

# Computing for all

Sometimes the constant demands of technology can cause a range of stresses and strains. Rosemary Haworth looks at ways to put yourself back in charge of your desktop and ensure the relationship with your PC remains a healthy one





Over the course of a day, most of us spend more time developing a relationship with our PC than we do with our colleagues or partners. But it's often a one-sided affair with our computers dictating how we work and us cast in the role of humble human operators.

This reality is in stark contrast to the picture manufacturers and vendors paint: technology is supposed to liberate us, streamlining and automating tasks so we can get on with the important things in life. Up to a point this is true – we can communicate with ease via email, video-conferencing and instant messaging while our PCs get on with performing the more complex tasks such as calculations and data manipulation.

But in other ways our PC is the real taskmaster. It forces us to work in certain ways, some of which can be detrimental to our health. Sustained computer work can damage our eyesight and staring at a screen all day can cause headaches and eyestrain. Sitting in front of a PC all day can be a problem, too, because poor posture can cause neck and back complaints to flare up. Typing and using a mouse put stresses on our limbs, while our poor digits also suffer when we have to deal with fiddly buttons on PDAs, notebooks and mobile phones.

For the physically disabled the PC can act as a lifeline to the outside world with email and internet access providing a means of communication and access to services and information. But specially adapted equipment is often required since many disabled people find it difficult to work with a keyboard and mouse. And visually impaired users aren't automatically able to take advantage of some of these tools because of the way websites are designed.

### Days of our lives

The combined effect of all these ailments and lack of computing facilities for the disabled and visually impaired cost employers dearly. As many as 5.5 million days are lost to office-related injuries each year and at some point more than half of us are likely to be affected by problems associated with PC use.

South-west London-based chiropractor Craig McLean told *PC Advisor* that a large proportion of his patients' complaints are caused by sitting at a PC all day. The types of neck and back injuries he addresses were commonplace in his native Australia where many of his patients were sheep farmers involved in physical tasks. These days, he sees similar strains on office workers who come back month after month because their daily routine is exacerbating or even causing the problem.

With many of us likely to fall victim to some sort of ailment, it's in the best interests of everyone that such issues are properly addressed. A wide variety of bodies, from manufacturers to campaign groups, are trying to find ways to improve the situation. On the hardware side it's product design that's addressing our divergent modes of working, while software that's accessible to all is in development.

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## Improve your posture

So what are the main causes of concern? First, we need to ensure we're doing all we can to make our work setup as user-friendly as possible. Legislation has been in place for the past decade that puts the onus on employers to provide staff with furniture and equipment that is sufficiently supportive and that can be adjusted to suit the individual. They should also pay for you to have your eyesight tested as frequently as once a year and even contribute to any corrective eyewear required.

It's all very well getting treatment for PC-related injuries, but simply improving your posture by sitting straight-backed with your keyboard within easy reach and your seat at the right height can bring instant results. Your back, upper legs and lower legs should all be at right angles to each other with your feet flat on the floor.

If the chair can't be adjusted so your feet reach the floor properly, get a



footrest; if you're long-legged and your knees are halfway to your chest or knocking against the underside of the desk, get a chair that can be raised sufficiently and/or an adjustable height desk. Remember, your employer has a duty to provide such basics.

More information on employers' responsibilities and advice on working in harmony with your PC should be available from your human resources officer (if you have one) or can be found online at [www.hse.gov.uk](http://www.hse.gov.uk).

Rather than a traditional padded and adjustable office chair, you might want to take a more radical approach. The ball chair ([www.sisseluk.com](http://www.sisseluk.com)) relieves strain from the lumbar region, while S-shaped, backless chairs force your hips forward and keeps your back straight, effortlessly improving posture.

## Creature comforts

A document holder will enable you to read the information you're inputting without having to constantly look down and strain your neck. Having your monitor facing you, rather than being off to one side, will also help avoid muscular pains.

Scrolling across screens to find the information on a spreadsheet or switching between document or application windows means you make extensive use of your mouse. Investing in a larger screen can therefore provide great productivity benefits.

Adjust the resolution and you will be able to view even more information at once; add a second monitor and you can

## Access all areas

Poorly designed websites are the bane of visually impaired users who rely on screen readers and similar PC tools to navigate web pages. Sites that provide no navigation guidance in their background code, no descriptive tags (for example, graphics simply listed as 'image') or that make extensive use of frames or Flash animation are inaccessible to such users.

Paul Blunden, CEO of The Usability Company, which independently audits the accessibility and navigability of websites (as well as other electronic media including digital TV channels), says unreadable colours, lack of navigation cues and barriers such as Flash animations which are embedded images and therefore cannot be recognised by screen readers are the most commonly identified problems.

Flash's creator Macromedia has already addressed the accessibility concerns of its software in the latest version of Flash, as well as the popular web design package Dreamweaver MX. Both include built-in accessibility functions that check the HTML code and alert the designer if insufficient navigation information is included.

Similar moves have occurred at Adobe which recently launched version 6.0 of its Acrobat PDF creator. Thanks to a tagging feature, PDFs are recognised by a screen reader while the scalability of files saved in this universally readable format means pages can be enlarged as much as required.

While a test case has yet to come before the UK courts, the Disability Rights Commission, together with charities such as the RNIB, argues that owners of non-accessible sites should be forced to comply. There's a commercial imperative too: those who depend on the web for groceries and other essential purchases have a significant collective spending power. Making sites as easy as possible to use means the companies concerned are more likely to earn their business.

Tesco, which is the first supermarket to gain the DRC's and RNIB's stamp of approval, has already reaped the rewards. Its own staff now routinely use the accessible version of the website to place their food orders because they find it easier to navigate.

As Marty Carroll of The Usability Company puts it: "Dipped kerbs at the edge of pavements don't just benefit wheelchair users, they're better for everyone" and the same is true of accessible websites.

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↑ A trackball mouse such as the Logitech Cordless Trackman Optical 2 cuts down on repetitive hand movements

extend your desktop across the screens. You should also make sure you're working in a well lit and airy room and that the temperature is suitable.

If you're a telephone fiend, invest in a headset so you no longer end up cradling the earpiece in the crook of your neck. And, rather than slaving away over a hot desk for hours on end, ensure you take regular breaks. Maintaining the same position for long periods can cause muscles to cramp and you'll ruin your eyesight if all you ever focus on is the artificially lit screen of your monitor.

Make a conscious effort to have a change of scene – you'll feel better for it too. If that's not practical, spend a couple of minutes every half hour or so looking at something or someone in the middle distance before returning to what you were working on.

Workaholics may need to force themselves to take a break, in which case it's worth loading up software that physically prevents you from typing for a while and is designed to cut down on complaints caused by small repetitive movements. Try WorkPace 3.0, which is free to download from [www.workpace.com](http://www.workpace.com) or load it up from the cover disc. It forces you to pause for a few seconds followed by less frequent but longer breaks. Short breaks taken often will do you more good than the occasional extended rest period.

If lack of space is your problem and you're unable to position your equipment correctly, you could be better off with a portable PC. Today's high specifications mean notebooks have plenty of power to handle everyday tasks.

And if much of your working life is spent on the road, you'll appreciate a lighter weight notebook or subnotebook. There's no sense in causing potential long-term damage to your neck and shoulders by lugging a heftier-than-necessary device from place to place.

If you need the full features of a desktop-replacement model, don't cause yourself a hernia – choose a model with detachable drives that only have to be transported as and when needed or opt for a high-spec machine that is highly portable and sports good battery life as well as wireless capabilities.

### The key to freedom

Using a keyboard can be a frustrating experience for the majority of us who aren't trained in touch-typing. If you can't get to grips with the standard Qwerty arrangement (which, after all, was introduced to slow typists down in the days of manual typewriters that were prone to key clashes) try a more logical approach.

Users of the Dvorak layout report faster, less strained typing and it can be used single-handed too which is ideal for those without full use of their limbs.

Rather than a new piece of software, you might want an entirely new keyboard that places less stress on your arms as less travel is involved. Specially configured keyboards such as a 'split' design can assist in a more natural posture. Programmable keys are a bonus, too, allowing you to save valuable keystrokes with one-touch access to frequently used applications or websites.

As with your desk arrangement, you need to ensure you're doing all you can to minimise risks to your health so double-check your typing position is correct. Your arms should not be outstretched to reach the keys and your wrists and lower arms must be flat. If you use a wristrest, ensure you don't end up leaning your hands on it while you type.

Mice are just as much to blame as keyboards for PC users' aches and cramps. An optical scrolling mouse is a helpful alternative since you don't need to chase it around your desk. Instead, you rest your hand over it and use your fingers or the palm or ball of your hand to move the cursor. More traditional-looking mice have also been overhauled and now often



### Sound advice

If you're a two-finger typist prone to aching limbs or are physically unable to use a keyboard then you've probably had a few choice words to say to your PC already. In fact, there's a lot to be said for talking to your PC. Voice-recognition packages have markedly improved of late and more powerful computers can take advantage of more demanding but far more accurate speech synthesis engines.

### Put to the test

After initially training it to pick up my high-speed mumbling, I was pleasantly surprised by how little direction Dragon NaturallySpeaking needed when taking dictation and an extensive dictionary meant most words were recognised. IBM also sells a comparable range of voice-recognition products under the ViaVoice banner.

While not ideal for users whose speech patterns are affected by a disability, voice recognition is being widely deployed and speech engines can be found in everything from English and foreign language learning programs, where they help users improve pronunciation, to voice prompt-based features in phone systems and multimedia applications.

### Get yourself heard

To combat the problems associated with unclear speech patterns or intrusive background noise, Intel recently released open-source audio-visual speech recognition software with which developers can build devices that are able to lip read.

Designed with public places in mind, but presumably also suitable for noisy office environments, AVSR software can track a speaker's facial and mouth movements and, together with speech-recognition applications, ought to provide greater accuracy.



←↔↕ If you don't get on with a traditional Qwerty keyboard then why not invest in a more comfortable, easier-to-use design such as the TypeMatrix EZ-Reach, Kenesis Classic or Maltron

may be totally unsuitable for another. This is backed up by tests conducted by Alloy Total Design, which designs casings for mobile phones and PDAs and has a client list including HP, Toshiba, BT and Marconi.

Alloy chairman Gus Desbarats told us different types of user and age groups use mobile devices in very specific ways and therefore require designs tailored to their particular modus operandi. He cites

combine scrollwheels with optical sensors, resulting in devices that are more accurate and comfortable to use and require less movement. Programmable mice are available, too, as are products that can scroll independently, saving you the trouble when browsing through lengthy documents.

### Diff'rent strokes

Don't be fooled by the label 'ergonomic' when hunting for a new keyboard or mouse. While product manufacturers are certainly going to great lengths to come up with peripherals and other devices that are easier to use, there's no set standard for what constitutes a well-designed product. Often, the label ergonomic seems merely to indicate greater attention to aesthetics and, hopefully, comfort.

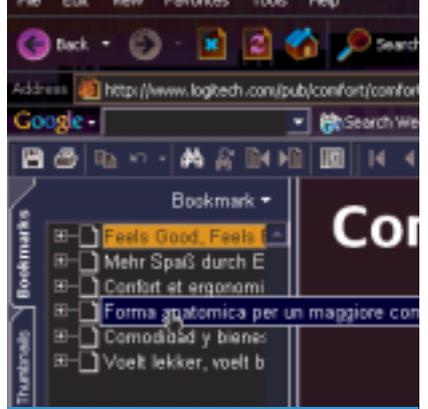
We all use technology devices in different ways, so a product that one person deems to have a natural feeling

Teenagers and pre-teens are assiduous text messagers. Some can bang out a message at breakneck speed and may have developed as many as 50 areas of sensitivity on their thumbs

mobile phones as a particular example. While 30- and 40-somethings prefer larger screens and keypads with which to tap out messages, teenagers and pre-teens are assiduous text messagers and are generally much more dextrous.

Some, he claims, can bang out a text message at breakneck speed and may have developed as many as 50 separate areas of sensitivity on their thumbs.

You now know what your rights are in terms of provision for your working needs, as well as how to arrange your desk and organise your working day to maximise your efficiency while ensuring your health is not at risk. The next step? Nag your boss for an eye test and check you haven't already compromised your sight. ■



## U Can Do IT

**U** Can Do IT is a London-based charity dedicated to training people with all kinds of disabilities. The charity uses a team of one-to-one freelance tutors who go to the client's home to teach them to use PC software, with the emphasis on internet access. The trainers also help with obtaining special equipment for operating the PC, whether that is voice-recognition software for the visually impaired or a customised input device for those with severe motor disabilities.

Anthony Wigram, chairman and founder of U Can Do IT, argues that access to the internet is not just beneficial but essential for the disabled. "Banking, social communications, government, essential shopping and specialist holidays are all on the internet. Use of the web has become a staple of modern life," he observes.

Wigram firmly believes that not only does access to the internet enrich the lives of the disabled, it also provides them with valuable employable skills, taking them towards financial independence and contributing to the UK economy.

### Beneficial skills

U Can Do IT's aim is for every disabled person in the UK to have a PC and know how to use it. The charity estimates that it costs an average of £1,500 to set up a single PC with the software and assistive peripherals required. This is clearly beyond the reach of those relying on disability benefit alone.

Since its inception three years ago, U Can Do IT has trained over 500 disabled people. But Wigram estimates there are up to 50,000 people in London alone who would benefit from the charity's work, most of whom don't have access to a computer at all. For more information go to [www.ucandoit.org.uk](http://www.ucandoit.org.uk).