

03 / THE DETAILED GUIDE

Understanding the assessment

How the test works, what is measured
and what the results can tell you.

What happens during the assessment

Saccade records how your eyes respond to visual prompts. The research explores the timing, direction and accuracy of those responses, and how consistently they can be measured.

What the visit involves

Staff fit the headset, check calibration, and guide you through each task. You can rest between tasks or stop at any point.

The five tasks

- **Hold** Keep looking at a still dot.
- **Look toward** Look at the new dot when it appears.
- **Look away** Look in the opposite direction of the dot.
- **Change timing** Look toward the dot as the centre dot changes.
- **Follow** Track a dot moving smoothly across the screen.

Eye-movement features

14 features across four categories of eye movement.



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|-----------------------------------|------------------------------------|
| 01 Immediate direction-error rate | 08 Look-toward latency, median |
| 02 Corrected-error rate | 09 Look-toward latency variability |
| 03 Correct latency, median | 10 Look-toward gain |
| 04 Correct latency variability | 11 Target accuracy |
| 05 First-saccade gain | 12 Look-away latency cost |
| 06 Endpoint error / final gain | 13 Fixation stability |
| 07 Omission rate | 14 Gap / overlap effect |

What the four groups measure

01-07

Looking away

Following the instruction to look away from a dot: the direction of the response, its timing, and where the eyes land.

08-11

Looking toward

The timing and accuracy of looking toward a dot. This gives a comparison with the look-away task.

12

Comparing two tasks

The difference in response time between looking away and looking toward, within the same person.

13-14

Holding and releasing gaze

How steadily the eyes hold their position, and how the timing of the centre dot affects the next response.

Definitions and units: appendix, pages 6-9.

What the results can tell you

The assessment records how your eyes respond. Your clinician reviews the available measurements and recording quality alongside your health history.

Read the measures together

The 14 features describe different parts of a response: timing, direction, accuracy and steadiness. The useful question is how these fit together, not whether one number falls outside a range. One unusual value is not a diagnosis.

Age comparisons and percentiles

A percentile shows where a result sits within a reference group of similar age; it is not a percent-correct score or a disease risk. Age-based ranges are not yet available in the current reporting system.

Following changes over time

Repeat visits can build a record to discuss with your clinician. Sleep, medication, vision and practice can change a result, so a difference alone does not show that a longevity routine is working.

Investigational assessment. Not a diagnostic test or a validated measure of biological age. Research reference: page 9.

Look-away responses

01 Immediate direction-error rate

ELIGIBLE RESPONSES / %

How often the first movement goes toward the dot when the instruction was to look away. The denominator is usable responses, not every dot shown.

02 Corrected-error rate

DIRECTION ERRORS / %

Of the initial direction errors, how many are followed by a correction. This describes what happens after a slip; it is not the overall accuracy rate.

03 Correct latency, median

CORRECT LOOK-AWAY TRIALS / MS

The middle response time, from the new dot appearing to the start of a correct eye jump. Only correctly performed trials enter this measure.

04 Correct latency variability

RESPONSE-TIME SPREAD / MS

How much correct look-away response times vary from trial to trial. A typical response time and its consistency describe different parts of the recording.

Movement and accuracy

05

First-saccade gain

MOVEMENT / REQUIRED DISTANCE

How far the first jump travels, divided by the required distance. A ratio of 1.0 means the requested distance; it is not a health score or clinical target.

06

Endpoint error / final gain

POSITION / DEGREES OR RATIO

Where the eyes finish after any correction, compared with the intended mirror location. The chosen definition reports position error or a final distance ratio.

07

Omission rate

NO QUALIFYING RESPONSE / %

How often an eligible trial has no qualifying eye jump within the defined time window. A missing response is not automatically a lapse of attention.

08

Look-toward latency, median

LOOK-TOWARD TRIALS / MS

The middle time taken to begin looking toward a new dot. It provides a comparison for the additional demands of the look-away task.

Look-toward responses

09

Look-toward latency variability

RESPONSE-TIME SPREAD / MS

How much look-toward response time varies across trials. This helps describe consistency in the simpler task, alongside its median response time.

10

Look-toward gain

MOVEMENT / TARGET DISTANCE

The distance travelled by the eye divided by the distance to the target. It describes the size of the movement, separately from how quickly it begins.

11

Target accuracy

ACCEPTED TARGET LANDINGS / %

The percentage of counted responses that land within the target acceptance window. The window must be defined before interpreting the result.

12

Look-away latency cost

MEASURE 03 MINUS 08 / MS

The difference between median correct look-away time and median look-toward time. This compares the two tasks within one person.

Holding and shifting gaze

13

Fixation stability

HOLDING STILL / DEGREES SQUARED + COUNT

The area covered by gaze during a hold, described by a contour ellipse, alongside the number of brief intrusive jumps. These describe stability in different ways.

14

Gap / overlap effect

OVERLAP MINUS GAP LATENCY / MS

The response-time difference when the centre dot remains briefly versus disappearing early. This explores how the timing of releasing fixation changes the response.

Research reference

Opwonya et al. Saccadic Eye Movement in Mild Cognitive Impairment and Alzheimer's Disease: A Systematic Review and Meta-Analysis. *Neuropsychology Review* 32, 193–227 (2022).

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This research describes differences between groups; it does not validate this panel for individual diagnosis.