

Eyes need light to see

The human eye has a great ability to adapt to light. From the brightest light on a sunny day to the extremely low levels of light at night, we use and enjoy our vision. We expect our eyes to work efficiently in artificial light and to function outside in the sun where illumination levels may be 2,000 times higher.

Poor lighting

The consequences of poor lighting are reduced concentration span, eye fatigue, headaches, irritability, nervous tension and, for older people, difficulty seeing detail. Many home accidents are caused by inadequate lighting of hallways, stairways, steps and the kitchen.

Age catches up

As we grow older, the efficiency of our eyes deteriorates. Commonly, the optical tissue becomes less transparent and changes in the retina reduce the sensitivity of the nerves which convert light into tiny electrical impulses for the brain.

Spectacles can compensate for any change in optical focus, but to compensate for the loss of transparency within the eye later in life, increasing intensities of light are required. For visual efficiency a person aged 60 years requires twice the light that he or she required at 20 years of age.

Not only is more light required, but a person developing cataracts experiences scatter of light causing a misty veiling effect and loss of contrast. Wearing a hat with a brim removes some of the unwanted light, which will improve contrast and reduce glare. Keen sports people find this very helpful at any age.

Glare

Excessive light, or light reaching the eyes from an unwanted direction, is called glare. Reducing glare is very important to make your vision comfortable. Careful planning of the position of lights in your home or workplace can keep glare to a minimum.

Sit on your favourite chair, in your lounge, at a table or desk, or stand at your work bench. If you can see a source of light within your field of vision, you have a direct glare problem. Change the position of your lights, chair, desk or curtains to remove the glare. For example, do not place a lamp on top of a television set.

Position your lights carefully

The correct position for a desk lamp is just to the side, above and behind the head, so that the light comes over the left shoulder for a right-handed person and over the right shoulder for a left-handed person.

Illuminate the room with a second light source to reduce the contrast when you look up from your desk. The same principle applies for a sewing table or work bench.

When watching television, place a moderate source of light to the side or behind you—a standard lamp is ideal.

Light for reading and hobbies

Often the light in the average home which has one or two light fittings suspended from the ceiling in a room is inadequate for detailed reading or close work. Many wall lights are too high, too small or too inefficient to provide adequate illumination. The intensity of illumination on a book placed one metre from a light source is only one-tenth of the intensity of illumination if the book is 30 centimetres from the light. Decorative lamps may provide background illumination, but to carry out specific tasks such as reading or sewing, a bright reading lamp is preferable.

A suitably designed lamp is usually the most economical way of providing sufficient light. The shade should be adjustable for height and position to control the direction of the light over the shoulder. Angle-poise models or standard lamps with adjustable reflector shades are ideal and can be shifted to illuminate tasks in various places.

By using reflector lamps in the fittings, both light and heat are reflected forward from the lamp, making it possible to use higher wattage lamps safely. Try a specially designed 100-watt reflector lamp placed one

metre from your reading, sewing or work—you will be surprised at how effectively it illuminates the task.

General lighting

Background illumination from spotlights reflected from the ceiling is often suitable and provides a pleasant visual environment. Dimmers can be helpful to control general room lighting for your comfort.

In a dining room, a light fitting hanging from the ceiling directly above the table is ideal. With a dimmer the illumination can be varied from mood lighting for relaxed dining to bright light for reading.

Inadequate lighting in a bedroom is common. For reading in bed, the lamp must be adequately bright, giving plenty of light but without glare or shadows on the book. Many bedside lamps have shades which look attractive but reduce the light output excessively.

Fluorescent lighting

Fluorescent lamps are blamed for many visual problems, although there is nothing about fluorescent light that is damaging to the eyes. Two aspects of fluorescent lamps require attention—quantity and quality of light output.

Quantity of light

As the tubes age, the light emission diminishes and ultimately flickering occurs. This flickering has been shown to cause fatigue and headaches in some people. Replace tubes when the ends begin to blacken and make sure that the fittings are cleaned regularly.

Quality of light

Light quality is governed by the position of the light relative to the task. As with other forms of lighting, fluorescents can contribute to direct and indirect glare if poorly diffused. Plastic diffusers fitted over fluorescent lamps spread the light more evenly throughout the room. Office desks may need to be repositioned, or the lighting moved, until the source cannot reflect from the desk into the eyes.

A further important factor is the colour rendering, which is the colour an object appears when illuminated by a source. Modern fluorescent lamps of smaller diameter (26 mm) produce more light for the same amount of electricity and have a superior colour rendition index. It is desirable to replace old tubes with these high efficiency types.

Computers

Personal computers introduce a new dimension into home and office lighting. Check that there are no reflections of light on the screen, and that there is no glare from a window behind the screen. Although you can change the position of the computer or the lighting, and fit curtains or blinds to the windows if necessary, it is far better to design your office or work station correctly to ensure comfort while using the computer for long periods. Your optometrist will provide special advice on any vision problems which seem to be associated with computer use.

Your optometrist advises:

1. Have a critical look at your lighting; avoid gloom and glare.
2. Place light fittings above all work surfaces in the kitchen, office or workplace so that you do not obstruct light reaching your work surface.
3. When you redecorate, paint or paper the walls and ceilings in light colours to reflect the light; in an older home arrange for your electrician to install extra lights.
4. Clean your light fittings regularly and replace old light globes before they burn out. You can still use them in less critical areas.
5. When concentrating for a long time, take an occasional rest from your task and relax your eyes by looking away for a few seconds.

Your optometrist can advise you further on the lighting you need.

This brochure is produced by the Australian Optometrical Association
in the interest of the visual welfare of the Australian people.

ACN 004 622 431

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