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**DEPARTMENT: BIOMEDICAL**

**ENGINEERING**

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**COURSE: PHYSIOLOGY**

**TOPIC: EYE DEFECTS**

## **1. Myopia**

Nearsightedness (myopia) is a common vision condition in which you can see objects near to you clearly, but objects farther away are blurry. It occurs when the shape of your eye causes light rays to bend (refract) incorrectly, focusing images in front of your retina instead of on your retina.

Nearsightedness may develop gradually or rapidly, often worsening during childhood and adolescence. Nearsightedness tends to run in families.

A basic eye exam can confirm nearsightedness. You can compensate for the blur with eyeglasses, contact lenses or refractive surgery.

### **Symptoms**

Nearsightedness symptoms may include:

- Blurry vision when looking at distant objects
- Squinting or partially closing the eyelids to see clearly
- Headaches caused by straining of the eyes
- Difficulty seeing while driving a vehicle, especially at night (night myopia)

Nearsightedness is often first detected during childhood and is commonly diagnosed between the early school years through the teens. A child with nearsightedness may:

- Persistently squint
- Need to sit closer to the television, movie screen or the front of the classroom
- Seem to be unaware of distant objects
- Blink excessively
- Rub his or her eyes frequently

**Seek emergency medical care if you experience:**

- The sudden appearance of many floaters (tiny specks that seem to drift through your field of vision)
- Flashes of light in one or both eyes
- A curtain-like shadow over your visual field

These are warnings signs of retinal detachment, which is a rare complication of myopia. Retinal detachment is a medical emergency, and time is critical.

## **2. Astigmatism**

Astigmatism is a common vision problem caused by an error in the shape of the cornea. With astigmatism, the lens of the eye or the cornea, which is the front surface of the eye, has an irregular curve. This can change the way light passes, or refracts, to your retina. This causes blurry, fuzzy, or distorted vision

The two main types of astigmatism are;

- Corneal and
- Lenticular

A corneal astigmatism happens when your cornea is misshapen. A lenticular astigmatism happens when your lens is misshapen.

## **Causes**

It's not known what causes astigmatism, but genetics is a big factor. It's often present at birth, but it may develop later in life. It may also occur as a result of an injury to the eye or after eye surgery. Astigmatism often occurs with nearsightedness or farsightedness.

## **Symptoms**

The symptoms of astigmatism include:

- blurry, distorted, or fuzzy vision at all distances (up close and far away)
- difficulty seeing at night
- eyestrain
- squinting
- eye irritation
- headaches

Astigmatism can occur in children and adults. Your risk of developing astigmatism may be higher if you have any of the following:

- a family history of astigmatism or other eye disorders, such as keratoconus (degeneration of the cornea)
- scarring or thinning of your cornea
- excessive nearsightedness, which creates blurry vision at a distance
- excessive farsightedness, which creates blurry close-up vision
- a history of certain types of eye surgery, such as cataract surgery (surgical removal of a clouded lens)