



Ergonomics



An eBook Resource—Not a Course for Credit

Introduction to Ergonomics

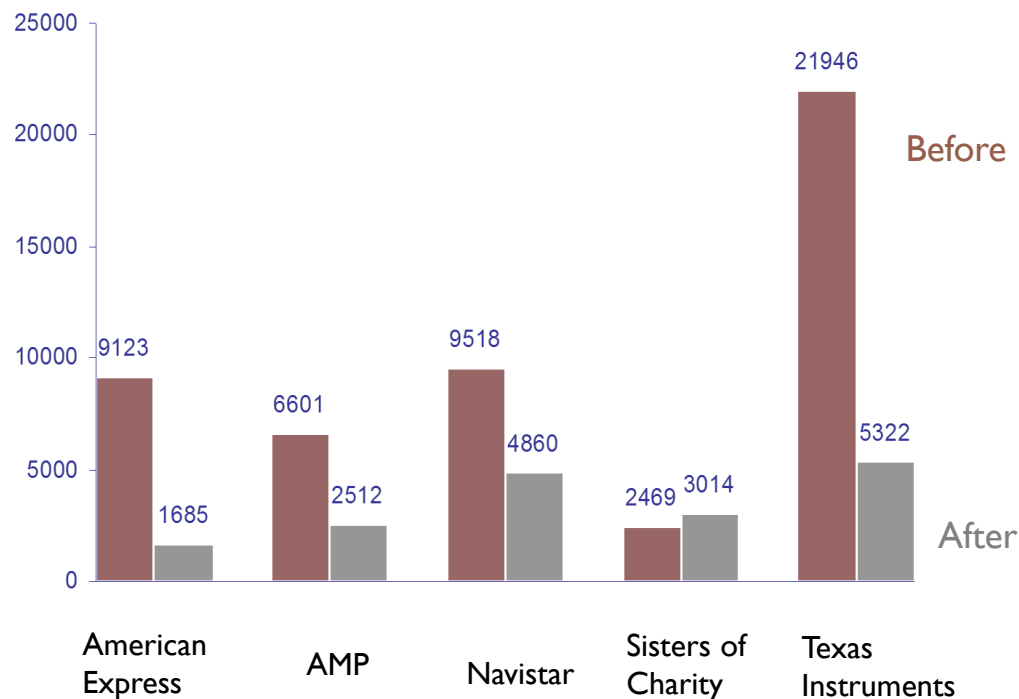
Fast Facts

▶ Why have an ergonomics program?

- ▶ Protects workers
- ▶ Improves productivity
- ▶ Saves money

In a report to Congress, the General Accounting Office presented case studies in which costs associated with cumulative trauma disorders (CTD's) were dramatically reduced when ergonomics programs were instituted

Average Cost per CTD Claim Before & After Ergonomic Program Implementation

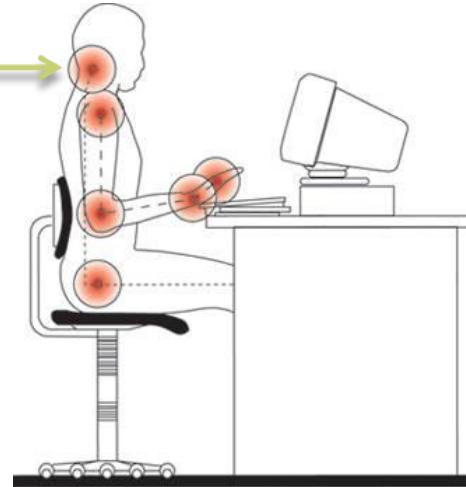


Repetitive Stress Injury

▶ What are the risk factors?

- ▶ Repetitive exertions
- ▶ Posture stresses
- ▶ Contact stresses
- ▶ Static exertions
- ▶ Forceful exertions

Areas likely to experience and RSI



▶ Generally:

- ▶ Pain indicates damage to muscles, tendons, or ligaments
- ▶ Numbness, tingling and loss of strength and/or coordination may indicate nerve damage
- ▶ Cold hands may indicate nerve and/or circulatory problems



Did you know? These are biomechanical risk factors, "biomechanical"-describes the body as a machine

Repetitive Stress Injuries

▶ Five main categories:

▶ Muscle

- ▶ May occur from chronic overuse or use of muscle groups not frequently used
- ▶ With rest symptoms resolve in a day or two

▶ Tendon

- ▶ With overuse the tendon and sheath may become damaged and not operate properly-wont “glide” as smoothly

▶ Ligament

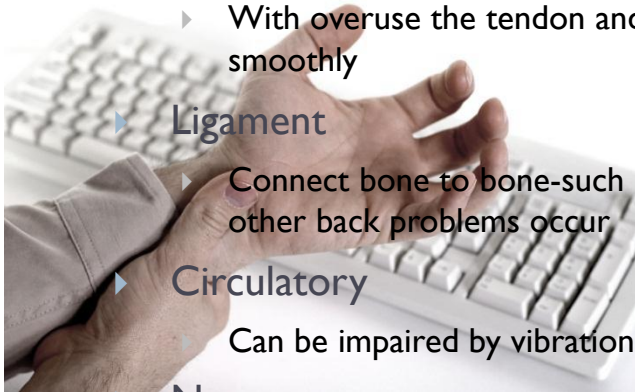
- ▶ Connect bone to bone-such as vertebrae- and can be damaged if improper lifting technique is used or other back problems occur

▶ Circulatory

- ▶ Can be impaired by vibration, repetitive motion, awkward postures, low temperatures, etc.

▶ Nerve

- ▶ Often occurs due to compression such as elbows resting on hard surfaces or sleeping on your arms



Repetitive Exertions

- ▶ In itself, repetition is not very risky, but when combined with other risk factors such as high force and poor posture, repetition takes on increased significance

- ▶ Includes activities such as:

- ▶ Assembly line work
- ▶ Typing
- ▶ Manual materials handling
- ▶ Laboratory procedures
- ▶ Etc.

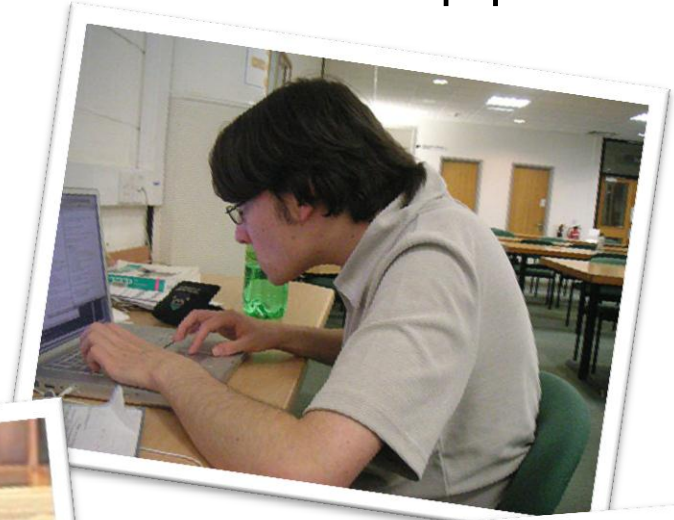


Repeating motions such as typing for assembly work without breaks can quickly lead to repetitive stress injuries



Posture Stresses

- ▶ If you experience posture stresses, habit modification and new equipment are things to consider
- ▶ Includes things like:
 - ▶ Awkward wrist bending
 - ▶ Stooping
 - ▶ Holding the phone between shoulder and ear
 - ▶ Etc.



Contact Stresses

- ▶ Typically involves upper extremities and a hard surface
 - ▶ Example: Typing or “mousing” on a square edge table-the underside of the arm is at risk of a compression injury where the arm makes contact with the “sharp” edge of the desk
- ▶ Consider purchasing wrist rests for your keyboard and mouse-pad



Static Exertions

- ▶ A reduction in blood flow can take a toll on our soft tissues
 - ▶ Examples: standing for long periods of time may cause pooling of blood in the legs, while keying a typist may find some muscles in the forearm that experience constant loading (contraction), etc.



- ▶ Be sure to take breaks and move or stretch all of your muscles to get blood flow moving faster

- ▶ Vibration and cold weather can also impede circulation and lead to or worsen RSI's
 - ▶ Consider taking breaks when using things like pneumatic tools and wear warm clothing if you work in a cooler environment



Forceful Exertions

- ▶ The repetitive stress injury due to force increases as other risk factors come into play
- ▶ RSI's typically take months or years to develop *and* months or years to resolve
 - ▶ When moving heavy objects-especially with poor physical conditioning and improper technique- tissue damage can occur immediately

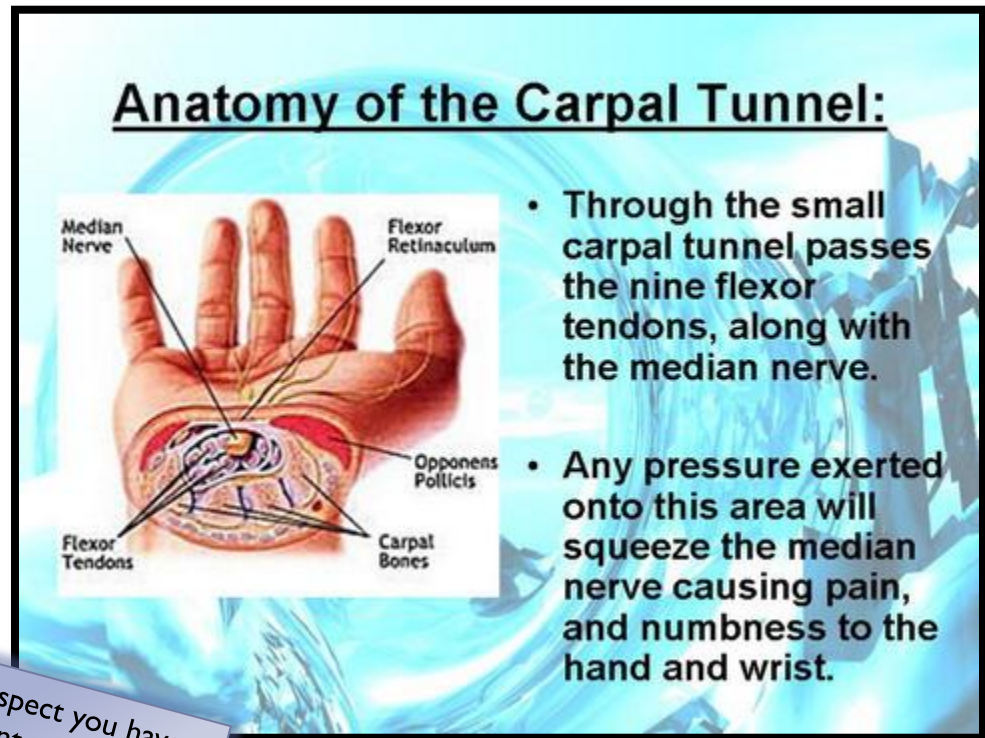
- ▶ It's important to plan out high-demand tasks and to make gradual increases in strength training routines

If an object is too heavy or awkward to carry, ask for help!
Risking the injury is not worth it



Carpal Tunnel Syndrome

- ▶ Often caused by the compression of the median nerve within the carpal tunnel
- ▶ Symptoms include:
 - ▶ Tingling
 - ▶ Burning
 - ▶ Numbness
 - ▶ Loss of coordination
 - ▶ Muscle loss



Note! If you suspect you have nerve impairment, consult your physician as soon as possible.

Alternative Keyboards*

*Some material adopted from: "NIOSH Suggests Considerations for Alternative Keyboard Use"

Introduction

- ▶ The National Institute for Occupational Safety & Health (NIOSH) cautions that a computer keyboard is only one element of the workplace that can influence comfort and health
 - ▶ Therefore, all features of the work environment should be examined when evaluating ways to enhance user comfort and avoid potential musculoskeletal problems



- ▶ Alternative keyboards can help keep wrists straight and help to avoid postures thought to cause musculoskeletal problems

Keep in mind: It may take a few days to become accustomed to an alternative keyboard and that some people never completely adapt to them



Quick Tips

- ▶ Broad-shouldered individuals may find that split keyboards allow improved (neutral) wrist postures compared to conventional keyboards
 - ▶ Small individuals may find that greater width of ergonomic keyboards induces an uncomfortable distance and/or approach to the mouse
- ▶ Try to select a keyboard angle that promotes neutral (straight) wrist posture
 - ▶ At least one study has provided evidence that “negative slope” keyboards may help alleviate keyboard discomfort and injury; although, to date there is no consensus on this subject among ergonomists

Keep in mind:
Tilting a keyboard tray with an attached mouse trap may cause the mouse to roll off of the tray



Purchasing Suggestions

- ▶ Determine if the keyboard is compatible with existing hardware and software and whether it can accommodate other input devices such as “mice” and trackballs



Details™ (a subsidiary of Steelcase, Inc.) is a govt. contract product line available to ISU departments. Find additional information at: <http://www.scdetails.com/>

Assess how the keyboard will fit with the workstation

- ▶ Some ergonomic keyboards must be placed on surfaces that are lower than those required for standard keyboards to achieve proper working posture
- ▶ If the workstation had a standard keyboard on a keyboard tray, an “ergonomic” keyboard may not fit on the old tray





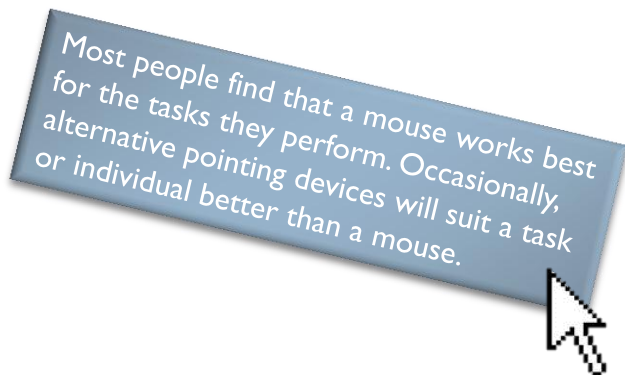
Pointing Devices

Introduction

► Four main types:

1. Trackball
2. Touchpad
3. Mouse with “scroll” wheel
4. Second digit, *Homo sapiens*

Most people find that a mouse works best for the tasks they perform. Occasionally, alternative pointing devices will suit a task or individual better than a mouse.



Quick Tips

- ▶ It is important to place the device roughly adjacent to (and roughly at the same level as) the keyboard
- ▶ Some people find that switching hands and/or devices helps control repetitive stress injury symptoms
- ▶ If you are experiencing upper extremity pain or discomfort while at the computer, make a habit of moving your hands away from the mouse and/or keyboard whenever possible
 - ▶ Examples include when thinking, reading from the monitor, or while waiting for files to download
 - ▶ Stretching and/or massage may help alleviate symptoms

When ordering a new keyboard/mouse tray, be sure there is enough room under the work surface to accommodate the new tray





Low Back Pain

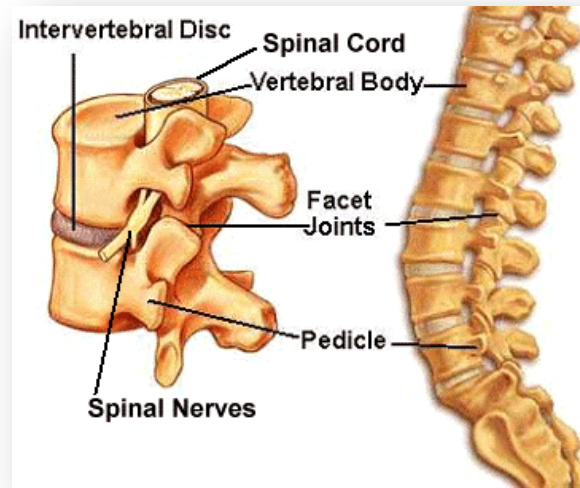
Snippets

- ▶ About 85% of Americans experience back trouble by age 50
- ▶ Back problems are the most frequent cause of activity limitations in working-age adults
- ▶ In the long run, surgery, chiropractic care, etc. , are considered no more effective than *no treatment* in reducing low back pain



The Spinal Column

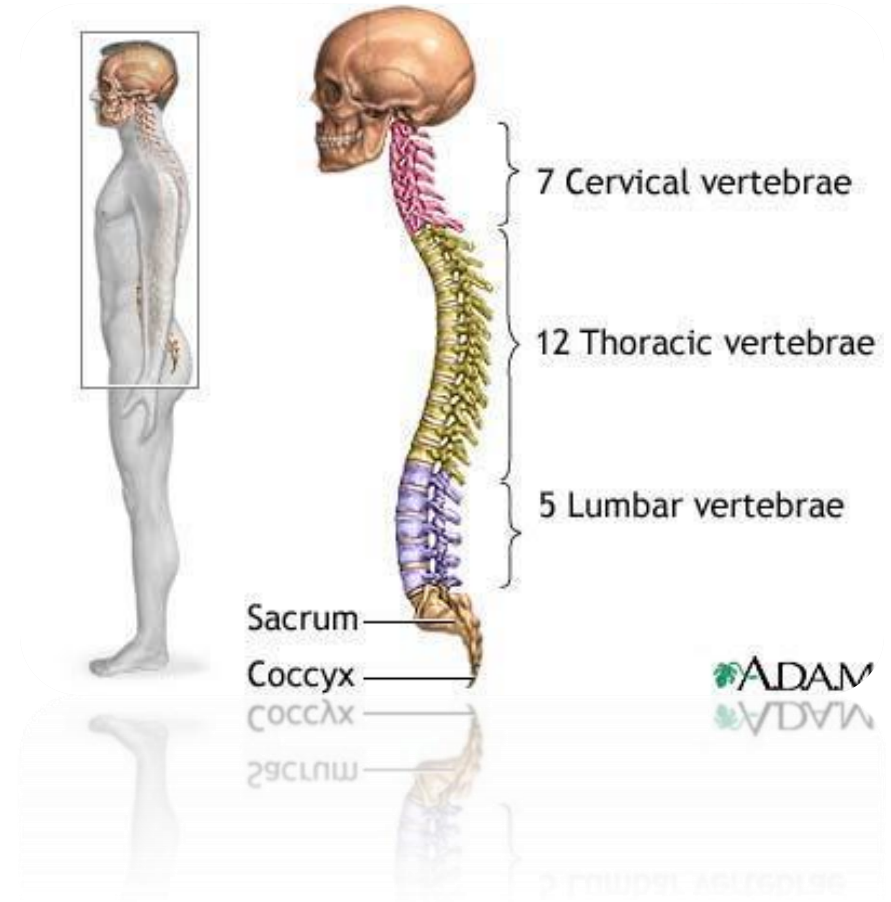
- ▶ The human spinal column is the center of postural control
- ▶ It is built to provide stability and at the same time allow flexibility
- ▶ These two seemingly incompatible functions of support (inflexibility) and movement (flexibility) are at opposite ends of the spectrum of movement, which is one reason the spine is so vulnerable to injury



Continued

- ▶ 7 cervical vertebrae (neck)
- ▶ 12 thoracic vertebrae (middle back)
- ▶ 5 lumbar vertebrae (low back)
- ▶ Sacrum (fused vertebrae)
- ▶ Coccyx (tailbone)

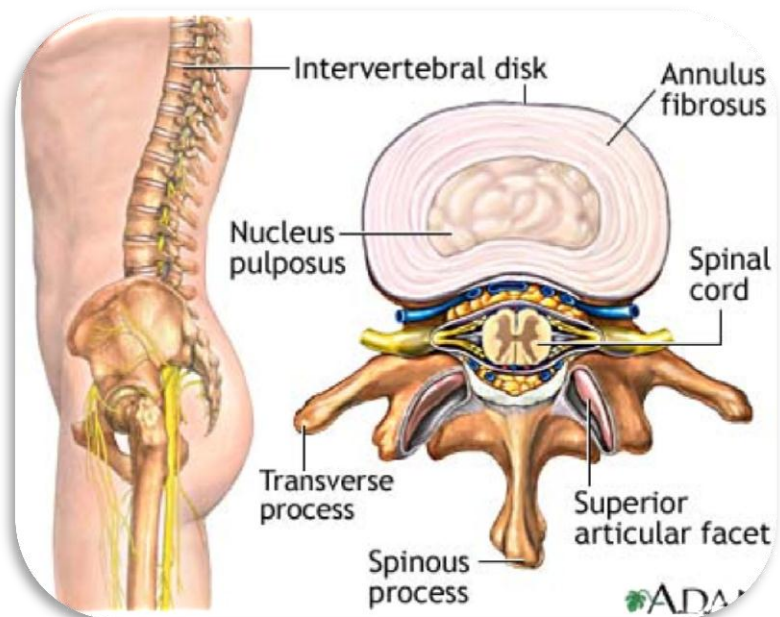
Did you know? Two main forces acting on the spine: compressive (push discs together), and tensile (pull ligaments, tendons, and muscles). Typically these forces occur simultaneously, for example, when lifting objects, or “slouching”.



The Spine – Disc Nutrition

- ▶ Located between the vertebrae in our backs are discs which act as the shock absorbers for the spine
- ▶ We feed our discs by moving fluids into and out of them through mechanical compression and decompression
 - ▶ One more reason to move about while at work

Did you know? Discs begin losing blood supply by age 20



Acute Injury Risk Factors

- ▶ Acute (traumatic) back injury may occur due to:
 - ▶ Slips, trips, falls
 - ▶ Auto accidents
 - ▶ Sedentary lifestyle (with occasional lifting)
 - ▶ Heavy and/or awkward loads
 - ▶ Improper lifting technique



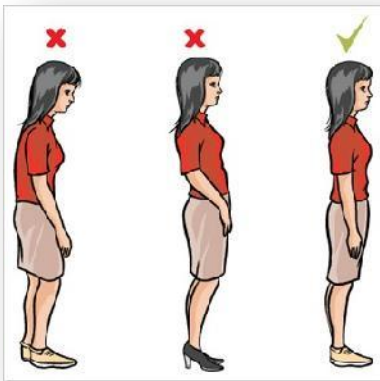
Chronic Injury Risk Factors

- ▶ **Chronic back injury may result from:**
 - ▶ Poor posture and/or improper lifting technique combined with repetitive lifting
 - ▶ Genetics
 - ▶ Overall physical fitness



Risk Reduction – Chronic Injury

- ▶ Maintaining a neutral spinal posture is important when seated as well as during lifting tasks
- ▶ If sitting without back support:
 - ▶ Rotate the hips forward until a neutral position is achieved
- ▶ If using the backrest:
 - ▶ Sit back in the chair to allow the backrest to help maintain a neutral posture and reduce muscle loading

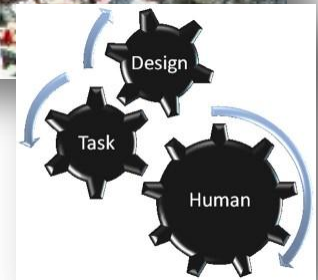


Remember! Maintaining a neutral spinal posture is crucial in treatment and prevention of chronic back pain

Risk Reduction – Engineering/Design

▶ You can design a safer lifting environment by:

- ▶ Avoiding very high and very low object placement
- ▶ Reducing object weight and size
- ▶ Providing handles
- ▶ Eliminating the need for twisting motions
- ▶ Eliminating bending and stooped postures
- ▶ Providing mechanical assistance



Risk Reduction – Lifting Tips

- ▶ When lifting, you can substantially reduce your risk of low back injury and pain by:
 - ▶ Keeping the object close to you
 - ▶ Bending your knees
 - ▶ Maintaining your lumbar curve (bend knees and stick buttocks out)
 - ▶ Not twisting or bending sideways
 - ▶ Avoiding rapid, jerky movements
 - ▶ Asking for assistance with heavy and/or bulky loads



Risk Reduction – At Home

- ▶ Be sure to maintain neutral spinal posture when stooped
 - ▶ For example, when shaving, brushing teeth, bathing children, repairing cars, shoveling, etc.
- ▶ Planning lifts and getting assistance or mechanical help whenever possible is also a good risk reduction strategy



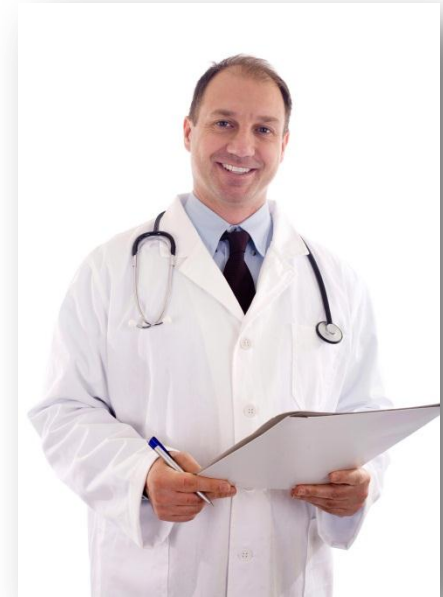
Note: Avoid stooping when gardening or doing other yard/maintenance activities



When to Seek Help

- ▶ For common back strain, give home remedies a try for 72 hours

- ▶ In rare cases, back pain can indicate a serious problem-**seek medical attention if:**
 - ▶ You have weakness or numbness in either leg
 - ▶ You have a fever along with back pain
 - ▶ You notice new bladder or bowel control problems
 - ▶ Your pain increases with lying down
 - ▶ You have a history of significant chronic disease, such as osteoporosis, cancer, or diabetes



Medical Intervention Snippets

- ▶ Less than 5% of back pain is caused by serious disease (e.g., cancer or infection) or anatomical problems that require surgery
- ▶ Surgery is almost always elective, possibly providing faster relief of symptoms but may have little effect on long term outcomes
- ▶ Non-specific pain could originate with the muscles, ligaments, facet joints, or discs and it is generally impossible to be certain of the exact cause



Note: More often than not, simply applying an ice pack or heat pad to the painful area and resting will “cure” back pain

Continued



- ▶ In a small fraction of cases, the pain will move down the leg into the foot, usually as a result of a disc herniation

- ▶ Only about 25 of persons with back pain undergo surgery



- ▶ Most herniated disc symptoms abate without surgery and have been found surprisingly common even in non-symptomatic adults
-

Stretching & Exercise



▶ Stretching and exercise are often recommended for back pain, however, some of these activities may aggravate some conditions

▶ Some discomfort is considered acceptable during the activity, but should not persist when the activity is discontinued



Speak to your physician or other health care practitioner for stretches and exercises suited to your specific condition



Back Belts

- ▶ The National Institute for Occupational Safety & Health has concluded that:
 - ▶ There is insufficient data to support back belt endorsement
 - ▶ There is a potential for cardiovascular problems
 - ▶ Back belts are not considered personal protective equipment

- ▶ To issue a back belt, ISU requires:
 - ▶ Job analysis
 - ▶ Medical recommendation
 - ▶ Fitting
 - ▶ Employee training



Resources

▶ Mayo Clinic

- ▶ <http://www.mayohealth.org/>
- ▶ Click on “search” and type “back pain”

Check out these websites or contact EH&S to get more information!

▶ Herman-Miller

- ▶ <http://www.hermanmiller.com/research/>
- ▶ Click on “ergonomics” and look for information on seating and back pain

▶ NIOSH

- ▶ <http://www.cdc.gov/niosh/homepage.html>
- ▶ Click “topic index” then chose “ergonomics” or use the “search” function and type “back pain”



Features to Consider when Purchasing a Chair

Introduction

- ▶ Perhaps you find your chair is not particularly comfortable and seems to become less so each time you plop down upon it
- ▶ This guide is designed to help you identify chair features that will make your seated work more comfortable and productive



Adjustment Options

▶ There are numerous seat adjustment options including:

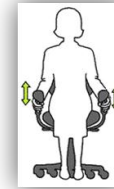
- ▶ Seat height
- ▶ Backrest height
- ▶ Armrest height
- ▶ Armrest width
- ▶ Backrest tilt
- ▶ Variable backrest stop
- ▶ Backrest tension
- ▶ Seat pan depth
- ▶ Foot ring height



Seat height



Backrest height



Armrest height



Armrest width



Backrest tilt



Variable backrest stop



Backrest tension



Seat pan depth



Foot ring height

Remember! It is important to "try out" the prospective model for several days before purchasing. The Design staff at Facilities and Planning Management have several models available for loan. Contact them at (515).294.1710

Quick Tips

- ▶ Seat height in most chairs is adjustable; if you are larger or smaller than average, the height range of an “average” chair might not be adequate-check with the manufacturer to make sure the chair you select is available in your size and is easily adjustable
- ▶ Be sure to select a chair that offers backrest height adjustment, maintaining a “neutral” lumbar (lower back) curve and having that extra support is important
- ▶ Some chairs have a seat pan tilt option
 - ▶ By lowering the front of the seat pan, the lumbar spine assumes a posture closer to the neutral standing posture which reduces pressure on the lumbar spine



Continued

- ▶ If possible, select a chair that will have an upright locking mechanism, a reclining backrest, and backrest tension adjustment
 - ▶ When writing or typing, many workers prefer to sit upright; however, when speaking to co-workers, reclining is recommended as it reduces pressure on the lower back
- ▶ Try to find a seat pan that is fitted to your body
 - ▶ A seat pan that is too short results in increased pressure on the buttocks and thighs
 - ▶ A seat pan that is too deep can restrict circulation at the knee and makes it difficult to attain proper lumbar support
 - ▶ Generally, a sliding seat pan will provide comfortable seating for a wide range of individuals



Five-star chair bases are safer than four-star bases - especially if you like to lean back in your chair. Fortunately, chair manufacturers have recognized this fact and four-star bases are now pretty much a thing of the past.



Just A Thought

- ▶ Chairs set on linoleum tile or cement flooring should have soft rubber casters
 - ▶ To keep you from zooming around too fast
- ▶ Chairs in carpeted areas should have hard plastic casters
 - ▶ To keep you from getting bogged down

If you move around a lot on carpet, consider purchasing a chair mat

Zooming around

Linoleum flooring



Small Budget?

- ▶ If your seat pan is too deep, try purchasing a seat back cushion
- ▶ If your armrests are too short, consider attaching foam to the top of them
- ▶ Many small changes can make a big difference

Be sure you know your chair adjustments-and use them!





Computer Workstation Ergonomics Checklist

Introduction

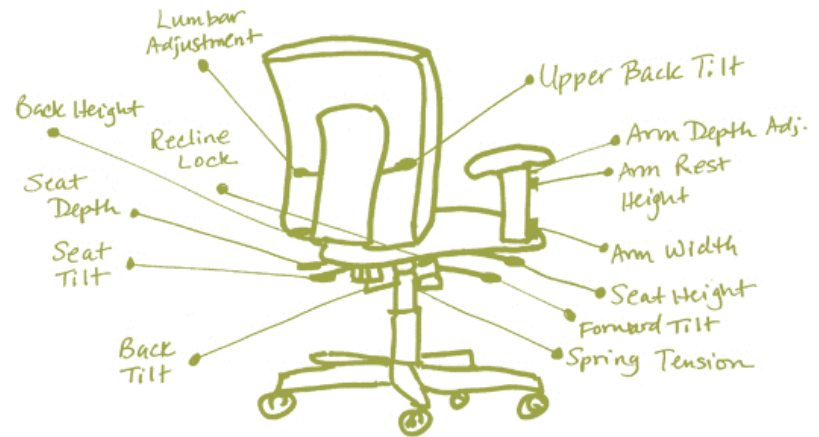
- ▶ This checklist is designed to guide you through an ergonomic assessment of your computer workstation
- ▶ If you answer “NO” to an item, it may indicate a need for workstation modification
- ▶ If you have any questions, comments, concerns, or need further information please contact EH&S at (515).294.5359



Chair Adjustment

▶ Primary considerations:

- ❑ Is your chair height adjustable?
- ❑ Does your chair support your lower back?
- ❑ Is there room between the front edge of the chair seat and the back of your knees?
- ❑ Can you easily reach your work without interference from the arms of your chair?
- ❑ When using the keyboard or mouse, are you able to keep your arms in a comfortable position with elbows at your sides?
- ❑ Do you feel rest flat on the floor or footrest?
- ❑ When you sit upright in your chair, are your thighs approximately parallel to the floor?
- ❑ Does your chair have an upright locking feature?



Other Considerations

- ▶ Adopting two or more seated postures will allow various muscle groups time to relax and recover
- ▶ If your chair backrest is adjustable, raise or lower it so that the contour of the chair provides maximum lower back support
- ▶ If your chair has armrests, they should allow you to get close to your work
 - ▶ If you're typing, they should be at a height where they barely contact your elbows when your arms are resting comfortably at your side
 - ▶ Chair armrests should not force you to elevate your shoulders or wing your arms to the side



The Ergonomist's Opinion

- ▶ Sitting with several “bad” postures for shorter periods of time may be better (or at least no worse) than using one “good” posture over long periods of time
- ▶ Individuals are encouraged to use 3 or more seated postures throughout the workday to allow various muscle groups time to relax and recuperate. Recommended postures include:
 1. “perched” on the edge of the chair – with pelvic tilt to maintain good low back curvature
 2. Upright with seat back locked and the gluteus maximus all the way to the back of the seat
 3. Reclined
 4. Other postures you feel comfortable with



Keyboard Adjustment

▶ Primary considerations:

- ❑ With your chair adjusted properly, are your keyboard and mouse approximately at elbow height?
- ❑ Are your arms in near your trunk rather than stretched out in front of you?
- ❑ Is there at least an inch of clearance between the bottom of your work surface and the top of your thighs?



Other Considerations

- ▶ If your keying surface is too high (or too low) and cannot be changed, installing an adjustable keyboard tray may be a solution
- ▶ If your keying surface is too high and a keyboard tray is not feasible, raise the chair and support your feet with a footrest if necessary
- ▶ Another approach is to elevate the back edge of the keyboard until your hands and forearms for a straight or somewhat straight line when fingers are on the keys
- ▶ If your keying surface is too low and cannot be adjusted, try elevating the leading edge of the keyboard until your hands and forearms form a straight or somewhat straight line when fingers are on the keys



The Ergonomist's Opinion



Did you know? Resting hands on a wrist rest or in your lap when not actively keying is recommended; however, using a wrist rest that induces poor (bent) wrist posture may induce injury

- ▶ Your forearms do not need to be exactly parallel to the floor while at the keyboard
- ▶ If your hands are more than one or two inches higher or lower than your elbows, changing your workstation configuration may reduce your risk of cumulative trauma disorder

- ▶ Footrests are best left as an option of last resort
 - ▶ Their use will tend to constrain the worker when it is actually postural fluidity we are seeking
 - ▶ Many workers have two or three seating locations within the workstation - meaning two or three footrests may be optimal for a given employee



Work Surface

▶ Primary considerations:

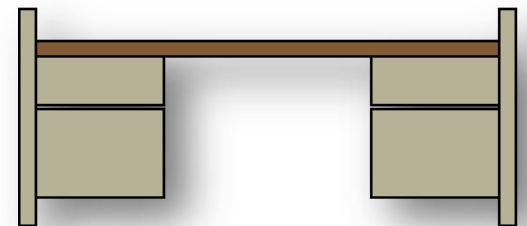
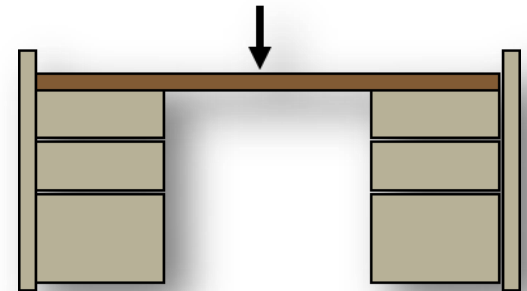
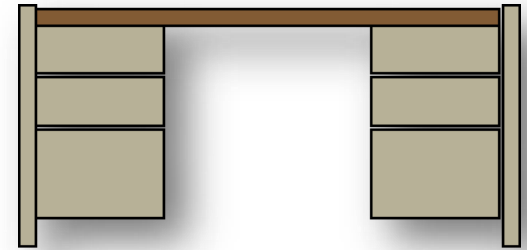
- ❑ Does your writing surface have a rounded leading edge?
- ❑ When seated upright, is the work surface height approximately midway between your navel (belly button) and the bottom of your sternum (breastbone)?



Other Considerations

- ▶ Many of the work surfaces (desks) on the ISU campus are Steelcase 9000 series
 - ▶ These surfaces have four height options:
29.75", 28.75", 27.25" and 26.25"
- ▶ What's average?
 - ▶ Many men of average stature will find the 29.75" height acceptable
 - ▶ Women of average stature will likely be most comfortable reading and writing at 28.75" or 27.25"

Note: Some smaller persons prefer a work surface height of 26.25", this may require switching to smaller hanging file pedestals (drawers)



The Ergonomist's Opinion

- ▶ It's best to key (whether at a keyboard or with a calculator) and write at separate heights
- ▶ If separate surfaces are not practical (forcing you to key and write at one height), selecting an intermediate height may be acceptable in some cases



Write here

Key here

Remember! Be sure to find a desk that fits you and your work needs

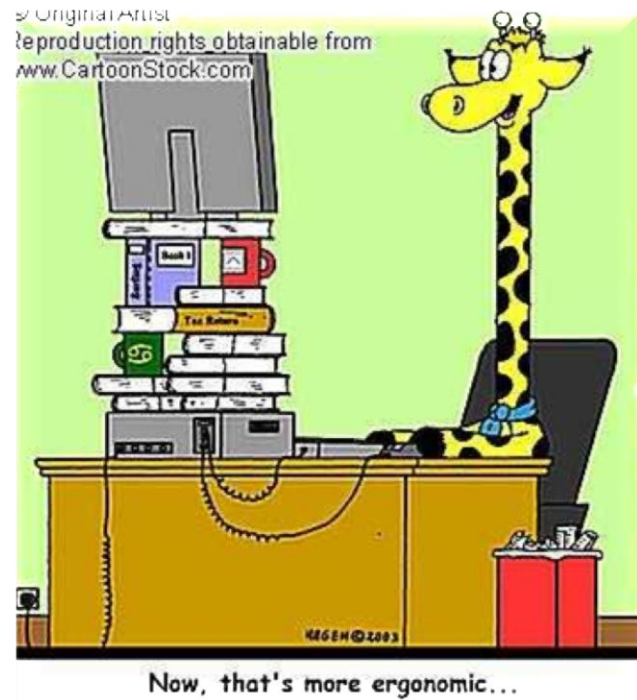
work needs
fits you and your
to find a desk that
remember! Be sure



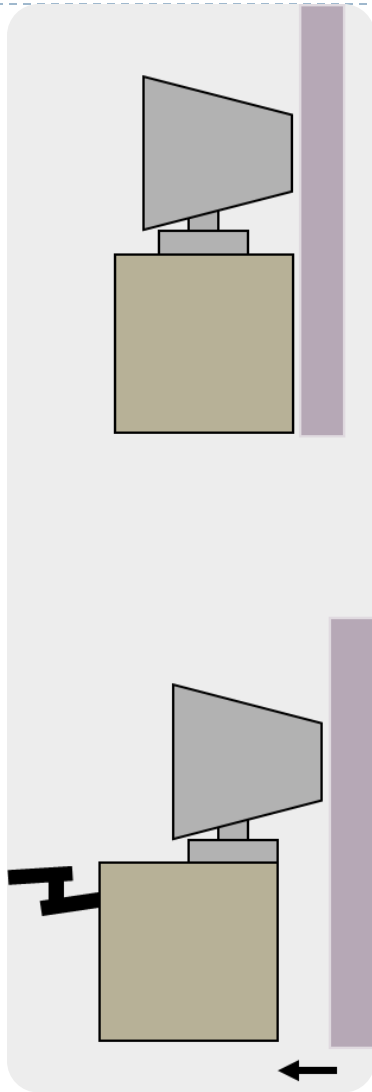
Monitor Adjustments

▶ Primary considerations:

- ❑ Is your monitor more-or-less in front of your keyboard rather than off to the side?
- ❑ Is the viewing distance to your computer monitor at least 18 inches?
- ❑ Is the top of the computer screen below eye level?
- ❑ Is your computer monitor protected from excess glare?
- ❑ Is your monitor screen more-or-less perpendicular to your normal line-of-sight?
- ❑ If you wear bifocals or trifocals, are you able to look at the monitor without tilting your head backwards?



Other Considerations



- ▶ If you feel as though your monitor is too close but you cannot “get away” from it, install a keyboard tray and/or pull the desk out from the wall - letting the monitor “hang” over the back of the work surface

Note: Check out the *e-book* on eyestrain for some helpful suggestions and more information about monitor placement and screen related eyestrain prevention

The Ergonomist's Opinion

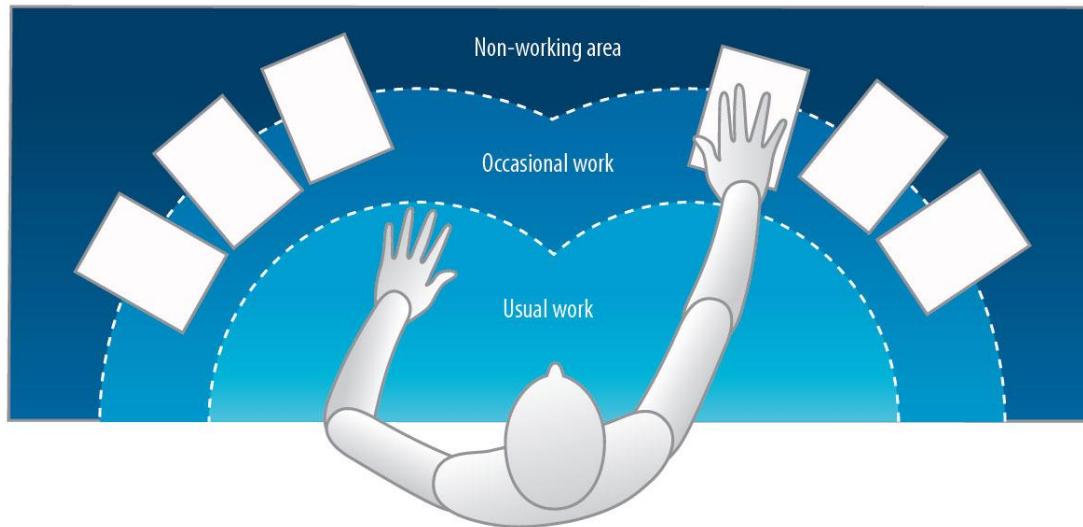
- ▶ Keeping the monitor on the work surface (as opposed to resting on a computer CPU) is recommended unless the new placement/angle creates unwanted screen glare
 - ▶ E.g., from overhead lighting
- ▶ Be sure to readjust the monitor tilt after adjusting the monitor height



Workstation Accessories

▶ Primary considerations:

- ❑ Are your primary work materials located in front of you?
- ❑ Are your most frequently accessed items (phone, manuals, etc.) easy to reach?
- ❑ Do you have a document or copy holder to hold reference materials?
- ❑ If a large percentage of your time involves using a phone, do you use a phone headset?



Other Considerations

- ▶ As you change tasks, remember to move primary materials in front of you
- ▶ When reading or writing on the desk, inclining the material by placing it on a 3-ring binder or other material will improve neck and back posture



Three-ring binder!



The Ergonomist's Opinion

- ▶ It's okay to place items where they are most comfortable to reach - rather than where they look "best"



Remember! Be sure to have a "method to the madness" and know where everything is!

- ▶ In some cases, a slant board may be a better option than a copyholder as the latter allows inclined viewing of large, heavy materials such as books and ring binders



Note: Slant boards are depicted in the ISU Bookstore catalog

Work Habits

▶ Primary considerations:


- ❑ Do you move your hands away from the keyboard and/or mouse as work allows (e.g., when waiting for files to download, reading text, or thinking about what to write)?
- ❑ When at the computer, do you take short, frequent breaks (up to a minute every 10-15 minutes) vs. less frequent breaks?
- ❑ Do you avoid end-of-year or end-of-cycle “crunches” by starting work sooner, getting assistance, or via other means?



Other Considerations

- ▶ If you are experiencing pain or discomfort at work and anticipate an increase in workload, be sure to speak to your supervisor about your concerns and have your workstation evaluated promptly
- ▶ Often it's helpful to ask an outsider to perform an ergonomic evaluation because they do not share your assumptions about work routines and environments



EH&S will gladly perform ergonomic evaluations!
Contact us at (515).294.5359 or
 Environmental Health and Safety, Iowa State University

Remember! Get your
workspace evaluated before you
get to this stage

The Ergonomist's Opinion

- ▶ If you are assessing your workplace for ergonomic risk factors and solutions, it's a good idea to pretend that anything is possible and that money is no object
- ▶ Once potential solutions are identified, assumptions about work routines, budgets, etc., can be discussed

Discuss money and options with your team and supervisors before taking action



Stretching at Work

Reasons to Stretch at Work

- ▶ Reduce muscle tension and stress
- ▶ Increase alertness and productivity
- ▶ Improve circulation
- ▶ It makes you feel better!



If you stretch, your co-workers just might try it too!



Things To Do When Stretching

Be excited! You'll get more energy out of your stretch!



- ▶ Make slow movements
- ▶ Hold the stretch for at least 5 seconds (10 is recommended)
- ▶ Experiment with slight variations in posture and movement to improve stretch effectiveness
- ▶ Stretch frequently, especially when sitting or in other constrained environments



Things To Avoid When Stretching

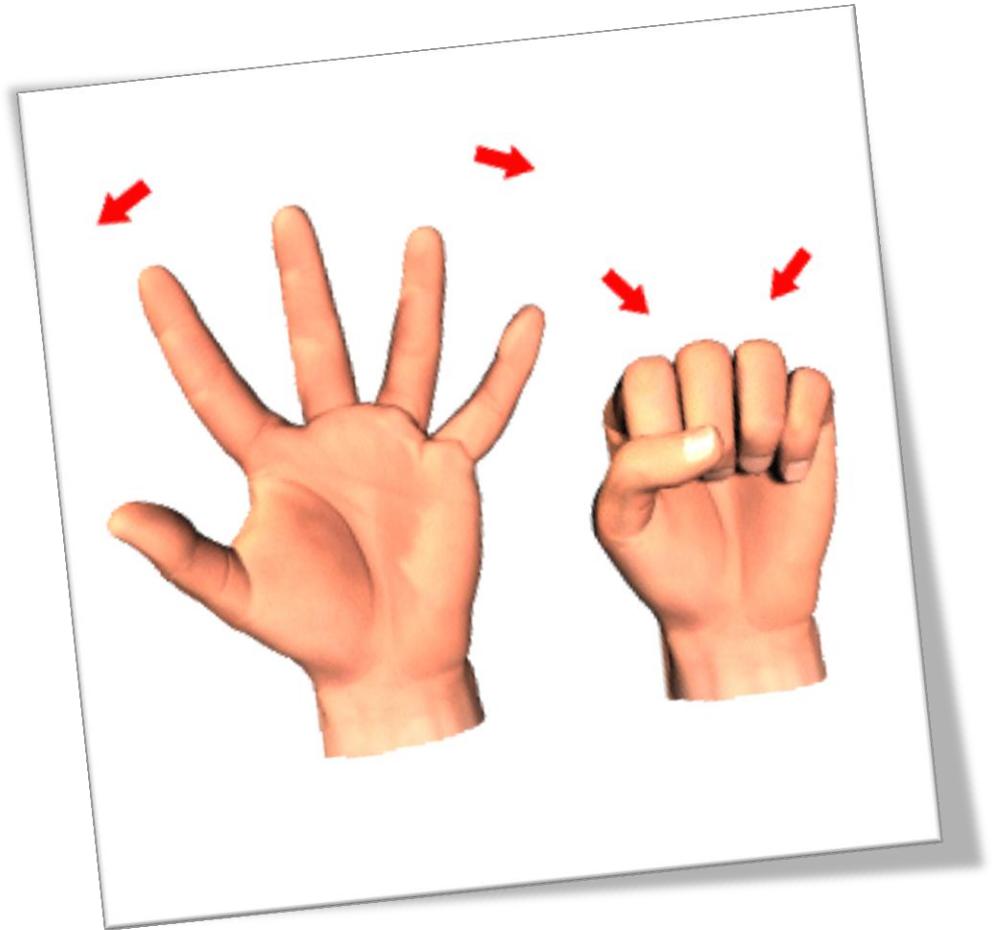
- ▶ Rapid Movement
- ▶ Holding your breath
- ▶ Bouncing
- ▶ Pain

Note: Stretching may aggravate certain medical conditions (e.g., herniated disc)-be sure to talk to a medical professional prior to starting your stretching program



The Finger Stretch

- ▶ Start with your fingers relaxed
- ▶ Curl and tense fingers
- ▶ Stretch fingers out and apart
- ▶ Repeat cycle



The Wrist Rotation

- ▶ Clasp your hands together
- ▶ Rotate your right hand over your left hand
- ▶ Rotate your left hand over your right hand
- ▶ Repeat cycle

Be sure to rotate both directions for a complete stretch!



The “Handshake”

- ▶ Stand upright
- ▶ Hold your hands at your sides and relax your shoulders/arms
- ▶ Shake your hands lightly but rapidly



The Wrist Flex

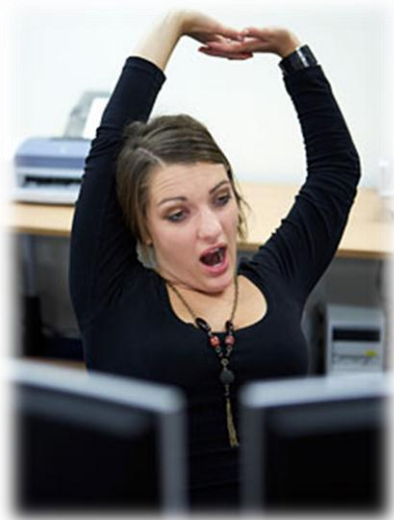
- ▶ Start from a typical seated posture
- ▶ Extend both arms with palms facing the wall ahead of you
- ▶ Place your left hand on your right hand fingers and pull towards the wall behind you
- ▶ Repeat on each hand



The Overhead Stretch

- ▶ Start from a typical seated posture
- ▶ Clasp your fingers together
- ▶ Move your hands upward, towards the ceiling, while rotating your palms outwards

Reach for it!



The Neck/Shoulder Stretch

- ▶ Start with your shoulders in a neutral position
- ▶ Relax your arms and shoulders
- ▶ Tense the muscles in your lower neck and shoulders, “raising your shoulders to your ears”
- ▶ Hold for 5-10 seconds and relax to original position



The Shoulder Stretch

- ▶ Start with your shoulders relaxed
- ▶ Raise your left arm and place your right hand on your left elbow
- ▶ Use your right hand to pull your left elbow toward your right shoulder
- ▶ Repeat cycle on each arm



The (other) Shoulder Stretch

- ▶ Start with your shoulders relaxed
- ▶ Raise your right arm and reach with your right hand for your left shoulder blade
- ▶ Use your left hand to press on your right elbow toward your left shoulder
- ▶ Repeat cycle on each arm



Try it! For a greater stretch, apply slight pressure to the upward elbow with this hand



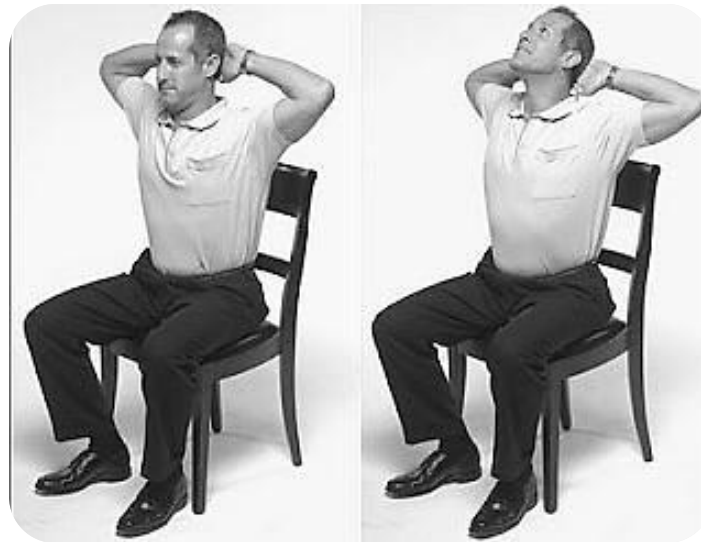
The Upper-Back Stretch

- ▶ Face an open doorway with your toes 1-2 feet from the opening
- ▶ Place your hands on either side of the door frame at about shoulder height
- ▶ Slowly lean forward, into the open doorway, keeping your hands on either side of the opening



The “Executive”

- ▶ Start in a typical seated, working position
- ▶ Clasp your fingers behind your head, resting your hands on the back of your head
- ▶ Lean back and press your elbows backwards, lifting the shoulders and chest slightly
- ▶ Repeat as desired



The Neck Roll

- ▶ Sit or stand in an upright position
- ▶ Slowly tilt neck to one side
- ▶ Slowly tilt neck to the other side
- ▶ Tilt head forward, and then back

Give it a try! Once you've stretched your neck in all directions, rotating your neck slowly counterclockwise and then clockwise will give you a little extra stretch and make sure you didn't miss any "kinks"



The Calf Stretch

- ▶ Take a staggered stance with your left foot about 1 foot away from a wall and your right foot about 3 feet from the same wall
- ▶ Place your hands on the wall or chair at about shoulder height
- ▶ Bend your right knee and lean forward into the wall keeping your left foot flat
- ▶ Repeat on each leg



The Hamstring Stretch

- ▶ Grab hold of a chair, desk, or other object for balance
- ▶ Stand with your feet about 3-4 feet apart with your toes turned slightly outward
- ▶ Bend at your hips toward your right leg, reaching for your calf
- ▶ Repeat on left leg



Feel the stretch!



The “Flamingo” Stretch

- ▶ Grab hold of a chair, desk, or other object for balance
- ▶ Raise your left leg, grabbing your left ankle with your left hand
- ▶ Gently and slowly, press your left (bent) knee towards the “back” of the room while slightly pulling your left ankle towards the “front” of the room
- ▶ Repeat on each leg



Remember!

- ▶ EH&S staff are available to perform ergonomic evaluations for ISU personnel
 - ▶ Call (515).294.5359 for details OR find us on Facebook



Environmental Health and Safety, Iowa State University





Finish