

VESTIBULAR FUNCTION TESTING

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SPEAKER DISCLOSURE

No Financial Relationships to Disclose

VESTIBULAR FUNCTION TESTING

- ▶ AFTER considering/excluding:
 - ▶ medication effects
 - ▶ orthostatic hypotension
 - ▶ anemia, hypoglycemia or thyroid dysfunction
 - ▶ checking for and treating BPPV
- ▶ **The MOST helpful diagnostic tests** in identifying (or excluding) the cause of 'dizziness'
 - ▶ Videonystagmogram (VNG) - the only test offered at *most* facilities
 - ▶ Rotary Chair
 - ▶ VEMP (Vestibular Evoked Myogenic Potential)
 - ▶ Audiogram

THE VNG

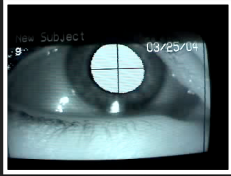
ROLE OF THE VNG

- ▶ Investigate vestibular pathology
- ▶ Quantify nystagmus response
- ▶ Allow measurement of nystagmus when eyes closed (no fixation)
- ▶ Allow permanent record of eye movements
- ▶ Caloric tests allow for ear specific information
- ▶ Diagnosis of BPPV

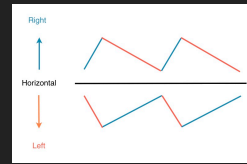
WHAT ABNORMALITIES ARE IDENTIFIED?

- ▶ Spontaneous nystagmus
- ▶ Positional/Positioning nystagmus
- ▶ Gaze-evoked nystagmus
- ▶ Abnormal responses to caloric stimulation
- ▶ Failure of fixation suppression
- ▶ Oculomotor disorders

VIDEONYSTAGMOGRAM



RECORDING EYE MOVEMENTS

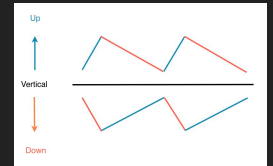


Right-beat nystagmus

Left-beat nystagmus

Up-beat nystagmus

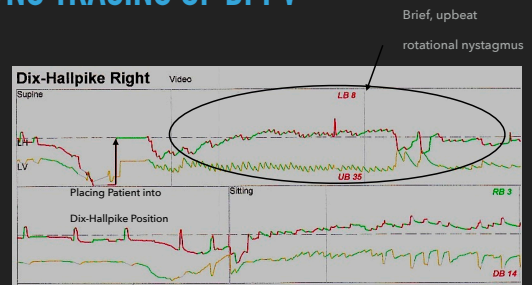
Down-beat nystagmus



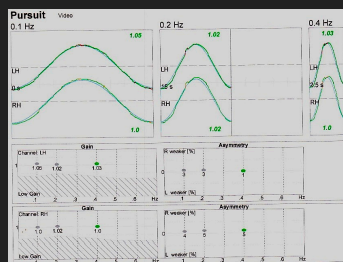
VNG SUBTESTS

- ▶ Positional Testing -7 positions
- ▶ Oculomotor Testing
 - ▶ Pursuit
 - ▶ Saccades
 - ▶ Optokinetic Nystagmus
- ▶ Caloric Testing

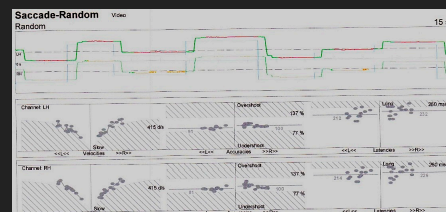
VNG TRACING OF BPPV



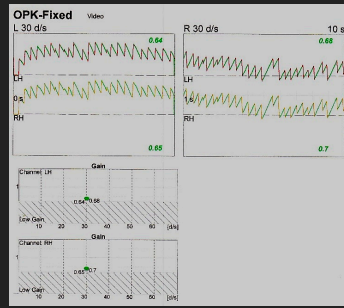
PURSUIT



SACCADES



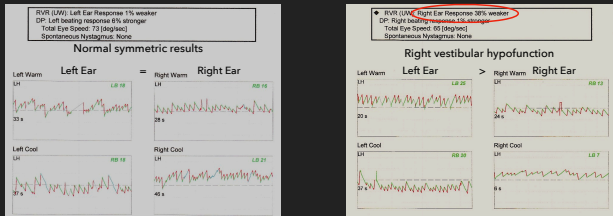
OPK



(AIR) CALORIC TESTING



AIR CALORIC - COWS



ROTARY CHAIR TESTING

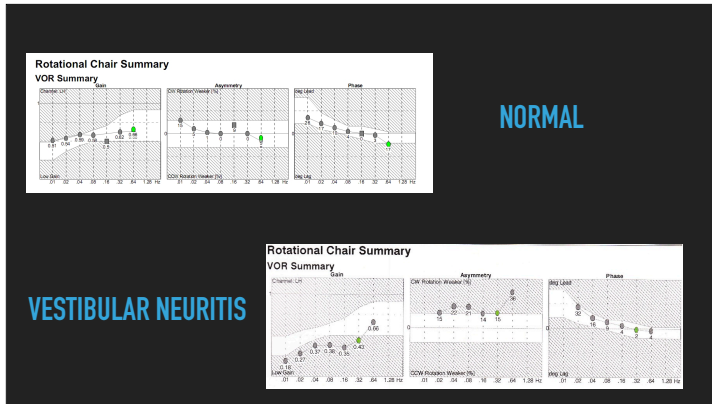
ROLE OF ROTARY CHAIR EVALUATION

- ▶ Evaluate VOR at frequencies more similar to daily activities- assessing high freq VOR
- ▶ Verify bilateral weakness found in caloric testing, including ice calorics
- ▶ Determine level of central compensation for a vestibular hypofunction
- ▶ Testing VOR in patients that caloric testing is not possible/accurate (atypical anatomy, recent middle ear surgery, pediatric population, etc)



ROTARY CHAIR TESTING





VEMP

VESTIBULAR EVOKED MYOGENIC POTENTIAL

CLINICAL UTILITY OF CERVICAL TEMP TESTING

- Assesses the inferior division of Vestibular Nerve
- Inferior Division Vestibular Neuritis (5% of vestibular neuritis cases)
- Superior Canal Dehiscence Syndrome

- ### C VEMP PATHWAY OF EXCITATION
- Loud stimulus (sound pressure) excites sensory tissue in saccule
 - Impulse travels down inferior vestibular nerve and reaches the vestibular nucleus
 - Impulses then sent to SCM via the medial vestibulospinal tract

