American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

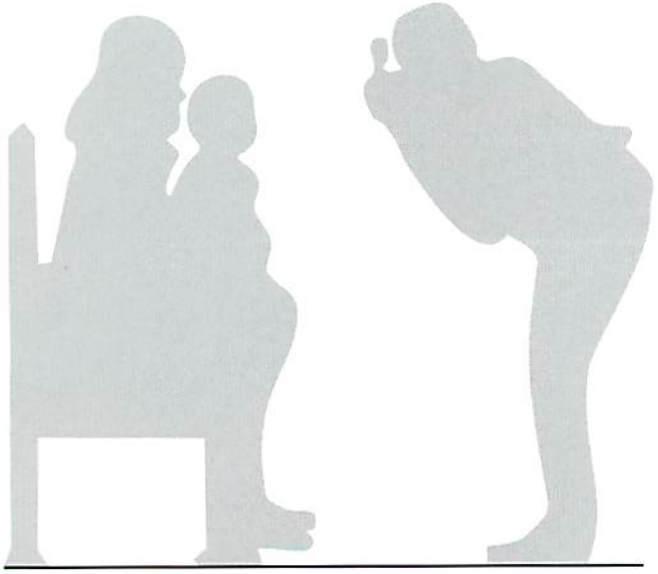
Section on Ophthalmology

See RED

Red reflexes from the retinas can be used by the physician to great advantage. The illustration shown here depicts the inequality of the red reflection or the interference with the red reflections in various conditions. The white dots represent corneal light reflexes.

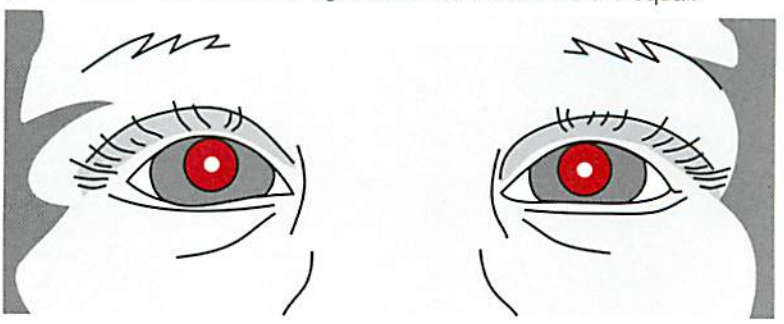
Techniques: Set the ophthalmoscope (preferably one with a halogen light source*) on zero or close to zero, stand a few feet away from the child seated in the parent's lap, attract the child with voice or noise encouraging the child to look at the light, compare the red reflection from each pupil. Both red reflections should be viewed simultaneously and alternately. An expanded observation is the position of the white reflection, the corneal light reflex.

The beauty of this test is that it can be done with a "hands-off" approach; it can furnish accurate information without dilatation of the pupils. As a screening device it is very cost effective. We encourage you to work with this technique. It is useful far beyond all other manual inspection tests for assessments of vision, refraction, motility, alignment, injury evaluations, and eyelid-pupil relationships.

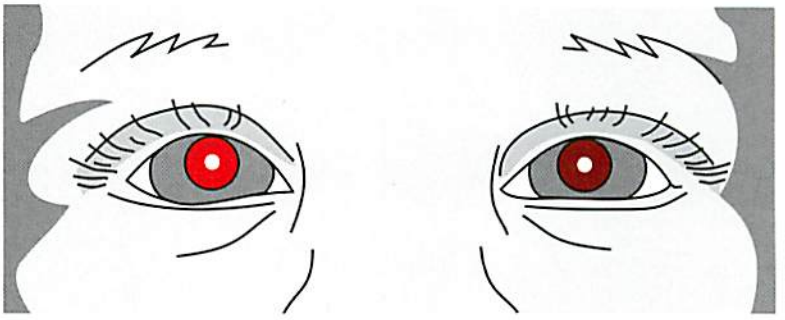


REFERENCE
Tongue AC, Cibis CW: Brückner test. *Ophthalmology.* 1981;88:1041–1044.
*Welch Allyn Ophthalmoscope # 11720

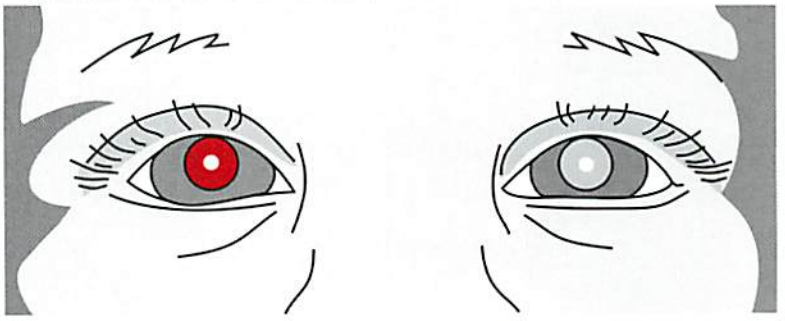
↓ **NORMAL**—Child looks at light. Both red reflections are equal.



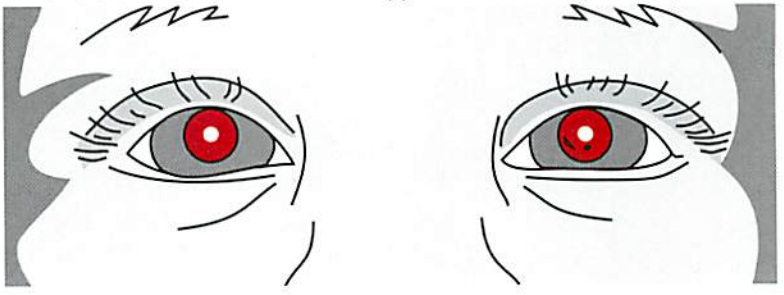
↓ **UNEQUAL REFRACTION**—One red reflection is brighter than the other.



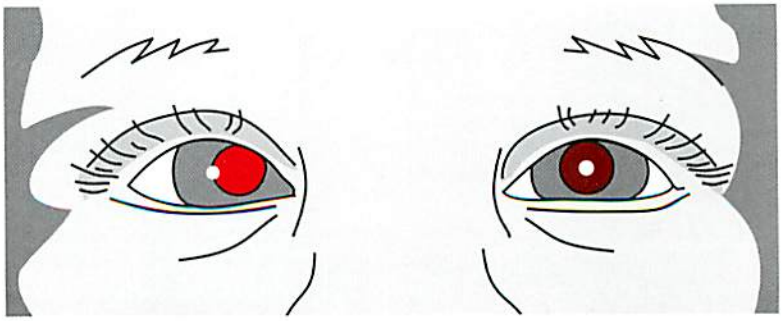
↓ **NO REFLEX (CATARACT)**—The presence of lens or other media opacities blocks the red reflection or diminishes it.



↓ **FOREIGN BODY/ABRASION (LEFT CORNEA)**—The red reflection from the pupil will back-light corneal defects or foreign bodies. Movement of the examiner's head in one direction will appear to move the corneal defects in the opposite direction. (Parallax)



↓ **STRABISMUS**—The red reflection is more intense from the deviated eye.



Eye Examination Guidelines

Assessing visual acuity (vision screening) represents one of the most sensitive techniques for the detection of eye abnormalities in children. The American Academy of Pediatrics Section on Ophthalmology, in cooperation with the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology, has developed these guidelines to be used by physicians, nurses, educational institutions, public health departments, and other professionals who perform vision evaluation services.

TABLE: Eye Examination Guidelines*

Function	Recommended Tests	Referral Criteria	Comments
		Ages 3–5 Years	
Distance Visual Acuity	Snellen letters Snellen numbers Tumbling E HOTV Picture tests Allen figures LEA symbols	1. Fewer than 4 of 6 correct on 20-ft line with either eye tested at 10 ft monocularly (ie, less than 10/20 or 20/40) or 2. Two-line difference between eyes, even within the passing range (ie, 10/12.5 and 10/20 or 20/25 and 20/40)	1. Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3–5 years of age and Snellen letters or numbers for children 6 years and older. 2. Testing distance of 10 ft is recommended for all visual acuity tests. 3. A line of figures is preferred over single figures. 4. The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to the eye; the examiner must ensure that it is not possible to peek with the nontested eye.
Ocular alignment	Cross cover test at 10 ft (3 m)	Any eye movement	Child must be fixing on a target while cross cover test is performed.
	Random dot E stereo test at 40 cm	Fewer than 4 of 6 correct	
	Simultaneous red reflex test (Bruckner test)	Any asymmetry of pupil color, size, brightness	Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2–3 feet away; detects asymmetric refractive errors as well.
Ocular media clarity (cataracts, tumors, etc)	Red reflex	White pupil, dark spots, absent reflex	Direct ophthalmoscope, darkened room. View eyes separately at 12–18 inches; white reflex indicates possible retinoblastoma.
		Ages 6 Years and Older	
Distance Visual Acuity	Snellen letters Snellen numbers Tumbling E HOTV Picture tests Allen figures LEA symbols	1. Fewer than 4 of 6 correct on 15-ft line with either eye tested at 10 ft monocularly (ie, less than 10/15 or 20/30) or 2. Two-line difference between eyes, even within the passing range (ie, 10/10 and 10/15 or 20/20 and 20/30)	1. Tests are listed in decreasing order of cognitive difficulty; the highest test that the child is capable of performing should be used; in general, the tumbling E or the HOTV test should be used for children 3–5 years of age and Snellen letters or numbers for children 6 years and older. 2. Testing distance of 10 ft is recommended for all visual acuity tests. 3. A line of figures is preferred over single figures. 4. The nontested eye should be covered by an occluder held by the examiner or by an adhesive occluder patch applied to the eye; the examiner must ensure that it is not possible to peek with the nontested eye.
Ocular alignment	Cross cover test at 10 ft (3 m)	Any eye movement	Child must be fixing on a target while cross cover test is performed.
	Random dot E stereo test at 40 cm	Fewer than 4 of 6 correct	
	Simultaneous red reflex test (Bruckner test)	Any asymmetry of pupil color, size, brightness	Direct ophthalmoscope used to view both red reflexes simultaneously in a darkened room from 2–3 feet away; detects asymmetric refractive errors as well.
Ocular media clarity (cataracts, tumors, etc)	Red reflex	White pupil, dark spots, absent reflex	Direct ophthalmoscope, darkened room. View eyes separately at 12–18 inches; white reflex indicates possible retinoblastoma.

*Eye Examination Guidelines were developed by:

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This table is reproduced from the AAP policy statement, Eye Examination in Infants, Children, and Young Adults by Pediatricians. *Pediatrics.* 2003;111:902–907.

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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