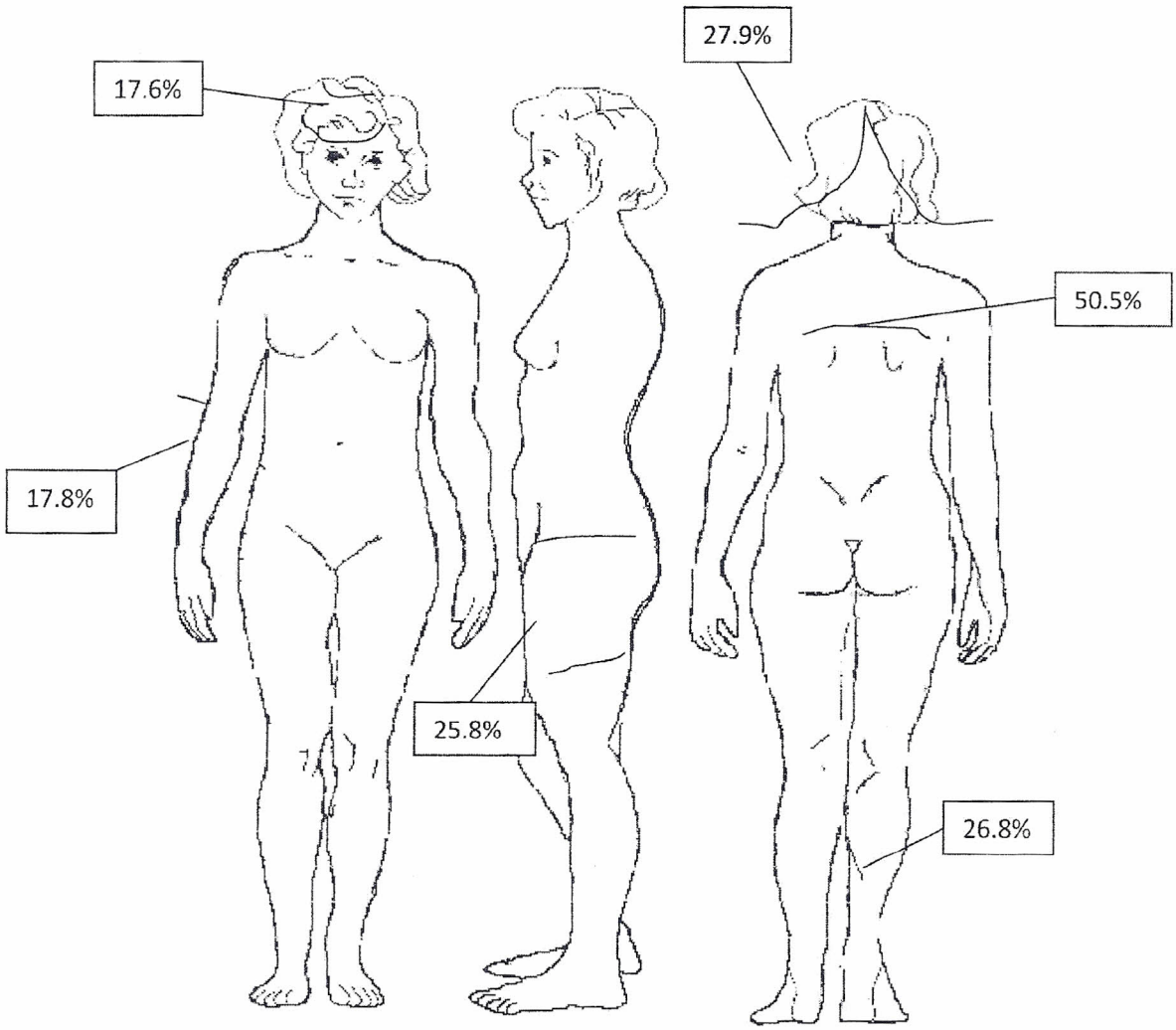
.....WITHOUT GETTING HURT OR SICK



UMass Lowell survey of nursing home personnel: Percent of non-clinical survey respondents reporting pain in a location of the body

University of Massachusetts Lowell
UMASS

Ergonomic Training for Nursing Home Employees



UMass Lowell survey of nursing home personnel: Percent of clinical staff survey respondents reporting pain in a location of the body

What Is Musculoskeletal Disorder (MSDs)?

- **Answer: The pain that you feel is often an indication of an ergonomic disorder**

- **MSD** is the language used by OSHA when it issued an Ergonomic Standard in November 2000 under the Clinton Administration. It was repealed by the Bush Administration in March 2001.

- **Repetitive Strain Injury (RSIs):** is used as a general term for a wide range of injuries to the hands, wrists, arms, elbows, shoulders, neck and even the back, the result from repetitive work.

- **Cumulative Trauma Disorders (CTDs):** is a condition where a part of the body is injured by repeatedly overusing or causing trauma to that body part.

- **Occupational Safety & Heath (OSHA)** has a new emphasis program on nursing homes beginning in October, 2011. **(See Attached Press Release)** http://osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=21192

The pain workers feel daily turns into MSDs gradually.

- First there's discomfort, then pain, then the pain turns into symptoms, syndromes or a diagnosed disorder, which can result in permanent disability.

- "Pain" is a term and a feeling which is subjective. Other early warnings include burning, cramping, numbness, swelling, tingling, weakness, or fatigue.

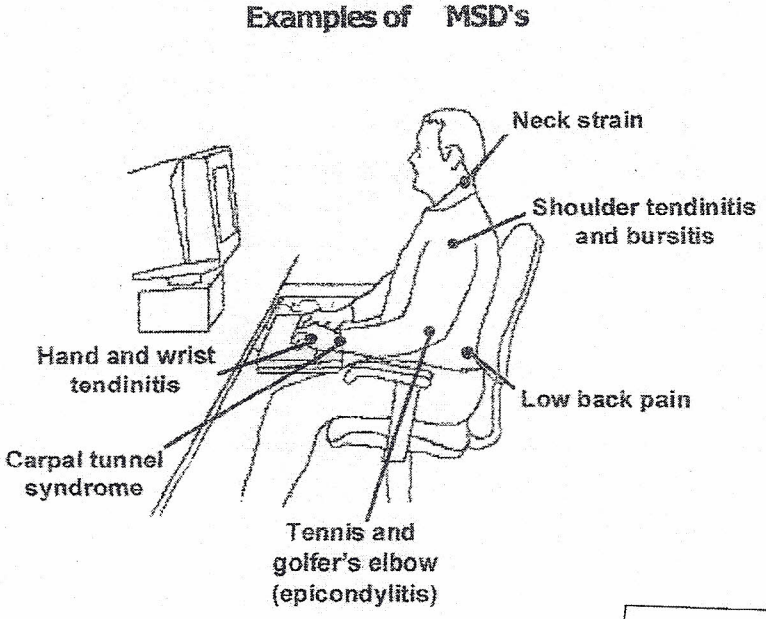
Important Facts of Musculoskeletal Disorders

- They affect your **musculoskeletal system** - your muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs.

- They are **cumulative** - they happen gradually, as opposed to accidents.

- They are **chronic** - the effects last a long time.

Musculoskeletal Disorders (MSDs)



Work-related Musculoskeletal Disorders (WMSD's)

Injuries to the soft tissues in the body:

- muscles
- tendons
- ligaments
- nerves
- blood vessels

Symptoms include:

- discomfort
- pain
- fatigue
- swelling
- stiffness
- numbness and tingling

Statement

U.S. Department of Labor

OSHA

Occupational Safety & Health Administration

- Nov. 9, 2011 News Release
- The rate of injury with days away from work for nursing aides, orderlies and attendants rose 7% to 489 per 10,000 workers (national average is 112)
- The rate of musculoskeletal disorder cases with days away from work for nursing aides increased 10% to a rate of 249 cases per 10,000 workers.

OSHA Director Dr. David Michaels:

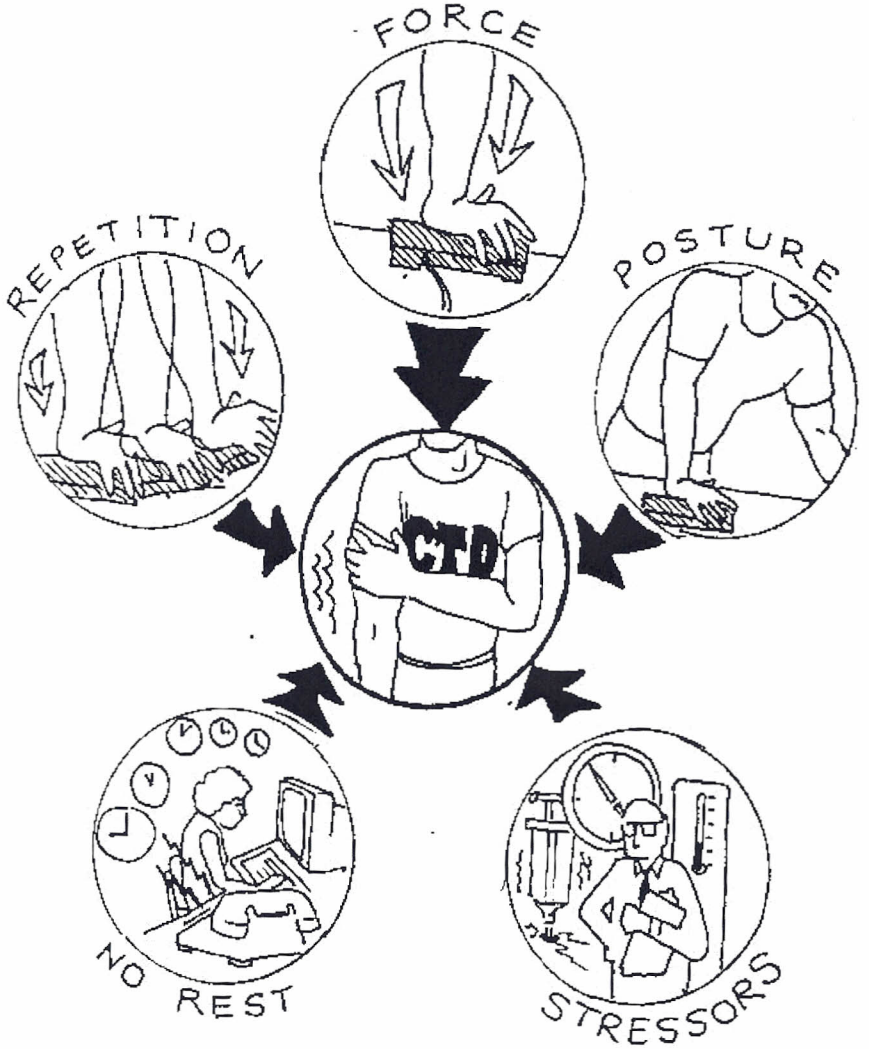
"The rates of injuries and illnesses among hospital and health care workers underscore OSHA's concern about the safety and health of these workers. OSHA is responding by launching, in the next few months, a *National Emphasis Program on Nursing Home and Residential Care Facilities.* Through this initiative, *we will increase our inspections of these facilities, focusing on back injuries from resident handling or lifting patients;* exposure to bloodborne pathogens and other infectious diseases; workplace violence; and slips, trips and falls."

Risk Factors for Cumulative Trauma Type Injury

- Awkward Posture, Static Posture
- Repetition
- High Force
- Contact Stress
- Cold Temperature

Risk Factors for Cumulative Trauma Type Injury

- Awkward Posture, Static Posture
- Repetition
- High Force
- Contact Stress
- Cold Temperature
- Fatigue, Overwork
- Job Stress, Mental Fatigue



THE ERGONOMIC RISK FACTORS

Check all the risk factors for MSDs that apply to the job.

AWKWARD or STATIC POSTURES

- ❑ Twisting or bending body to the side
- ❑ Holding arms at or above shoulders
- ❑ Bending or twisting neck
- ❑ Leaning over or kneeling
- ❑ Using equipment in difficult positions
- ❑ Working in small tight spaces
- ❑ Reaching low or high to begin a lift
- ❑ Working in one position for long periods
- ❑ Reaching and lifting loads far from the body

CONTACT STRESS

- ❑ Sustained pressure to a body part against a surface or edge

REPETITION

- ❑ Frequent forceful or awkward motions

FORCE

- ❑ Lifting or moving heavy boxes, files, or furniture without help
- ❑ Lifting unassisted
- ❑ Lifting more than 6 lbs with one hand
- ❑ Frequently lifting
- ❑ Using poorly maintained equipment for the job
- ❑ Excessive pushing or pulling

WORK STRESS – mental demand or physical fatigue

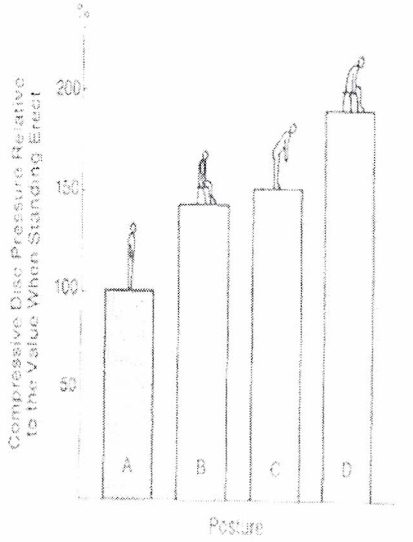
- ❑ Excessive production pressures
- ❑ Excessive overtime
- ❑ Not enough rest breaks

OTHER:_____

Keep Moving: The Risks of Sitting All Day

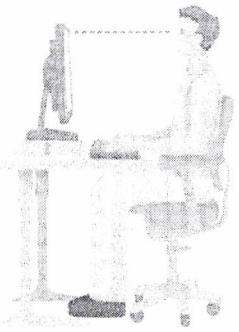
- We are meant to move!
- Remember: Sitting is an exertion
- Studies: prolonged sitting increases risks of diseases
- Build in posture changes throughout the day

Chaffin, D. Occupational Biomechanics, 3rd edition.



Keep it Neutral

- Neck/Back/Body: Computer Monitor, Keyboard and You should be in a **straight line**.
- Shoulders: not abducted nor rotated
- Elbows/Arms should be close to the body
- Thighs horizontal to the ground
- Feet comfortable and flat



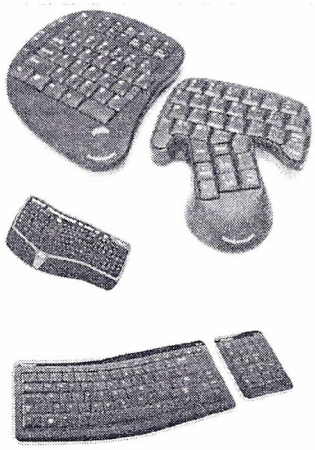
http://www.wtcsoftwarelab.com/forum/health-tips/healthy-computing/3-must-see/

Chairs: Key Adjustments

- Seat height
- Armrest: vertical and horizontal
- Back support: lumbar and midback
- Seat depth
- Seat Tilt
- Backrest forward/back/up/down

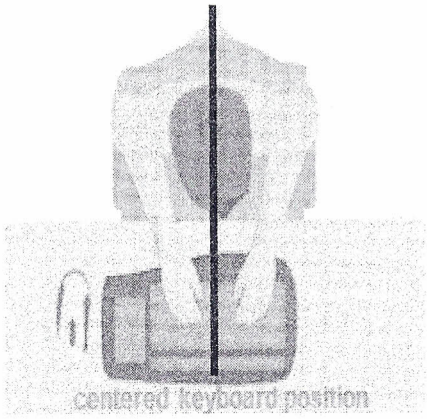
http://www.jaymit.com/Products/DetailView.php?p=423

Keyboards! What's the deal?



- Bottom line is personal preference. Try a variety of designs.
- No scientific evidence that the vertical designs prevent injury, though many users like them.
- Location of number pads on the right side are problematic for right-handers
- Modify risk factors associated with keyboard placement

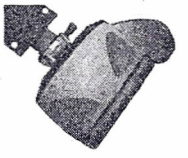
Keyboard Alignment



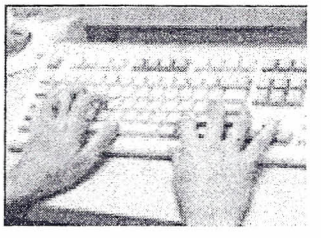
It's important to align the keyboard typing pad (not including the number pad on the right) centered on the body.

The typing portion of it should be aligned with your body, leaving the number pad outside of the center point. Look at the second picture and notice the difference. It is important to keep this alignment since you keep your posture closer to the neutral position.

Keyboard Trays

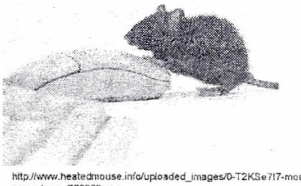


- Goal: bring keyboard to elbow height or below
- Should be height adjustable
- Adjust for downward tilt
- Room for various types of pointing devices
- Fold down keyboard legs!



Pointing Devices and Injury

- Try different designs
- Keep it close
- Don't clench
- Don't suspend fingers
- Don't anchor wrist
- Computer setup should assure that neutral hand/wrist/arm postures are supported
- Armrest should be a support and not a barrier to comfortable pointing device use



http://www.heatedmouse.info/uploaded_images/0-T2KSe7I7-mouse-computer-e--776068.png

Monitors and Vision

- Keep everything aligned: Monitor, keyboard, body
- Most people prefer the screen at least an arm's lengt
- Top of screen - 15° below the top of your head (Remember: The body follows the eyes!)
- Glasses: proper magnification is important
- Remove sources of glare
- Align the document holder with monitor

Space

- Knees and legs: Do they have enough room?
- Is there space on your desk for your non-computer work?
- Are your everyday items easy to reach?
- Can desk height be adjusted for comfort?

http://www.streetsinsurance.com/news-detail.php?article=16

The Telephone!

Is the phone easy to reach, answer and hold?

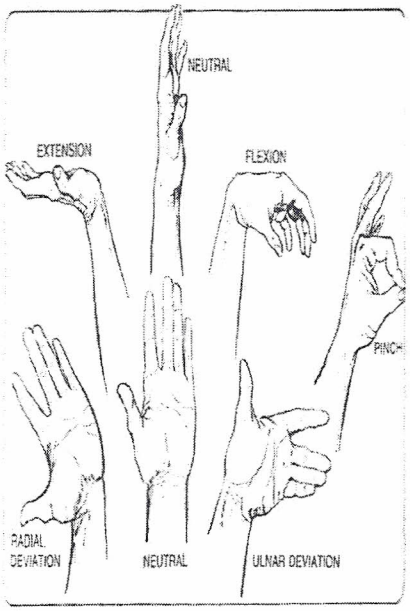
- Use headsets
- Use speakerphone when possible
- Don't cradle phone in neck!

Workstyle/Technique

- Typing so hard that the keys "clack"
- Holding a pencil while typing
- Excessive clenching on mouse
- Take every possible rest break
- Vary tasks to rotate muscle use
- Get up and get moving whenever you can
- Explore sit/stand options
- Review how to adjust your equipment

Key to Prevention: Mitigating Risk Factors

- Awkward Hand Postures
- Forceful pinching, twisting, or squeezing movements
- Contact Stress
- Repetition, esp. non-stop
- Absence of rest breaks, insufficient recovery time
- Pressure and stress at work



Graphic Source/credit
Putz Anderson, V. Cumulative Trauma Disorders: A Manual for Musculoskeletal Disease of the Upper Limbs (1988)

Watch for early SIGNS and SYMPTOMS

Besides PAIN, pay attention to:

- Fatigue
- Aching
- Burning
- Tingling
- Numbness
- Stiffness

http://www.wadhurst-physio.co.uk/common_conditions/wrist_pain

...And get medical attention right away

Summary

- One size does not fit all. Most "standard" size furniture does not fit some men or many women
- Align your workstation
- Get seated comfortably – then bring the keyboard to elbow height
- Avoid all awkward or forceful mouse postures
- Take frequent rest breaks
- Pay close attention to the first signs and symptoms

COMPUTER ERGONOMICS CHECKLIST

COMPUTER EXPOSURE: Hours per day that the operator spends at the computer on average:	Hours	
Observe employees conducting ordinary computing tasks. Make sure that mouse use is observed. Look out for non-neutral Postures. Evaluate the following as preparation for completing this checklist.		
☐ Thighs parallel to the floor ?		
☐ Feet comfortably flat on floor or footrest?		
☐ Are wrists bent to the side or up or down?		
☐ Forearms in reference to the floor and to the legs		
☐ Upper arms in reference to the torso		
☐ Lower Arms in reference to mid-section		
☐ Work surface height in reference to elbows when seated		
PAIN: **Does the operator have pain or symptoms that might be related to computer work? If YES, then please list the symptoms.**	**Yes**	**No**
Questions below are designed so that a "no" answer indicates a problem.	⇩	⇩
Chair		
a. Adjust easily?		
b. Have a padded seat with a rounded front?		
c. Have a seat pan/seat base that doesn't push into the back of knees?		
d. Are the operator's thighs horizontal (or parallel with the floor)?		

e. Have a lumbar support adjustable in height and angle?		
f. Are the operator's feet flat and comfortable on the floor or on a footrest?		
g. Have armrests?		
1. If so, are they padded?		
2. If armrests are present, do they adjust horizontally? Do they adjust vertically?		
3. If armrests are present, do they fit smoothly beneath the desk or keyboard tray?		
h. Does the chair appear to fit the operator correctly?		
i. Have all available adjustments been made to accommodate the user?		
Recommendations or adjustments made:		

	Yes	No
Keyboard, Keyboard Tray and Arm Position and Keyboard:		
a. Is there a keyboard Tray?		
1. If yes, does keyboard tray have adjustable height and tilt?		
2. Is keyboard tray close to body, so that arms don't have to be extended?		
3. Can the keyboard tray reach very close to the body?		
b. Are the operator's arms parallel to the floor? (Check YES) Are the operator's arms tilted downwards (towards floor)? (Check NO)		
c. Are the operator's elbows able to rest along the side of the body?		
d. Are the operator's forearms supported by an arm rest or other surface?		
e. Is the typing pad aligned with the monitor?		
Recommendations or adjustments made:		

Pointing Device and Hand Positions		
a. Type of Pointing Device/"mouse" used: (fill in)		
b. Is the wrist in a neutral position when holding the mouse?		
c. Is the wrist neutral when moving the pointing device?		
d. Does the device appear to fit the operator's hand?		
e. Are all fingers fully resting on the mouse when in use?		
f. Is the arm in a neutral position when the pointing device is in use?		
Recommendations or adjustments made:		
Monitor and Vision		
a. Is top of monitor screen at or below eye height (or lower if using bifocals)?		
b. Is the monitor free from glare from overhead or ambient light sources?		
c. If needed, is there a copyholder close by the monitor?		
d. Is the monitor, keyboard and chair aligned (so to avoid neck or back twist)?		
e. Can the operator relax into the back support of his/her chair and still comfortably read the monitor?		
f. Does the operator have appropriate glasses, if needed, for computer work?		
Recommendations or adjustments made:		

Space:		
a. Is there enough desk space for non-computer work?		
b. Is there sufficient space under desk for knees and feet?		
c. Can the workstation be used by left AND right-handed operators?		
d. Is the telephone, if used often, within easy reach without twisting?		
Recommendations or adjustments made:		
	Yes	**No**
Telephone:		
Does the operator have a hands-free method to use the phone (other than neck cradling)		
Is the telephone easily reached from the chair?		
Recommendations or adjustments made:		
Work Style		
a. Can the operator easily change positions over the course of the day?		
b. Does the operator "clack" by typing too hard?		
c. Does the operator able to maneuver the mouse without clenching hard?		
Work Conditions		
a. Can operator control take breaks at least 5 min/hour?		
b. Does the operator take at least a five-minute task break every hour?		
c. Is there sufficient task variety to allow changes of muscle use?		

d. Can the operator control the pace of his/her work?		
e. Is the work area a comfortable temperature (not too hot or cold)?		
Recommendations or adjustments made:		
Training		
a. Has the employee been trained to adjust the brightness and contrast controls on the monitor?		
b. Does operator know how to adjust the chair, keyboard tray, monitor and workspace?		
c. Has operator received training about injury prevention in computer work?		

Minor equipment needs: Check off if needed

- ☐ Copyholder (which side?)
- ☐ Task light
- ☐ Footrest
- ☐ Padding on armrests
- ☐ Padding on sharp edges
- ☐ Headset
- ☐ Dampen overhead light/add ambient light
- ☐ Other

Longer Term Recommendations:

Other Comments, Suggestions, Thoughts:

Online training and other resources for employees

OSHA Computer Workstation Ergonomics eTool—*Shows proper computer workstation set-up*

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

Office Ergonomics (by Kearney-Abrams, LLC)—*Shows proper computer workstation set-up*

http://www.articulate.com/products/demos/guru/Prometheus/player.html

Online Safety Library (Oklahoma State University)--*Informational website with lots of links to a wide range of topics and resources.*

http://ehs.okstate.edu/links/ergon.htm

University of Connecticut Ergonomics Technology Center (ErgoCenter)—*Provides training, consulting, clinical and research services to industry in CT and New England region. Personnel affiliated with Center for Promotion of Health in New England Workplace at UMass Lowell.*
http://oehc.uchc.edu/ergo.asp

Washington State Department of Labor and Industries, WISHA, Office Ergonomics: Practical Solutions for a Safer Workplace , 2002.

www.lni.wa.gov/IPUB/417-133-000.pdf

A CHECKLIST OF ERGONOMIC RISK FACTORS FOR THE COMPUTER WORKSTATION

Chair	
	Do you have lower back support? Y/N Does it work effectively? Y/N
	Is the backrest up to shoulder height? Y/N
	Do you have armrests? Y/N Can you adjust armrest height? Y/N
	Do your armrests present a barrier to free use of your arms? Y/N
	Is there pressure on the back of your legs against the edge of your seat? (Y = too long/no waterfall) Y/N
	Is the seat width OK? Y/N Is the seat depth OK? Y/N
	Do you keep your feet flat on floor? Y/N If no, then what do you do (see notes)
	Sitting posture notes:
Desk Interface	
	Is there enough room for your legs under the desk? Y/N Is there enough room for your legs under the desk and keyboard? Y/N
	Can you sit with your thighs parallel to the ground? Y/N Can you sit with your thighs tilted down to the floor? Y/N
	Desk surface height 1) from floor _____ inches 2) from elbow (+/-) _____ inches
	Are you able to adjust the height of your desk? Y/N
	Desk notes:

Monitor	
	How far is the monitor from you? inches from eyes:
	How far down (or up) do you have to look? approximate angle from eyeline:
	Are you able to adjust the monitor's location? Y/N
	Do you have to turn your head to look at the monitor? Y/N
	Do you have a task light? Y/N If Y, is the quality adequate? Y/N
	Do you use computer glasses, bifocals, or progressive lenses? Y/N
	Do you use bifocals or progressive glasses? Y/N
	Are you able to use a document holder? Y/N
	Monitor notes:
Keyboard	
	What type of keyboard tray do you have? Circle one: Normal QWERTY Microsoft Natural Specialized Other
	Is there a keyboard tray? Y/N Is it articulating? Y/N
	Do your wrists extend or flex at the keyboard? Y/N
	Do your wrists deviate to the side at the keyboard? Y/N

	Do you have a wrist pad?	Y/N
	Do you tend to rest your wrists?	Y/N
	Keyboard notes:	
Pointing device		
	Input device type:	Circle one: Mouse Joystick Roller ball other
	Where is the pointing device located relative to your keyboard?	Circle one: In front Behind To the left To the right
	Do you feel that the pointing device fits your hand?	Y/N
	Do you know how to set the settings of you pointing device?	Y/N
	Do you have a wrist pad?	Y/N
	Do you tend to rest your wrists?	Y/N
	Do you comfortably rest your arms at your side while pointing?	Y/N
	Do your wrists extend or flex at the pointing device?	Y/N

	Do your wrists deviate to the side when using the pointing device? Y/N
	Do you have to hold your fingers in the air while pointing? Y/N
	Do you continuously have to clench the pointing device? Y/N
	Are your wrists or forearms constantly under pressure from the edge or surface of the desk? Y/N
	Pointing device notes:

NOTES

NOTES