

LAPTOPS, SMARTPHONES, BLACKBERRYS, OH MY!

PRESENTED BY:
GINGER EDGECOMBE DORSEY, Ph.D.
APHIS ERGONOMICS PROGRAM MANAGER



APHIS ERGONOMICS

Work Healthy



2012

Ergonomics

- Defined as: Fitting the job to the worker.

- Goals:
 - Minimize your risk for discomfort, aches, and pains associated with use of mobile technology.
 - Provide tips on how to achieve optimum postures.
 - Review exercises to relieve stress and strain.

Mobile Computing

- Increase use of mobile technology.
 - Easily portable.
 - Convenient.
 - Variety of accessible programs.
 - Greater productivity.

- Meetings

- Teleworking

- Travel



BLD081025 [RF] © www.visualphotos.com



Mobile Computing

- Increase in injuries.
 - Less ergonomically designed than standard desk mounted computers.
 - Short-term or long-term discomforts.
 - Awkward postures.
 - Head and neck.
 - Hands and wrists.



Mobile Computing Devices

- Laptops
- Smartphones
- BlackBerrys
- iPads/e-Readers

Laptops

**LAPTOP COMPUTERS
ARE NOT RECOMMENDED AS
PRIMARY COMPUTERS!**



Laptop Issues

- Initially designed as a temporary solution.
 - Short-term replacement for the traveler's desktop computer.
- Violate basic ergonomic design principles.
 - Cannot adjust monitor and keyboard independently.
 - For example: if monitor is at the right height, the keyboard is too high and vice versa.
 - More difficult to achieve “neutral” postures.
 - Keyboard keys may be smaller.
 - May cause hand and finger pains.

Additional Issues

- Laptop screens are generally smaller.
 - Standard desktop screen is 17” versus 13-15” for a laptop.
 - Trying to view same amount of information in a smaller space.
- Laptops with LCD screens look best at one resolution.
 - See distortions otherwise.
- Challenging to adjust screen for glare.
- Laptop base gets hot.



Laptop Risks – Monitor Height

- Improper monitor viewing height.
 - Bent heads.
 - Extended necks.
 - Rounded shoulders.
 - Loss of back support.
 - Eye strain.

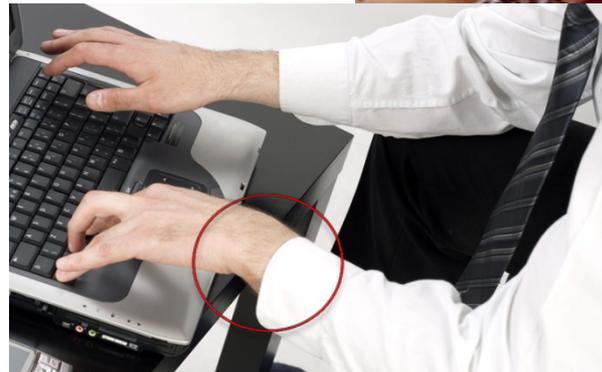
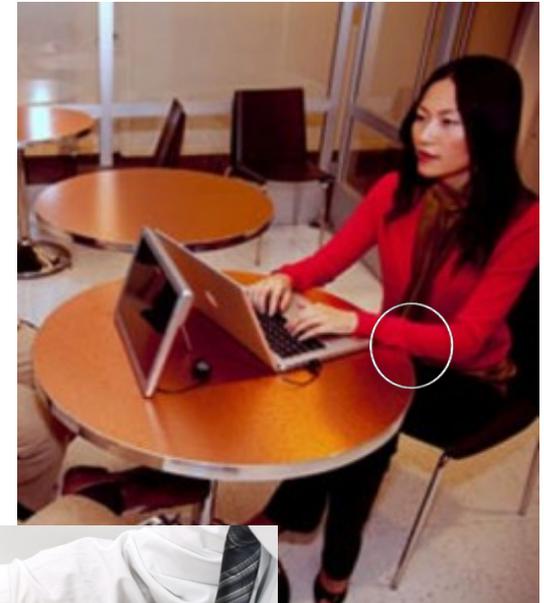


Laptop Risks Cont.



Laptop Risks – Keyboarding

- Awkward postures.
 - Keyboard is small.
 - Keyboard may be too low or too high.
 - Bent wrists.
 - Contact stress against surfaces.



Laptop Risks – Mouse Use

- Awkward hand postures.
 - ▣ Constrained mouse use.
 - ▣ Requires use of fine movement.
 - ▣ Bent wrists.



Laptop Solutions

- ❑ Experiment with table height, chair height, & keyboard angle to maintain neutral wrist postures.
- ❑ If you are seated in a side chair or couch, use a pillow to support your arms while keying.
- ❑ Attach an external mouse instead of using the small constricted touchpad or trackball.
- ❑ Incorporate mini-breaks every 20 to 30 minutes to break up repetition and static postures.

Solutions Continued

- Laptop Risers/Stands
- External Keyboard
- External Mouse



Additional Solutions

- Work with laptop on lap for 30 mins. and then on table top for 30 mins.
- Use a footrest to support feet when laptop is on lap.
- Raise laptop off lap with a pillow or cushion.



Other Considerations

- Laptop Usage.
 - Less/more than 2 hours usage.
 - Less risk with shorter usage.
- Laptop Size.
 - Larger laptops, more difficult to use on the go.
 - Smaller laptop, smaller keyboard, less weight.
 - Screen size and resolution.
- Laptop Weight.
 - Take into account needed accessories.
 - Switch shoulders.
 - Use a roller bag or backpack.

Add-On Products

https://www.aphis.usda.gov/aphis/ourfocus/business-services/emergency_management/ergonomics_program/ergonomics_program

- ❑ External monitor
- ❑ External keyboard and mouse
- ❑ Document holder
- ❑ Laptop stand
- ❑ Glare filter
- ❑ Laptop light (any office supply store)
- ❑ Lap cushion (any office supply store)
- ❑ Docking station (Contact your IT Rep)



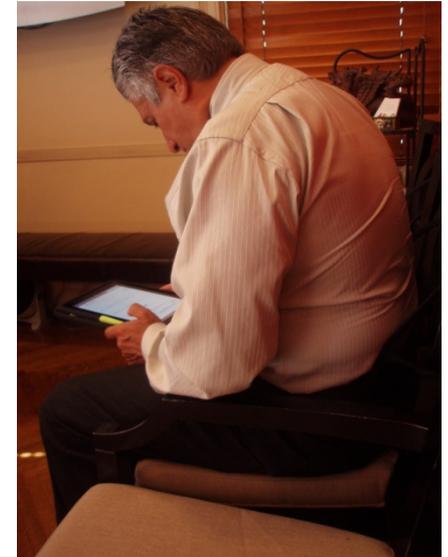
Handheld Devices

- Smartphones
- BlackBerrys
- iPads/e-Readers



Handheld Devices - Issues

- Typical user sends and receives more text messages than phone calls.
- Assume unnatural postures.
 - Crunched over a tiny keyboard.



Handheld Devices - Issues

- Require the use of awkward hand and finger postures.
 - Using thumbs to type.
 - “BlackBerry Thumb” phenomenon.



Handheld Devices - Issues

- Primary interaction is via the screen.
 - Note primary usage (i.e., indoors vs. outdoors).
 - Monochrome screen vs. a colors screen.
 - Backlight needed for indoors or reduced-light environments.
 - Colors screen is less readable in direct sunlight.
 - Consider the resolution.
 - Longer the reading time = higher resolutions.



Handheld Devices - Issues

- Many repetitive motions.
 - Entering text and information.

- Sources of finger, hand, wrist, and neck pain.
 - Entering too much text into a small area.
 - Cradling the device between neck and shoulder.



Handheld Devices - Solutions

- Use hands-free headset.
 - Keep hands free.
 - Allow for a neutral neck (upright).

- Alternate ears.
 - For each conversation.
 - Every 10 mins.
 - Distributes stress more evenly.
 - Allows rest for each ear.

- Consider size and weight.



Handheld Devices - Solutions

- Store commonly used numbers in memory.
 - ▣ Small keypads makes dialing numbers more difficult.
 - ▣ More potential for finger stress and strain.

- Minimize exposure.
 - ▣ Reduce amount of time on device.
 - ▣ Combine use with alternatives like email.
 - ▣ Save long messages for email.

Handheld Devices - Solutions

- Reduce keystrokes.
 - ▣ Keep messages brief.

- Learn device shortcuts.
 - ▣ Copying and pasting.
 - ▣ Word prediction.
 - ▣ Auto completion.

Handheld Devices - Solutions

- Use device for information retrieval only.
 - Enter data on a PC.

- Clean screen periodically.
 - Prevent eye strain.
 - Use screen protectors.



Handheld Devices - Solutions

- Pick a device with a full keyboard.
- Maintain an upright position.
 - Avoid bent head.
 - Avoid rounding shoulders.
- Use a neutral grip.
 - Maintain a neutral grip – straight wrists.



Handheld Devices - Solutions

- Rest thumb by using alternative fingers.
- Type using pad of fingers versus fingernails.
- Use device in vertical position while typing.
 - ▣ Decreases thumb reach to push a key.



Add-On Products

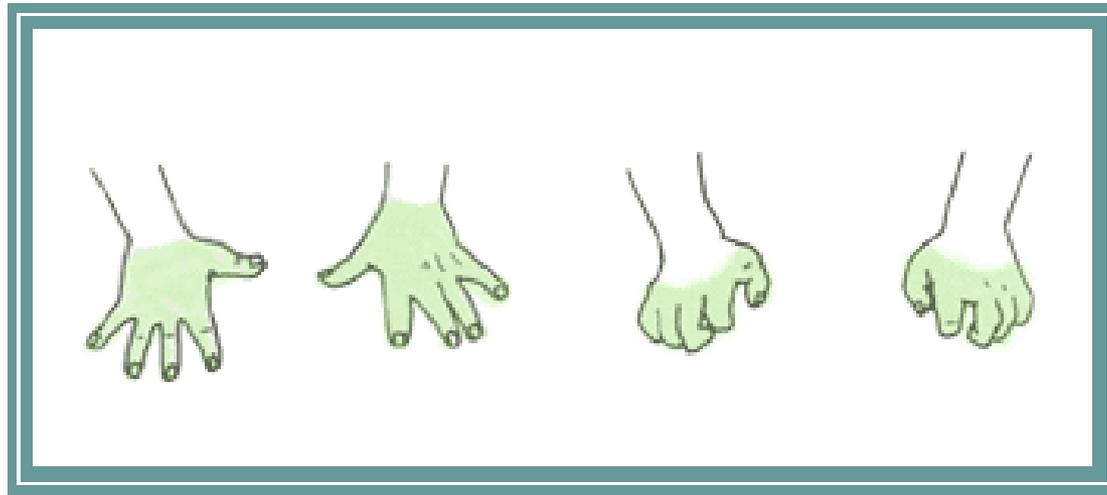
- External keyboard
 - Mini-keyboards
 - Example: Adesso Mini-Keyboard and Goldtouch Go!
 - http://www.aphis.usda.gov/mrpbbs/emssd/recommended_equipment.shtml
- Wider grip stylus (if used)
- Screen magnifiers to enlarge text
- Screen protectors
 - Protects against scratches
 - Improves readability

*Available at any office supply store.

Exercises

You can perform the following exercises at work throughout your day. These exercises can help energize your body and relieve muscle tension.

Hand Stretches



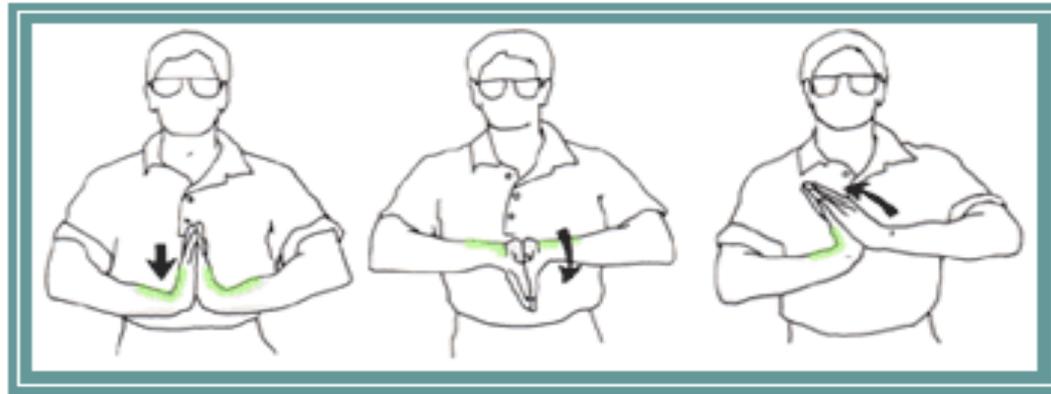
Separate and straighten your fingers until the tension of a stretch is felt.

Hold 10 seconds.

Relax, then bend fingers at the knuckles and hold 10 seconds.

Repeat the first stretch once more.

Wrist Stretches



Place your hands palm-to-palm in front of you.

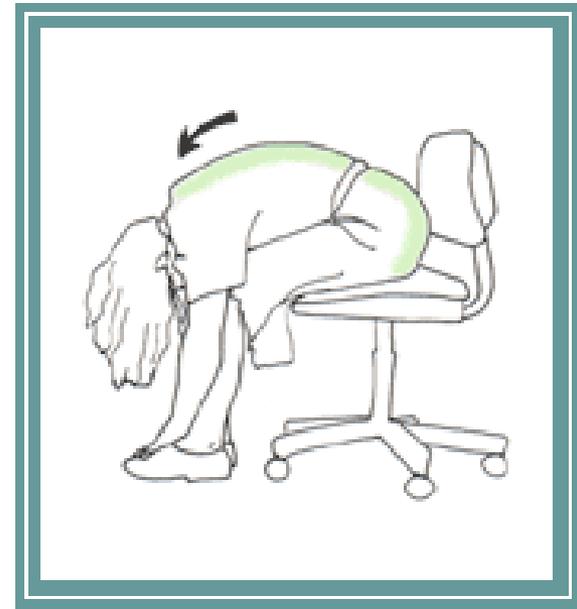
Move hands downward, keeping your palms together, until you feel a mild stretch.

Keep elbows up and even.

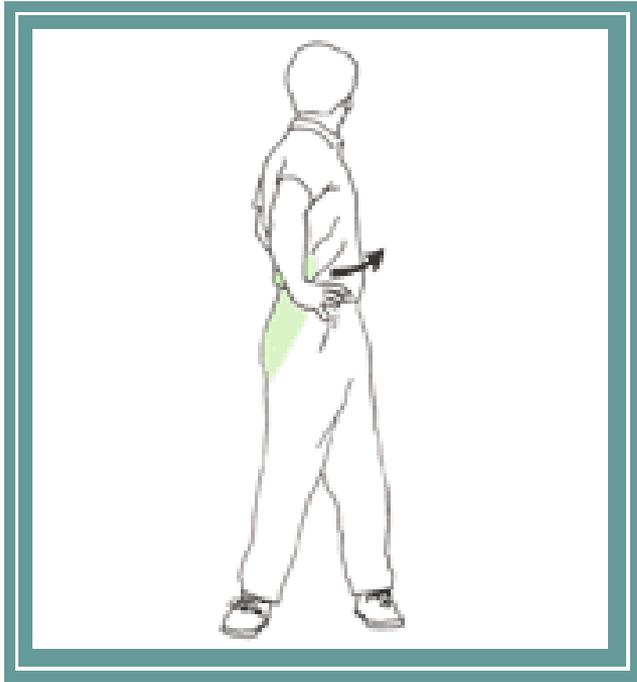
Hold 5-8 seconds.

Back Stretches

- Lean forward to stretch.
- Keep your head down and your neck relaxed.
- Hold 10 - 20 seconds.
- Use your hands to push yourself upright.



Back Stretches



- Stand with hands on your hips.
- Gently turn your torso at the waist and look over your shoulder until you feel the stretch.
- Hold 8 - 10 seconds.
- Repeat other side.
- Keep your knees slightly flexed.
- Do not hold your breath.

Eye Stretches



Palming

Cover your closed eyes with your hands, so that the palms are over (but not touching) your eyelids. Your fingers should overlap above your nose on your forehead.

Take several deep breaths and take in the complete darkness (or visualize a relaxing setting).

After 20 seconds or so, uncover your eyes and allow them to refocus.

Eye Stretches

Refocus Routine

If you regularly work with your computer, you should periodically look away to allow your eyes to change focus. This exercise should be repeated regularly throughout the day. Here's how to do it:

Identify two objects that are roughly 20 feet away and relax.

Comfortably focus on one object for approximately 10-15 seconds, then focus on the other object for 10-15 seconds.

Return your focus to your monitor and continue working.

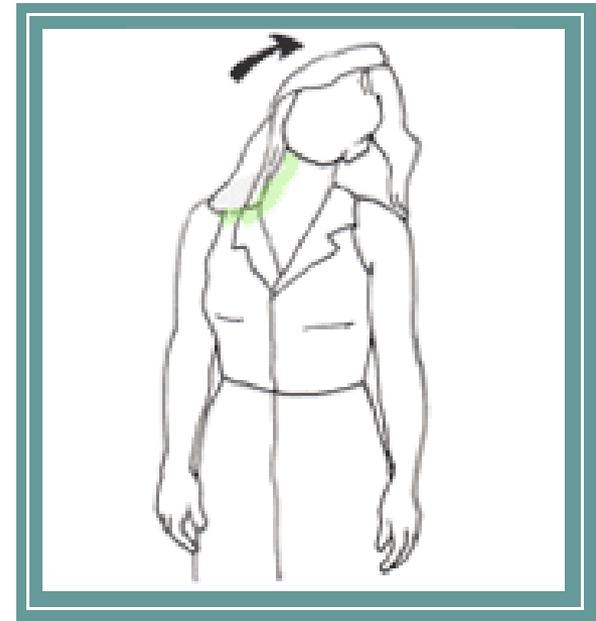
Shoulder & Arm Stretches



- Interlace your fingers behind your back, palms facing your back.
- Slowly turn your elbows inward while straightening your arms until a stretch is felt.
- Lift your breast bone slightly upward as you stretch.
- Hold 10 seconds.

Neck Stretches

- Slowly lower your neck to one shoulder, keeping that shoulder down.
- Hold 5-10 seconds.
- Do both sides.



Available Services

- Equipment Loans – USDA Target Center
 - Keyboards, mice, footrests, etc.
 - 1-2 week loan period
 - Ordering information provided as requested

- Ergonomics Video-Lending Library (APHIS only)
 - “Back Protection – Defending Your Safety Zone”
 - “Office Ergonomics – It’s Your Move”

- Individual Ergonomic Evaluations

- Phone & Email Consultations

*Contact your agency Safety and Health Program for more information.

USDA Target Center

□ Background:

- Target = Technology Accessible Resources Give Employment Today
- Est. in 1992 to support USDA with assistive technology (AT) & ergonomic solutions.
- Ensure all employees have safe and equal access to electronic and information technology.
- Collaborate with the DoD Computer/Electronic Accommodations Program (CAP) to provide services for employees with disabilities.

Target Center

- Provides:
 - Worksite assessments/consultations.
 - Presentations on AT, ergonomics, disability awareness.
 - Group & individual demonstrations.
 - Equipment loans.
 - Alternative Formats.

Contact the Target Center

target-center@usda.gov

Phone

202-720-2600 (v/tty)

TTY

202-690-0942

Address

Room 1006-South Building
1400 Independence Avenue, SW
Washington, DC 20250

Successful Ergonomics

- **Understand:** associated risks with use of mobile computing devices & ways you can prevent them.
- **Respect:** potential hazards caused by poor postures and overuse.
- **Communicate:** ways to eliminate stress factors & report symptoms early.
- **Commitment:** eliminate risks while working with your mobile computing device.

Questions



APHIS Ergonomics Program

USDA APHIS

4700 River Road, Unit 124

Riverdale, MD 20737

301.436.3175

Email:

aphis.ergonomics.program@aphis.usda.gov

Website:

<http://www.aphis.usda.gov/mrpbs/emssd/ergonomics.shtml>