



Wasatch View Eye Care

Jeff Mellor, OD, MEd, FAAO-Optometrist

10412 S. 2200 W.

South Jordan, UT 84095

(801) 858-2020

[www.wasatchview.com](http://www.wasatchview.com)

2135 W. Main Street, B101

Lehi, UT 84043

(801) 702-8550

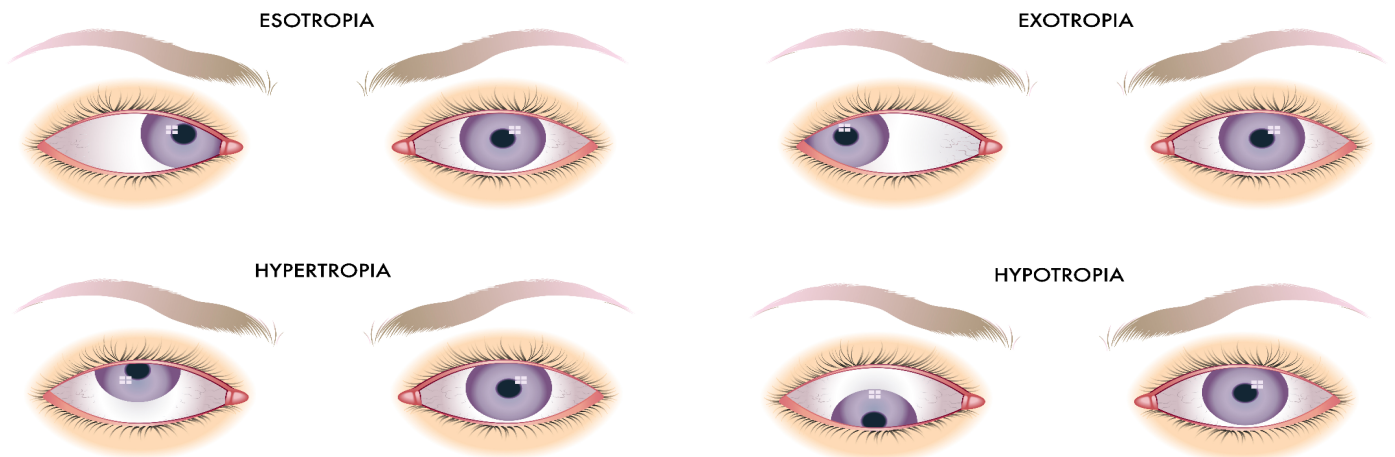
## Strabismus

### Overview

Strabismus or a tropia is a misalignment of the eyes, meaning that they don't look at an object together. An eye can turn in, out, up or down. A long standing strabismus may not have any symptoms because the brain shuts off or "suppresses" the image from the eye that turns away. A new onset results in double vision and disorientation. Strabismus occurs because of poor coordination between the extraocular muscles or the nerves that innervate them. Testing done by your eye doctor includes a cover test to assess ocular alignment, determination of refractive state and an assessment of ocular health. Treatment involves the use of prism in glasses, vision therapy, surgery and correction of refractive error.



Below are examples of the types strabismus.



### Signs & Symptoms

If strabismus occurs early in life and goes without treatment, the brain shuts off the image perceived by the eye that is misaligned and there are not any symptoms. The brain does this to avoid disorientation and confusion. When strabismus occurs later in life, double vision or diplopia occurs. It is very bothersome, disorienting and leads to a sense of imbalance. A vertical strabismus is much more disorienting than a horizontal one. One prism diopter of vertical strabismus can lead to double vision.

## Causes

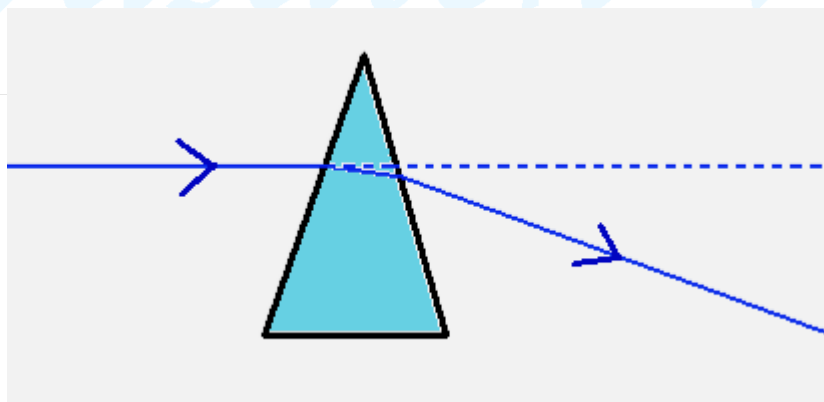
Strabismus is caused by poor coordination between the extraocular muscles or the nerves that innervate them. A weak muscle may not be able to counter the pull from the other muscles or a muscle might provide excessive pull leading to a misalignment. A muscle with poor or excessive innervation leads to the same problems. One type of strabismus is caused by a large amount of far-sightedness or hyperopia and is called accommodative esotropia. In this particular situation the eyes need to focus excessively, which results in increased innervation for the eyes to turn in. New onset of strabismus later in life may be caused by strokes, brain tumors and trauma.

## Testing & Evaluation

The most important test for strabismus is called a cover test. In this testing the eyes are covered up individually to see how the opposing eye aligns and moves to determine the type and magnitude of the strabismus. A red lens test is also done to see the dimensional relationship between the images perceived by the brain and to determine the amount of prism needed to allow the eyes to fuse the images seen. For this test a red lens is placed in front of one eye and the patient is instructed to look at a light held in the distance. Prism is then placed over the eyes until the image from the eye without the red lens and the image from the eye with the red lens are fused into a single image. New onset strabismus will require urgent and appropriate scans of the brain and its visual pathway.

## Treatment

Strabismus is treated with prism in eyeglasses, surgery, vision therapy, correction of refractive error and managing an underlying cause. Prism will bend light to the deviated eye so that it was as if it were looking where it should. A prism bends light toward its base. A drawing of how a prism works is given below.



With surgery the eye muscles responsible for ocular movement are either shortened or stretched so the eyes are aligned properly. Some types of eye turns can be improved by the use of exercises that train the eyes to move, align and fuse images properly. These exercises are called vision therapy. A proper correction of refractive error allows the eyes to see clearly and relax. For those that are far-sighted they need to focus to see far away, which drives the eye to turn inward. By correcting for the

far-sightedness the eyes don't have to focus and the drive to turn the eye inward is reduced. Decreasing that drive to turn the eye inward corrects for accommodative esotropia that was described earlier. Any underlying causes of the strabismus should also be managed with the proper medical attention (i.e stroke, tumors, etc...)

## **Websites**

All About Vision: <http://www.allaboutvision.com/conditions/strabismus.htm>

American Optometric Association:

<https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/strabismus?sso=y>

Kids Health: <https://kidshealth.org/en/parents/strabismus.html>

