

Guidelines for using computers

Preventing and managing discomfort, pain and injury

Workstation layout
Workstation environment
Work organisation
Posture and body position



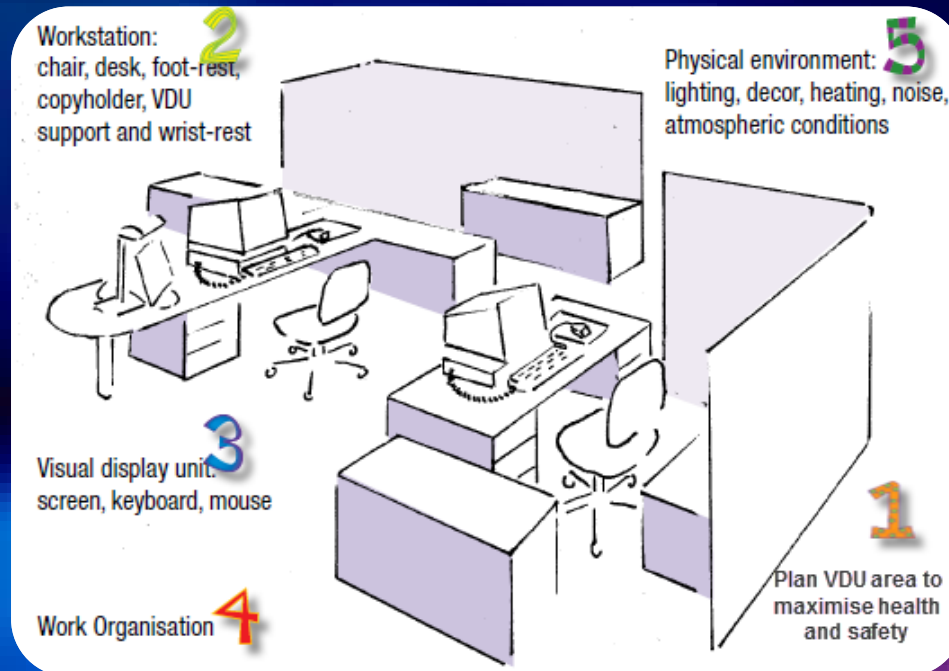
Author: Gay Robertson, 2015

Remember

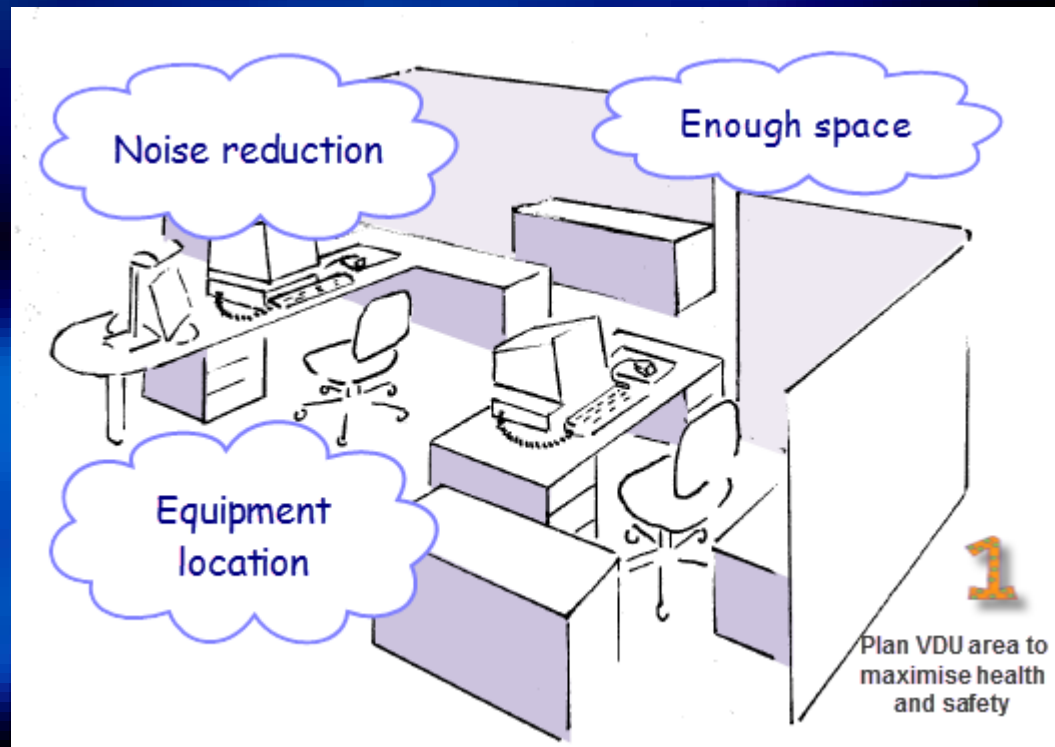
- If you work in an organisation, your supervisor would ensure that potential hazards have been identified and assessed and action has been taken to adequately control them to provide the correct level of health and safety required by the ACC Guidelines for using computers and the Health and Safety in Employment Act 1992.
- If you work at home, you should use the ACC Guidelines as a guide to help you stay comfortable and productive when using a computer.

When planning your computer workstation, consider the interaction between the user using the workstation, the computer hardware provided, the physical environment and the work to be done

What is a computer workstation?

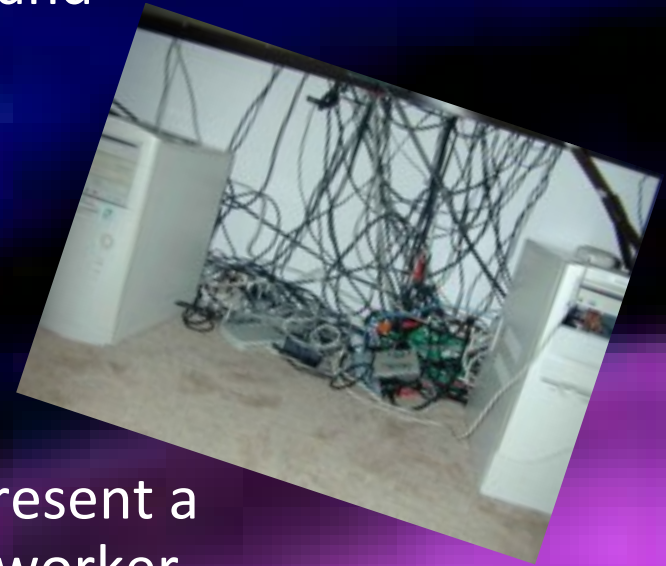


1 Plan to maximise health and safety



Plan enough office space ...

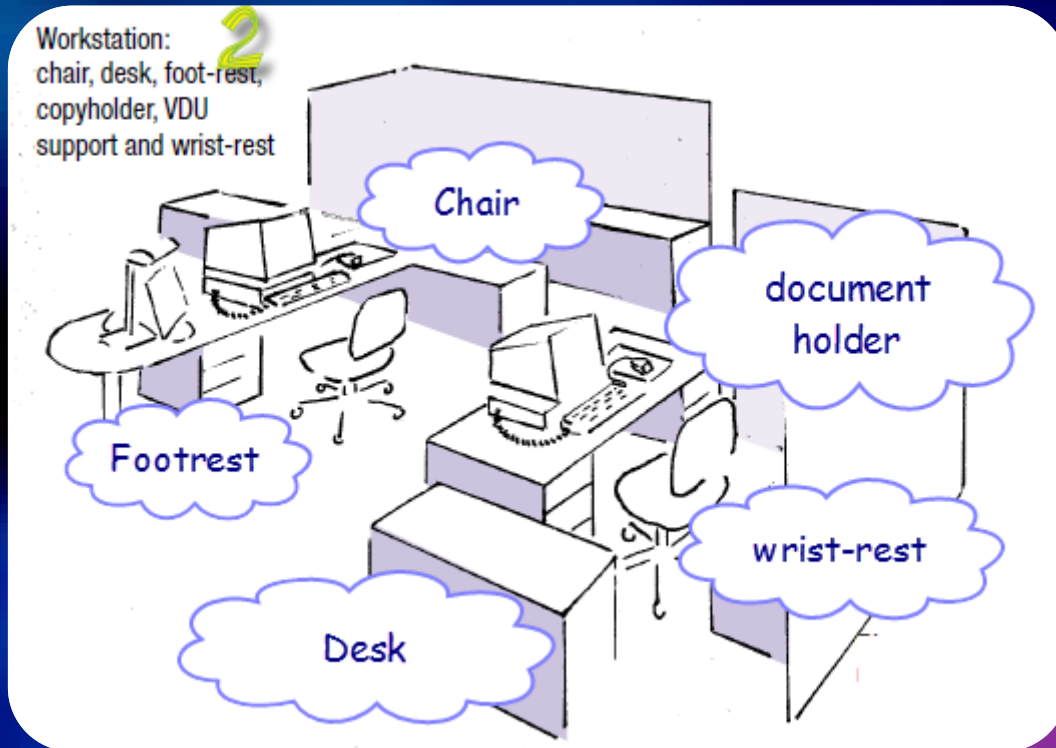
- Space to maximise health and safety and increase job satisfaction
- Not a mass of cables under users feet
- Any other furniture placed around the workstation should not present a danger to the user or overcrowd the worker
- Space and design of the workstation should allow for a range of comfortable working postures



Plan equipment location and plan noise control ...

- In an office, the main effects of poor equipment **location** are:
 - Interference with verbal communications
 - Reduction in concentration
 - Annoyance
 - Users being subjected to heat coming from equipment outlets
- Methods to **reduce noise**
 - Enclosure of noisy machines or padding under machines
 - Carpet
 - Sound-absorbing partitions, acoustic ceilings
 - Replacement or isolation or relocation of noisy equipment

2 Workstation furniture & Hardware



Recommended Chair specifications



Users need to know how to adjust their chair ..

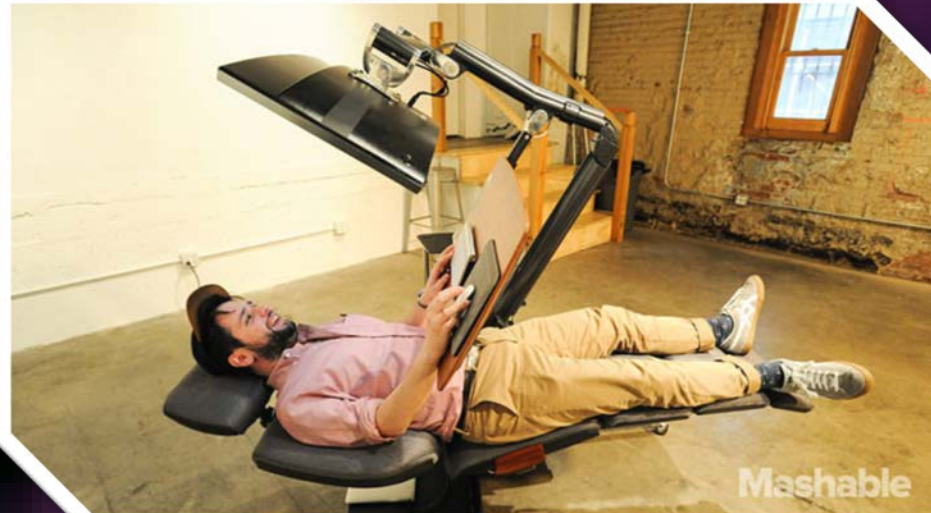
- Adjusting your chair height
 - Pull chair up to highest point
 - Sit on chair and lower till your feet are flat on the floor
 - Thighs should be horizontal



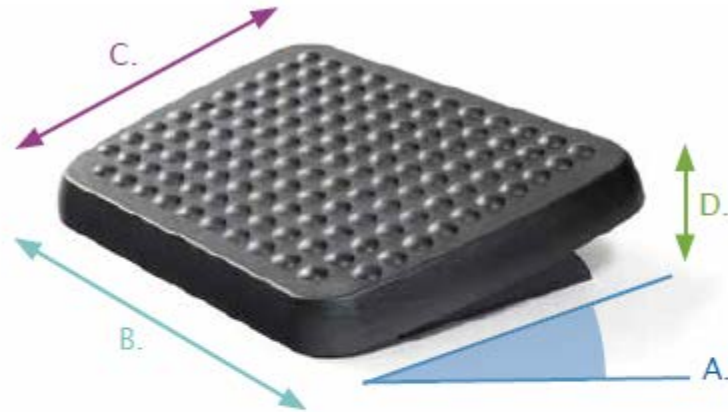
And look at these lie down chair/desks...



If you happen to be on the lazy side, these might appeal!



Recommended footrest specifications



- | | |
|---------------------|--|
| A. Foot Rest Slope | Comfortable for the user, adjustable between 0° and 10° |
| B. Foot Rest Width | 450mm minimum recommended |
| C. Foot Rest Depth | 350mm minimum recommended |
| D. Foot Rest Height | Adjustable range of 50mm - 185mm recommended for seated work |

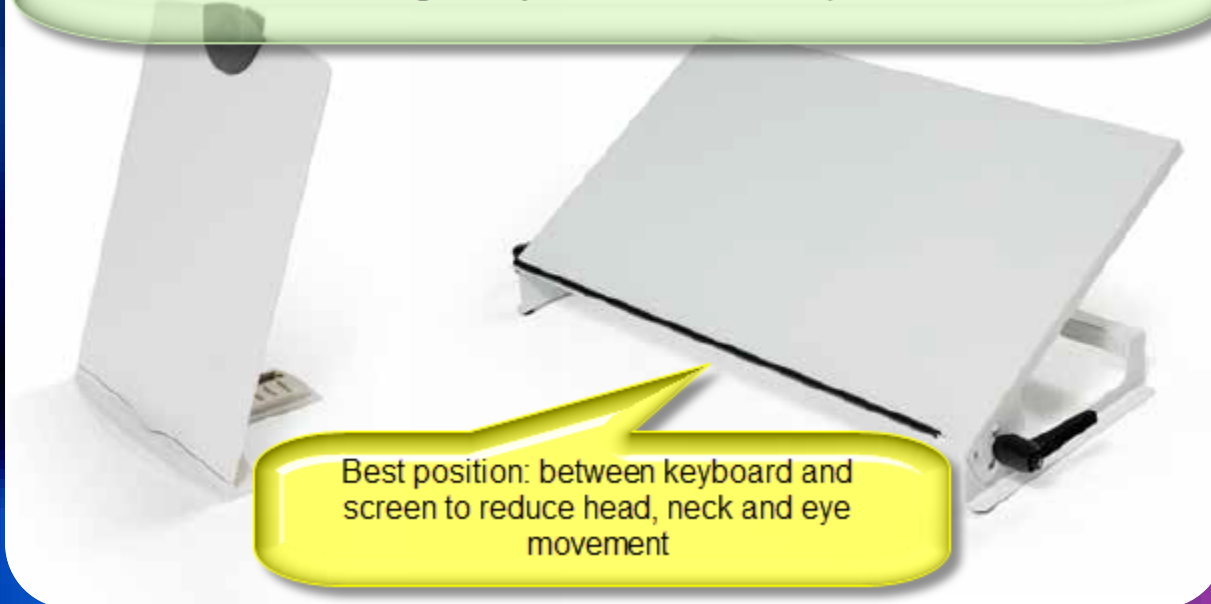
D. Foot Rest Height Adjustable range of 50mm - 185mm recommended for seated work

C. Foot Rest Depth 350mm minimum recommended

B. Foot Rest Width 450mm minimum recommended

Recommended document holder specifications

large enough for documents (10 mm smaller allows easy access to documents):
stable: adjustable in angle and distance to avoid glare etc which is visually
disturbing or may lead to unfavourable posture



Best position: between keyboard and
screen to reduce head, neck and eye
movement

Recommended desk specifications

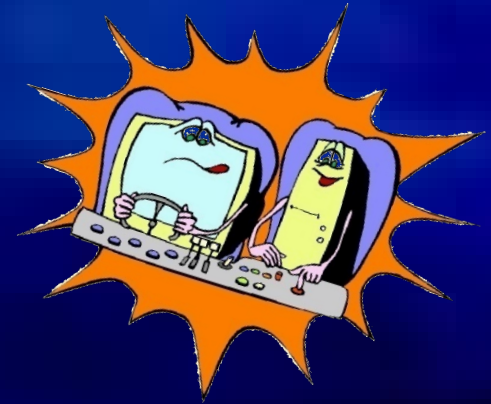


- 1** 650 to 1100mm adjustable for both seated & standing work
- 2** 610 to 760mm adjustable for seated work only
- 3** 800 to 950mm 800mm minimum for flat screens, 950mm minimum for CRT screens
- 4** 1200 to 1600mm 1200mm minimum when used solely for computer work, 1600mm minimum when used in combination with reading and writing



Standing
to work

Desk & other aids ...

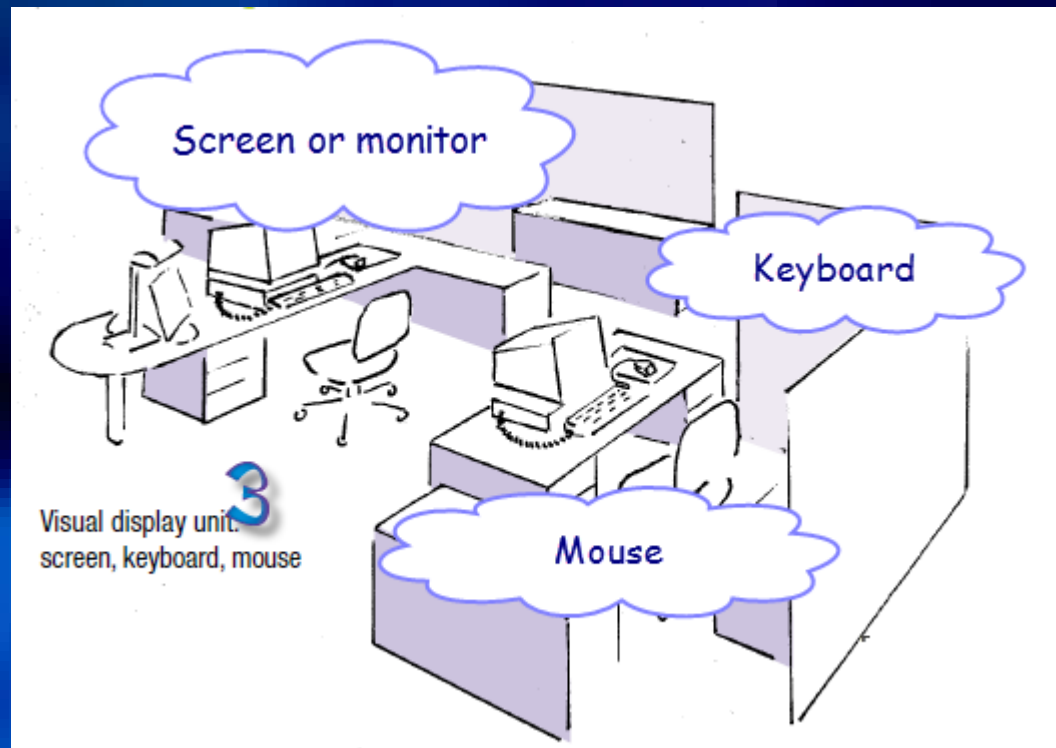


- should be stable and strong and provide sufficient space for performing tasks eg computer work, writing, open drawers
- surface should be large enough to hold work accessories such as a telephone, a document holder, a pencil holder, etc
- may also include space for a printer or for the specific requirements of a particular task eg drawing board
- May also need space for user aids eg mouse pad, keyboard/wrist rest
 - Wrist rest should only be used for micropauses, not to lean on while keying



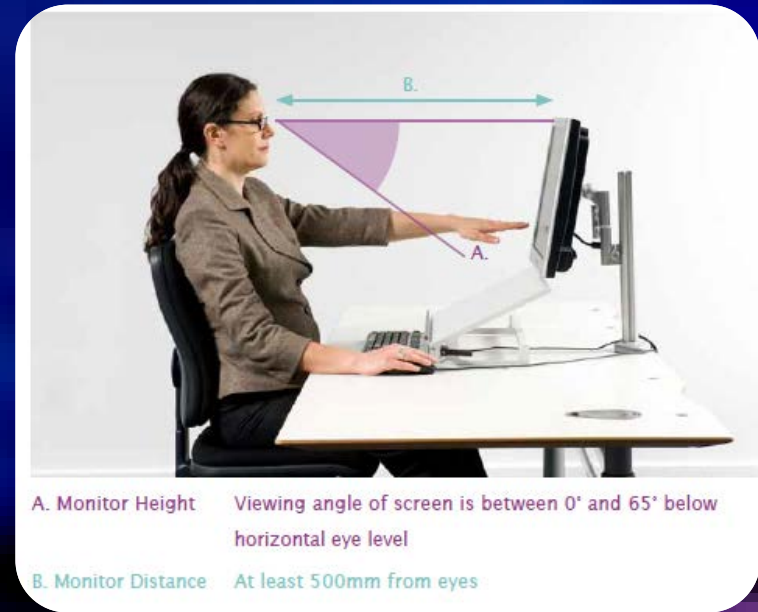
And when you've got everything right

- Remember to change your position to get your blood flowing and stretch your muscles



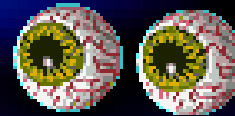
Screen / monitor ...

- should be placed at **eye level** (you look either straight ahead or downward)
- should have an **adjustable tilt and swivel** which can be altered from the seated position
- Adjust brightness and contrast if necessary
- should be at **arm's length** from the user
- should be positioned where the screen is **free of glare** or reflections
- should **not** be facing a window
- the most frequently “looked at” items should be directly in front of you



And ... look after your eyes!

- blink often – look into the distance to rest and re focus your eyes



- adjust the brightness & contrast



Keyboard ...

- Should be at correct height to allow user to hold **wrists** level with **forearms** – should be comfortable
- **Slope of keyboard** should be adjustable
- Shoulders low and relaxed
- It shouldn't be too far away (a space of approximately 50 mm between the desk edge and keyboard) – no reaching!
- Elbows loose at your sides.
Upper arm and elbow at 45o angle.
- User should be centered on the alphanumeric section of keyboard – not the cursor arrows or numeric keypad section



Skills training ...

- Users should have basic training in the use of software including:
 - The use of function keys
 - Organising and managing files
 - Positioning icons on the desktop for easy access
 - Able to access the control panel display to adjust various functions eg mouse speed
 - Be able to use the mouse with both left and right hands
- Users should be given training whenever software is upgraded
- Users should be encouraged to learn touch typing

Keyboard examples



Conventional keyboard



Split keyboard

Mouse ... pain and discomfort is often because of mouse use

- Mouse buttons should be easy to click and mouse should be easy to hold (no gripping tightly)
- Fingers should not hover over buttons they should rest lightly – too much contraction of muscles when hovering causes pain & discomfort
- Remove hand from mouse when not using it – relax muscles
- Have mouse at same height as keyboard so good **elbow** height is maintained
- **DON'T REACH FOR IT – IT SHOULD BE RIGHT THERE!!**
- **Encourage users to reduce the use of the mouse – use the keyboard shortcuts**

Mouse positioning

Correct mouse placement



Incorrect mouse placement

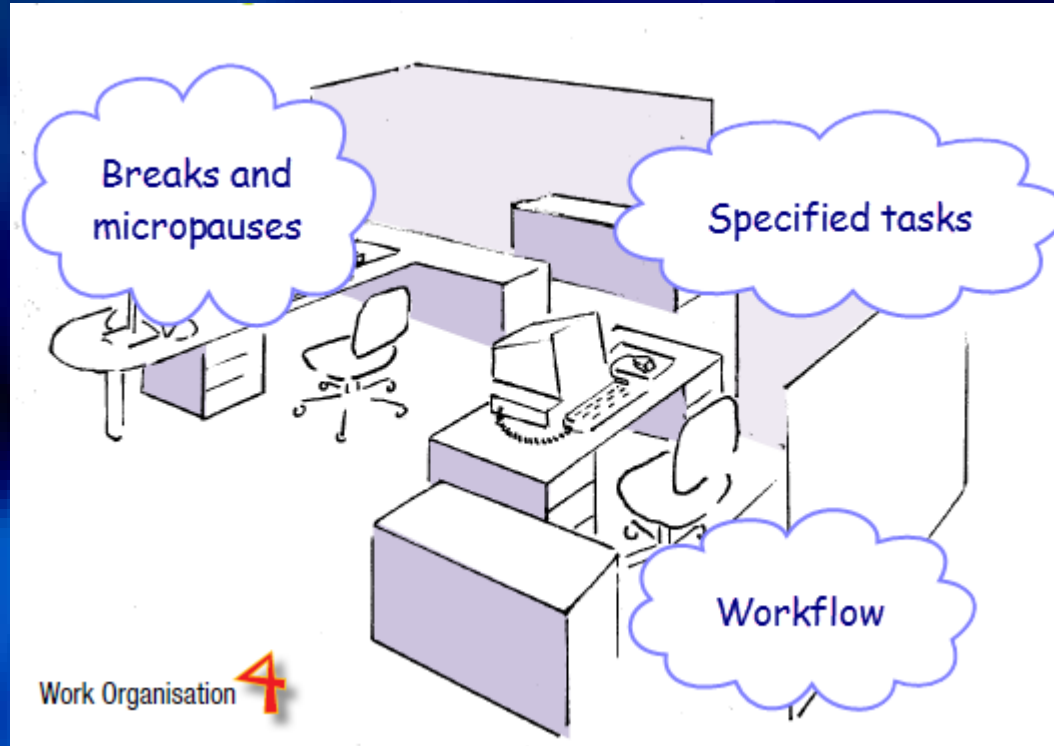


Keep arm
and hand in
line



4

Work or task organisation



Organising tasks, workflow and breaks

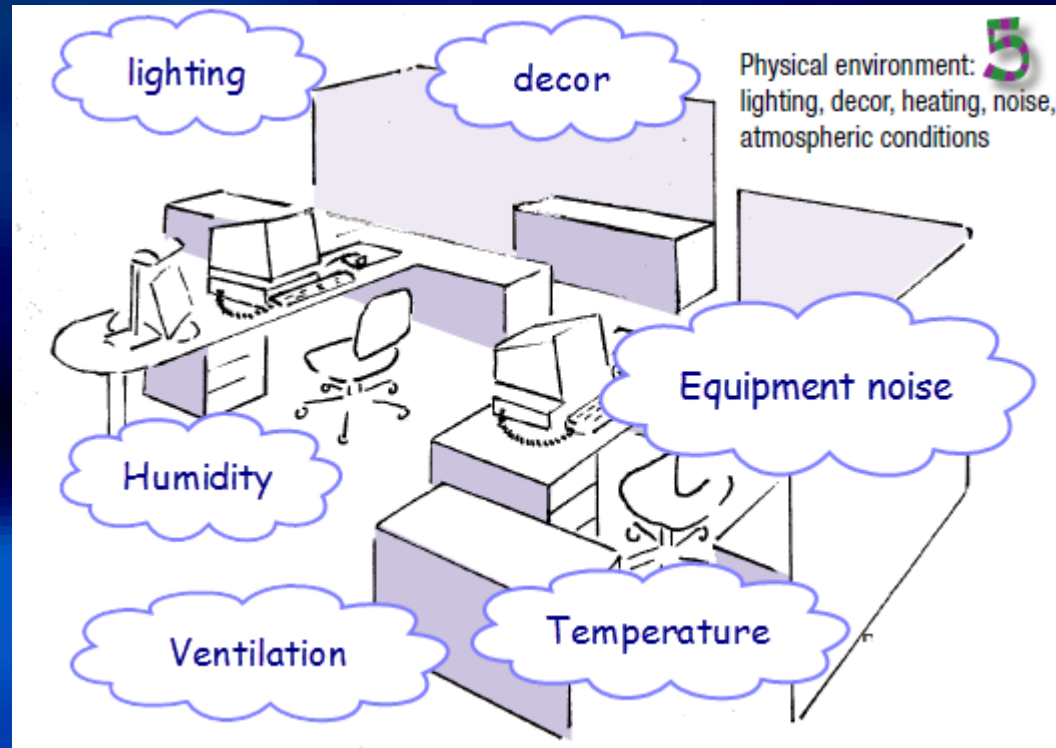
- **Tasks** need to be specified
 - A clear job description and clear performance objectives remove uncertainty
 - User needs clear lines of supervision to reduce tension
- **Workflow** needs to be specified
 - What is the variety of tasks? Is there any job rotation?
 - Is work scheduled to allow for deadlines to be met and anticipated peak times
 - Is time management training given to users for prioritizing tasks
 - Is your desktop organised – frequently used items within arm's reach to allow you to work smarter?
- Are regular **breaks** included as well as **micropauses and exercises**
 - Recognition of signs and symptoms of computer related health issues and importance of reporting these early to avoid chronic pain and disability

Organising study, workflow and breaks

- **Tasks** need to be specified
 - Knowing what is required to pass the module you are studying removes uncertainty
 - Knowing how long you have to complete the module will stop you from procrastinating (putting study off till another day!)
- **Workflow** needs to be specified
 - Have you allowed time to complete the workbook exercises before the end of your course?
 - Do you know what tasks you need to complete before assessment?
 - Have you scheduled your study time so that you avoid fatigue?
- Take regular **breaks** as well as **micropauses and exercises**

5

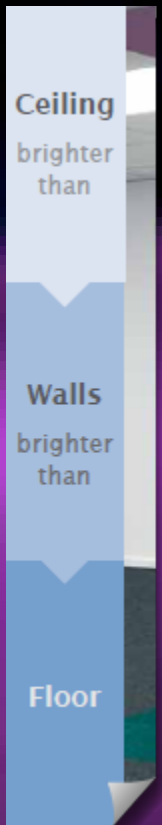
The physical environment



Lighting & decor



- **lighting** is low, background lighting
 - visual fatigue is more common when lighting is too bright
- **standard of lighting** is 320 lux (amount of shadow thrown on your desk or on your screen or amount of 'illumination' thrown which causes the shadow)
 - problem arises when more light is required for paper-based tasks
- **VDU screen should be positioned** where the screen is free of glare or reflections and should not be facing a window
- **Décor** should be light coloured to help reflect natural light



Atmospheric conditions - Temperature, ventilation, humidity



- Comfortable **Temperature** about 20-22°C (depending on summer or winter)

- Moderate air movement (air conditioning)
- No draughts on users (can cause stress)

Plants not only help clean the air of toxins and indoor air pollution, they also have a relaxing effect on the human mind.

- **Ventilation**

- Air that is stuffy, stale or polluted causes general dissatisfaction with the environment
- Experts used to take care of air conditioning and maintain filters
- Care should be taken that VDU users are not seated in the direct path of air outlets from printers, computers



- **Humidity** should be 45-75%

- plants in the area to enhance humidity (helps prevent static electricity build up)
- If more physical activity is necessary you may need lower humidity

Equipment noise...

- In an office environment, **noise** from equipment eg fans, photocopiers, printers, telephones, etc is the main source of noise associated with VDU work
 - Stress levels are influenced
 - Unlikely that noise levels could cause loss of hearing
 - Telephone conversations in open plan offices cause distraction
 - Ventilation ducts throb and can be annoying



So, if I follow these ergonomic principles and guidelines ...

1. Plan and organise my work
2. Select and arrange my workstation
 - Check my workstation to make sure it meets the requirements. **If at work**, notify my boss of any discrepancies as they **MUST** be corrected as part of employer responsibilities. **If at home**, try to make changes to ensure that I look after myself.
3. Take care of the physical aspects of my environment

6 The posture and body position of the user ...

- You need to be aware of what happens in your body
- You need to be able to adjust your furniture
- You need to be prepared to try different positions and posture to find the body position that works for you

Simple suggestions to think about ...

- Face straight onto your work positioned in the centre of the alpha keys on the keyboard
- Loosen your shoulders with elbows loose at your sides
- Wrists straight
- Pivot your head to look down - Don't slump forward
- Keep the hollow in the base of your spine
- Change backrest angle
- Change your position often
- Adjust your equipment

- This will lead to:

Fewer injuries

- Less absenteeism
- Increased efficiency
- Reduced errors
- Increased job satisfaction

Work productively and efficiently

Keep all these things in mind as you are working at your computer

A: MONITOR:- Eye level or lower; at arms-length from user

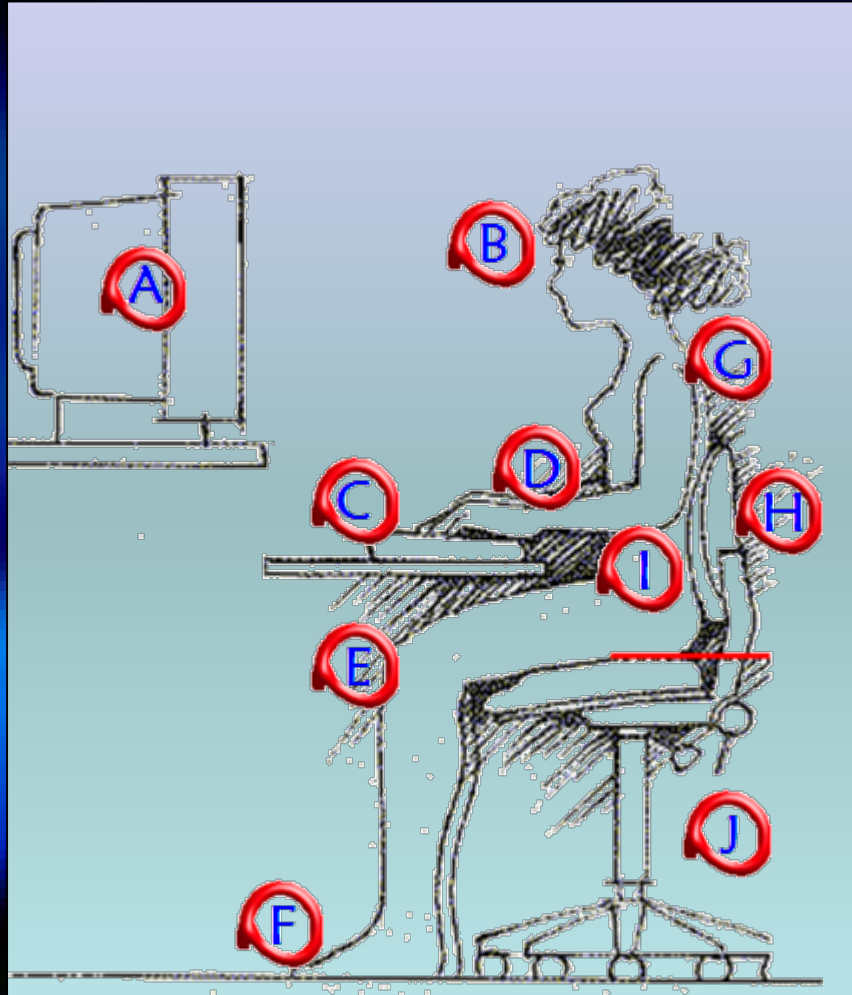
B: EYES:- Blink & refocus often

C: KEYBOARD:- About 50 mm from edge of desk
MOUSE - Don't need to reach for mouse

D: WRISTS:- Level with forearms

E: KNEES:- about 90° angle

F: FEET:- Flat on floor or on a footstool



G: SHOULDERS:- relaxed

H: BACK:- support with lumbar support

I: ELBOWS:- At your side about 90° bend

J: CHAIR HEIGHT & SEAT DEPTH:- adjusted to suit you

These are ergonomic principles to be followed by you for your well-being

- And then ... when you've got it all right
 - Change your position to get your blood flowing
 - Stretch your muscles
- and ... Look after your eyes
 - Refocus
 - Adjust brightness and contrast
 - Blink
 - Change colour used in the window

**Avoid
Gradual
Process
Injury**

Work productively and efficiently

Further resources on the Internet ...

- Go to
<http://www.osh.dol.govt.nz/order/catalogue/index.shtml>

- [OOS/Manual Handling](#)

- Scroll down to

- Click on

- [Visual Display Units in the Place of Work
- Approved Code of Practice for the Safe Use of \(Package\)](#)

- Click on

- [How to Use Your Visual Display Unit Safely](#)

- On the right side of the screen click on
and read the brochure

DOWNLOADS

[How to Use Your VDU
Safely](#) [pdf file size:
1.43MB]

What next ...

- Go back to the workbook

Complete Reflection 3

Write your descriptions of the points IN YOUR OWN WORDS

- Close this presentation