

## OFFICE ERGONOMICS 101 ~ YOUR CHAIR PART 3

By Trevor Shell, Ergonomist, Occupational Health Clinics for Ontario Workers (OHCOW)

Submitted by Tammy Beaudry on behalf of the Do It the Healthy Way (Corporate Health Plan) Task Group



Occupational Health  
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Workers Inc.

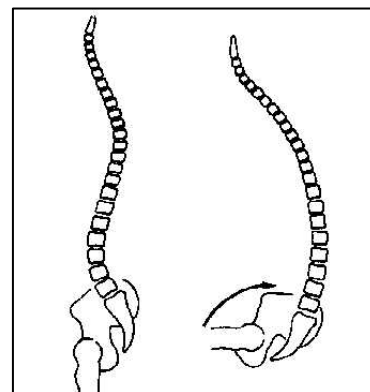
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### Back Support

The height of the backrest must be designed to ensure adequate support for the back and an acceptable curvature for the spine. This is important in minimizing static loading and reducing the likelihood of back pain.

Typically the following guidelines are in place with respect to backrest height:

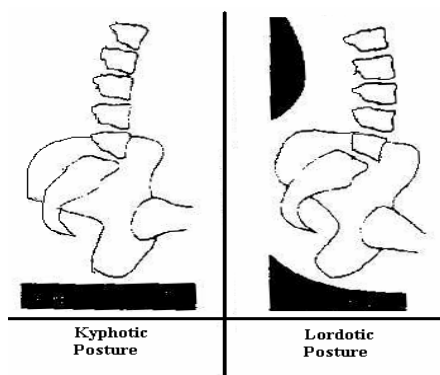
- Standard back: the top of the backrest should not be less than 45 cm and not greater than 55 cm; and
- High back: the top of the backrest should be at least 7.5 cm higher than the standard back



Changes in the curvature of the spine when sitting

Chairs with height adjustable backrests are preferred to allow workers to fit the chair to themselves.

### Lumbar Supports



Comparison of spine posture with straight and curved back seats

When a person sits, the back loses its lumbar curvature resulting in the lower portion of their spine supporting the weight of the upper body, while conforming to the curvature of the seat back. When a back support is used, it has been recommended by various researchers that it provide adequate lumbar support, with a moderate concave curve for the lower back.

The lumbar support should be vertically convex and horizontally concave for side support. The lumbar support height (if adjustable), should be at least 5 cm within the range of 15 to 25 cm above the seat. If the height of the lumbar support is fixed, it should fall within the range of 15 to 25 cm above the seat.

### Backrest Width

To assist in providing lumbar support, the seat should slope backward at an angle of 3 - 5 degrees, and that the angle from the front of the seat to the back should range from 95 - 115 degrees.

## Inside Edition

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Here are some additional guidelines regarding the use of backrests:

1. Backrests should be curved in the vertical and horizontal planes with a maximum indentation of 4 - 5 cm.
2. Backrests should be vertically adjustable so that its point of contact (peak horizontal curvature) is between 20 - 25 cm above the seat. The effective curvature can be increased by leaving an open space of 12 - 20 cm between the top of the seatpan and the bottom of the backrest.
3. A backrest that is adjustable horizontally between 38 - 43 cm from the front edge of the seatpan can provide back support.
4. When free arm movement is necessary, the backrest height should be between 32 - 38 cm. Otherwise a height of 38 - 53 cm and width of 35 - 48 cm is acceptable.
5. The backrest angle may be fixed, adjustable, or spring tensioned. If fixed, an angle of  $103 \pm 1$  degree is suitable. If adjustable, a range of 95 - 110 degrees is sufficient.

Stay tuned for November's article, *Office Ergonomics 101 ~ Your Chair Part 4*.

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