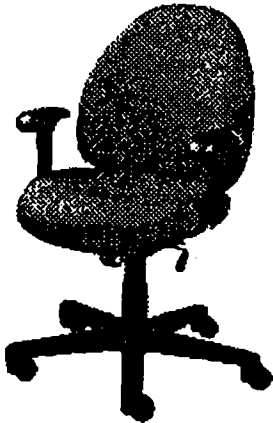




## Just the Facts...

## Ergonomic Chair Features



- ◆ *Safety and Health Professionals*
- ◆ *Adaptability*
- ◆ *Individual Characteristics*

People vary widely in their shapes and sizes, and the chairs they use should reflect this characteristic. Workers should be able to select from a variety of different chair models.

A "poorly fitting" chair may introduce musculoskeletal problems or aggravate existing conditions. Compressive forces on the spine are greater when sitting than when standing. Fatigue and discomfort result when muscles and joints are forced into awkward postures, especially after prolonged sitting.

The chair is the most intimate piece of equipment the office worker has, yet it is often overlooked in the design of a workstation. Whether in a conference room, at a computer workstation, or at a drafting stand, the chair must be designed with function in mind. For example, a cozy, stylish conference chair may present problems for the office worker who types for a long period of time each day.

Currently there are no restrictions on using the term "ergonomically designed" to describe chairs or any other type of office furniture. Pay attention to the claims made by chair manufacturers.

### ***Fitting the Population***

The chair must adjust to the size and comfort of each worker. Not only should the chair raise and lower to accommodate varying heights, but the seat depth should adjust as well. If the seat depth of the chair is too great, the back support cannot be used.

An adjustable seat angle is beneficial for the office worker. A forward sloping seat, or "waterfall front," is helpful to relieve pressure on the backs of the legs while the worker is typing or writing. A 5-degree backward

slope promotes use of the backrest and prevents the worker from sliding forward. The backrest should support the lumbar spine but not restrict its movement.

The armrest should be adjustable for height, width between armrests, and distance to the seat front. These adjustments are important for reducing the pressure on the seat surface and the load on the spine. The length and width of the armrests must also be considered.

Armrests can become obstacles when they are too wide or too high (e.g., armrests that prevent a chair from sliding under a table). When awkwardly positioned, armrests may hinder a worker getting out of the chair. Five casters are necessary to prevent the chair from tipping. The casters must roll over carpeted surfaces easily.

The chair evaluation checklist, on the back, should guide you in selecting a chair that can be adapted to your individual needs.

### ***References***

1. Chaffin, D.B., and Andersson, G.B., *Occupational Biomechanics*, 2d ed. New York: John Wiley & Sons, Inc., 1991.
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3. Eastman Kodak Company, Ergonomics Group, *Ergonomic Design for People at Work*, New York: Van Nostrand Reinhold, 1986.
4. Grandjean, E., *Ergonomics in Computerized Offices*, Bristol: Taylor & Francis, 1987.
5. Lueder, R.K., "Why Your Employees Can't Sit Still," *Office Ergonomics Review*, October 1984.

## Chair Evaluation Checklist

- | Yes                      | No                       |  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | If the seat is a fixed height, is the seat pan 18 to 19 inches high?   |
| <input type="checkbox"/> | <input type="checkbox"/> | If the seat is adjustable, is the seat pan 16 to 20.5 inches high?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the seat pan adjust from an angle of 5 to 15 degrees forward tilt to 5 degrees backward tilt and lock in place? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the seat 15 to 17 inches deep (i.e., does the seat back move in over the seat pan)?                               |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the seat pan at least 18.2 inches wide?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the seat have a rounded, waterfall front seat edge?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the amount of contouring support postures, distribute pressures, and provide freedom of movement?               |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the seat cushion thickness range from 1.5 to 2.0 inches?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the seat covering "give" and "breathe"?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the seat back angle a minimum of 90 to 105 degrees (preferably up to 120 degrees), and does it lock in position?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the seat back width in the lumbar region at least 12 inches?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the seat back 15 to 20 inches high?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the height of the lumbar support adjustable?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the lumbar support move upward relative to the lumbar spine as the backrest reclines?                           |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the lumbar support 6 to 9 inches long and 12 inches wide?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the lumbar support positioned 6 to 10 inches above the seat?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the lumbar support protrude forward about 2 inches from the back of the seat?                                   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the chair have a stable five-point base with casters?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the chair have adjustable armrests?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Are the armrests 9 to 12 inches long and 8 to 9 inches above the seat?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the chair easily adjustable?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Can the controls be easily reached and adjusted from the standard seated work position?                              |
| <input type="checkbox"/> | <input type="checkbox"/> | Do the controls provide immediate feedback?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Is the direction of operation of controls logical and consistent?  |
| <input type="checkbox"/> | <input type="checkbox"/> | Do adjustments require the use of only one hand?   |
| <input type="checkbox"/> | <input type="checkbox"/> | Does the chair pivot 360 degrees, allowing easy ingress/egress and access to various surfaces?                       |

**\* Any question answered NO indicates a potential problem area.**