

Ocular Motility:

Motility Exam

The motility exam determines how one eye moves in conjunction with the other. Several tests provide this information. First the examiner evaluates motility by having the patient follow a moving object to check the nine positions of gaze. As the object is moved, the examiner observes the patient's eyes to determine function of the extraocular muscles and reveal any manifest deviations.

Hirschberg test

The examiner shines a small light into the patient's eyes at a distance of 33cm. Note where the light falls. If the patient has no strabismus, the corneal light reflection appears in symmetrical parts of the patient's pupil.

If strabismus is present, the corneal light reflection appears as asymmetric. An estimate of misalignment can be determined by calculating that for each 1mm of corneal light asymmetry reflection corresponds to 7° (or 15 prism diopters) of ocular deviation of the visual axis.

Krimsky test

The Krimsky test is similar to the Hirschberg test in that it is conducted by observing the corneal light reflection. However, with the Krimsky test, use of prisms is used to determine the specific amount of prism diopters needed to correct the ocular deviation.

Prisms have an apex (the "point") and a base (the "fat part"). The apex points towards the deviation. The base is points to the direction the eye needs to move to be in "normal" position. The more the eye is turned, the greater the prism power required to correct the deviation.

Cover-uncover Test [Reveals tropia, or a manifest (obvious) deviation]

Step 1: Have patient fixate on distant target.

Step 2: Use the occluder to COVER one eye at a time.

Step 3: When one eye is covered (keeping the occluder in place), observe the other eye. Only observe the fixation behavior of the non-occluded eye as you slowly COVER, then UNCOVER, the opposite eye.

Step 4: Repeat this procedure several times.

Step 5: Check the opposite eye in the same fashion.

Step 6: If the non-occluded eye moves to fixate on the target, a manifest deviation is present in the form of a tropia. The occluded eye will not move in this case.

Step 7: Tropia should be documented in the patient's chart.

Or...

Step 6: If the non-occluded eye does not move to fixate on the target, no tropia is present. Then proceed to the cross-cover test.

Cross-cover Test [Reveals phoria, or a latent (hidden) deviation]

Step 1: Have patient fixate on distant target.

Step 2: The occluder is placed over one eye and the fixation behavior of the non-occlude eye is observed.

Step 3: The occluder is moved across the face to cover the opposite eye. When doing so, the re-fixation behavior of the eye being uncovered is observed.

Step 4: The occluder is next moved back across the face to the opposite eye while observing the re-fixation behavior of the eye being uncovered.

Step 5: Repeat this procedure several times.

Step 6: If you observe re-fixation movements, a phoria is present.

Step 7: Phoria should be documented in the patient's chart.

Or...

Step 6: If you do not observe any re-fixation movements, then no phoria is present.

Step 7: Orthophoria should be documented in the patient's chart.

Determining the direction of the deviation:

Tropias and phorias are categorized according to the position of the deviated eye.

Note: the deviation is where the eye turn starts. So, it is the direction that the eye deviates from normal. (Do not confuse it with which direction the eye has to move in order to find its normal position.)

Exo- deviation: deviation is outward, towards the temple.

Eso- deviation: deviation is inward, towards the nose.

Hyper- deviation: deviation is upwards, toward the forehead.

Hypo- deviation: deviation is downwards, towards the chin.