NOTE:
WHAT'S THE DIFFERENCE BETWEEN A VDU, A VDT, A MONITOR AND DISPLAY SCREEN EQUIPMENT (DSE)?
There isn't one. All these terms mean the same thing - a display screen, usually forming part of a computer and showing text, numbers or graphics.
1) DISPLAY SCREEN EQUIPMENT - POSSIBLE EFFECTS ON HEALTH

Display screen equipment has been blamed - often wrongly - for a wide range of health problems. In fact, only a small proportion of computer users actually suffer ill health as a result of their work. Where problems do occur, they are generally caused by the way in which the computer is being used, rather than by the computer itself. So problems can be avoided by good workplace and job design, and by the way you use your computer workstation.

A) Pains and discomfort

A range of conditions of the arm, hand and shoulder areas linked to work activities are now described as work related upper limb disorders (WRULDs). These range from temporary fatigue or soreness in the limbs to chronic soft tissue disorders like peritendinitis or carpal tunnel syndrome. Peritendinitis is basically the inflammation of the sheath that surrounds the tendon. Some keyboard operators have suffered occupational cramp.

The contribution to the onset of any disorder of individual risk factors (eg keying rates) is not clear. It is likely that a combination of factors is concerned. Prolonged static posture of the back, neck and head are known to cause musculoskeletal problems. Awkward positioning of the hands and wrist (eg as a result of poor working technique or inappropriate work height) are further likely factors. Outbreaks of soft tissue disorders among keyboard workers have often been associated with high workloads combined with tight deadlines. This variety of factors contributing to display screen work risk requires a risk reduction strategy which embraces proper equipment, furniture, training, job design and work planning.

B) Eye and eyesight effects

Medical evidence shows that using display screen equipment is not associated with damage to eyes or eyesight; nor does it make existing defects worse. But some workers may experience TEMPORARY visual fatigue, leading to a range of symptoms such as impaired visual performance, sore eyes and headaches, or the adoption of awkward posture which can cause further discomfort in the limb. These may be caused by:

(a) staying in the same position and concentrating for a long time;
(b) poor positioning of the display screen equipment;
(c) poor legibility of the screen or source documents;
(d) poor lighting, including glare and reflections;
(e) a drifting, flickering or jittering image on the screen.

Like other visually demanding tasks, computer work does not cause eye damage but it may make workers with pre-existing vision defects more aware of them. Such uncorrected defects can make work with a display screen more tiring or stressful than would otherwise be the case.
The health risks associated with computer work can be greatly reduced by

- Providing the right equipment and setting it up correctly
- Assuming the right posture and in particular
  - sitting upright
  - ensuring straight wrists
  - sitting face in to the workstation
- The correct use of the equipment and self-management of the correct posture adopted by the user
- Organising work so that there are short periods spent away from the workstation doing other things
2) HEALTH AND SAFETY (DISPLAY SCREEN EQUIPMENT) REGULATIONS

WHO IS AFFECTED?
The Regulations affect staff who habitually use computers for a significant part of their normal work (Defined in the Regulations as “Users”)

WHAT DO EMPLOYERS HAVE TO DO TO COMPLY?
The Regulations do not contain detailed technical specifications or lists of approved equipment. Instead, they set more general objectives.

Employers have to:

1) ANALYSE WORKSTATIONS OF EMPLOYEES COVERED BY THE REGULATIONS AND ASSESS AND REDUCE RISKS
   They need to look at the hardware, the environment, and factors specific to the individuals using the equipment. The views of those individuals may be sought as part of the assessment. Where risks are identified, the employer must take steps to reduce them.

2) ENSURE WORKSTATIONS MEET MINIMUM REQUIREMENTS
   These are good features that should be found in a workstation. For example, the screen should normally be able to tilt and swivel in all directions. This allows individuals to find a comfortable position for the screen, helping to avoid muscular problems in the upper part of the body.

3) PLAN WORK SO THERE ARE BREAKS OR CHANGES OF ACTIVITY
   The length or number of these is not specified precisely in the Regulations, as the need for breaks depends how intensely and for how long the employee has been using the workstation. But short, frequent breaks are better than longer, less frequent ones, and ideally the individual should have some discretion over when they are taken.

4) ON REQUEST ARRANGE EYE AND EYESIGHT TESTS, AND PROVIDE SPECTACLES IF SPECIAL ONES ARE NEEDED
   Employees who are covered, or about to become covered, by the Regulations can ask their employer to provide and pay for an eye and eyesight test. These employees are also entitled to further tests at regular intervals - the person doing the first test can recommend when the next should be. If in the meantime an individual has visual problems which may be related to work with computers, the employer has to provide another test on request. (In Scotland, as opposed to England and Wales, eye tests are free for everyone so staff can make their own arrangements for eye tests.)
5) PROVIDE HEALTH AND SAFETY TRAINING

This is to make sure employees can use all aspects of their workstation equipment safely, and know how to make best use of it to avoid health problems, for example by adjusting the chair.
3) WHAT (AND WHO) ARE USERS?

The Regulations apply to a class of people called “users”. A “user” is defined in the Regulations as “an employee who habitually uses display screen equipment as a significant part of his normal work”. This can be difficult definition to apply to the workplace. Staff who meet the following criteria would most certainly be regarded as “users”:

- Use it for continuous or near-continuous spells of an hour or more at a time
- Use it in this way more or less daily.

In practice almost all members of staff in the University who make use of computers will be “users”

While postgraduate students are not “users” as they are not members of staff, most will make considerable use of computers and Schools should ensure that they are provided with suitable equipment and understand how to use it correctly. If the postgraduate student has been allocated a specific desk and workstation exclusively for their use, then a duty of care should be extended to conduct a workstation assessment for them.
4) COSTS OF COMPLIANCE WITH THE REGULATIONS

Assessments may show that alternative items of furniture are needed. A document holder or a footrest may be required. A user may have to see an optician for an eye test and special spectacles may be needed.

Who meets the costs of these items?

Chairs and other furniture: Most Schools now meet the costs of their furniture. They will therefore need to meet the costs of any additional furniture which is required to configure a computer workstation.

Other equipment: Footrests, document holders, screen filters etc must be provided by the School and the costs met by the School.

Eye Tests and Glasses: Eye tests are now free, however, in the unlikely event of prescription spectacles being needed only for computer work, the costs of a basic frame and lenses must be met by the School (see section 9). If the user wishes to choose more costly spectacles, the user must fund the additional amount above the cost of the basic equipment. If a user wears glasses for ‘normal use’ and the prescription covers the distance required for workstation use, then there is no need to pay.
### Checklist for Computer Workstation Assessment

User __________________ Location __________________ School ________________
(e.g. Room Number)

<table>
<thead>
<tr>
<th>Chair - 3 way adjustable</th>
<th>Y/N or n/a</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair set at correct height - upper arm vertical and forearm horizontal; adjust back of chair to support lower back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot rest supplied if required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen is directly in front of user (or immediately to the side of any document holder) and keyboard parallel to edge of table</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen a suitable distance from the user and at the correct height (eyes level with top of monitor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Space in front of keyboard to rest hands when not keying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mouse and mouse mat within easy reach – close to keyboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document holder supplied if required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen is clean with a clear image</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen does not suffer from glare and reflections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate space beneath table for posture changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posture of user - upright with no flexure of wrists and lower back supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User’s work pattern - regular activity changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User is aware of health risks associated with intensive computer work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other points:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessed by __________________ Signature __________________ Date _____________

Signature of user ____________________________
6) POSTURE
Good Seating and Posture at a Workstation

- Balanced head, not leaning forward
- Arms relaxed by your side
- Forearms parallel to desk
- Sit back in chair ensuring good back support
- Screen approximately arms length from you
- Top of screen about eye level
- Space behind knee
- Feet flat on floor or on a footrest
7) GUIDANCE ON ASSESSMENTS

1) Involve the user (e.g. discuss the work conducted by the user, what their tasks are and complete the checklist together)

2) Take seriously reports of aches and pains from users. If necessary, contact the Assistant University Safety Adviser, who will arrange for an ergonomic assessment to be carried out.

3) Look for the less obvious causes of risk. For example, poor (i.e. risky) posture may be due to bad seating, OR sitting awkwardly to avoid glare on the screen, OR leaning forward to key because arm rests prevent the chair being close to the workstation.

4) Unless competent to do so, the assessor should not advise on specialist equipment to be purchased. If new equipment is considered, please refer to the Central Safety Team for further advice. If a standard office chair requires to be replaced, then this should be arranged.

5) Sign-off the checklist to show that everything has been done. Get the user to sign it as well. Encourage the user to self-manage their position.

6) Keep the assessments on file in the School to show that the assessments have been carried out.

7) Having taken action to reduce the risks, check with the user that no new problems have arisen, for example:
   • To have forearms in the correct keying position, a short user raises the chair height, but feet can't now be placed flat on the floor. A foot rest is needed.
   • Workstation layout is reorganised to give more space but one user is now sitting next to a group of noisy printers.

8) Completed assessments will need to be reviewed when:
   • major changes to the display screen equipment, furniture, or software are made;
   • new users start work, or change workstations;
   • workstations are re-sited;
   • or in any event, every 2-3 years.

9) Beware exaggerated claims and misinformation from suppliers of products that are supposed to reduce risks. They may over-simplify or exaggerate problems, or encourage unnecessary bulk purchasing of accessories. BEWARE IN PARTICULAR
   • Wrist rests (if the user is not experiencing any problems)
   • Screen filters (if you have not yet tried other methods of reducing reflections)
   • Over-elaborate adjustable tables.
8) TRAINING FOR USERS

It should be possible to provide users with adequate training “one-on-one” at the same time as carrying out an assessment.

Training for users needs to cover:

1) The health risks (particularly upper limb problems) and how relatively easy it is to minimise the risks.
2) What the University does to minimise the risks
   • Provide the right equipment to those at risk
3) What users can do to minimise the risks
   • Use the equipment correctly (adopt the correct posture)
   • Ensure computer work is interrupted with regular changes in activity
4) What users should do if they feel they have problems
   • Whom in the School they should contact
9) EYE TESTS

The University is required by the Health and Safety (Display Screen) Regulations to provide users who so request it with eyesight tests.

However eye tests are free for all in Scotland so any user wishes to take up their entitlement to an eyesight test should make an appointment with their optician for a free test.

The University is also required by the Health and Safety (Display Screen) Regulations to meet the costs of any spectacles which are required specifically to correct vision defects at the viewing distances used for display screen work. If the optician certifies that spectacles specifically for the display screen distance (rather than for, say, driving or reading in addition to display screen work) are required, then the cost of basic pair of spectacles must be met by the user’s School. If the user wishes to choose more costly spectacles, the user must fund the additional amount above the cost of the basic equipment. The costs can be claimed back through expenses:
10) LAPTOPS

Laptops and tablet computers are designed to be portable, compact and lightweight in order to be easier to carry. This results in compromised design features like smaller keyboards, the lack of a numerical keypad and touchpads. Prolonged use of these can lead to discomfort so steps must be taken to avoid problems from developing. Many staff and students who work in multiple locations or from home may have a laptop as their primary computer and in these cases the laptop should be used in conjunction with a docking station as they are sometimes referred to. When the laptop is docked, the laptop user’s workstation should resemble that of a standard desktop user; with a keyboard, mouse and flat panel screen at the correct height and distance.

For desktop users who may be using a laptop as a secondary device, advice should be given in order to minimise risks. This should include sitting comfortably with adequate lumber support, angling the screen so it can be seen clearly with minimal reflections and taking frequent breaks during prolonged work periods. Eye strain may also be a hazard if the laptop is not set to the appropriate brightness level or resolution. Wherever possible, laptops should be placed on a firm surface at the appropriate height for typing.

In addition to the use of laptops, attention should be paid as to how the user is transporting them. It is recommended that whilst carrying, the weight should be distributed evenly across both shoulders. A laptop backpack is the ideal solution.

Where tablet devices such as Apple’s iPad and various Windows tablets are in use users should be aware of similar issues of prolonged use. When using a tablet the user’s posture and neck position should be comfortable and a stand or case that can hold the tablet at a suitable angle should be used with the tablet on a firm stable surface with routine breaks taken every 15 – 20 minutes.
11) FURTHER INFORMATION AND ASSISTANCE

Director of Health, Safety & Wellbeing
Mr Naveed Qamar, Ext 2783

University Safety Adviser
Dr Allan Petrie, Ext 3896

Occupational Health Service
NHS Grampian Occupational Health Service
Foresterhill Lea
Foresterhill
Ext (Foresterhill) 53663

Web links
http://www.abdn.ac.uk/safety/resources/workplace/computers
Appendix A – Setting up the Workstation

The information provided below will assist in setting up the workstation for the user to minimise any discomfort which may arise during use of the workstation.

General Office Environment

The immediate work environment is also an important factor in minimising risks. Important factors include, lighting, ventilation, temperature, noise, etc.

- Background noise levels should allow staff to hold conversations, both face to face and on the phone, in comfort.
- Users should ideally not face windows, unshielded lamps or other sources of glare. If this is not possible, then blinds should be used.
- Task lighting can be used as necessary.
- The temperature should be reasonable (a minimum of 16°C for office environments). There is no maximum temperature. A reasonable temperature may be achieved via appropriate heating or cooling.

Seating

The chair should allow the user to find a comfortable and well supported position which minimises muscle strain.

- Chairs must be in good working order, comfortable, have good lumber support, adjustable back rest height, back rest tilt and seat height as a minimum to meet the regulations.
- The chair should be set up as per the diagram in section 6,
- A 15° forward tilt (approx.), if possible, should be considered as this opens the hips and significantly reduces the pressure on the discs in the lower back.
- It is expected that a good quality, standard office chair should be suitable for most users and only a small percentage of people will require additional assessment

Desks

A suitable and correctly located work surface will allow the chair and other equipment to be positioned appropriately.

- Work surface must be free from glare & reflection and large enough to allow flexible arrangement of the screen, keyboard, documents and other equipment.
- Be aware of users cluttering their desks with papers and, books which prevent them from operating their keyboard, mouse, etc.
• The height of the work surface for sitting postures should usually be between 705 to 735mm. Desk feet can be purchased to raise the height of the desk if necessary. For a few individuals, who are particularly tall, then higher desks or stand / sit desks may be beneficial.

Document Holders
If a user is regularly transferring data from paper to computer a document holder may be beneficial. Ideally this should be positioned not to cause twisting or strain.

• If possible, place document holder adjacent to the side of the monitor to minimise strain and stooping of the neck.
• If transfer is between books to computer, then a reading / writing slope may prove beneficial.

Mouse
Intensive use and poor position of a mouse can lead to discomfort in wrist, arms and shoulders. The following should minimise any discomfort.

• Mouse should be comfortable with smooth, precise and easy to use controls
• Mouse should be positioned as close to the centre of the body as possible
• There should be enough room on the work surface in front of the mouse to support the forearm
• If user is experiencing pain or discomfort an ergonomic mouse may prove beneficial

Keyboard
Similar to the mouse, intensive use and poor positioning of the keyboard can lead to discomfort and pain. The following should be considered.

• In order to support the user’s wrists there should be enough room in front of the keyboard to support their forearms
• The ‘H’ key should be in line with the centre of the body.
• Alternative designs of keyboards (ergonomic, narrower, etc) may help to alleviated pain / discomfort in the wrists / shoulders of some users.
• Not deploying the ‘feet’ at the rear of keyboard to increase the tilt helps to keep the angle of the wrists in a more natural position.
• Wrist rests are not often required, but if considered, ensure that it supports the heel of the hand as opposed to the wrist. If it supports the wrist, this can cause compression of the nerves / tendons in this area
Monitor
A correctly positioned monitor encourages good posture and reduces eye strain.

- The top of the monitor should be level with the eyes (monitor risers may be required).
- The monitor should be approximately one arm length away from the user.
- The screen should be free from glare and reflection and the image should be easy to read.

Telephones
If a user requires intensive use of the telephone whilst operating the workstation, then a headset should be considered.

Work Pattern & Breaks
As an assessor, it is unlikely that you will be able to manage or control the working pattern of the user, but it is encouraged that you highlight the importance of breaks, mixing different activities, etc. in order to prevent fatigue, developing discomfort or pain, etc. Points that should be discussed include:

- Take opportune breaks – stand up or change posture when answering the phone.
- Take micro breaks (less than 2 minutes) more frequently to rest intensively used muscles. Relax the wrists, arms, shoulders, move legs, etc.
- Take eye breaks to allow the eye muscles to relax. A 20/60/20 rule is advised, this being, look 20metres away for 60 seconds every 20 minutes).
- Take longer breaks (e.g. lunch breaks) away from the computer.
- Frequent small postural changes are recommended.
- Work patterns should ensure that tasks and activities are varied as much as possible and physical and mental demands on the user are well balanced.