

Chapter 8: Home Computers, Games & Gadgets

How many electronic gadgets do you use?

- Do you surf the net, email friends & family, maintain your own web page, download, edit and share photos, or play video games?
- Do you also use text messaging on your cell phone?
- Use a PDA or Blackberry?



How many hours outside of work each day do you spend using some sort of electronic device? *You do the math!*

If the combo of office computer use and off work electronic device use is greater than 30-hours per week, you are now in a “high risk” category for developing hand/wrist disorders.

Give your digits a break from digital devices...

Home Computers and Ergonomic Risks

The *Ergonomic Risk Factors*

- Repetitive stress due to prolonged use or overuse of keyboards and mouse or handheld devices such as game controllers, PDAs and text messaging devices
- Awkward and unsupported postures using computers on ill-fitted chairs and surfaces at home – the kitchen table, your reclining chair or home office
- Awkward head/neck postures viewing laptop screens, TVs and hand-held digital devices



Home Computers, Games & Gadgets

Essential Tips & Techniques

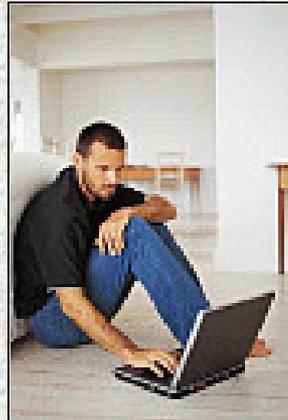
- Limit after-work “computer” activity – including video games - to no more than one hour
- Create a comfortable and ergonomically safe work setting at home when using devices – the same principles apply!!
- Invest in an adjustable chair
- Limit your use of handheld devices because they increase finger/hand activity and often involve awkward upper limb and head/neck positions
- Just like at work, take frequent breaks and stretch out the stress



Places you work can create awkward postures

On the couch

- *bend neck*
- *twist spine*
- *bend wrist*

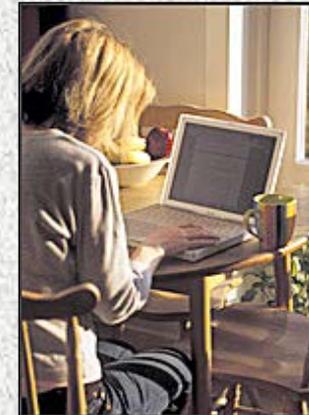


On the floor

- *bend neck*
- *bend spine*
- *bend wrist*

On the bed

- *bend neck*
- *bend spine*
- *bend wrist*



On the kitchen table

- *bend neck*
- *bend spine*
- *bend wrist*
- *elevate arms and shoulders*

Avoid using table tops and desks *...surfaces are often too high for keying/mousing*



Home computer settings often pose awkward arm and wrist postures because most table heights are 29 inches...too high for most people.

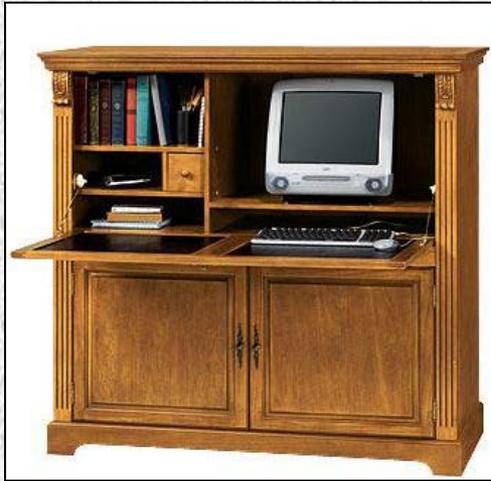
Your work surface input device height should be close to your seated elbow height

Customize your work setting *...if furniture doesn't fit*

This fellow set up his computer on a closet door from Home Depot and used crates to get it at a height to fit him and his chair. While he's sitting in a hard wooden chair, he's making good use of the backrest, getting great support for his arms on the worktop and keeping his wrists straight.



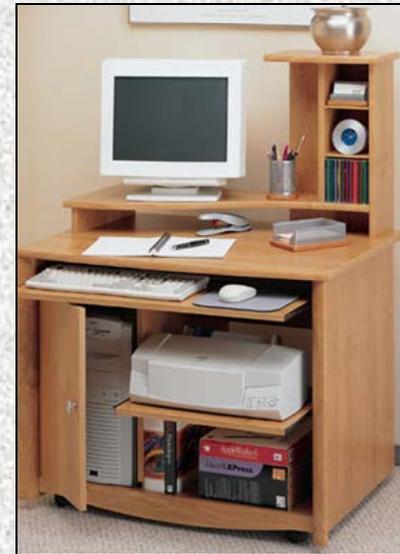
What's wrong with these home setups?



Can't adjust monitor or keyboard height



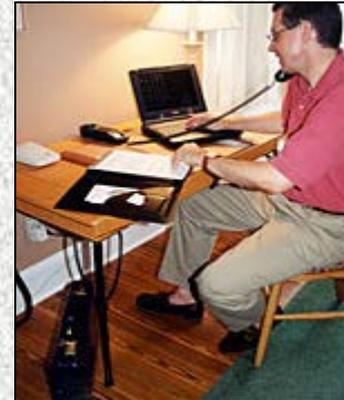
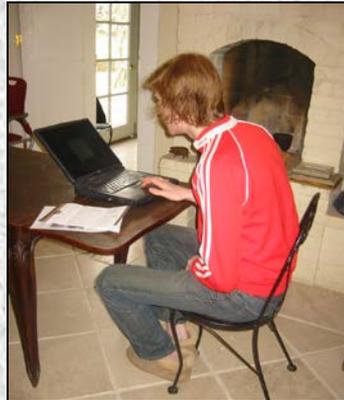
No room for mouse next to keyboard



No room for knees/toes under the keyboard platform

What difference does a chair make?

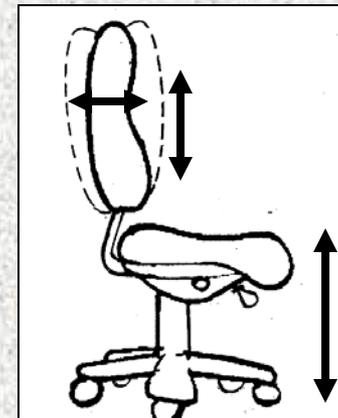
...household chairs aren't designed with your work in mind



Most household chairs have seat heights that range from 16" to 18" which is too low for about 50 % of adult females and 75% of adult males when working at a computer on a household table.

An adjustable chair is your #1 investment

- It's comfortable and the contours fit your curves, particularly the lumbar cushion
- Seat adjusts low enough for foot contact with the floor
- Seat adjusts high enough so your knees can be lower than your thighs
- The backrest adjusts up/down and fore/aft to ensure it engages your low back in your normal working posture
- Armrests are optional but if you like good arm support, make sure they adjust up/down and side-to-side, particularly for smaller individuals



Backrest adjust
up-down and
fore-aft to
support low back

Seat adjusts
up-down

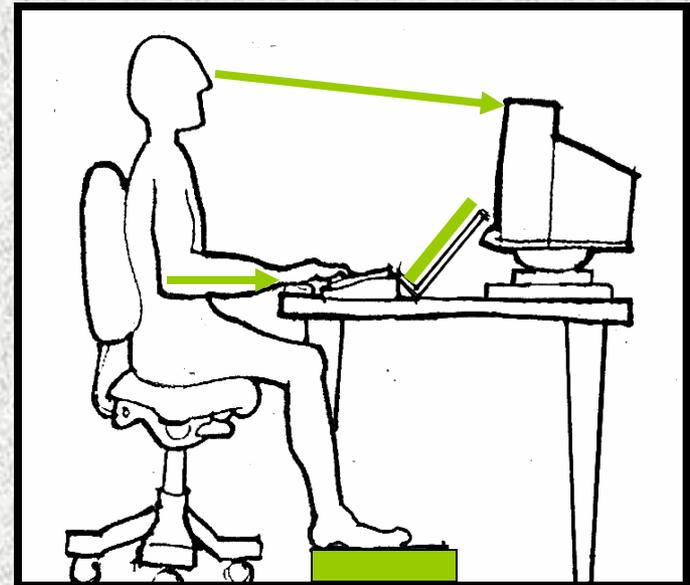
Comfortable contours and
cushioning on seat and back

Test “drive” various chairs in the store and at a computer setting before you buy. The cost of a decent adjustable work chair is around \$250 at Office Max, Staples or Office Depot.

How to set up your home work station

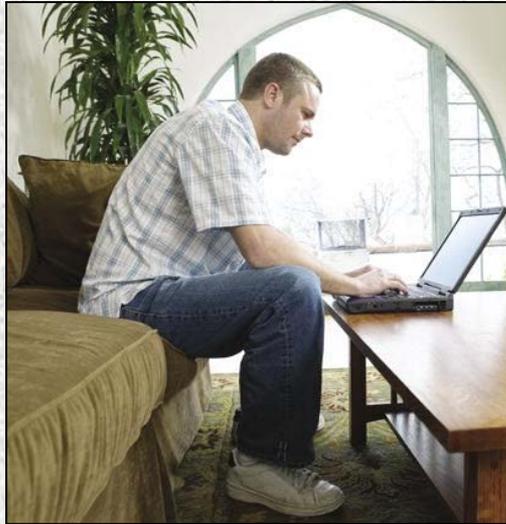
...fixed surface with adjustable chair

- Raise your chair so your elbow height aligns well with the keyboard/mouse height- relaxed shoulders and straight wrists
- If your feet are dangling, use a footrest or outdated phone books to support your feet
- Top of monitor should align with your line of vision or eye height- if you're 6 feet tall or above you might need a "riser" (think phone book or ream of paper)
- If you work with reference documents, try propping them up on a board or binder set between the keyboard and monitor



If using a laptop instead of PC...make one other adjustment

- Set up a detached keyboard and mouse rather than use the laptop keypad and mouse touchpad

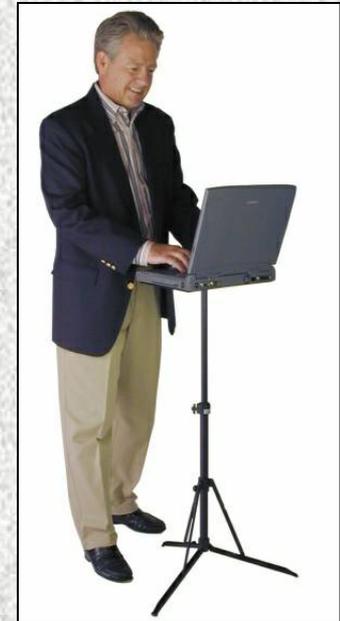


If you have a favorite spot around the house where you like to work but the furniture isn't supportive, invest in some flexible computer furniture!

There are options to a fixed work setting!

Tools for home computer use

...adjustable, flexible and affordable furniture



Each of these laptop supports is portable, adjustable and can be used either sitting or standing and they cost under \$100.

Look closely however, the input surface should be closer to the person's elbow height than what you see in these product ads!!

Tools for home computer use

...adjustable, flexible and affordable furniture



These portable and adjustable computer stands can be parked anywhere in the house where there's a power source. They come as knocked-down kits that can be assembled to fit your size and cost around \$100 dollars.

Games & Gadgets



Remember the video game generation- a group of teens hovered around the TV while firing away with their controllers?

Well they're now 30-somethings and working at the County.

Avoid overuse of handheld devices

According to American Society of Hand Therapists, there has been an alarming increase in the rate of hand injuries attributable to use of handheld electronic devices.

They speculate the use of computers in the office is compounded by the addictive use of cell phones, cameras, PDAs and micro-game devices.

A majority of injuries involve the thumb(s) used predominantly with PDAs, text messaging devices and micro-games.

In addition, when using these devices the head is typically craned forward and neck bent down to view these small screens which results in pinched nerves and damage at the vertebrae affecting the hands and wrists.

They may be fun and effective tools but use caution and good ergonomics!



Avoid Nintendonitis, Atari-tunnel and Sony Thumb!

Its all in the thumbs...

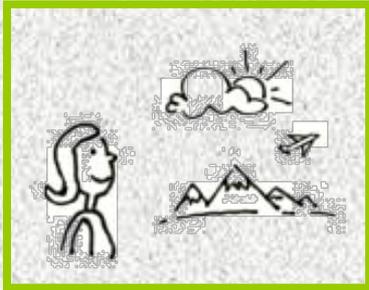
Good News- Video gamers who play more than 20 hours per week have been shown to have superior eyesight and quicker motor skill reactions than non-gamers their age...wow!

Bad News- Video gamers who play more than 20-hours per week are at very high risk of developing hand/finger injuries and prone to developing back pain.

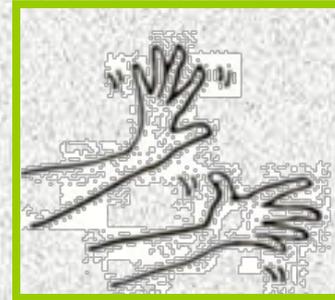
Ergonomics News- Current releases of game controllers include new features like voice recognition and 3-d space operation (used like a wand) which are intended to reduce repetitive finger activation. So much for quiet game playing!



Take frequent rest breaks *...and stretch out the stress*



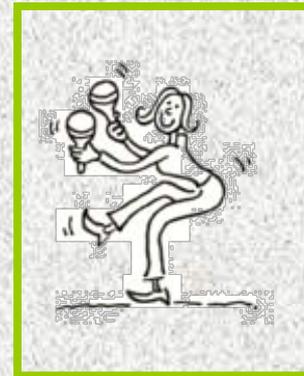
Get up each 20 minutes and look out the window at a distance for a few minutes to relax your eyes.



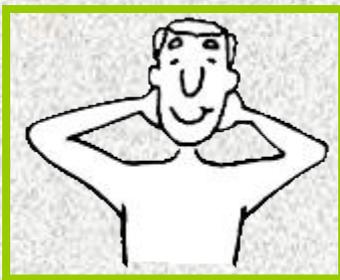
Stretch your fingers out like a fan and hold for a minute, wiggle them a bit. Make a tight fist and hold for a few seconds then repeat the fan.



Rest your arms on the table and twiddle those thumbs for a minute to relieve the tension.



Get up and move about every 20-minutes and shake it out. Large body movements gets blood flowing which nourishes and limbers your muscles and joints.



Clasp your hands behind your head and draw your elbows back. Bend your head forward and back to Upright a few times. Repeat.

Where to find additional information



Resources- guidelines for computers, laptops, games and gadgets

www.dea.human.cornell.edu - ergonomics for laptops

www.ergoweb.com - ergonomics articles on laptops and video games

www.workingwell.com - ergonomics of laptops and home computing

www.medicinenet.com - video game injuries and gaming tips

www.australianit.news.com - health articles on handheld devices

www.healthycomputing.com/kids/gaming - guidelines for video games

Sources- tools for home computers

www.backdesigns.com- task chairs, computer tables and accessories

www.sitincomfort.com - task chairs and computer tables

www.relaxtheback.com - task chairs

www.1-computerdesk.com - laptop tables

www.levenagers.com - reading tools and laptop accessories

Large discount stores like Office Max, Staples, Office Depot and Costco can be good sources for economical task chairs and computer furniture with adjustments.