TEST

# Visual field

A visual field test measures how much you can see centrally and around the edges of your vision.

**WHAT IT MEASURES**
Central and side vision in each eye

**SAMPLE**
None

**FASTING NEEDED?**
No

**HOW LONG IT TAKES**
Usually 10 to 30 minutes

**RESULTS IN**
Often same visit; reporting time varies by clinic or laboratory

**USED FOR**
Screening, diagnosis, and monitoring vision loss

**MAIN LIMITATION**
Attention, fatigue, and inexperience can create misleading results

## Overview

A visual field test measures the full area you can see while looking straight ahead. This includes central vision and peripheral, or side, vision. Each eye is tested separately because one eye can hide a problem in the other.

The test is also called perimetry. The most common version uses a bowl-shaped machine that shows small spots of light in different places. You press a button whenever you see one.

Visual field testing can find patterns of missing or reduced vision. These patterns may help identify or monitor glaucoma, retinal disease, optic nerve problems, and conditions affecting the brain's visual pathways.

There are several types of testing. Automated static perimetry uses stationary flashes of different brightness. Kinetic perimetry moves a light from an area you cannot see toward one you can. A simple confrontation test, in which a clinician checks whether you can see fingers or objects at the sides, mainly detects larger defects.

## Why the test is ordered

You may have a visual field test to investigate changes in your vision or to check whether an eye or neurological condition is affecting your field of view.

Common reasons include:

In glaucoma, repeated tests are especially useful. Comparing results over time can show whether vision is stable or whether field loss may be progressing.

- Detecting or monitoring glaucoma
- Checking the optic nerve, which carries visual information to the brain
- Investigating unexplained blurred vision or missing areas of vision
- Assessing retinal conditions
- Looking for effects from a stroke, brain injury, or brain tumour
- Monitoring medicines that can sometimes damage the retina
- Assessing whether drooping eyelids interfere with vision
- Meeting certain driving, employment, or disability assessment requirements

## Who should have the test

Visual field testing is usually offered when your symptoms, eye examination, medical history, or another test suggests that more information is needed.

You may need testing if you have raised eye pressure, an unusual-looking optic nerve, known glaucoma, retinal disease, or a condition affecting the brain or visual pathways. It may also be used if you take a medicine that requires retinal monitoring.

Not everyone needs routine automated visual field testing. The most suitable test pattern and frequency depend on why you are being tested, your previous results, and your ability to complete the test reliably.

Young children and some people with physical, cognitive, or attention difficulties may need a shorter test, a different machine, or extra support.

## How to prepare

You can eat and drink normally. Coffee is usually allowed, and fasting is not required.

Take your usual medicines unless the clinic has given you specific instructions. Bring an up-to-date list of your medicines and any glasses you use for reading or distance vision. The machine may use a corrective trial lens instead of your glasses.

Try to arrive rested. The test requires concentration, so lack of sleep can make it harder. Tell the examiner if you have neck or back pain, difficulty pressing a button, severe dry eyes, or trouble keeping your head still.

Your pupils usually do not need to be dilated. If dilation is required for another examination at the same visit, the clinic may perform the visual field test first.

## What happens during the test

You sit facing a bowl-shaped machine with your chin and forehead supported. One eye is covered while the other looks at a central target.

Small lights appear in different places. You press a button whenever you see one, even if it is very faint. Some lights are deliberately too dim to see, so it is normal to have periods when you do not press anything.

Keep looking at the central target rather than searching for the lights. You can blink normally. The machine checks whether your eye stays in position and may occasionally show a light where you should not be able to see it. These checks help judge how reliable the result is.

The process is repeated for the other eye. Depending on the test, each eye may take several minutes. Ask for a pause if you are uncomfortable, tired, or losing concentration.

## Understanding your results

Results are often displayed as maps showing which areas responded normally and which required brighter lights or produced no response. Dark areas on a printout do not automatically mean permanent vision loss.

Automated reports may compare your responses with those of people of a similar age. They can include summary measurements such as mean deviation, which describes overall field sensitivity, and a visual field index, which estimates how much of the measured field remains. The meaning of these values depends on the machine, test pattern, and clinical context.

There is no single universal normal range. Interpretation varies by equipment, laboratory or clinic, age, sex, pregnancy status, medicines, eye conditions, and the reason for testing.

The pattern matters as much as the number. Glaucoma often causes particular patterns of

peripheral loss, while optic nerve, retinal, or brain conditions can produce different patterns. A visual field result does not identify the cause by itself.

## What affects the results

A result can look abnormal even when the machine is working properly and no new damage has occurred.

Important influences include:

Medicines that cause sleepiness or reduce attention can make the test harder. Pregnancy and age can also affect interpretation, although they do not usually prevent testing.

Tell the examiner when you need a break. A short pause is usually better than continuing with unreliable responses.

- Learning effect: Your first test may be less reliable because the task is unfamiliar
- Fatigue or poor concentration: Responses may become slower or less consistent
- Looking away from the target: Searching for lights can create false defects
- Pressing too often: Trying to anticipate lights can make the field look better than it is
- Wrong optical correction: Blur from an incorrect lens can reduce sensitivity
- Trial-lens position: The rim of the lens can block part of the field
- Cataract or a small pupil: Less light reaches the retina, causing widespread reduction
- Drooping eyelids or long eyelashes: These can obstruct the upper field
- Dry eyes: An uneven tear layer can temporarily blur vision
- Recent pupil dilation: A larger pupil and blurred near focus can affect some tests
- Head position or movement: Poor alignment can produce an artificial edge or defect

## Accuracy and limitations

Visual field testing is useful, but it is not perfect. There is no single percentage describing how often it finds or misses disease because accuracy changes with the condition, its stage, the machine, the test pattern, and the quality of your responses.

Early or small defects may be missed, particularly on a first test. A confrontation field test can miss subtle loss that automated perimetry detects. Conversely, fatigue, poor fixation, eyelid obstruction, or the wrong lens can create an apparent defect when no true defect is present.

The machine provides reliability indicators, but these do not prove that a result is correct. A test can appear technically reliable and still be affected by learning or concentration.

An unexpected abnormal result is often repeated before firm conclusions are made. Consistent change across several tests is generally more meaningful than a single result.

Visual field testing measures function: what you can see. Optical coherence tomography, or OCT, measures the structure of the retina and optic nerve. Eye examination, retinal imaging, eye-pressure measurement, and sometimes brain imaging may be better for answering different questions. These tests often complement rather than replace one another.

## Risks and complications

The test does not touch the eye and does not use radiation. It may cause temporary eye strain, tiredness, or frustration, but serious complications are not expected.

## What happens next

Your result may be discussed at the same visit or reviewed later with your other eye tests. If the test is normal but concern remains, you may be offered a repeat test or a different type of examination.

An uncertain or abnormal result often leads to routine repeat perimetry. Other possible tests include an optic nerve examination, OCT, retinal imaging, eye-pressure measurement, or neurological assessment. The next step depends on the pattern and whether it is new, stable, or changing.

Do not wait for a routine appointment if you suddenly lose part of your vision. A new curtain or shadow, especially with flashes or many new floaters, needs urgent same-day eye assessment. Sudden visual loss with weakness, facial drooping, severe imbalance, confusion, or difficulty speaking is an emergency; call your local emergency service.

## Common questions

Can I drink coffee before a visual field test?

Usually, yes. Coffee does not normally prevent testing. Follow any separate instructions if you are having other tests at the same appointment.

Does the time of day matter?

Usually not for a single diagnostic test. If you have repeated monitoring, using a similar time and test setup may make comparisons more consistent, especially if fatigue changes during the day.

Can I exercise beforehand?

Ordinary activity is unlikely to interfere. Avoid arriving exhausted after unusually strenuous exercise because fatigue and reduced concentration can affect your responses.

Can I wear my glasses or contact lenses?

Tell the examiner what you normally wear. You may remove glasses so the machine's trial lens can provide the correct focus. Contact lenses can often remain in place unless they are uncomfortable or your clinic advises otherwise.

What if I press the button when there was no light?

That happens and does not automatically invalidate the test. The machine measures these responses. Press only when you think you saw a light rather than trying to guess.

Why do I need the test repeated?

Performance often improves once the test is familiar. Repeating it can confirm whether an apparent defect is genuine and show whether an established defect is stable or changing.

## Sources

- European Glaucoma Society. Terminology and Guidelines for Glaucoma, 5th Edition . British Journal of Ophthalmology. 2021;105 Supplement 1:1-169.
- National Eye Institute. Glaucoma Tests: What to Expect . US National Institutes of Health.
- American Academy of Ophthalmology. Visual Field Test . EyeSmart patient education.
- Broadway DC. Visual field testing for glaucoma: a practical guide. Community Eye Health . 2012;25(79-80):66-70.
- National Institute for Health and Care Excellence. Glaucoma: Diagnosis and Management . NICE guideline NG81. Updated 2022.