

# Computer Ergonomics

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## Tips for computer ergonomics

### *Why computer ergonomics?*

Ergonomics is a field of study that attempts to decrease strain, fatigue, and injuries by improving product design and workspace arrangement. The objective is a comfortable, relaxed posture

#### ➤ **Arrange Your Workstation**

- Have anything you may need close by and within easy reach during study sessions
- Use a keyboard tray to position your mouse and keyboard correctly while operating on a desktop
- Using an easily accessible paper holder which is preferably in line with your computer screen
- Ensure a fully smooth working surface
- Be sure that your show doesn't mirror or glare
- Make sure that your monitor is in line with your face
- Use a speaker app or headset while talking on the phone
- Try using an external keyboard or monitor to make your setup easier
- A flat, smooth keyboard and mouse surface so they can be used at the same level
- Positioning space for all the equipment so that posture or vision is not impaired while performing tasks
- Appropriate height (e.g. 680-720 mm when measured from the top of the workstation to the floor)
- Suitable leg clearance under laptop
- The workstation may be elevated or lowered
- The screen needs to be able to rise to at least 1100 mm to have a standing position
- Using a proportion of workstations in the work area that can be configured for both sitting and standing work is best practice.

#### ➤ **Use adjustable office chairs**

- Chair height adjustable
- Lower curved back support
- Height adjustable





- Adjustable angle of the backrest (forwards / backs).
- Seat pan tilt adjustable
- A rounded front edge of the seat
- Easy-to-operate change controls from seated position
- Adjustment of the seat depth pan (by sliding the seat).
- A chair with five casters appears to tip over less than one with four casters
- Convenient cushioning and bench and backrest covering.

### ☒ **Armrests**

Chairs with armrests can provide protection for the forearm and assist users in lowering in and rising from the chair. Generally, armrests should be:

- Adjustable height and capable of turning inwards or outwards
- Tested before purchase to check they can be modified to match the customer

#### **Must drop armrests if they:**

- prevent the user from getting close to the desk
- interfere with the use of keyboard, mouse
- prevent the user turning the chair or quickly getting up from the chair
- are not adjustable
- When leaning on the armrest, turn sideways to the right. It means that the user would find the armrests too small

### ☒ **Footrest**

When the user's feet cannot be laid flat on the floor a footrest should be used. The right footrest height is the distance the footrests are off the floor after changing the seat height

- ***Have a footrest:***
- Have a non-slip surface wide enough to rest comfortably on both feet (about 30 x 30 cm)
- Using an adjustable slope (10-20 degrees) to allow a comfortable location of the ankle while the feet are on it.
- Be stable enough to prevent falling or shifting





## ➤ **Arrange Your Computer Workstation**

Arrange and change the monitor, keyboard, mouse, documents, and other workstation products in a comfortable working position that meets the needs of the person before beginning work, or while sharing a workstation to start a shift.

- ***The main considerations include the following:***

1. The neck is not arched backward, and the chin does not extend forwards
2. It is easy to see the screen characters clearly and comfortably
3. It is appropriate for the specific eyewear worn by the user.

- ☒ **A general guide to setting up the monitor:**

- Height of the screen-the top of the screen should be set at the level of the eye.
- Distance viewing-put the screen distant or slightly further forward, around one arm length.
- Some displays are supplied on stands with a degree of adjustability in height. The screen size can determine its positioned directly at the top of the desk.

- ☒ **If using a monitor stand or arm, consider:**

- ease of modification
- The use of different monitor arms where two monitors are used makes it possible to position them more flexibly
- lowering of monitor height to desk level.

- ☒ **How to set up the keyboard**

- Place the keyboard right in front of the user.
- Use a keyboard without a numeric keypad to reduce the width of the keyboard.
- Change the keyboard angle and height.

- ☒ **The mouse and other pointing devices**

- Keep the mouse at the same height close to the keyboard.
- Ensure that mouse fits comfortably in the hand.
- Consider operating the device with the non-dominant hand. Adjust this device configuration operating settings





- Set the pointer tracking speed to suit the user.
- Provide enough space and a flat smooth surface to keep the wrist straight
- Take the keyboard and the mouse off hands when not in use.
- Take breaks to do other tasks.
- Use keyboard short cuts.
- If the device is used for long periods of time, push the device towards the middle of the desk and reposition the keyboard temporarily.

### **☒ Options to use when typing information from a paper document are outlined below**

- Place the documents close the screen with the documents at the same height and viewing distance as the screen.
- Moving the monitor to one side and putting the document in front of you.
- Prop up documents to an angled reading board between the monitor and the keyboard.
- **There will be consideration of the following:**
- Place objects that are regularly or for long periods used in a semicircle in the usual work area no farther than the gap between the elbow and the knuckles while seated near to the body and the upper arm.
- In the secondary work zone, place objects used rarely or for brief periods, up to one arm length away while in a seated position.
- Position materials and equipment used very seldom in the region beyond the secondary zone.

### **☒ Telephones and headsets**

- Telephones should be positioned inside the primary work area.
- Telephone headsets should be used when telephone usage is continuous.

### **☒ How to use storage areas**

- Storage areas at the workstation include overhead cupboards, bookshelves, filing cabinets and desk drawers.
- use storage areas for items which are not very commonly used
- store heavy objects between shoulder and knee height to prevent excessive reaching and twisting





- do not crowd leg space under the desk.

### ☒ **Specific eyewear for computer users**

Appropriate eyewear lets the user to see the task clearly and comfortably. eyewear practitioners suggest certain types of eyewear such as:

- Bifocal or Multi-Focal lenses where the display is located at or below eye height
- task specific spectacles, e.g., single vision spectacles which are focused on activities, such as reading, or extended focus spectacles ('computer multifocal') which are focused on a working distance of approximately 40 cm to 1 m. These are suitable for extended use of computer
- spectacles designed specifically for the workstation where monitors are located above eye height may be needed.
- The types of spectacles used may need to be changed if workstation improvements have been made.
- Eyewear dyes and anti-reflection coatings will not eliminate glare from the windows or overhead lights.
- Anti-reflective coatings on spectacle lenses are useful.
- Visual variety is important for all your day.

### ☒ **If your workstations are changeable:**

- Minimize regular workstation shifts wherever possible
- Chairs adjustable in height to match various statures
- The desks, monitors, document holders and footrests are adjustable in height
- The ability to quickly turn mouse and keyboards without interrupting operating device service
- Pre-purchase trailing flexible equipment, chairs, and furniture
- Appropriate cleaning material to wipe between user's workstation, keyboards and mouse.
- Training and regular updating on how to adapt workstations, chairs and equipment correctly
- Adequate monitoring and time to ensure that users change their workstations to fit their body and tasks
- Provide safe storage areas for personal belongings.





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- Allow enough time to adapt their workstation to fit your body and to plan for your activities, including putting frequently used equipment such as a telephone handset or dialer in their frequently reached area

☒ ***It is better to take several short breaks rather than one long one. Ways to do this include:***

- Rotating and promoting several job activities and brief daily breaks, so that the posture changes during the day.
- Take chances to switch between seated and standing positions at workstations
- Taking small breaks, such as lifting the hand from the mouse or keyboard while not in use
- The printer, scanner and photocopier are put away from the workstation.

☒ **How to improve lighting and minimize glare**

- Higher levels of lighting are needed for writing and reading activities
- lower lighting levels could be ideal for more computer-based activities
- clean and maintain fluorescent tubes and light fittings regularly.

☒ **Ways to avoid glare:**

- position the computer workstation so that the users' line of light is parallel to the window
- try to locate computer workstations between rows of overhead lights
- Monitor natural window light, e.g. using venetian blinds (best angled up rather than downwards)
- Ensure that all the work surfaces and office fittings are non-reflective
- Change the panel angle such that the work surface is 90 degrees.
- avoid tilting the screen towards the ceiling
- adjust brightness and contrast on the monitor
- use a light-colored background on the monitor
- Remove monitor and keyboard to reduce glare on equipment.

☒ **Ways to reduce shadowing/ improve low light levels include:**

- Eliminate barriers to light falling on the work room, such as shelving overhead to reduce shadows
- Change the lighting strength
- Redirect existing lighting
- Keep lights in good working order





- reposition the workstation
- Provide extra lighting e.g. desk lamp
- Position the lamp to the left if right-handed so that the light of the lamp shines in front from left to right, where left-handed, put the lamp to the right
- Do not position desk lamps directly in front of users.

### ➤ **Your Posture**

- **Here are a few suggestions relating to posture:**
- In general, you would have both straight and supported back. Your legs and elbows should be at 90 degrees.
- Sit on a good, strong backrest chair and place your feet flat on the floor or on a footrest.
- Adjust the height of your chair, so your knees are level with your hips.
- Adjust the armrests of your office chair, without tensioning your shoulders.
- Do not be tempted to rest your elbow on or off the edge of your table. You can also use pads or two rolled cloths to cover your elbows if necessary.
- Don't bend or twist your neck or trunk.
- Maintain your shoulders relaxed and your elbows close to your sides.
- Memory foam mouse mats can be purchased with built-in wrist rests which gently cushion your wrists.

### ➤ **Adjust Your Work Patterns**

- Minimize prolonged computer time whenever possible.
- Break down work into smaller segments and switch between tasks using different movements. For example, alternate mouse usage with reading and web searching.

### ➤ **Move!**

- Take a short break (10-20 seconds), at least every 10 minutes. Take your hands off the keyboard and move!
- Take a short (2-5 minute) break every 30-60 minutes to stretch and/or walk around

### ➤ **Exercise at Your Computer**







### ***Neck and Shoulders:***

- ***Neck Rotation:*** Slowly move the head to the right and then left.
- ***Shoulder Rotation:*** circle your shoulders, then reverse.
- ***Head Side to Side:*** turn the neck so that the left ear touches the left shoulder, then repeat correctly. Push your hand to the side of your head to provide a little resistance
- ***Chin Tuck:*** Slide your chin inwards, without bending up or down your neck.
- ***Shoulder Blade Retraction:*** Pull down and back.
- ***Shrug:*** Lift your shoulders slowly towards ears and hold for a few seconds. Gradually bring shoulders down and relax.

### ***Back:***

- ***Shoulder Squeeze:*** lift your arms in front of your chest, with bent elbows and thumbs up. Squeezing shoulder blades together, pull the elbows back. Hold then release for a few seconds
- ***Stretch Up:*** Sit up straight and imagine a cable positioned on the top of your head. Gradually stretch to be as high as possible, keep for a couple of seconds, then relax.

### ***Arms:***

- ***Arm Relaxation:*** Turn your arms and hands to the side. Shake them gently for a few seconds.
- ***Arm Rotation:*** Raise your arms in front of your body. Rotate arms in such a way that the palms face up, then rotate backs of hands facing each other

### ***Hands and Wrists:***

- ***Wrist Flex:*** Use gently left hand with your elbows on the desk to bend right hand back to forearm. Hold on for a couple of seconds then relax.
- ***Finger Fan:*** extend your fingers as far apart as possible, hold, then clench fists and release them.

### ***Feet:***

- ***Toe Curl:*** Lift toes up, curl toes below. Release.
- ***Foot Rotation:*** Slowly rotate the foot from the ankle, then reverse.

### ***Eyes:***

- ***Eye Rolls:*** Roll your eyes in the clockwise direction and then momentarily counterclockwise.





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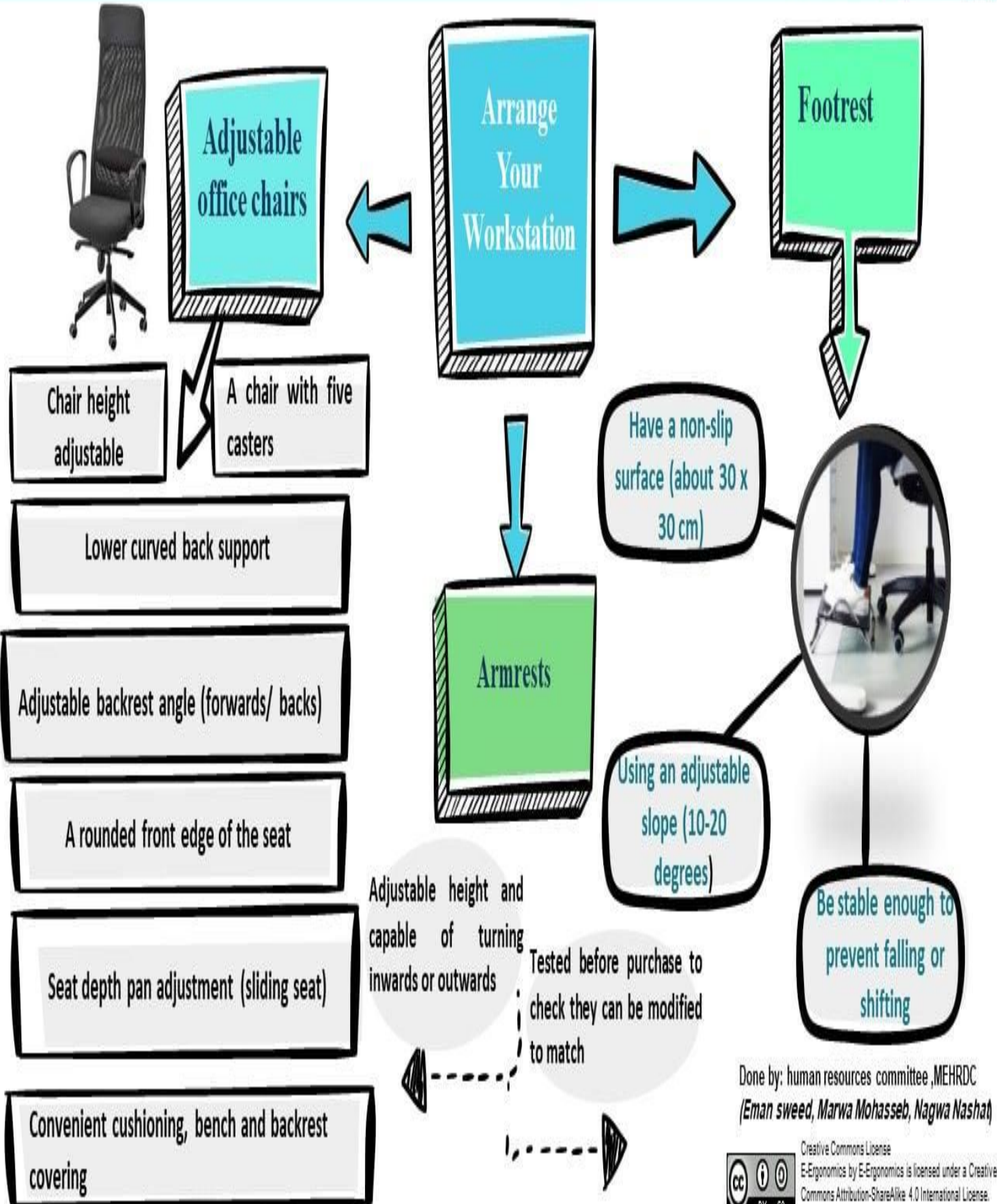
- **Palm Eyes:** Cup hands gently over the eyes for 30 seconds without closing the eyes to protect them from the light
- **Look Away:** Exercise your eyes by turning away from your screen occasionally to concentrate on distant objects

### ➤ **Keep fit**

- Physical exercise will help you avoid and cure computer-related problems. Build up your physical fitness with exercises for strength, flexibility, and cardiovascular health.
- Don't tense your hands as you're write. Only try to remain as calm as possible.
- Avoid holding your mouse so tightly — your grip should always be relaxed.
- Press the keys gently instead of letter-hammering and eventually damaging your fingertips and legs, leaving you with repeated stress injuries. Stop distracting people around.
- Get up every so often and walk around. Try some gentle stretching exercises to get rid of any residual stress on your body. This may involve:
  1. Tilting your head to one side, hang on to the other side and repeat.
  2. Put your shoulders slowly to your ears, and keep for a few seconds
  3. Stand up and straighten your arms as far as possible above your head
  4. Keep your arm straight in front of you, raise your hand back with the opposite hand and bring it down for a few seconds, then repeat with the other hand
- Give your eyes a rest from time to time, too. between 50 to 90 percent of computer users experience symptoms of computer vision syndrome, as double vision, blurred vision, eye strain, eye irritation or dry eyes at some stage in their lives. The American Optometric Association recommends following the 20-20-20 rule. For every 20 minutes you work, you should take a 20 second break to look at something 20 feet away.
- Take care of your body when you're not studying at your computer. Enjoy a good night's sleep and eat a well-balanced diet. Participate in regular exercise to improve body and brain functioning. It also makes you more comfortable and more able to work and sit on a screen for long periods of time.



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# Thank you.

