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## **DISCUSS THE DEFECTS OF THE EYE**

### **NEARSIGHTEDNESS**

Myopia is often called nearsightedness, because people who have it can only see the near objects in sharp focus. Its caused by too much curvature of the cornea relative to the length of the eyeball. This causes the light rays in the eye to be focused in front of the retina instead of in it.

In laser correction, this curvature is reduced, moving the focal point of the light to the retina and enabling clear vision without corrective lenses.

### **FARSIGHTEDNESS**

Hyperopia, or farsightedness, is just the opposite people with it can see clearly far way, but not close up. It is caused by insufficient curvature of the cornea relative to the length of the eyeball. This puts the focal point of the light rays behind the retina instead of on it.

In laser correction, the curvature of the cornea is increased, moving the focal point of the light to the retina and enabling clear vision.

### **PRESBYOPIA**

Presbyopia is an age related condition that occurs as the lens loses its ability to change shape. This reduces the eyes ability to adjust for different distances, especially close up, so that the weakly bundled light rays are not focused at the retina. In PresbyMAX treatment with SCHWIND AMARIS close in clarity becomes easy again for people with aging eyes. The treatment can also alleviate other vision defects like nearsightedness, farsightedness or astigmatism.

### **ASTIGMATISM**

In astigmatism, the cornea is misshapen and does not properly focus the light entering the eye. Instead of hitting the retina in a focused point, the light is spread over two or more points. The result is a blurry or stretched image. In laser treatment, the cornea is brought into a shape that focuses the light on the retina correctly.

### **HIGHER ORDER DEFECTS [ABBERATIONS]**

Higher order vision defects, often called aberrations, van take many different forms. Abberations is a synonym for error and refers to the fact that in higher order defects the light rays are focused

erroneously so that they don't form a clear picture. 80% of aberrations are caused by corneal defects, and only 20% by issues with the lens or vitreous body. On most people these errors are so small that they don't impair visual acuity. Higher order defects become most noticeable at night and in twilight, when light reaches the retina with less focus. Under these conditions, vision can become much worse and/or the individual is more susceptible to glare.

These visual defects can often be corrected by laser surgery with wavefront guided treatment. This requires that the aberrations be precisely localized. SCHWIND offers diagnostic systems that deliver extremely precise information on the cornea and the entire eye, enabling individually adapted treatment.