

# Optimizing the Wilkins Egg and Ball Test: Overcoming Limitations for Accurate Astigmatism Detection [Letter]

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## Dear editor

We thoroughly reviewed Gal et al's article<sup>1</sup> on "Assessment of a Clinical Test for Detection of Alteration in Visual Perception Due to Astigmatism" in the *Clinical Ophthalmology*. The study by Gal et al evaluates the effectiveness of the Wilkins Egg and Ball Test (WEBT) in detecting alterations in visual perception due to uncorrected astigmatism across different cohorts. While the study identifies limitations in the WEBT model, we believe there are additional considerations regarding the reliability, validity, and potential ceiling/floor effects that warrant discussion.

Firstly, the manuscript overlooks the inter-rater reliability of the WEBT which refers to the consistency of results when administered by different examiners.<sup>2</sup> This is crucial as variability in interpretation among different testers could impact the consistency and generalizability of the test results. Ensuring inter-rater reliability is essential for accurate data collection and valid conclusions.

Moreover, the presence of ceiling and floor effects in the WEBT is not addressed. A ceiling effect might occur if the test is too easy or if the participants' visual perception is minimally affected by uncorrected astigmatism. Conversely, a floor effect might occur if the test is too challenging or if the participants' visual perception is severely impaired by uncorrected astigmatism.<sup>3</sup> These effects could hinder the test's sensitivity in detecting subtle changes in visual perception, particularly in individuals with extreme levels of astigmatism.

Furthermore, the study does not assess the test-retest reliability of the WEBT, an important psychometric property needed to achieve validity and reliability standards.<sup>4</sup> Without evaluating test-retest reliability, it remains unclear whether observed changes in visual perception are due to true differences in astigmatism or simply measurement variability. Ensuring test-retest reliability is essential for establishing the validity and consistency of the test results.

Lastly, the manuscript overlooks the validity of the WEBT across different age groups. Presbyopia and changes in cognitive function are two examples of characteristics that can cause variations in visual perception with age,<sup>5</sup> which could have an impact on the test's accuracy and suitability for use in younger or older populations. It is imperative to take into account the validity of the test in a variety of age groups in order to guarantee its efficacy and applicability in clinical settings.

While the Gal et al study sheds light on how well the WEBT detects changes in visual perception associated with astigmatism, it is deficient in addressing important issues like validity across age groups, ceiling/floor effects, inter-rater reliability, and test-retest reliability. Addressing these limitations would strengthen the overall reliability and applicability of the WEBT model in clinical settings.

## Disclosure

The authors report no conflicts of interest in this communication.

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