

Extraocular Motility Test

Your Comprehensive Guide

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Start Conducting Extraocular Motility Exams with Carrot

Extraocular motility, or EOM, refers to the muscular function of a patient's eyes.

Discoordination or unusual movements of the six extraocular muscles can indicate strabismus, nystagmus, or suggest underlying neurological conditions.

Extraocular motility testing is simple. Traditionally, this exam is performed with a penlight to observe the patient's eye movements as they follow the light. This method is straightforward but doesn't accurately measure subtle abnormalities. Moving this exam to Carrot introduces a pinpoint-accurate moving stimulus and real-time eye tracking. Video and still images provide a clear, objective record for more accurate and efficient testing.

Extraocular Motility Exam Overview

Extraocular motility testing is a standard part of almost any comprehensive eye exam. Moving a stimulus in an H-shaped pattern measures eye movement in up, down, left, right, and diagonal directions. The eye muscles' [movements](#) are considered yoked to maintain coordinated vision, and if a patient's gaze is uncoordinated or strained, this can signal weakened muscles. Any disruption in extraocular muscle function can lead to misalignment of the eyes, compromising stereopsis and depth perception.

This exam is typically performed manually with a light or even a finger, but modern diagnostic tools enable you to improve patient throughput without compromising accuracy. Carrot's eye tracking capabilities eliminate the subjectivity inherent in traditional EOM testing methods. The stimulus is always correctly positioned, and even slight eye movements are trackable with our high-accuracy headset.

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Academic references and clinical validation



The [American Academy of Ophthalmology](#) published a review on strabismus following extraocular muscle trauma. This resource emphasizes the importance of thorough extraocular motility testing to diagnose traumatic strabismus, which can result from injury.



[A 2021 study](#) introduced a novel laser pointer technique for measuring ocular duction ranges. The researchers found this method was reproducible, accurate, and simple. They concluded that this technique, similar to Carrot, could be valuable for evaluating patients with ocular motility disorders.



[Video-oculography](#), or digital eye tracking technology, is a useful, objective way to test extraocular muscle function and collect objective measurements. This functionality is especially beneficial for myasthenia gravis patients.

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The extraocular motility exam is a straightforward process — patients must follow an H-shaped pattern with their eyes while you assess their muscular function. You can conduct the exam without tools, but accuracy will be lost. This test can detect misalignments and [specific conditions](#) that may not be apparent with other visual tests. EOM is a standard eye exam component, but it is not individually billable.

Pros and Cons of Extraocular Motility Testing

We know the extraocular motility test is efficient, useful, and widely used, but there are pros and cons to incorporating this test into your routine.

PROS	CONS
This exam is almost always quick, painless, and simple to administer.	Extraocular motility measurements with a penlight or other object can be subjective and provide unreliable results.
Extraocular motility exams have high diagnostic value, especially considering how simple and non-invasive this test procedure is.	Traditional testing methods can miss subtle abnormalities.
With Carrot, this test is precise and objective, with clear-cut results.	Testing requires full patient cooperation, which can be challenging for patients who are anxious, uncomfortable, or struggle to maintain focus.

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<p>Strabismus and Amblyopia</p>	<p>About 4% of adults have misalignment of the eyes, including esotropia, exotropia, hypertropia, and hypotropia. Strabismus isn't always immediately visible, but you can reveal most cases with an EOM test.</p>
<p>Cranial Nerve Palsies</p>	<p>Specifically, damage to cranial nerves III (oculomotor), IV (trochlear), or VI (abducens) can cause restricted eye movement, double vision, and abnormal head positioning. The EOM test helps identify which nerve is affected based on the pattern of weakness.</p>
<p>Nystagmus</p>	<p>This involuntary, repetitive eye movement can indicate neurological disorders, vestibular dysfunction, or drug toxicity. An accurate extraocular motility exam helps detect subtle nystagmus.</p>
<p>Neurological Conditions</p>	<p>Multiple sclerosis has many eye-related symptoms that can be monitored with comprehensive eye testing. Demyelination in the central nervous system can affect eye movement control.</p>
<p>Myasthenia Gravis</p>	<p>This neuromuscular disorder causes fluctuating weakness in extraocular muscles, leading to ptosis and variable diplopia. You can use extraocular motility testing to inform patient referrals.</p>
<p>Thyroid Eye Disease</p>	<p>Autoimmune inflammation affects the extraocular muscles, leading to proptosis, restricted eye movement, and diplopia. You can track thyroid eye disease progression and assess muscle involvement with extraocular motility testing.</p>
<p>Other Conditions</p>	<p>The extraocular motility exam can also monitor: Orbital fractures • Stroke • Brain tumors • Parinaud syndrome Brown syndrome</p>

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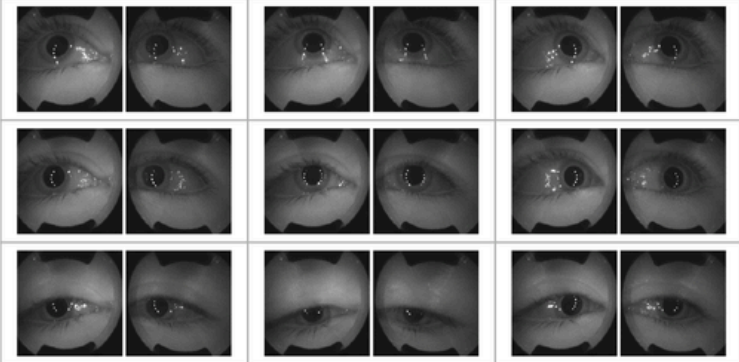
Example Extraocular Motility Report

BOTH | Mar 28, 2025, 9:34 AM

Extraocular Motility | Carrot

Patient Name
7.21.1997 (27)

MRN	DURATION
pa_bb6b83be	0:30



OUR NOTES

The eye video can be viewed [here](#)

NOTES

3.28.2025 9:34 AM | Printed

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Extraocular Motility Exam Device Pricing Options

When researching extraocular motility exam device buying options, you'll see a steep price-to-technology curve.

A basic penlight or fixation target costs just \$7–\$20 but offers only a subjective glimpse of eye-muscle function. A Maddox rod/occluder kit is another low-tech option, costing roughly \$20–\$50, that combines tools to add phoria measurement but remains manual and lighting-dependent.

Taking a step up in capabilities, tabletop synoptophores provide comprehensive binocular analysis. An economy import starts at around \$673, while branded clinical units and marketplace listings range from \$2,900 to \$4,500. If you want objective video records, infrared video-oculography (VOG) goggles, such as the Insight Pro+, retail for about \$2,600.

Representing the most comprehensive, modern, and positive ROI technology options, [Carrot's Pro subscription](#) offers pinpoint eye tracking, automated stimuli, and instant video documentation starting at a predictable monthly subscription cost of \$359. There's no bulky hardware to house and no maintenance contracts to sign. Whether you're upgrading from a \$20 pen-light or replacing a \$3,000 synoptophore, Carrot supplies synoptophore-level objectivity and VOG-quality video at a fraction of the upfront cost, making it the most innovative way to modernize extraocular motility testing.

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Billing and Coding for EOM in Eye Exam Routines

The extraocular motility exam is not an independently [billable](#) test. However, it can be included as one of the four exams required for billing under [CPT code 92060](#), which covers sensorimotor examination with multiple measurements of ocular alignment and motility.

When is the extraocular motility exam required?

The extraocular motility exam is a routine part of eye care, but it's especially important for patients at risk of eye movement disorders. If a patient reports double vision, eye strain, or trouble tracking moving objects, EOM testing can help uncover the underlying issue. It's also a key exam for those with a history of neurological conditions, head trauma, or systemic diseases like thyroid eye disease and myasthenia gravis.

Is the EOM test required for driver's licenses?

No, an extraocular motility exam isn't required for a driver's license, but that doesn't mean it's not relevant. Poor eye movement control can make it harder to scan the road, judge distances, or react quickly to hazards. Patients with conditions like strabismus, cranial nerve palsies, or orbital trauma may have trouble with stereopsis and depth perception. Standard driver's licensing vision tests, like the [Esterman exam](#) or Full Field 120, are usually sufficient.

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The extraocular motility exam gives a clear picture of how well the eyes move and work together. Patients with conditions such as stroke or multiple sclerosis benefit from routine testing to detect early changes in their eye movements. For those with strabismus, this exam helps measure deficiencies and inform a treatment plan.

With Carrot's advanced eye tracking capabilities, EOM testing is faster, more precise, and completely objective, eliminating the need for manual assessments. The controlled stimulus ensures accurate measurements, and if you already have a Carrot Pro subscription, adding this test to your routine is effortless.

Ready to get started?

Schedule a demo or begin your 30-day free trial of Carrot to offer an exceptional eye exam experience in your practice.

[Book a demo](#)

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Questions? Contact sales@carrot.io talk to a Carrot expert today.