



**Neuro-Ophthalmology Basics:
From Exam to Diagnosis**

OAO 2026 Eye Technician Meeting

DATE: FEBRUARY 27, 2026 PRESENTED BY: FLORIAN GUILLOT, MD (PGY1)

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Disclosures

None.

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Learning Objectives

1. Describe the diagnostic tools and tests used in evaluating neuro-ophthalmic conditions.
2. Understand the neurological basis for routine exam maneuvers.
3. Recognize technician responsibilities and red flags that warrant urgent attention.

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Why Does This Matter?



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The Neuro-Op Toolkit

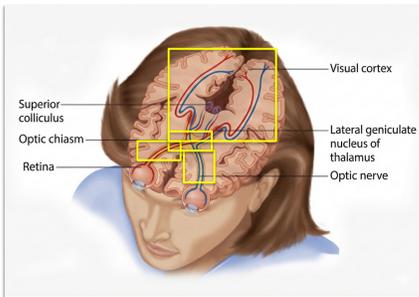
- Pupils
- Extra-ocular movements
- Color vision
- Visual fields

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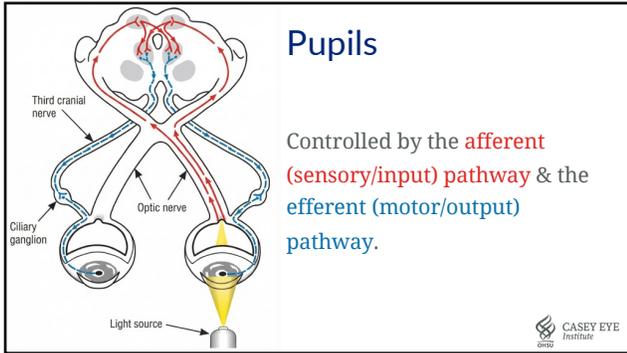
Anatomy



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TARGET → Focus on distant target.

↓

Lightbulb icon ↓ Dim lights.

Shine light from below. If asymmetric, assess in light & dark.

SYMMETRY CHECK

| | | | |
|---|---|--|---|
| <p>SYMPATHETIC STIMULATION</p> <p>E.g., Stimulants, decongestants, antihistamines, dilating drops, midbrain injury/lesion.</p> | <p>PARASYMPATHETIC STIMULATION</p> <p>E.g., Opioids, pontine injury.</p> | <p>DILATED PUPIL (WORSE IN LIGHT)</p> <p>E.g., CNIII palsy, Adie's pupil.</p> | <p>CONSTRICTED PUPIL (WORSE IN DARK)</p> <p>E.g., Horner's syndrome.</p> |
|---|---|--|---|

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TARGET → Focus on distant target.

↓

Lightbulb icon ↓ Dim lights.

Shine light from below. If asymmetric, assess in light & dark.

SHINE LIGHT (e.g., 1-2 sec) → Shine light in each eye to assess individual response.

INDIVIDUAL RESPONSE

RAPD CHECK: 1-2 sec → Test for Relative Afferent Pupillary Defect (RAPD) with the swinging flashlight test.

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RAPD CHECK: 1-2 sec

Test for Relative Afferent Pupillary Defect (RAPD) with the swinging flashlight test.

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Extraocular Movements

- Assess primary gaze
 - Hirschberg (corneal light reflex) test

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Alignment Assessment (Hirschberg)

| | | |
|---|----------------------------------|--|
|  | Normal corneal reflex |   |
|  | Esotropia (eye turned inward) | |
|  | Exotropia (eye turned outward) | |
|  | Hypertropia (eye turned upward) | |
|  | Hypotropia (eye turned downward) | |

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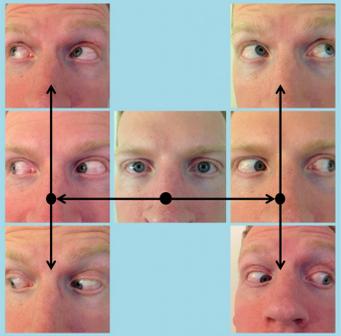
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Extraocular Movements

- Assess primary gaze
- H-pattern

Grading:
0 = Full movement
-1 = 25% deficit
-2 = 50% deficit
-3 = 75% deficit
-4 = No movement past midline



Miriam CURIE MD PhD



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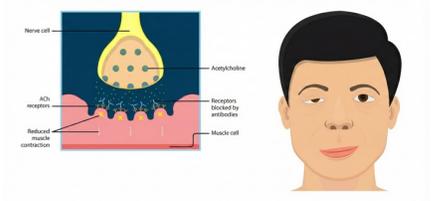
DO NOT DILATE! **Concerns for aneurysm/stroke!**

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Fluctuating motility/ptosis



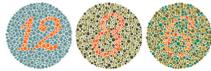
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Color Vision

- Test each eye individually
- Color plates:
 - Ishihara



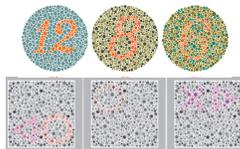
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Color Vision

- Test each eye individually
- Color plates:
 - Ishihara
 - Hardy-Rand-Rittler



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Visual Fields

- Confrontational fields



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The Neuro-Op Toolkit

- Pupils: Optic neuropathy, CN III palsy, Horner syndrome, aneurysm
- Extra-ocular movements: Cranial nerve palsies, myasthenia gravis, stroke
- Color vision: Early optic neuritis, optic neuropathy
- Visual fields: Glaucoma, stroke, chiasmal lesions, functional vision loss

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Conclusion

- Always record pupil shape, reaction, RAPD before dilation.
- Motility deficits, ptosis can indicate intracranial disease. Check with physicians before dilating!
- Color testing can indicate optic nerve disease
- Visual fields help establish and track diseases affecting peripheral vision

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Thank You

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