



養和醫院

Hong Kong Sanatorium & Hospital



Spine Protection when using Display Screen Equipment

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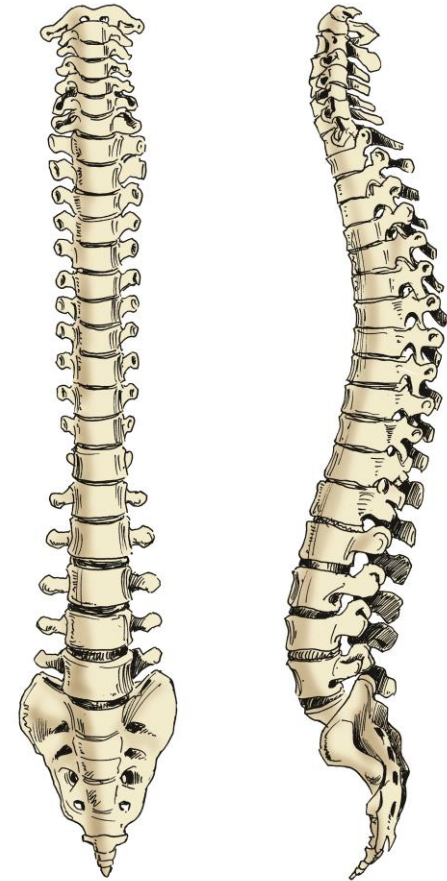
Content

- Understand normal spinal anatomy and bad posture
- Risk management: DSE



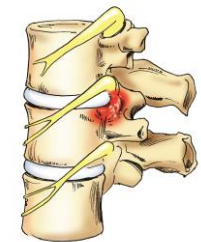
Normal Spine Anatomy

- Normal sagittal view of the spine should be straight
- Side view should have normal physiological curves: cervical and lumbar lordosis, thoracic kyphosis
- Spinal discs in between each vertebrae to act as cushions and absorb shock



Awkward Posture

- Awkward posture refer to positions of the body which deviate significantly from the neutral position while the job tasks are being performed. In such prolonged position poses increased stress on the joints and /or spinal discs

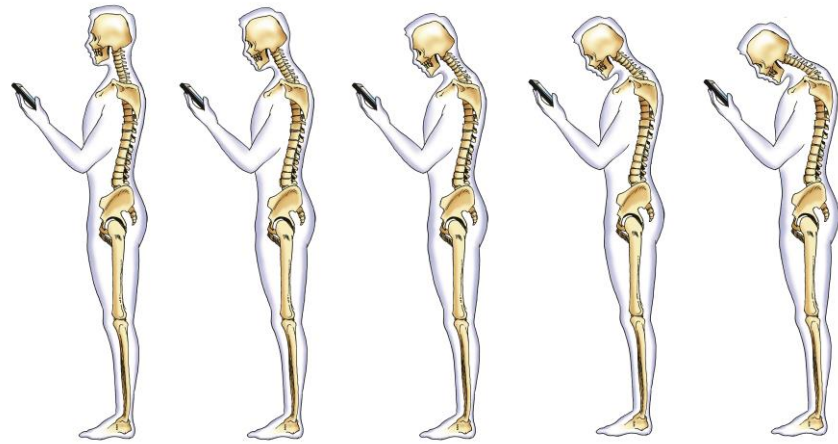


Risk Management: DSE



Stress Over Neck With Different Head Posture While Using Mobile Phone

- The more head and neck bending forward posture, the more compressive force to the cervical spine



Position	neutral	15°	30°	45°	60°	90°
Force to Cervical Spine	10-12lbs	27lbs	40lbs	49lbs	60lbs	not measurable



Bad Sitting Posture

Upper back and neck discomfort? You may need to adjust your chair, monitor, or the position of your documents, or may need to use a phone headset.

Shoulders and elbow discomfort? This may be related to the reaching you do at your workstation or the height of your keyboard or mouse.

Lower back discomfort? Your chair may need adjusting, or you may not be taking regular posture breaks.

Eyestrain, burning eyes, or headache? You may need to change lighting levels or your viewing distance. You may need to adjust contrast, brightness, or font size on your monitor.

Wrist and hand discomfort? Your wrist posture may be incorrect when typing or when using your pointing device (mouse). Your keyboard may be at the wrong angle, or you may be resting your wrist on the palm support too much while typing.

Lower limb muscle cramps, aching, or numbness? Your chair height or seat angle may be incorrect, or you may need a footrest or more leg space.

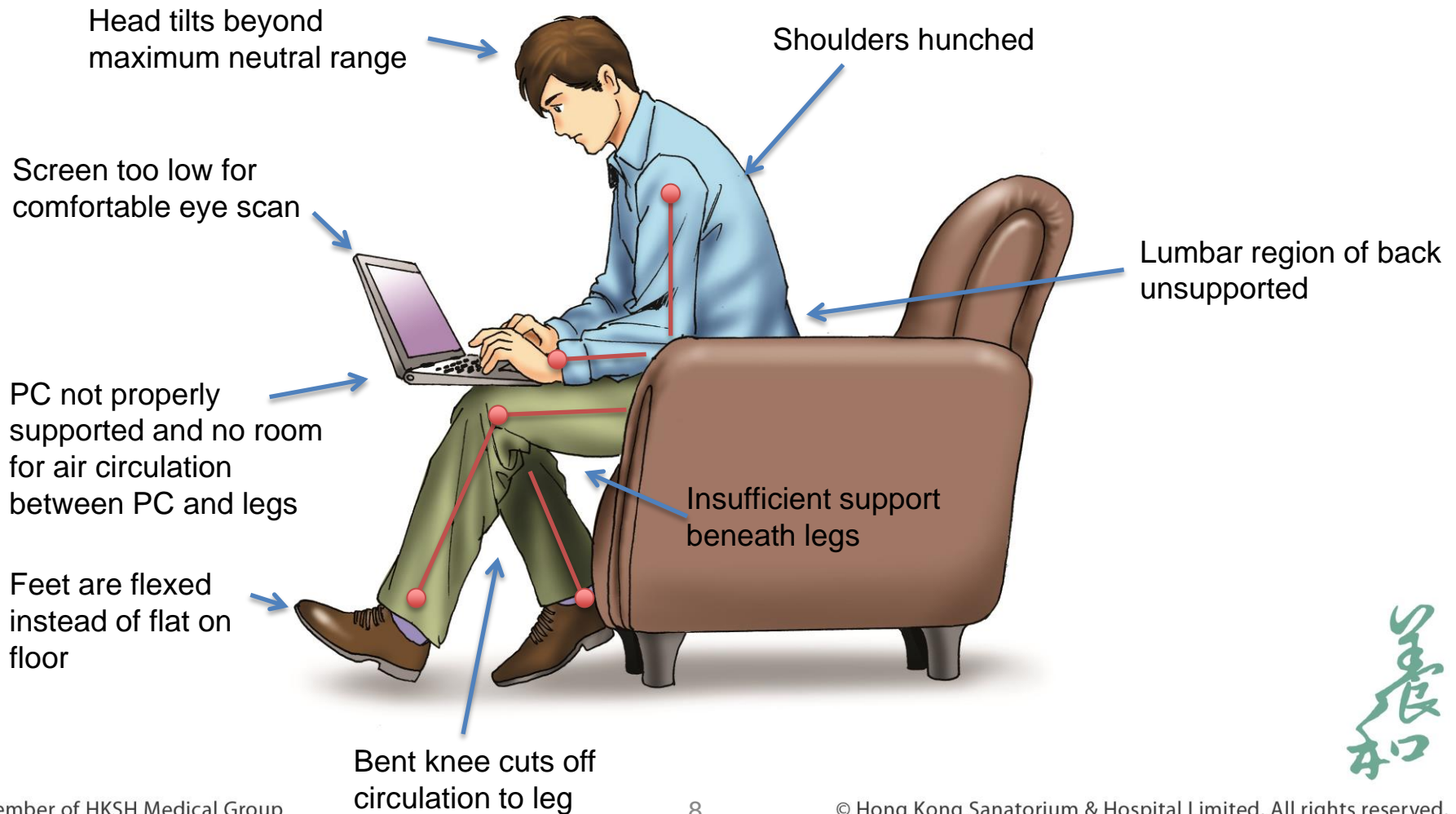


- Do you have any of the aches and pains described in this illustration?
- Attention to workstation layout and correct posture may ease the signs and symptoms described here



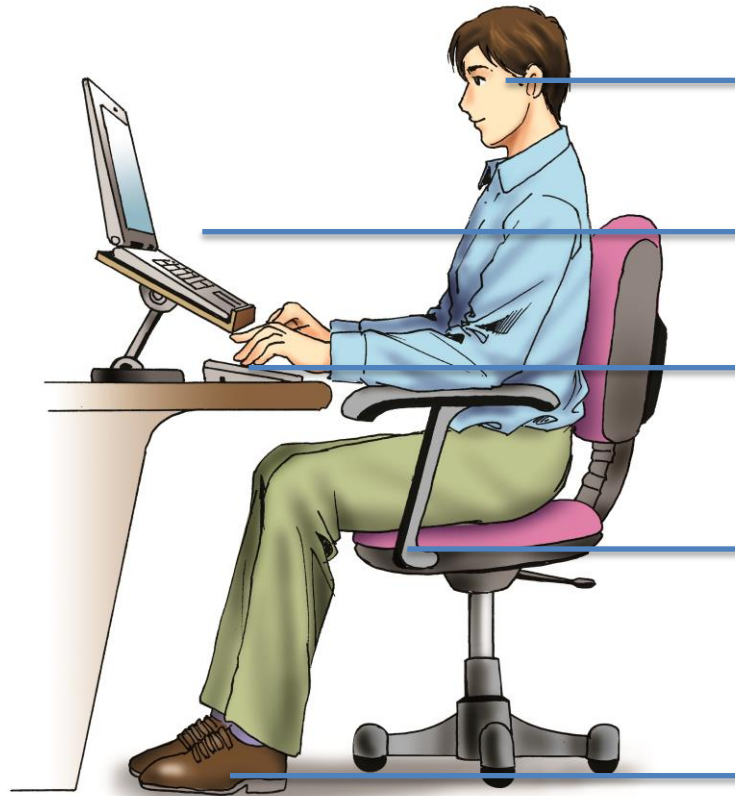
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Laptop



Laptop

- Keyboard spacing
- Size of monitor
- Placement of monitor
- Back and foot support



Elevate laptop to eye level with a stand or stacks of books

Bring laptop close enough to see without tilting your head forward

Use an external keyboard & mouse; if not possible, use a stand to angle the laptop keyboard

Support neutral elbow posture with armrests or cushions

Feet flat on the floor or a foot rest, if necessary

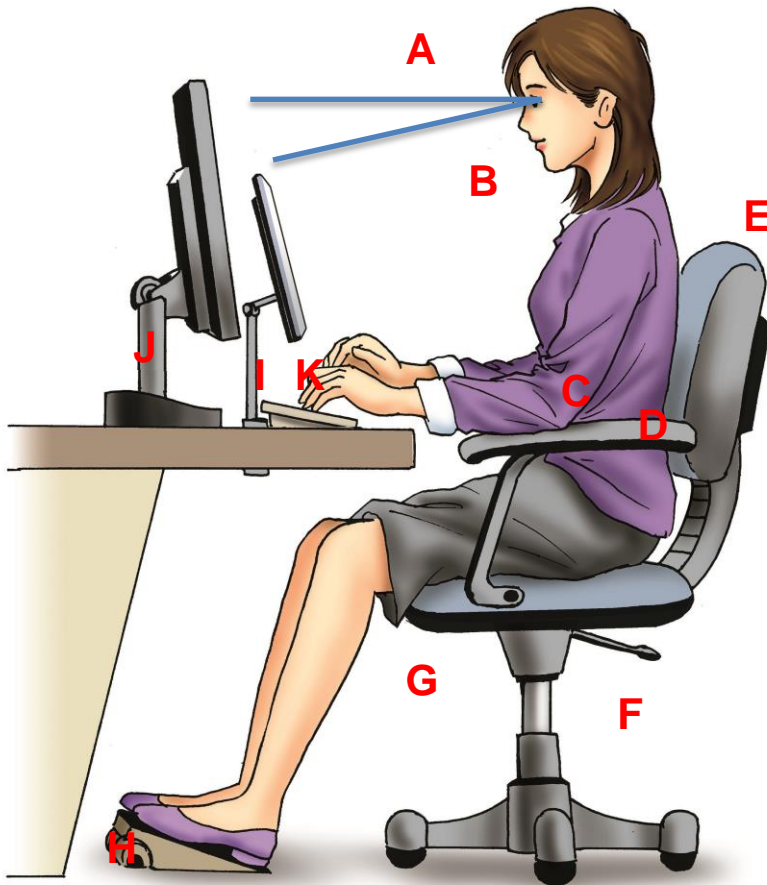


Tips in Using Mobile Phone

- Maintain the phone at eye level
- Maintain an upright posture, avoid bending the neck
- Avoid using phone at one side of the body with neck rotated
- Alternate between the holding hand and the texting hand
- Keep the wrists relaxed and as neutral as possible



How to Arrange Workstation Equipment



- A. Comfortable viewing distance should be 35-60cm
- B. Top of screen at or 10-20° below eye level
- C. Elbow at right angle
- D. Adjustable armrest with shoulders relaxed
- E. Adjustable back rest tilt
- F. Adjustable seat height: having knees have a height lower or level with the hips; feet flat on the floor or footrest
- G. Space between chair and legs
- H. Adjustable footrest height and angle
- I. Use of document holder
- J. Adjustable monitor stand
- K. Adjustable keyboard height and tilting angle



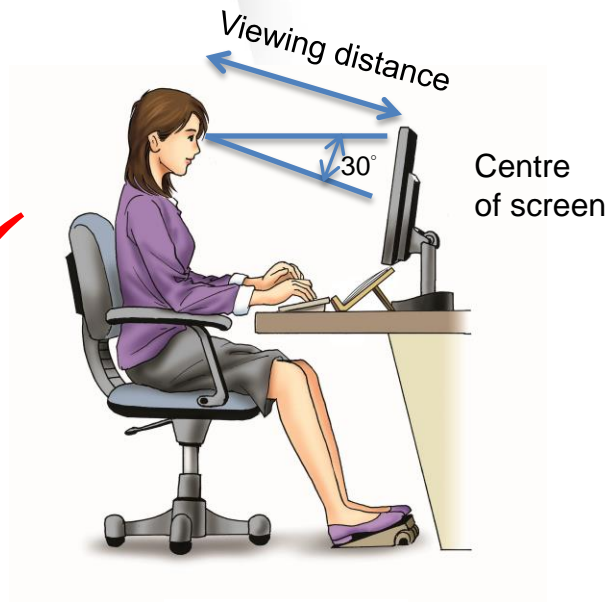
Improving Physical Job Design



- The important aspect of physical job design is that it fits with how our bodies operate
- Joints should be in relaxed and comfortable positions
- This makes the work of muscles, ligaments and tendons around joints more efficient
- Where extreme positions must be used, they should be held for as little time as possible and not repeated often
- If the chair height is correctly set but the desk is too high, either lower the desk height or raise the height of the chair and use a footrest to make up the height difference



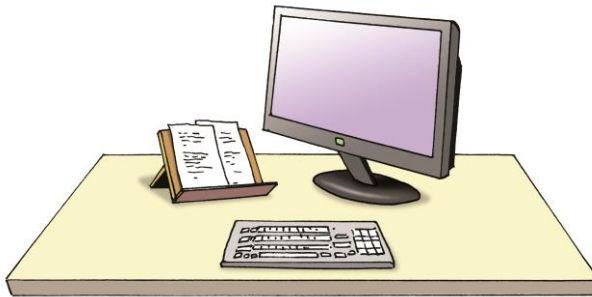
Use of Document Holder



- Poor placement of the documents you look at while typing may lead to muscle discomfort or eye strain
- Upright movable document holders can be positioned next to the screen at the same height and visual distance from the user as the screen
- Flat document holders can be positioned between the screen and keyboard to support multiple or bulky papers



Use of Document Holder



- The position of the document holder depends on your need to view and reach the documents and the type of document holder that is used
- For continuous or frequent data entry where the source document is observed more than, or the same amount as, the screen:
 - Place the screen slightly to one side so that the document holder is directly in front of the user
 - Place the document holder in a similar position to the screen where it is slightly to one side and you look evenly between the two



Operator Chair - Ergonomic Guidelines

- A chair is the main item of a workstation that provides adjustability for comfort and enables the work height to be controlled
- It should accommodate different body sizes
- One size does not fit all
- Key factors for choosing a good chair:
 - Have five-legged base with casters for stability and easy movement
 - Better to include an adjustable foot rests & seat height with hydraulic controls
 - Have supportive backrest that is adjustable in height, angle and depth
 - Seat can be tilted backwards or forwards
 - Both the seat and backrest should be covered by cloth or some other type of material that breathes or made of seamless upholstery
 - Armrest are optional



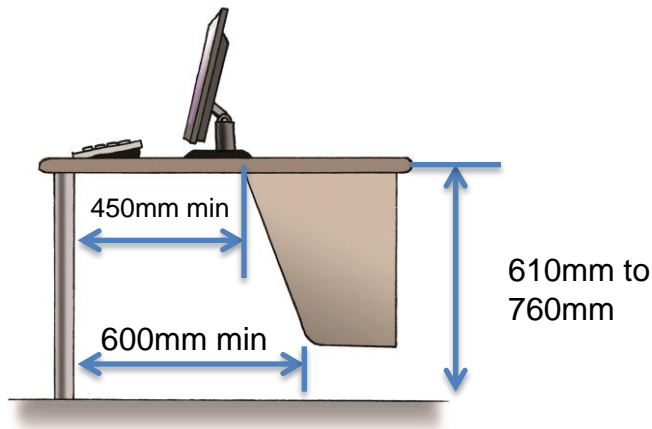
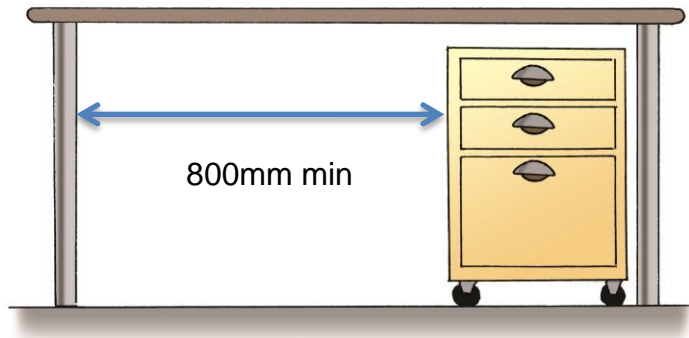
Use of Arm rests



- The arm rest can reduce lumbar disc pressure
- It can decrease stress on low back, neck and shoulder
- Putting the force of your body not entirely on the seat and back rest, but on the armrests
- They move the fulcrum to the elbow, hence moving the workload to the smaller motor muscles for precision work
- Armrest needs to be adjustable in height to assure that shoulders are not overstressed



A Good Desk Should Have:



- Rounded corners with no sharp edges
- Good access for legs with no obstacles under the desk to cause discomfort and possible injury
- Adjustability to fit most users (a range of adjustment for seated tasks of at least 150mm, from 610mm to 760mm in height, easily adjustable from the seated position)



Clearance Under the Desk



- General items, like computer hard disk drives, boxes of documents or files, rubbish bins and mobile drawers should not be stored under desks where they will decrease or interfere with the space required for the legs

- This may force you to adopt a twisted or awkward posture of the spine



Use of a Mouse



- The mouse can come in a variety of shapes and sizes, with features such as a scrolling wheel. The key criteria for the use of a mouse should include:
 - Placement of the user's hand and upper limb in as neutral a posture as possible during use
 - Support of the weight of the arm by the desk and not by the user
 - Keeping the wrist flat during use
 - Allowing fingers to rest on the push buttons between actions
 - Ensuring mouse design fits the size of the user's hand



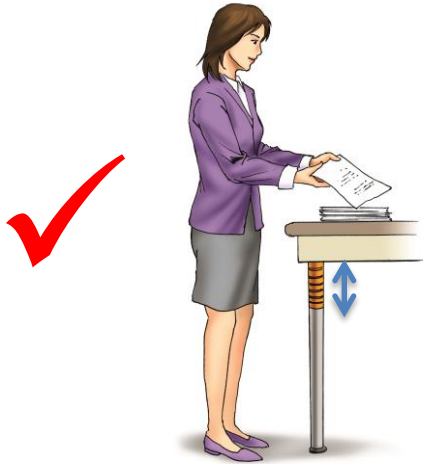
Use of a Mouse



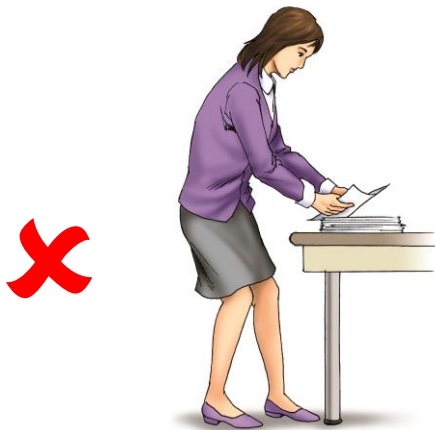
- Alternatives to the standard mouse are designed to change hand and arm postures and increase efficiency. They include a diverse group of operations, including rollers, pads, glide points
- The main difference between a mouse and these devices is that the hand and arm remain stationary while the wrist is at an angle and the fingers or thumb stretch
- For long periods of use this way may cause finger, thumb or wrist discomfort
- Lifting the hand off the keys while operating the pointing devices is preferable



Standing-height Benches



- Typical tasks that require a stand-height bench include sorting mail, collating documents etc.
- Ideally standing-height benches should be adjustable to accommodate the height differences of the range of people using them



Alternative Seating



- Some forms of alternative seating are designed to enable people to sit with the hips at an angle that is believed to reduce pressure on the lower back



- But, it may not provide optimum support in a workplace where many hours of the day may be spent in sitting



Telephone and Headset



- A telephone handset can be replaced with a headset where there is prolonged use of the telephone or where typing is required while using the telephone



Don't forget to....

- Take micro pauses. E.g. Moving the hands off the mouse or keyboard when not in use
- It is important to do stretching exercise and change postures throughout the day. Extended periods in similar postures can lead to fatigue or overloading of the body parts and can contribute to injuries such as strains and sprains



Reference

- OFFICEWISE – A Guide to Health & Safety in the Office. Developed by the Ergonomics Unit – Worksafe Victoria 2006
- How to make your computer workstation fit you – Work safe BC 2009
- Hansard KK. Assessment of stresses in the cervical spine caused by posture and position of the head. Surg Technol Int 2014; 25: 277–279



Thank you

