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.

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 dual-screen setup. If there is a single screen setup, please use the answer options for the left screen only.
1. The display screens are:
   - Arm/wall mounted
     - Left screen (L)
     - Right screen (R)
   - Freestanding
     - Left screen (L)
     - Right screen (R)

2. What is the display screen size?
   - LEFT: Size _________ inches/cm
   - RIGHT: Size _________ inches/cm

3. The display screens are easily adjustable in:
   - Height
   - Distance from person
   - Angle/Tilt
   - Twist/Rotation

4. Is there glare on the display screens that affects image reading?
   - NO
   - YES
   - What are the sources of the glare?
     - Overhead lighting
     - Paper
     - Task lights
     - Windows
     - Clothing
     - Other, please specify:

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

5. Is the screen character luminance adjustable?
   - LEFT SCREEN (L)
   - RIGHT SCREEN (R)
     - YES
     - NO

Check the current screen character luminance of the computer screens by comparing to these luminance examples:

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6. 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.

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<thead>
<tr>
<th>L</th>
<th>R</th>
<th>O</th>
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<th>L</th>
<th>R</th>
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<th>L</th>
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<th>O</th>
<th>O</th>
<th>L</th>
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<th>O</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Correct distance/height" /></td>
<td><img src="image2" alt="Screen too close" /></td>
<td><img src="image3" alt="Screen too far away" /></td>
<td><img src="image4" alt="Screen too low" /></td>
<td><img src="image5" alt="Screen too high" /></td>
<td></td>
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</table>

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

- ![Fuzzy](image6)  
- ![Hard to read](image7)  
- ![With visible flicker/jitter](image8)
8. What is the wrist angle? Please check the image that fits the posture:

If the workstation has a keyboard tray: If the workstation keyboard is placed on the desk:

9. Check the circle if the mouse designed for: O Right handed use only O Left handed use only O Use with either hand

10. Where is the mouse used? O On platform over keyboard O Platform adjacent to keyboard O On desk

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

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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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 space for feet underneath the desk?  O YES  O NO

- Depth at knee level: _______ inches
- Clearance width: _______ inches
- Depth at foot level: _______ inches
- Desk height: _______ inches

18. 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
- Is the document placed at the same height and distance as the screen?  O YES  O NO
- Height of document holder: _______ Distance from person: _______

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

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

20. Does the workstation have a footrest?  O YES  O NO
## CHAIR

### ERGONOMIC ISSUES

21. Chair seat pan can be adjusted in:  
- [ ] Height  
- [ ] Angle/Tilt  
- [ ] Fore/Aft Distance

22. Does the chair have armrests?  
- [ ] NO  
- [ ] YES  
*Please check the circle that best describes the adjustability for the armrests, if applicable.*

<table>
<thead>
<tr>
<th>Continue to item 23</th>
<th>O Height</th>
<th>O Width</th>
<th>O Can be removed</th>
</tr>
</thead>
</table>

24. Do the chair armrests restrict workstation access?  
- [ ] YES  
- [ ] NO

25. Does the chair have a five (5) legged base with casters?  
- [ ] YES  
- [ ] NO

26. Does the chair swivel?  
- [ ] YES  
- [ ] NO

27. Does the chair have: a height adjustable lumbar support?  
- [ ] YES  
- [ ] NO  
Lumbar support that matches the curve of the lower back?  
- [ ] YES  
- [ ] NO

<table>
<thead>
<tr>
<th>Continue to item 29</th>
<th>Backrest height: ________ inches</th>
<th>Backrest adjustment range: ________ inches</th>
</tr>
</thead>
</table>

28. Can the backrest height be adjusted to a comfortable height?  
- [ ] NO  
- [ ] YES

<table>
<thead>
<tr>
<th>Continue to item 29</th>
<th>Backrest height: ________ inches</th>
<th>Backrest adjustment range: ________ inches</th>
</tr>
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</table>

29. Can the backrest recline angle be adjusted?  
- [ ] NO  
- [ ] YES  
Recline range: ________ degrees from 90° angle (upright)

<table>
<thead>
<tr>
<th>Continue to item 30</th>
<th>Does the chair have a headrest?</th>
<th>O YES</th>
<th>O NO</th>
</tr>
</thead>
</table>

30. If known from the chair specifications, how much weight can the chair support? ________ pounds

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<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Is the light level satisfactory for the type of work performed there?</td>
<td>O YES O NO Illuminance level: _____fc/lux</td>
</tr>
<tr>
<td>32. Is there a task light at the workstation?</td>
<td></td>
</tr>
<tr>
<td>O NO O Incandescent O Fluorescent O LED O Other: ______________________</td>
<td></td>
</tr>
<tr>
<td>33. Are there natural light sources?</td>
<td></td>
</tr>
<tr>
<td>O NO O Interior window without blinds O Exterior window without blinds</td>
<td></td>
</tr>
<tr>
<td>O Interior window with blinds O Exterior window with blinds</td>
<td></td>
</tr>
<tr>
<td>34. How does the quality of the light source affect the display screen images?</td>
<td>O Not at all O Washes out image O Distorts image O Brightens image contrast</td>
</tr>
<tr>
<td>35. Does the reading room noise level interfere with reading performance or verbal communication?</td>
<td>O NO O YES Noise level _____db (A)</td>
</tr>
<tr>
<td>36. How does the room feel?</td>
<td>O Comfortable O Hot O Warm O Cool O Cold Measured temperature: _________ °C/°F</td>
</tr>
<tr>
<td>37. Is the room drafty?</td>
<td>O NO O YES Air velocity: _______ ft/min.</td>
</tr>
<tr>
<td>38. Does the air feel too dry or too humid?</td>
<td>O NO O YES Relative humidity: ______ %</td>
</tr>
<tr>
<td>39. Does the air smell or feel stuffy or stale?</td>
<td>O NO O YES</td>
</tr>
</tbody>
</table>