



PC Wide Lenses

Checkups at an early stage are recommended if you have concerns. Parents with small children are constantly concerned about the health of their family. A great many parents are particularly concerned about problems with the eyes such as injury, diseases, eyesight and vision, especially where children who are not yet capable of properly explaining such problems are involved.

Strabismus and heterophoria in particular are concerns of parents, and can be improved through treatment if spotted in the early stages.

The true position of the human eye is not necessarily central.

The position of the eye is determined by the tension of six ocular muscles that make the eyeball move and the status of the tissue on the periphery of the eyeball. This is why the true position of the eyeball is not necessarily central.

When the eyes look at an object and the images that enter the right and left eyes are coalesced into one by the brain, minor misalignments of the eyes are adjusted so that they are in the central position.

This is why the position of the eye when we are not conscious of its position, or find ourselves in a dark place where we cannot see anything, for example, is the true position of the eye (physiological rest position).

Binocular vision that measures elements such as distance and depth

Even though the eye may be in its central position, the images projected on the retinas of the right and left eyes are each seen from a slightly different angle. Images from both eyes are transmitted to the brain (occipital lobe) where the discrepancy in vision (the technical term for this is "parallax") is calculated to give a sense of elements such as distance and three-dimensionality. This function is called the "binocular function" and the neurons in the occipital lobe that operate when this function is active are known as "binocular neurons."

In a newly-born baby, these binocular neurons are still only neurons of indeterminate characteristics in the optic system. Generally, these neurons acquire properties during the process of visual experience up the age of two that enable binocular vision. This function becomes more and more difficult to acquire as we grow up, and cannot be acquired at all once we become adults.

What is the difference between strabismus and heterophoria?

Strabismus refers to a state wherein the binocular neurons fail to develop properly for some reason and cannot function adequately, and does not affect outward appearance.

Among the causes of strabismus are misalignment of the eye position from birth, poor eye movement and disease of the eyeball itself. Of the above, in many cases, the term strabismus is used in the strict sense to refer to cases of failure of binocular neurons to develop due to misalignment of the eye position.

Persons suffering from strabismus view objects with one eye only. The condition is referred to as "exotropia" or "divergent strabismus" if the eye not used is directed outward, and "convergent strabismus" if directed inward, while the terms used to describe the condition in cases where the inactive eye is directed upward or downward are "hypertropia" and "hypotropia" respectively. In many cases, poor vision develops in the inactive eye (amblyopia, or weak sight). In addition, people suffering from strabismus often suffer stiffness in the neck caused by turning or twisting their necks to compensate for strabismus (ocular torticollis).

< Convergent strabismus >



< Exotropia or divergent strabismus >



< Hypertropia >



< Hypotropia >



In the case of heterophoria, sufferers are capable of binocular vision, but if one eye is covered, binocular vision becomes impossible with the result that the uncovered eye becomes misaligned to an upward, downward, left or right orientation.

As we can see, although the definitions of strabismus and heterophoria are clear, only an eye specialist can determine which of the two conditions a patient is suffering from.

Since strabismus can be effectively treated as long as the condition is spotted at an early stage. Since simple visual examination is sometimes not enough to spot cases of strabismus (particularly intermittent exotropia), or cases of strabismus where the eye is only very slightly misaligned more in-depth examination by an eye care professional for heterophoria or binocular vision may be required.

