NHS
National Services Scotland

Display Screen Equipment Safety and Comfort Guide

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introduction

Nowadays almost everyone uses a computer, whether it's at work or at home - to send mail, access the internet, prepare documents and complete a variety of work tasks. We are as a result less physically active at work. Jobs such as filing and mailing which gave us a degree of activity and postural change are now accomplished by a simple click of the mouse. Although the computer has simplified our day to day lives and is designed to increase the speed and efficiency at which we work, it does expose us to a number of risks. These risks may occur from the design of the computer itself, but more often will be due to the way the computer and workstation are set up and used. Some people who use computers for long periods of time find that they experience some physical discomfort. Generally, the discomfort is related not to the computer itself, but more to how they have their workstation arranged and how they interact with their computer.

The Health and Safety Display Screen Equipment (DSE) Regulations were first introduced in 1992. These Regulations aimed to combat the risks associated with using computers such as upper limb pains and discomfort, eye and eyesight defects and general fatigue and stress. They place a duty on all employers to undertake risk assessments to determine any health and safety risks to employees in relation to the use of computers and place a duty on employees to take responsibility for their own health, safety and wellbeing when using computers.

National Services Scotland has developed this step by step Guide and the accompanying DSE Self Assessment Questionnaire to help you to:

- set up and use your computer and workstation safely and comfortably
- minimise the risks, avoid physical discomfort and prevent problems occurring from computer use
- know where you can get specialist advice and assistance if you experience difficulties in setting up or using your computer or workstation or experience any physical discomfort associated with computer use.

the next step

Please now read this Guide and take time to adjust your computer and workstation to your own individual needs. You may not be able to achieve all of the suggestions in this Guide immediately and may need two or three attempts at setting things up. Once you feel you have sufficiently adjusted your computer and workstation, you should then complete a DSE Self-Assessment Questionnaire. This Questionnaire is designed to help you to assess your computer and workstation arrangements and the way you work at your computer.

The Guide and Questionnaire form the first stage of the NSS DSE Risk Assessment Process and all NSS employees are required to complete this Questionnaire shortly after joining the organisation and on completion of their Health and Safety Induction Training. You may also be asked to complete further Questionnaires at pre-determined intervals in line with the scheduled reviews of all DSE Risk Assessments or following any significant changes to work practices, workstations or the computer equipment provided. You may also be asked to complete a further Questionnaire if you report any discomfort, pain or eyesight problems and believe these relate to DSE use. If you regularly use portable DSE (a laptop or hand held computer) you should also refer to the NSS Portable Display Screen Equipment Safety and Comfort Guide.

Once you have completed the Questionnaire, it should be signed off by your Line Manager and passed to the trained DSE Assessors on your local Health and Safety Committee, who will review the content and where necessary undertake a detailed Workstation Assessment.

Ensuring you stay safe and comfortable when using your computer and workstation requires you to develop and maintain an overall awareness to safety. Refer to this Guide periodically to refresh your memory and review your computer and workstation arrangements, especially when any new furniture, equipment, software or hardware is introduced.

Section 1

Medical evidence indicates that using computers does not damage the eyes or eyesight and does not make existing eyesight problems worse. However, using computers places a high visual demand on the user and individuals may experience temporary visual fatigue, resulting in a range of symptoms such as blurred vision, tired, red or sore eyes, eye irritation and headaches. Careful placement and adjustment of the Monitor and some basic steps to ensure visual comfort and eye and vision care will ensure you avoid any of these symptoms.

Adjusting your Monitor

Distance

The Monitor should ideally be positioned one arm's length away from the user, i.e. when sitting in the desired posture you should be able to brush the screen with your finger tips and be able to read the screen clearly.

Angle

Position the screen to maintain a relaxed head and neck posture and to avoid sources of glare or any bright reflections by using the tilt feature. Adjusting the screen upwards may result in increased glare from overhead lighting.

If you wear varifocals or have any vision difficulties you may have to adjust the angle regularly.

Height

Position your screen so your eyes are level with or slightly below the top edge of the monitor to ensure your head is level and you maintain a good head and neck posture.

You may experience discomfort if the screen is too low as your head will tend to lean forward and if it is too high your head and neck will tend to tilt backwards.

If you wear varifocals you may have difficulty adjusting your monitor to a comfortable position. Adjust the angle to help place the screen at a better viewing height.

Eye and Vision Care

Adjust your screen settings by selecting different colours and fonts which are easy on the eye.

From the Start Menu go to Settings and select Control Panel > select Display > select Appearance

It is easier to read from the screen if the characters are brighter than the background. Reduce the brightness and contrast controls on the monitor to low levels and increase them slowly until comfortable viewing levels are reached and character and image quality is improved. Further adjustment may be required throughout the day, especially if light levels change, i.e. if the sun is shining or it is dull or dark outside.

Eliminate any glare from the screen caused by bright light or sunlight by closing or adjusting blinds.

Look away from the screen occasionally and focus on an object in the distance to rest and relax the eyes.

DSE Eyesight Screening

All NSS employees who are required to use a computer as part of their duties are offered the opportunity to have a DSE eyesight screening on joining the organisation. Further screenings are then routinely offered at regular intervals and are also available on request should an individual experience eyesight problems in relation to DSE use.

The screening which is conducted by the NSS Occupational Health Service focuses entirely on DSE use. If a screening indicates that an individual requires further testing and glasses for DSE use then NSS will meet the cost of this test with an optician and the cost of a basic pair of glasses for DSE use.

Full details of the NSS DSE eyesight screening arrangements including information on the financial procedures for the provision of glasses for DSE use are available from your local Personnel Department.

screening eyes vision glasses screening monitor vision

keyboard mouse arms wrist hands keyboard mouse

Section 2

Common causes of workplace injuries to the hands, wrists and arms as a result of computer use include:

- poor positioning of the keyboard and mouse
- prolonged repetitive use without regular breaks and postural adjustment
- force where the mouse buttons and keys are struck much harder than necessary
- contact stress where the hand or wrist regularly rests against a sharp edge while typing
- awkward wrist postures where the wrists are bent, arched or angled up, down, in or out and the shoulders are rounded forward.

Resulting injuries and conditions can include:

- muscle fatigue leading to strain and stiffness
- increased wear and tear, shock and damage to the joints, tendons and soft tissues
- irritation at the elbow
- nerve problems focused on the wrist and palm.

These injuries and conditions can easily be avoided by taking some basic steps to correctly position and use your keyboard and mouse.

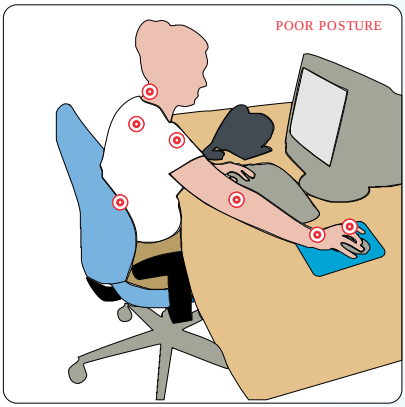
Using the Keyboard and Mouse

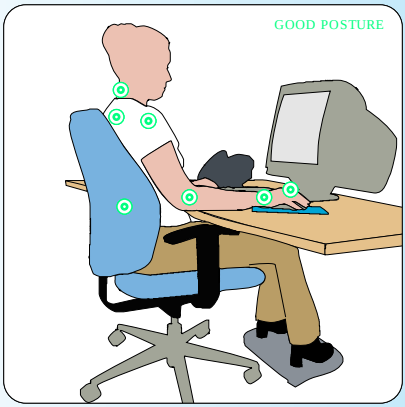
Position your keyboard and mouse at the same height - slightly lower than elbow height with your upper arms roughly vertical and the forearms horizontal when seated. In this position the wrists should be straight and the shoulders relaxed. Maintain sufficient room in front of the keyboard to comfortably rest and support your forearms between periods of typing and to avoid wrists resting on the edge of the desk.

If you need to refer to a document whilst typing, avoid placing any document between you and the keyboard and wherever possible use an adjustable document holder. Place it next to the screen and at the same height. This will ensure your head will turn less and your eyes will adjust more easily. Try alternating the position of your document holder on either side of the screen to vary your head position. Placing a document between you and the keyboard may cause unnecessary overstretching of the hands, wrists and arms and may cause you to round your shoulders, sit forward on your chair and maintain poor head, neck and back postures.

When typing and/or using the mouse keep your forearms, wrists and fingers relaxed and in a straight line and your elbows in a relaxed position near your body. Avoid bending your wrists up, down or out and use the minimum amount of force needed to push down the keys. Hold your mouse loosely in your hand, relax your grip and use the minimum amount of force needed to activate the mouse buttons. The mouse is harder to control if you use a fast setting, so you may find it helps to adjust the mouse speed settings.

Position the mouse beside or close to the keyboard on either the right or left according to the hand you use it with, i.e. on the right if using the right hand and on the left if using the left hand. You should never have to extend your reach to access the mouse, i.e. a reach where your back leaves the chair backrest or your arm is fully extended. Extending or over-stretching your arm creates tension in your arm, neck and shoulder muscles and reduces blood flow.





Hand, Wrist and Arm Care

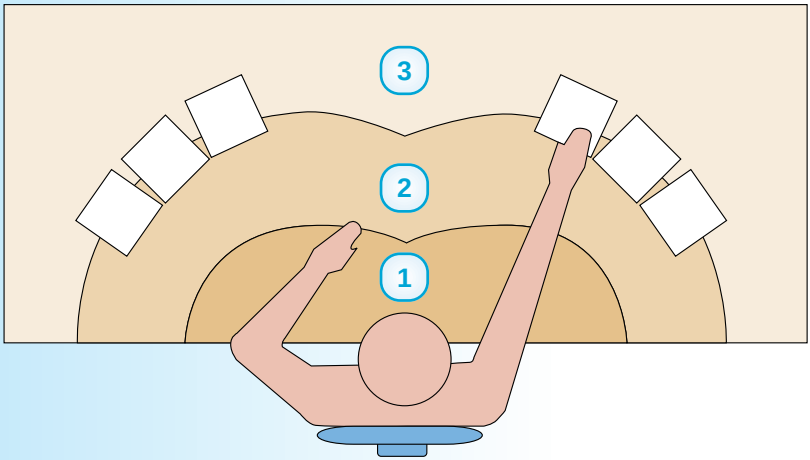
- Wherever possible, vary activities and spread keyboarding tasks throughout the day rather than undertaking periods of intensive typing.
- Regularly reposition your keyboard and mouse to maintain good hand, wrist and arm postures, relax your arm and shoulder position and periodically rest the hands and arms, especially if you experience any muscle fatigue or stiffness.
- Take frequent short breaks to relax muscles, stretch and change position.

Section 3

Using computers has caused people to sit longer than ever before. They no longer need to get up as often as all the information they need is at their fingertips. Sitting for long periods of time in static, poor or awkward postures can have a negative effect on the body. When static, poor or awkward postures occur, the muscles are often held in a contracted position and not allowed to change length. As a result the blood circulation which is responsible for bringing nutrients to the muscles is reduced and the muscles can become fatigued. Muscle fatigue can lead to stiffness, strain and discomfort and can lead to long term injuries. Muscle fatigue and the risk of injury can easily be avoided by taking some basic steps to set up and maintain your workstation and to look after your body.

Using the Desk and Work Surface

Keep those items that you use frequently close to you to avoid stretching, reaching and awkward postures when you use them. The diagram below normally referred to as the Reach Envelope provides a guide to the recommended location of work items on the work surface and is designed to support good posture by minimising overstretching and reaching across the body for work items. Try adjusting your own workstation in relation to the three zones below.



1. Place frequently used items within the sweep of your forearm. Rotate both hands, moving from the elbow, while seated to find the sweeping curve. If you use your computer on an hourly basis then the computer, keyboard and mouse should be placed in this zone. If you use the telephone regularly this should also be placed within this zone.

2. Place less frequently used items within the sweep of your whole arm from shoulder to fingertips across the desk surface. This would include any items you only use occasionally during the day.

3. The remaining area of the desk should be used for items which you use infrequently during the day.

Make sure there is enough space under your desk to move your legs freely and remove any obstacles, i.e. boxes, equipment, files, bags etc.

Using the Telephone

If you frequently need to use the telephone and write notes or use your computer at the same time:

- avoid cradling the receiver between your shoulder and chin, as this will cause tension in your shoulder and neck and may lead to discomfort and a risk of injury
- use a headset instead of a conventional handset to reduce awkward neck and head postures.

Adjusting The Chair

Height

Your chair should ideally be positioned as low as possible so your:

- feet can rest firmly on the floor and thighs are horizontal
- back is supported
- elbows are about the same height as the work surface
- forearms are parallel with the floor and your wrists are straight.

If you find it difficult to adjust your chair once seated, ask a colleague to assist you or alternatively, try standing in front of your chair and adjust the height so the highest point of the seat is just below your knee cap. If you find you cannot rest your feet comfortably on the floor or if you experience pressure on the back of your legs, then you need to use a footrest.

Back Rest and Seat Pad

Adjust the lumbar pad (the curved section of the back rest) so it supports the inward curve of your lower back and enables you to sit comfortably. Your head should be level, shoulders relaxed and back supported and slightly reclined. Adjust the back rest and seat pad controls (where available) to ensure that when you sit you can fit a clenched fist in the space between the front edge of the seat pad and the back of the lower part of your legs. If you perch on the edge of your seat or place your feet on the castors you will put excess pressure on the backs of your legs and knees.

Armrests

Armrests are designed to help support the body and to enable the shoulders to relax. If they are too high your shoulders will be lifted up towards your ears and if they are too low, your shoulders and upper body will sag. Adjustable armrests should be adjusted after the seat height and backrest have been set. When seated, dangle your arms down to assess the height of your elbows, then move the armrests to that height.

Using DSE in a Standing Position

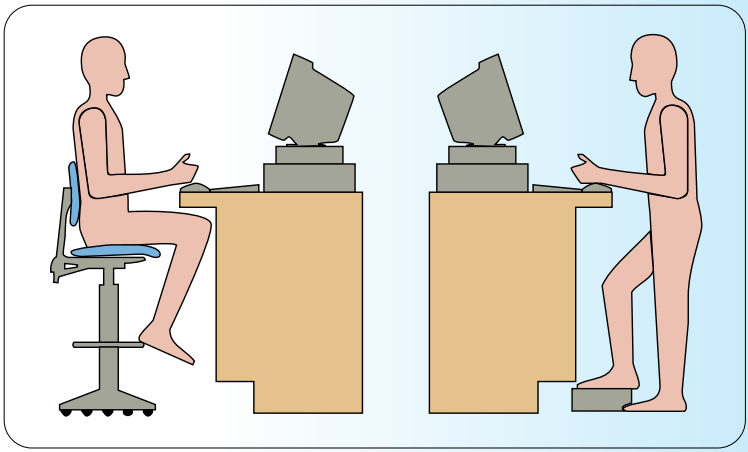
In many Laboratory environments, DSE will be placed on a workstation which is designed to enable individuals to use the equipment in a sitting or standing position throughout the day. While the information contained in this Guide should also be applied to this type of workstation, a number of additional points should be taken into account.

The monitor distance, angle and height should be adjusted as detailed on page 4, however when standing you should ensure you face the monitor at all times with your chin in line with the centre of the monitor to reduce postural strain to the neck muscles.

Apply the principles outlined in the Reach Envelope diagram on pages 8 and 9 and avoid overextending your reach beyond the point of comfort.

The workstation should be set up to ensure you can easily move from a standing or sitting position at will and you should use a chair whenever possible. Frequent changes of body position including sitting and standing help to avoid fatigue.

Adjust the seat height to around 25 to 35cms below the work surface. When standing, use a footrest with a height of 40 to 50 cms. You may find using the footrest to change your body position and shift the weight of your body from one leg to the other, is beneficial.



Section 4

Stretching and Adopting Good Posture

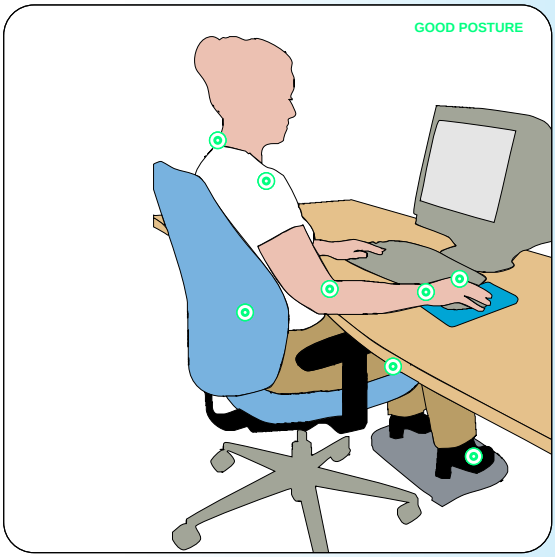
If you are a regular computer user, stretching and adopting good posture and taking some basic steps to look after yourself are key to your health and wellbeing and indeed your ability to successfully carry out your daily work activities.

Worldwide studies indicate that after one hour of continuously working at a computer, an individual's peak performance rate reduces by 60%. However, a short five minute break involving some postural adjustment, stretching, movement or some non computer based work activity not only protect an individual's health and wellbeing but allows their peak performance rate to return back to 100%

If you hold a body part in an awkward or static position for a long period of time it will initially feel uncomfortable but will soon become numb as the flow of blood to the muscles is restricted and waste products in the muscles accumulate. When you then later move this body part, you may experience muscle fatigue, stiffness, discomfort or even pain.

Avoid slouching forward, leaning back or any awkward postures that may lead to muscular discomfort.

When sitting at your computer, try to sit an inch taller than you normally do. Align your ears over your shoulders and place your shoulders over your hips. Place your head evenly between your shoulders and when you look down your head should be positioned over your neck and not in front of your shoulders. Adopt and maintain a relaxed, upright working posture.



Wherever possible, vary activities and organise your workload to give your body a break at regular intervals throughout the day - remember frequent short breaks are best.

Adjust and change your sitting posture every half hour, even slightly.

Keep blood circulating and rest and refuel your muscles by gently stretching your hands, neck and shoulders to reduce tension and loosen muscles.

Stand up, move around and stretch your body.

Try a little Deskercise by repeating each of the exercises overleaf a few times during the day.

Head

Slowly drop your chin to your chest, then roll your head all the way to the left, then turn all the way to the right. Repeat, rotating in the other direction.

Arms

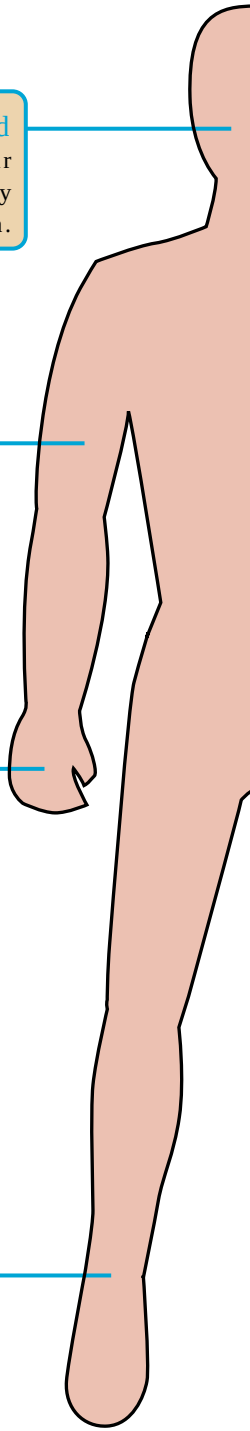
Lift your arms straight out ahead to shoulder level, and rotate them so the back of your hands are facing each other. Then rotate them so the palms face upward. Keep switching back and forth.

Hands

Tightly clench your hands into fists, then open the fists and fully extend and separate your fingers.

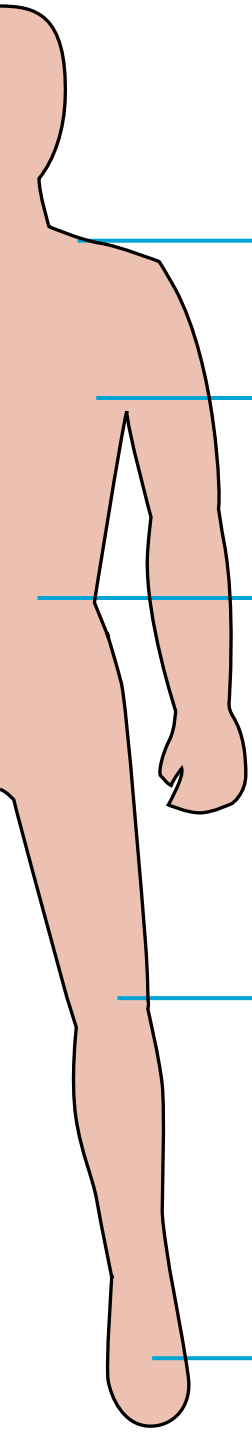
Mousercise

Make smooth circles with the mouse with a relaxed shoulder and grip. Practice making circles smoother and smoother until you are comfortable with them. Next try making a figure 8.



Ankles

While sitting raise one foot just of the floor, draw circles with this foot by rotating the ankle, first one way a few times, then the other. Change legs and do the same with the other foot.



Shoulders

Raise your shoulders to your ears until you feel slight tension in your neck and shoulders, hold for a few seconds then relax your shoulders downwards. Alternatively try the same exercise but only raise and relax one shoulder at a time.

Body

Stand up and walk around and have a good stretch.

Spine

Sit forward in your chair, feet firmly on the floor. Place your right hand on your left knee and your other hand behind your back. Slowly twist to your left, turn your shoulders so that they face sideways and your head so that your look behind you. Use the hand on your knee to help you turn. Slowly come back to the centre. Switch arms and repeat in the opposite direction.

Legs

Holding onto the sides of you chair, point one leg straight out in front, then lift the whole leg a few inches. Lower and lift, lower and lift. Rest, then change legs.

Feet

While sitting, raise one leg just of the floor. Point your foot out straight, then pull it back up towards you, flexing your foot. Repeat several times, then change legs and repeat.

help problems safety advice care health help problems

Section 5

Should you experience any physical discomfort, problems with vision or other difficulties whilst operating your computer advise your Line Manager and contact your Health and Safety Representative immediately.

If you move from one desk to another or share a workstation with someone else make sure you take time to adjust the workstation, chair and computer to your own personal requirements before you use it. Do not put up with any workstation arrangements which cause you discomfort simply because the person who normally sits at the workstation has it set up to suit them.

Report any problems with your computer or workstation, e.g. damaged cables or plugs, any evidence of overheating, flickering or blurred screen, damage to your chair or desk etc.

Do not eat or drink or place liquids or food close to the equipment. Any spillage on or around the equipment could result in a serious accident and/or damage to the equipment.

Clear your desk at the end of each day, as far as possible, to allow the work surface to be cleaned, even if it only means you place work files and documents in a tray on your desk. Clean your display screen equipment once a week to remove any build up of dust and reduce static. Remember to switch off equipment prior to cleaning.

Health, Safety and Wellbeing

NSS PROMOTING SAFER HEALTHIER WORK