

## Overview of Examination of the Dizzy Patient

Timothy C. Hain, MD

Northwestern University, Chicago  
t-hain@northwestern.edu

## Goals of the Exam

- Quantify functional status
- Identify medical problems
- Quantify vestibular deficit
- Quantify neurological deficit
- Identify psychological problems

## Strategy of the exam

- Order for your convenience
  - I. Standing
  - II. Sitting
  - III. Frenzel basic tests
  - IV. Special tests
- Save potentially disturbing tests (e.g. vestibular testing) for the end
- Expand exam as needed based on history or previous examination

## I. Standing

- Gait and Romberg
- Motor power in lower extremities
- Blood pressure/Pulse standing

## Romberg



This is eyes-open regular Romberg (EORR).

It is best to use eyes closed (ECTR)

Normal persons should be able to stand in ECTR for 6 sec.

Head extended ECTR for 6 seconds is in upper 25<sup>th</sup> percentile

<http://www.opt.pacificu.edu/ce/catalog/COPE9462/FIG24.JPG>



## Standing -- Motor power

- Is patient's unsteadiness due to weakness ?
  - Stand on heels and toes
  - Deep knee bend
- Tell patient you are checking for power.
- You also should be checking for consistency – if can't do Romberg, but can do this, not inconsistency

## Standing -- Blood pressure/Pulse

- Measure BP/pulse



## II. Sitting exam (without goggles)

- Cranial Nerve exam
- Upper ext. Neurological, DTR, Toe signs
- Vibration at Ankle

## II. Essential Cranial Nerves

- Vision
- Oculomotor
- Hearing

## II. Vision

- Visual acuity
  - Is patient (nearly) blind ?
  - Can patient see with both eyes ?



## 8<sup>th</sup> nerve: Dynamic Illegible 'E' test( DIE test)

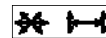
- Distance vision with head still
- Distance vision with head moving
- Normal: 0-2 lines change.
- Abnormal: 4-7 lines change



## II. Oculomotor

Does patient have double vision, nystagmus ?  
Can patient track ?

- Range, alignment and Gaze
- Saccades
- Pursuit

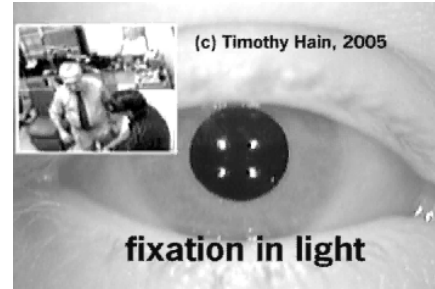


## II. Gaze Testing

- Move finger to the limits of lateral gaze (bury sclera) – if can't bury, may have oculomotor palsy
- Move finger to limits of vertical gaze
- Do eyes reach end-gaze ?
- Is there end-gaze nystagmus ?

## Gaze nystagmus

- Alexander's Law



## II. Hearing -- 8<sup>th</sup> nerve

- Screen Hearing
  - Rubbed fingers (high frequencies)
  - Tuning forks (Good but slow)



## Motor

- Deep tendon reflexes
- Babinski sign
- Tremor
- Tone



## Coordination

- Finger to nose (FTN), fine finger movements
- Rapid alternating movements (RAM)

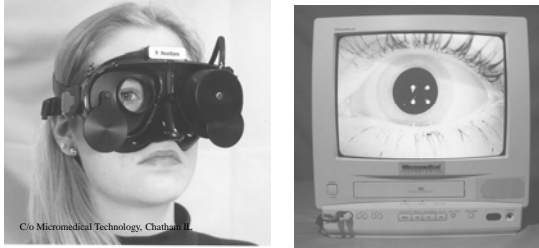


## Sensory Examination

- Vibration sense (ankles)



### III. Frenzel Goggles (Video is best)



### Optical Frenzel Goggles



- Inexpensive (about \$500)
- Portable – take on the road
- A little limited – can't do vibration, head-forward or cross-cover
- Can get hot, bulbs burn out and break

### Frenzel – routine test Spontaneous Nystagmus Test

- Observe nystagmus in light and dark
  - Acute vestibular disorders have strong horizontal “jerk” nystagmus.
- Many other types of nystagmus



### Frenzel -- Routine Vibration

- Method: Apply 60-120 hz vibration to SCM, first one side, then the other. Shower massagers work well for this and are inexpensive.
- Use Video Frenzel goggles – optical Frenzels don't work
- Compare nystagmus before and during



### Vibration Induced Nystagmus

- Unidirectional horizontal nystagmus strongly suggests contralateral vestibular lesion.



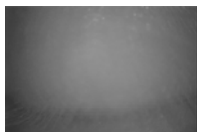
### Frenzel -- Routine Positional Testing

- Dix-Hallpike testing
  - For BPPV
- Situational testing
  - Lateral canal
  - Head vs. Body position testing (prone)



## IV Frenzel – Situational Head-shaking test

- Method: 20 cycles of horizontal head rotation
- Frenzel goggles to monitor nystagmus prior to and following head-shaking.
- Positive – substantial change in nystagmus following head-shaking. Usually beats away from bad ear.



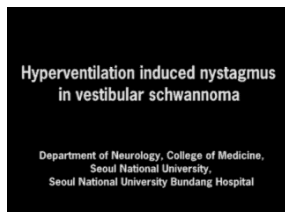
## IV Frenzel Situational Tests Pressure sensitivity

- Valsalva test
  - 10 seconds of exhale against closed glottis (to increase CSF pressure)
  - Sensitive



## IV Frenzel Situational Tests: Hyperventilation

- 30 seconds of brisk HVT
- Exam for change in nystagmus
  - Irritable vestibular nerve (tumor, v. neuritis)
  - Seizure (very rare)
  - Anxiety (dizzy, no nystagmus)



## More details

Hain, T.C. Approach to the patient with Dizziness and Vertigo. Practical Neurology (Ed. Biller), 2002, 2007. Lippincott-Raven

## More movies

[www.dizziness-and-balance.com](http://www.dizziness-and-balance.com)