UNDERSTANDING VISION

80% of all the information we receive is perceived by our eyes.

The eye is a fragile organ which must be treated with care. Understanding how vision works allows you to take better care of your visual health. Understanding the mechanisms of vision helps you better protect your visual health.

HOW DOES VISION WORK?

The optical system that enables visual perception is very complex, since it involves a series of elements which are all required to produce vision.

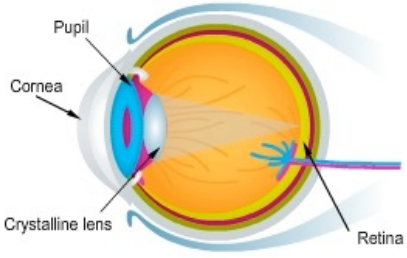
1. The eye intercepts light.
2. An image of the external world is created on the retina.
3. The nervous system transmits this image to the brain.
4. The brain interprets the information received to form an image.

Our vision evolves throughout our live. We can identify three major stages:

The formation of the eye happens between 0 and 10 years: At birth our visual abilities are extremely poor. We can't see beyond 20 centimetres. Our eyesight develops until the age of 10. This phase is crucial, which is why it is important to control its evolution. One parent out of three never brings their child to the eyecare professional. Today, one in four schoolchildren doesn't see properly. Visual defects such as astigmatism, myopia or hyperopia can affect young children and have dramatic consequences if not diagnosed and treated in time. So keep your eyes open!

The optimum condition of the eye is between 20 and 45 years.

The gradual weakening of the eye's defence system begins at the age of 45: With the aging population, the cases of presbyopia, cataracts (clouding of the crystalline lens) and AMD (age related macular degeneration) will double in 30 years. Today, we estimate that approximately 250 million people suffer from cataracts in the world. In 2050, we will have nearly 676 million. Similarly, the number of people with AMD is nearly 100 million today, but it will rise to 265 million by 2050. That's why it is important to protect our eyes against UV rays, everyday.



Eye without eyesight problems

The crystalline lens: an essential organ

- The crystalline lens is the organ which focuses. It plays an essential role in vision. This lens contracts and expands to focus rays of light on the retina. Like an autofocus camera lens, it helps to adjust images in accordance with the distance of the external object, a function that is called accommodation. When the eye presents no visual disorder, images of near or far objects are formed on the retina through accommodation. The crystalline lens bulges in or out according to its distance from the object in order to create a focused image.

VISION PROBLEMS

Vision is blurred or deformed when the image of the object does not form properly on the retina. This type of visual disorder is called ametropia. Myopia, hyperopia and astigmatism are the three kinds of ametropia.

If you don’t recognize your friends standing on the other side of the street, you might be suffering from myopia. Myopia is mainly caused by the eye being "too long", meaning that the distance between the cornea and the retina is too important. In such cases, the image forms just in front of the retina, resulting in difficulties for the myopic individual in seeing things far away, but not close up. The more the person is nearsighted, the more he/she must approach an object to distinguish it clearly.

Do you feel eyestrain and often have headaches? These symptoms can be a sign of hyperopia. Hyperopia is mainly caused by the eye being "too short", meaning that the distance between the cornea and the retina is not important enough. In such cases, the image forms just behind the retina, resulting in the hyperopic individual seeing things better far away than close up. Clear vision can only be achieved by intense use of accommodation which can be tiring in the long term and causes eye fatigue.

Do you have difficulty assessing the straight lines? Does your peripheral vision lack precision? Do you have difficulty making out certain forms and details? You might be affected by astigmatism. Astigmatism is mainly caused by "incorrect curvature of the cornea", i.e. the cornea is slightly oval in shape instead of being spherical. Astigmatic individuals have imprecise near and far vision, their peripheral vision is unclear and they cannot clearly distinguish certain shapes and details or see contrasts clearly between horizontal, vertical or oblique lines. Astigmatism may be combined with other eyesight problems such as myopia, hyperopia or presbyopia.

Presbyopia affects all of us after the age of 40: This is not a visual defect but a natural change in eyesight. It results from the natural ageing of the crystalline lens and is characterized by the eye's gradual loss of the ability to accommodate. Presbyopia develops in addition to vision problems such as myopia, hyperopia and astigmatism.

Vision correction involves forming a focused image on the retina. Corrective lenses are the most common way of restoring perfect eyesight. One in five people in the world wears glasses.