

Binocular Vision

Stereopsis tests

Stereoscopic tests help to establish that binocular vision is present and determine its normality. This is particularly useful in younger children where it is often difficult to obtain reliable results with other tests. When a good level of stereopsis is demonstrated, it is very unlikely that there is any significant binocular vision problem or amblyopia.

There are several commercially available stereoacuity tests that principally differ in whether they are contour or random-dot stereotests, and thus whether they assess global or local stereopsis. Global stereotests do not have any contours and so no form perception can occur until the horizontal retinal disparities have been correlated across a substantial area. These tests are more demanding of good binocular vision. The stereoacuity values for any test should be taken as specific for the particular test used because the different tests vary in their cognitive demands and so do not give interchangeable results. Additionally, any calculation of stereoacuity would need to consider the working distance and separation of the two eyes.

Tips for stereopsis tests

- Use test appropriate for age and cognitive abilities of patient
- Random-dot testing of global stereopsis is preferable to contour tests
- Ensure that an appropriate refractive correction is worn
- Normal values are specific to each stereotest.

Name of test	Method of separating images seen by each eye	Working distance	Level of stereoacuity	Other details
Lang I	• Cylindrical gratings (24 per cm) superimposed on a series of random dots	40cm	Cat - 1200" Star - 600" Car - 550"	• Monocular cues present if card is tilted relative to the line of sight • Ideal for screening in young children
Lang II	• No goggles required		Moon + Star - 200" Car - 400" Elephant - 600"	
Frisby	• Random patterns of shapes printed on perspex sheets separated by 6mm, 3mm + 1mm • No goggles required	Variable 40cm - 80cm	600" - 15"	• Monocular cues apparent with movement of the patient's head and/or plate, or if held at an oblique angle
Titmus	• Superimposed images polarised 90 degrees to one another • Cross polarised filter goggles required	40cm	Fly - 4000" Animals - 400"-100" Circles - 800"-40"	• Strong monocular cues with horizontally separated images evident without goggles
TNO	• Red/green randomly generated dots with areas of horizontal disparity • Red/green goggles required	40cm	Plates 1-3 - screening Plates 5-7 - 480" - 15"	• Devoid of monocular cues