GUIDE TO COMMONLY USED DIAGNOSTIC VESTIBULAR TESTS

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Test	Method	Information provided	Issues for consideration
Air Calorics	Both ears stimulated equally to elicit nystagmus from the vestibulo-ocular reflex (VOR)	Unilateral weakness (UW) calculation gives peripheral side-specific information. Indicators for central signs include an inability to fixate or unexpected beat direction	Cannot be performed on ears with excessive wax. UW cannot be calculated in ears that have undergone middle ear surgery or have middle ear effusion. Low frequency VOR measured, thus testing unnatural head movements.
Rotational Chair testing (SHA)	Patient is rotated using a constant stimulus at 4 different frequencies. Test of VOR	Results may determine if pathology is peripheral or central. Provides measure of compensation	Not ear specific
Rotational Chair testing (Step Velocity)	Patient is rotated in one direction at one speed, using a constant stimulus. Test of VOR	Results may determine if pathology is peripheral or central	Not ear specific
ENG (gaze, saccades & smooth pursuit)	Patient's eye movements are recorded when responding to a stimulus which is moving	Results can support central pathology findings (E.g. saccadic smooth pursuit)	Can be affected by laziness, fatigue, tranquilisers and alcohol
Hallpike	Record nystagmus with head turned when positioned into the supine	Torsional nystagmus consistent with displaced crystals floating in semicircular canals, tests specifically for BPPV	Nystagmus not always seen during the test, quickly fatigues in some patients
Auditory Brainstem Response (ABR)	Test records integrity of the connection between the cochlear and the 8th nerve as well as nerve bodies found along this pathway. Shows function to the brainstem level and is ear specific. Requires the patient to be relaxed/asleep	Abnormal interaural latencies or waveforms can support the presence of a retrocochlear lesion, vestibular schwannoma	Reliant on neural synchrony. Results become uninterpretable once hearing levels are at 70dB or worse at 3 and 4kHz
Vestibular Evoked Myogenic Potential (VEMP)	Neural response recorded from the contraction of the sternocloidmastiod muscles (neck)	Information about saccule/inferior nerve function, when responses are present bilaterally	Muscle response quickly fatigues, especially in older patients
Electrocochleography (ECoG)	Records neural integrity at cochlear level only. Requires the patient to be relaxed/asleep.	Results presented in a ratio of SP (pre-neural) and AP (Wave 1 of the ABR). Ratio of >0.5 may be consistent with endolymphatic hydrops	Results become uninterpretable once hearing levels are at 70dB or worse at 3 and 4kHz
Static Bias	Patient's are placed in a darkened room. We record their attempts to horizontally align a bar which is randomly displaced.	Results outside the normal range supports utricle dysfunction. Can show compensation over time.	Not ear specific