The Cornell Digital Reading Room Ergonomics Checklist is intended as a quick evaluation of the working environment for radiologists who work with digital medical images. The checklist can be used to document the conditions for one radiologist or several radiologists.

The checklist is divided into five sections:

* Display Screens,
* Input devices,
* Workstation and Workstation accessories,
* Chair, and
* Ambient Environment.

Each section asks questions about the physical environment (such as the height of the desk or the temperature of the room) and the users (such as the posture of the radiologist and how s/he uses the equipment).

When using the checklist, please read the question carefully as well as the answer options. Each item can be answered with a checkmark in an accompanying checkbox. Some items will have “Continue to item X” depending on the answer given or clarifying questions that will follow directly below the answer.

If an item marked as an “Ergonomic Issue” is checked, this indicates a problem area within the workstation. Upon completion of the checklist, please refer to the accompanying guidelines on what steps to take.

To complete the Display Screens and Workstation sections, you will need a tape measure. For the Input device and Chair sections, you will need a goniometer. For the ambient environment section you will need a sound level meter, a light level reader and instruments to measure temperature, humidity and velocity. It is also possible that the ambient environment of the facility is electronically monitored; in that case archival readings are fine.

**NOTE:** It is assumed that each workstation will have a three-screen setup. If your workstation has fewer screens, you can leave extra screen answers options blank. If your workstation set up has more than three screens, you can print out an extra copy of pages 2-3 “Display Screens” to accommodate for this.
## DISPLAY SCREENS

### ERGONOMIC ISSUES

<table>
<thead>
<tr>
<th>Arm/Wall mounted</th>
<th>Freestanding</th>
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</table>

1. The display screens are: Left (L)  Middle (M)  Right (R)  Left (L)  Middle (M)  Right (R)
   - O  O  O  O  O  O

### Monochrome

<table>
<thead>
<tr>
<th>Color</th>
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2. The display screens are: Left (L)  Middle (M)  Right (R)  Left (L)  Middle (M)  Right (R)
   - O  O  O  O  O  O

3. What is the display screen size? **LEFT:** _______ inches/cm  **MIDDLE:** _______ inches/cm  **RIGHT:** _______ inches/cm

4. The display screens are easily adjustable in:
   - Height  O  Left (L)  O  Middle (M)  O  Right (R)
   - Distance from person  O  Left (L)  O  Middle (M)  O  Right (R)
   - Angle/Tilt  O  Left (L)  O  Middle (M)  O  Right (R)
   - Twist/Rotation  O  Left (L)  O  Middle (M)  O  Right (R)

5. Is there glare on the display screens that affects image reading?
   - NO  O  YES  O
   - Continue to item 6
   - Overhead lighting  O  Paper  O  Task lights
   - Windows  O  Clothing  O  Other, please specify:

Please mark or fill in the screen areas affected by glare:

- **LEFT (L)**
- **MIDDLE (M)**
- **RIGHT (R)**
6. Is the screen character luminance adjustable? | LEFT (L) | MIDDLE (M) | RIGHT (R) |
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<tr>
<td>O YES O NO</td>
<td>O YES O NO</td>
<td>O YES O NO</td>
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</table>

7. Please check the image that best describes the posture of the radiologist while (s)he is viewing the screens:

**INSTRUCTIONS:** Ask the radiologist to sit directly in front of and facing the left screen while evaluating the posture. Repeat for the right screen.

<table>
<thead>
<tr>
<th>L</th>
<th>M</th>
<th>R</th>
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<tbody>
<tr>
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Correct distance/height | Screen too close | Screen too far away | Screen too low | Screen too high

8. Please check the circle if the displayed images on the screen are:

<table>
<thead>
<tr>
<th>L</th>
<th>M</th>
<th>R</th>
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<tbody>
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</table>
9. What is the wrist angle? Please check the image that fits the posture:

If the workstation has a keyboard tray:

- Neutral wrist angle
- Wrist Flexion
- Wrist Extension

If the workstation keyboard is placed on the desk:

- Neutral wrist angle
- Wrist Flexion
- Wrist Extension

10. Check the circle if the mouse designed for:

- O Right handed use only
- O Left handed use only
- O Use with either hand

11. Where is the mouse used?

- O On platform over keyboard
- O Platform adjacent to keyboard
- O On desk

12. What is the wrist position? Please check the image that fits the posture:

- Neutral wrist
- Radial Deviation
- Ulnar deviation

13. Please check any other hand operated input devices used at the workstation that put the hand or arm in an awkward posture:

- O Trackball
- O Touchpad
- O Touchpoint
- O Joystick
- O Lightpen
- O Other: ____________

14. Is voice recognition used?

- O NO
- O A hands-free headset
- O A free standing microphone
- O A hand-held microphone

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### ERGONOMIC ISSUES

15. Does the work surface look cluttered?  
   - O NO  
   - O YES  

   Desktop size: Width: ______ inches. Depth: ______ inches

16. Does the workstation have any sharp edges that could cause compression to either hands or arms?  
   - O NO  
   - O YES

17. Does the radiologist have sufficient clearance underneath the desk?  
   - O YES  
   - O NO

18. Can the angle of the workstation surface be changed?  
   - O YES  
   - O NO

19. Can the desk height be adjusted to accommodate for seated work as well as standing work?  
   - O YES  
   - O NO

   Depth at knee level: ______ inches  
   Depth at foot level: ______ inches  
   Desk width: ______ inches  
   Desk height: ______ inches

20. Does the work require a document holder for paper?  
   - O NO  
   - O YES

   Is there a stable document holder at the workstation?  
   - O YES  
   - O NO

   Continue to item 21

   Is the document placed at the same height as the screen?  
   - O YES  
   - O NO

   Is the document placed at the same distance as the screen?  
   - O YES  
   - O NO

   Height of document holder: ______  
   Distance from person: ______

21. Does the radiologist need to use a telephone while reading images?  
   - O NO  
   - O YES

   Continue to item 22

   Is the telephone used with the head upright and shoulders relaxed?  
   - O YES  
   - O NO

   Please check the circle that best describes the phone usage

   - O Hands free / Headset (cell/regular phone)  
   - O Shoulder cradle (regular phone)  
   - O Regular phone w/o accessories  
   - O Cell phone w/o accessories

22. Does the workstation have a footrest?  
   - O YES  
   - O NO
23. Chair seat pan can be adjusted in:  
- O Height  
- O Angle/Tilt  
- O Depth

24. Does the chair have armrests?  
- O NO  
- O YES

Please check the circle that best describes the adjustability for the armrests, if applicable:  
- Continue to item 25
  - O Height  
  - O Width  
  - O Can be removed

25. Do the chair armrests restrict workstation access?  
- O YES  
- O NO

26. Does the chair have a five (5) legged base with casters that are appropriate for the flooring material?  
- O YES  
- O NO

27. Does the chair swivel?  
- O YES  
- O NO

28. Does the chair have:  
- a height adjustable lumbar support?  
- O YES  
- O NO

- lumbar support that matches the curve of the lower back?  
- O YES  
- O NO

29. Can the backrest height be adjusted to a comfortable height?  
- O NO  
- O YES

Continue to item 29

Backrest height: ________ inches  
Backrest adjustment range: ________ inches

30. Can the backrest recline angle be adjusted?  
- O NO  
- O YES

Recline range: ________ degrees from 90° angle (upright)

Continue to item 31

Does the chair have a headrest?  
- O YES  
- O NO

31. If known from the chair specifications, how much weight can the chair support? ________ pounds
32. Is the light level satisfactory for the type of work performed there?  
O YES  O NO  Illuminance level: _____fc/lux

33. Is there a task light at the workstation?  
O NO  O Incandescent  O Fluorescent  O LED  O Other: ______________________

34. Are there natural light sources?  
O NO  O Interior window without blinds  O Exterior window without blinds  
O Interior window with blinds  O Exterior window with blinds

35. How does the quality of the light source affect the display screen images?  
O Not at all  O Washes out image  O Distorts image  O Brightens image contrast

36. Does the reading room noise level interfere with reading performance or verbal communication?  
O NO  O YES  Noise level _____db (A)

37. How does the room feel?  
O Comfortable  O Hot  O Warm  O Cool  O Cold  Measured temperature: _________ °C/°F

38. Is the room drafty?  
O NO  O YES  Air velocity: _________ ft/min.

39. Does the air feel too dry or too humid?  
O NO  O YES  Relative humidity: _____ %

40. Does the air smell or feel stuffy or stale?  
O NO  O YES

42. Are individual controls for heat available?  
O YES  O NO

43. Are individual controls for lighting available?  
O YES  O NO