

合符人體功效 Ergonomics in Office Workstation

前言 Foreword

由於電腦的應用日益普遍，亦是文職人員工作不可缺少的工具，但長時間不正確地使用電腦，很容易令手部和上肢出現不適及疼痛、眼睛疲勞、身體疲倦和增加精神壓力等情況。這些情況除了令員工感到不適外，還會減低員工工作效率。

所謂工欲善其事，必先利其器，僱主及管理階層亦明白此點，應為員工提供一個合乎人體功效學的辦公室工作間，以配合使用者，同時確保員工的職業安全健康。

的辦公室工作間

With the growing use of computer which is an indispensable equipment for sedentary workers in their work, symptoms of upper limbs discomfort and pain, visual fatigue, muscle fatigue and mental stress are frequently associated with long hours of work with computer. The symptoms of somatic discomforts can adversely affect the workers' performance and lower their work productivity.

An important feature of computer workstation is to suit the needs of users and the work they perform. Indeed, employer and management are well aware of this and a flexible ergonomic design workstation should be provided to the users in order to match the job to the user and to protect the safety and health of the users.



辦公室工作間的組件

Facilities of Display Screen Equipment (DSE) Workstation

辦公室工作間備有以下的組件配合。只有適當的組件配合，才可舒適的操作電腦工作，保障僱員的職業安全及健康。

- 顯示屏幕設備
- 有關的家具，如椅子、書桌及工作平面
- 周邊設備如打印機及文件夾
- 周圍的工作環境如照明、溫度、濕度、噪音及通風

The workstation for operation of display screen equipment consists of the following facilities. Only with suitable types of facilities, DSE operation can be comfortably achieved and therefore protect the occupational safety and health of employee.

- the DSE
- the related furniture (e.g. chair, desk, work surface)
- the items peripheral to DSE (e.g. printer, document holder)
- the immediate working environment around the DSE (e.g. lighting, temperature, humidity, noise and ventilation)

工作間須注意的特點

Noteworthy Characteristics in Workplace

工作間設計須符合人體功效學原理，以確保操作員的職業安全及健康。根據《職業安全及健康(顯示屏幕設備)規例》，有以下針對工作間的安全及健康要點而訂的一般規定：

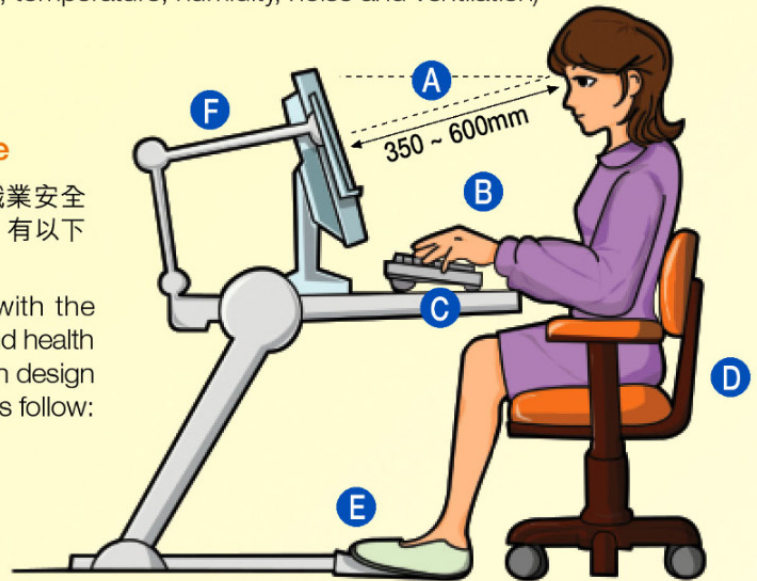
DSE workstation is best designed in accordance with the ergonomic requirement in order to protect the safety and health of the operator. The main features of a DSE workstation design and the suggested precautionary measures are listed as follow:

(A) 屏幕 Display Screen

- 屏幕顯示清晰、分明而穩定的影像
- 顯示適中的字體大小，字裡行間必須有足夠的空間
- 影像的光度和對比度應可調校
- 屏幕應可以轉向及調校傾斜度，以配合操作員的需要
- 屏幕擺放的位置應與操作員保持舒適的觀看距離(約350至600毫米)，而屏幕的最頂一行字樣適宜在或略低於眼睛的水平
- the screen should give a clear, sharp and steady image.
- the characters should be of adequate size, with adequate spacing between the characters and lines.
- the brightness and contrast of the image should be easily adjusted.
- The screen should be easily swiveled and tilted to suit the needs of the operator.
- The screen should be kept at a comfortable viewing distance at 350-600 mm and the first line on screen is suitable at about or just below eye level.

(B) 鍵盤 Keyboard

- 薄身及可調校傾斜度，並可與顯示屏幕分離，以便操作員可以採取舒適的工作姿勢
- 鍵盤表面不應反光，宜採用中性柔和的顏色
- 鍵上的字體和符號應清楚及容易辨認
- 鍵盤前面應有足夠的空間來承托雙手
- 桌邊最好是圓滑的
- 如需作長時間鍵盤操作，可考慮使用手腕墊，來減輕手部的壓力
- 鍵盤的擺放位置應使操作時前臂與手臂大約成直角
- the keyboard should be as thin as possible, tiltable and detachable from display screen to accommodate frequent postural change of the operator.
- the keyboard should be neutral in color and non-reflective.
- the letters and symbols on the key tops should be clear and easily recognized.
- There should be sufficient space in front of the keyboard to provide support for the hands.
- the table edge should preferably be rounded.
- Use of wrist support is recommendable to alleviate muscle strain of hands if prolonged keyboard operation is required,
- forearm at about right angle to arm.





C 工作枱面 Work Surface

- 枱面積應足夠放置屏幕、鍵盤及滑鼠等設備
- 放置屏幕和鍵盤的工作枱最好可調校高度，以配合個別操作員的需要
- 工作枱面下要保持足夠的腳部空間，以便伸展雙腿
- the work surface should be large enough for the screen, keyboard, mouse and other peripheral equipment.
- the height of work surface for the screen and keyboard should be adjusted to suit the needs of the user.
- Sufficient leg clearance should be kept under the work surface.

D 座椅 Chair

- 座椅的高度應可調校（距離地面400至500毫米之間）
- 座椅靠背的高度及傾斜度應可調校，以提供腰背足夠的承托
- 如有手靠，其位置不應阻礙鍵盤操作
- 座椅底部應穩固（應有五點座腳），並可設置滑輪以便移動
- 座墊的軟硬度要適中，而前面邊沿應為渦形



- the chair should be adjustable in height to suit the body size of the user (400-500 mm from the floor).
- the backrest should be easily adjustable in the both height and tilt to provide adequate support to the lower back.
- armrests should not interfere with keyboard operation.
- the chair should have a stable base (a five-pronged base) and be provided with smooth castors for easy movement.
- the seat pan should be of appropriate hardness and the front edge should be scrolled.

E 腳踏 Foot Rest



- 如座椅過高，操作員雙腿不能平放在地上，則應提供穩固的腳踏來承托下肢
- a stable footrest should be made available to the user if the chair is too high for the feet to rest firmly on the floor.

F 文件架 Document Holder

- 如需透過閱讀文件輸入資料，應使用穩固和可調校的文件架，以便操作，亦可避免不良的頸部姿勢和動作
- If reading of document and entering data are both necessary, suitable document holder should be provided to operators so as to avoid awkward neck posture and movement.

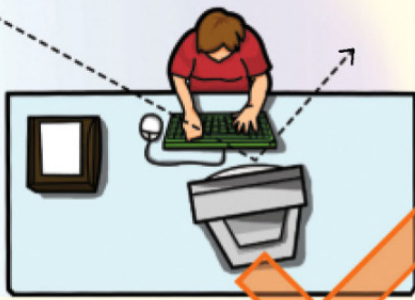


工作環境 Working Environment



適當的照明度 Sufficient Luminance

- 顯示屏幕的操作應配合適當的照明和輔助照明設施，舒適的光度宜在300至500勒克司(Lux)之間。
- Suitable lighting and auxiliary lighting facilities should be provided according to the nature of DSE work and the visual demand on the operator. Suitable illumination for general office work ranges from 300 to 500 lux.



避免反光及眩光 Avoidance of Reflections and Glare

- 避免把屏幕擺放在照明裝置之下或近於窗戶，以避免產生反光及眩光的情況，令眼睛不適。
- 光源及窗戶應與屏幕成直角，並善用窗簾遮擋過強的陽光。
- Avoid placing the screen directly under the light sources or close to windows to eliminate glare and reflections.
- The screen should be perpendicular to the light sources and windows. Fit all windows with blinds to prevent excessive sunlight and to control lighting level.

控制噪音 Noise Control

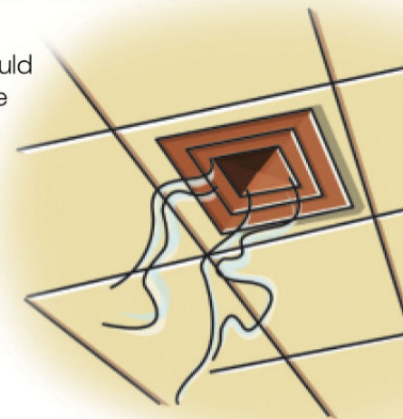
- 工作間範圍內的周邊設備如打印機、影印機發出的聲音，可能對僱員造成滋擾；應盡量控制會發出噪音的設備，如分隔設備與工作間範圍或設置屏障阻隔噪音。
- 對於一般的電腦工作，噪音水平宜控制在60分貝(A)以下。
- Noise produced by the equipment such as printers and photocopiers in the workplace should be controlled to avoid nuisance to operators. Noisy equipment should be located away from the DSE workstation or placed suitable barrier to reduce the noise level.
- For general computer work, a noise level below 60dB(A) is optimal.

適當的溫度和濕度 Suitable Temperature and Humidity

- 應把工作間的溫度和相對濕度控制在適當舒適的水平：室內溫度應保持23-26°C(夏季)或20-24°C(冬季)，而相對濕度應為40-70%。
- The temperature and humidity at workplace should be kept at a suitable level to avoid discomfort to the operator: optimum temperature for office work is best kept at 23 - 26°C (in summer) or 20 - 24°C (in winter) with relative humidity between 40-70%.

保持新鮮空氣的供應 Sufficient Supply of Fresh Air

- 工作間應有良好的通風，以保持新鮮空氣的供應。
- Suitable ventilation should be provided to the workplace to ensure sufficient fresh air supply.



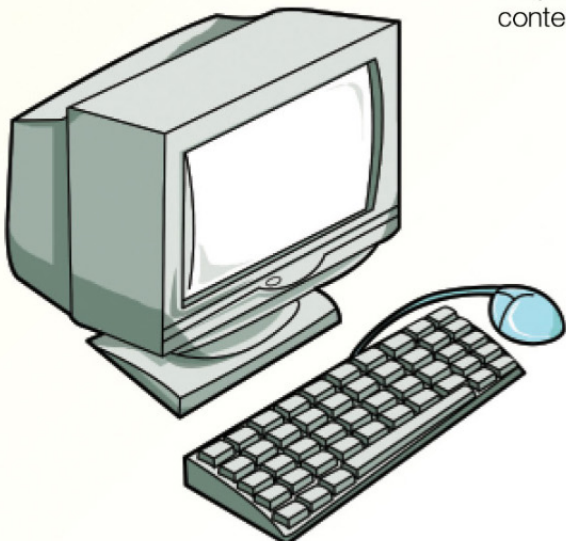
提供安全及健康訓練 Provision of Safety and Health Training

僱主亦應為僱員提供使用工作間的安全及健康訓練。訓練內容主要包括：

Employers should provide safety and health training on working with DSE. The content of training can be focused on the following items :

觀看屏幕 Viewing Angle

- 顯示屏幕擺放位置，除了與操作員保持350-600毫米的距離外，更應注意操作員觀看屏幕的角度。調校屏幕的轉向和斜度至舒適的觀看角度，避免頸部過度伸展或屈曲。
- The operator should not only keep a comfortable viewing distance 350 to 600 mm from the screen, but also should bear a comfortable viewing angle. The suitable viewing angle should be adjusted to accommodate the users so as to avoid awkward neck bending.



鍵盤輸入 Keyboard Operation

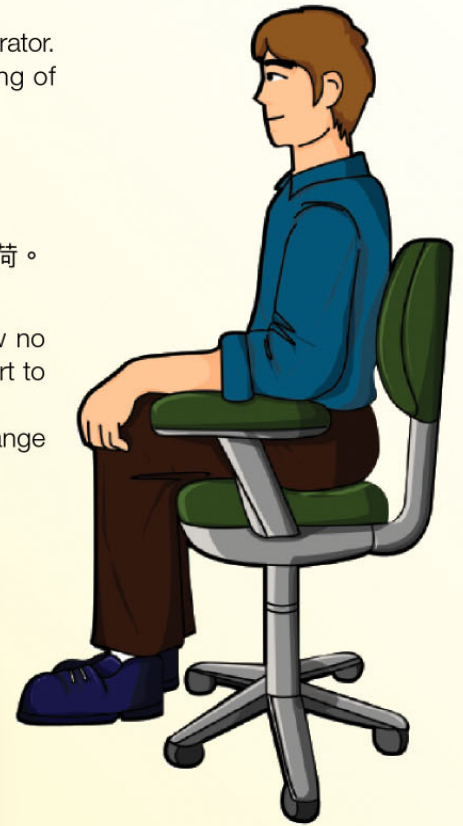
- 鍵盤的傾斜度要調校至適中的輸入角度，過份傾斜的鍵盤會令手腕過度屈曲。操作時手腕應平直或最多輕輕傾斜。
- The keyboard should be adjusted to suitable inclination for proper keyboard operation. Excessive inclination can cause extreme wrist bending. Wrist position is best kept straight or most slight inclined.

滑鼠擺放 Position of Mouse

- 滑鼠應靠近擺放，避免過度伸展前臂，而注意操作時手腕應保持平直。
- The mouse should be positioned at an easily reachable distance to the operator. It should be close to the area of operation so as to avoid overstretching of forearm but to keep the wrist in neutral position.

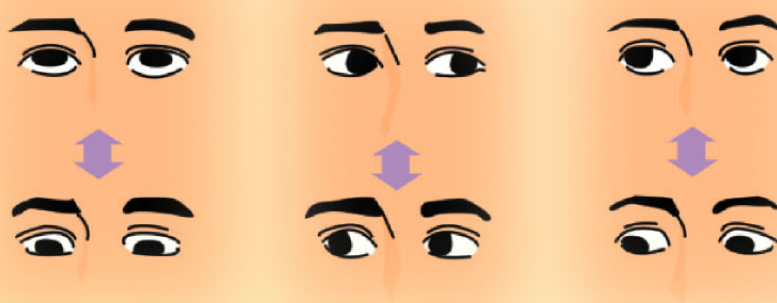
坐姿 Sitting Posture

- 坐姿要挺直，避免扭轉側身的坐姿，並須善用靠背來承托腰背的負荷。
- 切勿長時間維持同一坐姿，應間歇轉換姿勢來促進血液循環。
- A correct sitting posture should have the back straight but allow no twisting at all. The back rest should be capable of providing support to the back of the operator in sitting position.
- Prolonged sitting is a static load to the body. Periodic postural change is encouraged to facilitate blood circulation.



休息及伸展運動

Rest Break and Stretching Exercise



- 應安排小休，以紓緩因持續的鍵盤操作所導致的疲勞。
- 除顯示屏幕操作外，應編排其他不同類型工作如影印或檔案整理，這樣不但可以減少固定或重複性動作，也可以給予身體不同部位輪流休息的機會。
- 如長時間觀看顯示屏幕，可間歇遠望景物來紓緩眼睛疲勞，亦可做一些眼部運動
- 如操作電腦的時間過長，上肢及腰背肌肉會容易疲累。平日休息時可以考慮做一些簡單的上肢及頸背伸展運動，除可鬆弛神經外，亦有助紓緩筋骨及預防勞損。
- Short breaks should be arranged to relieve muscle strain arose from prolonged keyboard operation.
- Apart from DSE work, job allocation should also be planned in such a manner to incorporate different varieties (e.g. mix of DSE work with photocopying and other paper work). This arrangement not only helps to minimize static or repetitive movement, but also takes chances for different muscle groups to rest.
- If prolonged viewing of DSE is needed, viewing of distant objects is recommended to alleviate eyestrain. Exercises for visual comfort are highly recommended.
- Prolonged DSE work can induce muscle fatigue in upper limbs and low back. Stretching exercises for DSE operators are recommended during the rest breaks since the exercises are effective in reducing mental stress as well as muscle strain.

有獎問答遊戲

文職系安全及健康委員會於本通訊內續設了一個有獎問答遊戲，藉此來提高大家對工作安全的警覺性，希望讀者們踴躍參加，若能答中以下三條問題，便可參加抽獎，有機會獲得價值\$150購物禮券乙張，名額共5個。

The Sedentary Workers Safety & Health Committee has included a prize quiz to this bulletin to help raise awareness of work safety. We look forward to your participation. If you can answer the following three questions correctly, you can enter the lucky draw and have an opportunity to receive one of a total of 5 shopping vouchers to the value of \$150.

- 1 電腦顯示屏幕應放置在哪一個高度？ Where should the display screen equipment be located in height?
 - a. 較操作員的眼睛略高 just above operator's eye level
 - b. 較操作員的眼睛略低 just below operator's eye level
 - c. 與操作員的眼睛同一水平 at operator's eye level
- 2 辦公室的理想座椅椅背應可怎樣？ The backrest of an ideal chair should be?
 - a. 成90度直角 in right angle
 - b. 支撐著下腰部 support the lower back
 - c. 支撐著上背部 support the upper back
- 3 操作電腦鍵盤時，其手腕應？ While operating keyboard, wrist position is best kept?
 - a. 向上傾斜 inclined
 - b. 保持平直 straight
 - c. 向下微斜 declined

請圈出正確答案及填妥下列表格，郵寄或傳真回本局總辦事處，請在信封背面註明「文職系安全健康通訊問答遊戲」。

截止日期：2006年4月29日。

Please circle the correct answers and fill in the following form and send it or fax it to the Council. Please write "Sedentary Workers Safety & Health Bulletin Prize Quiz" on the envelope. **Closing date: 29 April, 2006.**

姓名 Name : _____ 身份証號碼 Identity Card No. : _____

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2. 主辦機構之員工及其直系家屬均一律不得參加。
3. 得獎者結果以主辦機構的決定為準。
4. 主辦機構保留更改有關是項活動事宜的權利，恕不另行通知。
5. 倘有任何爭議，一切以主辦機構的決定為最終決定。
6. 歡迎複印參加表格。

Rules for participation

1. Each participant may only enter once.
2. The employees and direct family members of the organising body are not eligible to enter.
3. The decision of the organising body regarding the prize results is final.
4. The organising body reserves the right to make changes to any matters related to the competition and will not provide further notice.
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填妥後請將表格傳真至 2739 9779 職業安全健康局 Please fax the form to Occupational Safety and Health Council (Fax No.: 2739 9779)

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