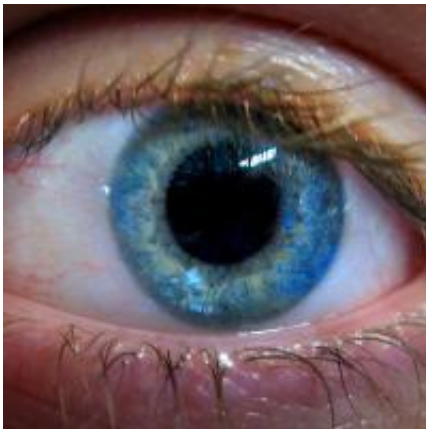


# Scientists discover a distinct new way in which we move our eyes

August 23 2016

---



We probably do it every day, but scientists have only just discovered a distinct new way in which we move our eyes.

The team from the University of Tübingen in Germany assessed the eye movements of 11 subjects using tiny wires attached to the cornea and with infrared video tracking. In results published in *eLife*, they discovered a new type of eye movement that is synchronised with [blinking](#).

The movement they discovered helps to reset the eye after it twists when viewing a rotating object. It is like avoiding tiny rotations of a camera to stabilise the image we perceive. We don't notice the eye resetting in this

way because it happens automatically when we blink.

"We were really surprised to discover this new type of eye movement and it was not what we had anticipated from the experiment," says lead author Mohammad Khazali.

"We had expected to find that another, already well-known type of eye movement is synchronized to blinking."

Although it is brief, blinking creates an interruption in our visual perception. We spend up to a tenth of our waking hours blinking but hardly notice it. It serves an essential role in lubricating the eye and may even provide the brain with small, frequent mental breaks.

The scientists sought to investigate whether a reflexive, involuntary eye movement called torsional optokinetic nystagmus (tOKN) occurs at the same time as blinking. The theory was that this reflex also creates a break in the visual system so synchronising them minimises downtime.

The subjects' [eye movements](#) were tracked as they viewed a rotating pattern of dots. As their eyes twisted to follow the dots, they frequently reset, via tOKN, to avoid moving beyond the mechanical limits of the eye muscles. However, this resetting was imperfect and the eyes gradually twisted until the muscles couldn't twist any more. This varied between subjects from three to eight degrees of rotation.

Once they reached their maximum, the eyes reset so they were no longer twisted at all. This happened at the same time as blinking. The scientists have called this newly-discovered movement blink-associated resetting movement (BARM).

"The eye's sharpest vision is enabled by a spot on the light-sensitive sheet of the retina called the fovea and this needs to stay balanced to ensure

objects of interest can be scrutinised in an optimum way," says Khazali.

The frequency and size of the movement is determined by how far the eyes have deviated from a neutral position. It helps to reduce strain in the eyes as they move to assess the world around us. In further experiments, the scientists discovered that it even occurs when the [eye](#) is not tracking a rotating object.

"To discover such a ubiquitous phenomenon in such a well-studied part of the human body was astonishing to us and we're very grateful to the volunteers who took part in the study," says Khazali.

**More information:** Mohammad Farhan Khazali et al, A new motor synergy that serves the needs of oculomotor and eye lid systems while keeping the downtime of vision minimal, *eLife* (2016). [DOI: 10.7554/eLife.16290](#)

Provided by eLife

Citation: Scientists discover a distinct new way in which we move our eyes (2016, August 23) retrieved 28 April 2024 from <https://medicalxpress.com/news/2016-08-scientists-distinct-eyes.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--