



OFFICE OF THE DEAN

## Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,  
PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P-II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

**Ref. No. SLIMS/Dean Off/VAC/024**

**Date:03/09/19**

**From**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

**To**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

Respected Sir

**Sub:** Request for permission and approval of Syllabus for certificate course (Value Added course) for the academic year 2019-20 - Reg  
**Ref:** Requesting letter received from Departments  
\*\*\*\*\*

With reference to the above, herewith forwarding the proposed list of Value-added courses for necessary permission and approval of syllabus to conduct the same.

This is for your kind information and needful action.

Thankingyou

Yours faithfully

[DEAN]

**DEAN**  
Prof.K.BALAGURUNATHAN,M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

**Encl's:**

1. Requesting letter received from department
2. Syllabus of thecourse
3. Details of faculty handlingcourse

**Sri Lakshmi Narayana Institute of Medical Sciences,  
Puducherry**

**VALUE ADDED COURSE : ENG-An modern era for vertigo evaluation**

**COURSE CO-ORDINATOR DETAILS**

**Faculty Name:** Dr.R.Nithish Timothy

**Email ID:**entslims@gmail.com



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Ref. No. BHIER/ VAC/B-02**

**Date:05.09.2019**

**From**

The Registrar,  
Bharath Institute of Higher Education and Research,  
Chennai - 600073.

**To**

The Dean  
Sri Lakshmi Narayana Institute of Medical sciences,  
Pondicherry – 605502

Sir / Madam,

**Sub:** Approval of Syllabus to conduct certificate course (Value Added course) for the academic year 2019-2020 – Reg.

**Ref:** Ref. No. SLIMS/Dean Off/VAC /024 Dated: 03.09.2019

\*\*\*\*\*

With reference to the above, it is to inform that the proposal submitted to conduct Value Added Course has been accepted and approved by BIHER, council meeting. List of the VAC are mentioned below for the academic year 2019– 2020. The abstract of the VAC course completion detail should be submitted to the Registrar office.

Thanking you

Yours faithfully



REGISTRAR



OFFICE OF THE DEAN

## **Sri Lakshmi Narayana Institute of Medical Sciences**

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY - 605 502.

[ Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME ( P -II ) dt. 11/07/2011 ]

[ Affiliated to Bharath University, Chennai - TN ]

### **Circular**

07/09/2019

**Sub: Organising Value-added Course: ENG-An modern era for vertigo evaluation reg.**

With reference to the above mentioned subject, it is to bring to your notice that SLIMS, **Bharath Institute of Higher Education and Research**, is organising “**ENG-An modern era for vertigo evaluation**”. The course content and registration form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 15/09/2019. Applications received after the mentioned date shall not be entertained under any circumstances.

DEAN

**DEAN**  
Prof. K. BALAGURUNATHAN, M.S  
(General surgeon)  
SRI LAKSHMI NARAYANA  
INSTITUTE OF MEDICAL SCIENCES  
OSUDU PONDICHERRY

Encl: Copy of Course content

## VALUE ADDED COURSE

### 1. Name of the programme & Code

ENG-An modern era for vertigo evaluation – A value added course  
for the medical students.  
& ENT 11

### 2. Duration & Period

30 hrs & Sep 2019-Dec 2019

### 3. Information Brochure and Course Content of Value Added Courses

*Enclosed as Annexure- I*

### 4. List of students enrolled

*Enclosed as Annexure- II*

### 5. Assessment procedures:

Pre test and post test which includes 10 mcqs - *Enclosed as Annexure- III*

### 6. Certificate model

*Enclosed as Annexure- IV*

### 7. No. of times offered during the same year:

1 time Sep 2019- Dec 2019

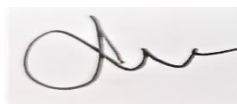
### 8. Year of discontinuation:2020

### 9. Summary report of each program year-wise

Value Added Course- Sep 2019- Dec 2019					
Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	ENT 11	ENG-An modern era for vertigo evaluation	1. Dr. Venkataraman 2. Dr. S. Ganesh	3 <sup>rd</sup> year MBBS students	16 students & 2019

### 10. Course Feedback

*Enclosed as Annexure- V*



**RESOURCEPERSON**

1. Dr. R. VENKATARAMANAN
2. Dr. S. GANESH



**COORDINATOR**

**Dr. R. NITHISH TIMOTHY**

## **COURSE PROPOSAL**

### **1. NAME OF THE PROGRAMME**

ENG-Anmodern era for vertigo evaluation– A value added course for the medical students.

### **2. AIM**

Training the students to provide hands on experience on Electronystagmography.

### **3. OBJECTIVES**

a) To teach the students how to connect the ENG leads and interpret the results in various disease patterns

### **4. METHODOLOGY**

Students who are interested in participating in value added course are enrolled and the course is conducted for them during the non college hours for a period of 30 hours from Sep 2019 – Dec 2019 . This course is conducted every 6 months.

**Course Audience: 3<sup>rd</sup> year MBBS students**

**Course Coordinator: Dr.R.Nithish Timothy**

**Course Faculties with Qualification and Designation:**

**1.Dr. R. Venkataramanan**

**2.Dr. S.Ganesh**

### Schedule followed during the course

No	Topic	Title	Duration	Date and time
1	ENG-An modern era for vertigo evaluation	Introduction & Learning outcomes of electronystagmography	3hrs	4pm-6pm(20/9/19),4pm-5pm(26/9/19)
		Vestibular reflexes	4hrs	4pm-6pm(30/9/19),4pm-6pm(5/10/19)
		Fundamentals of electronystagmography	5hrs	4pm-6pm(10/10/19),4pm-6pm(16/10/19),4pm-5pm(20/10/19)
		Electrode placement and description of the procedure	3hrs	4pm-6pm(27/10/19),4pm-5pm(2/11/19)
		Clausens butterfly chart	3hrs	4pm-6pm(9/11/19),4pm-5pm(14/11/19)
		Demonstration of ENG lead placement and interpretation of the various results	6hrs	4pm-6pm(19/11/19),4pm-6pm(23/11/19),4pm-6pm(27/11/19)
		Hands on experiance of ENG lead placements and interpretation ofthe results	6hrs	4pm-6pm(30/11/19),4pm-6pm(4/12/19),4pm-6pm(9/12/19)
		TOTAL	30HRS	

REFERENCE BOOKS: 1) SCOTT BROWN 8th edition

2) ANIRBAN BISWAS 5th edition

# *ELECTRONYSTAGMOGRAPHY*



HANDBOOK  
of  
**Balance Function  
Testing**

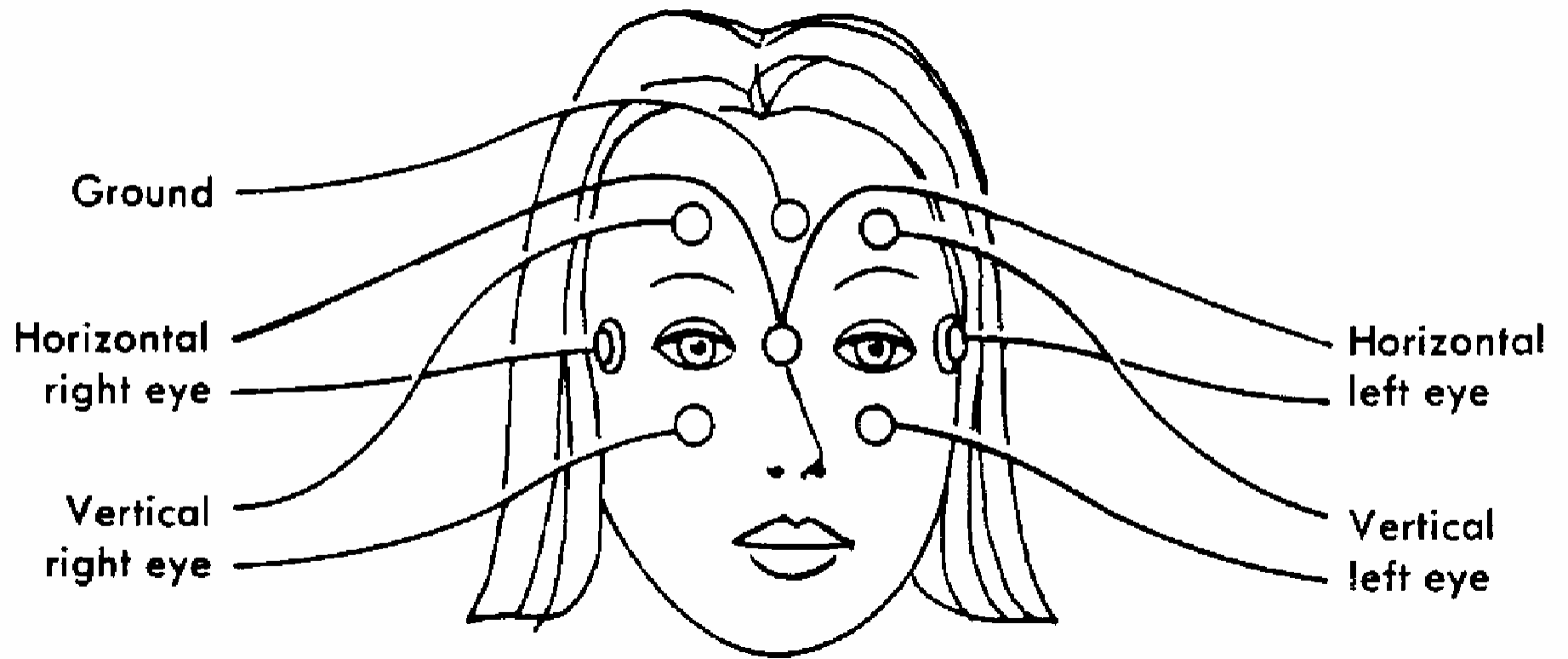
Gary P. Jacobson  
Craig W. Newman  
Jack M. Kartush

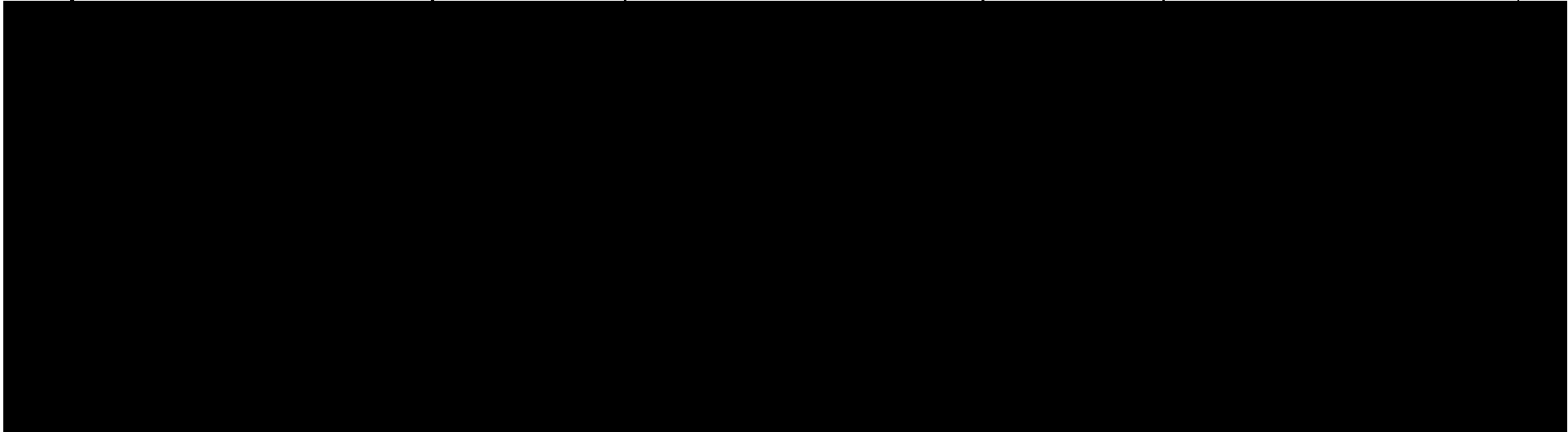
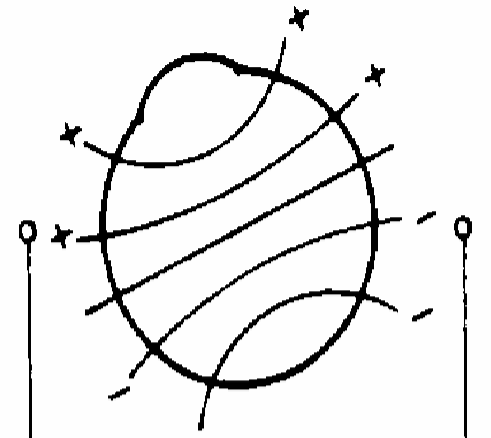
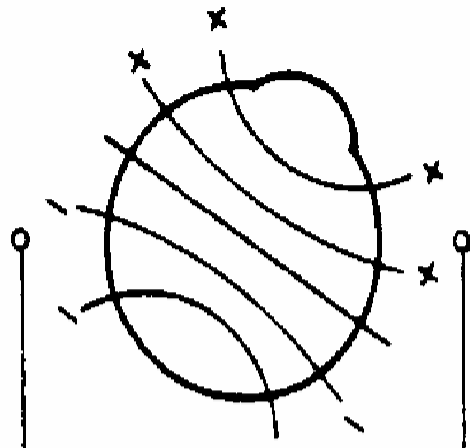
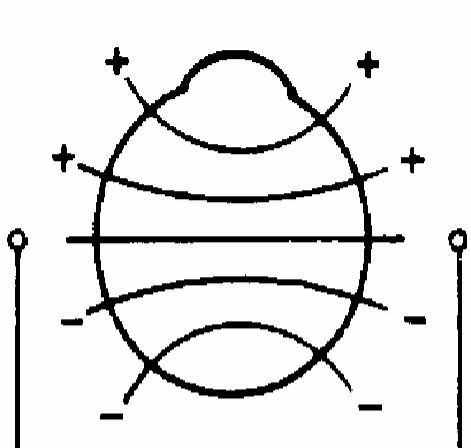


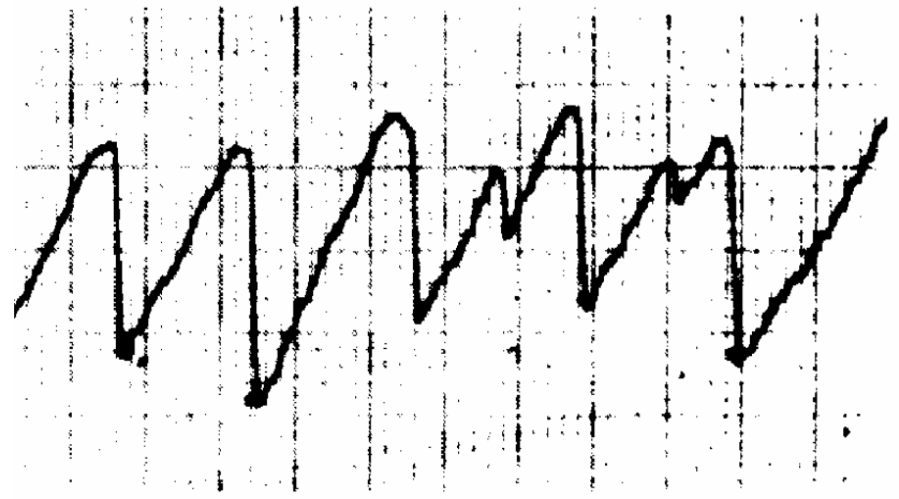
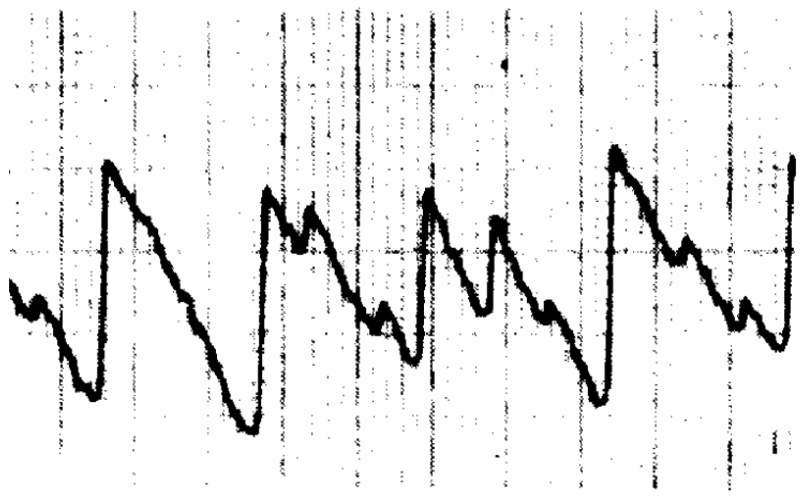
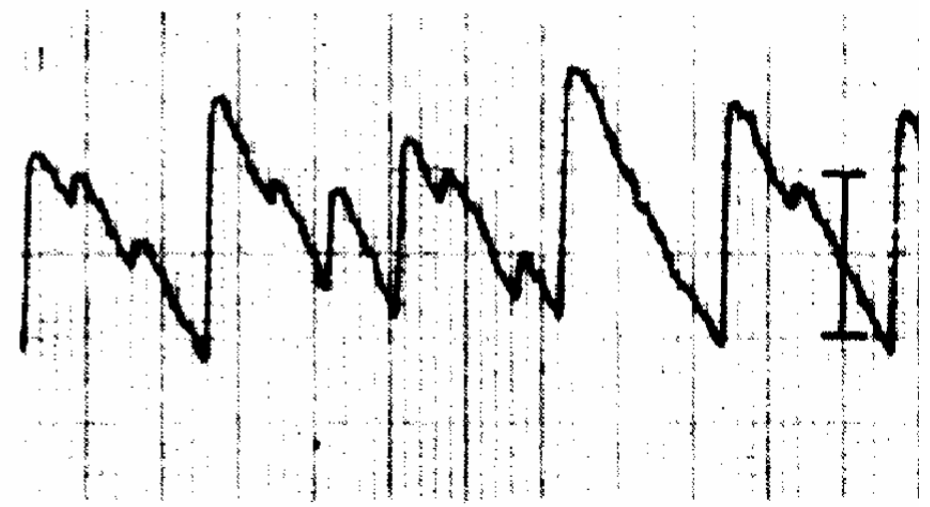
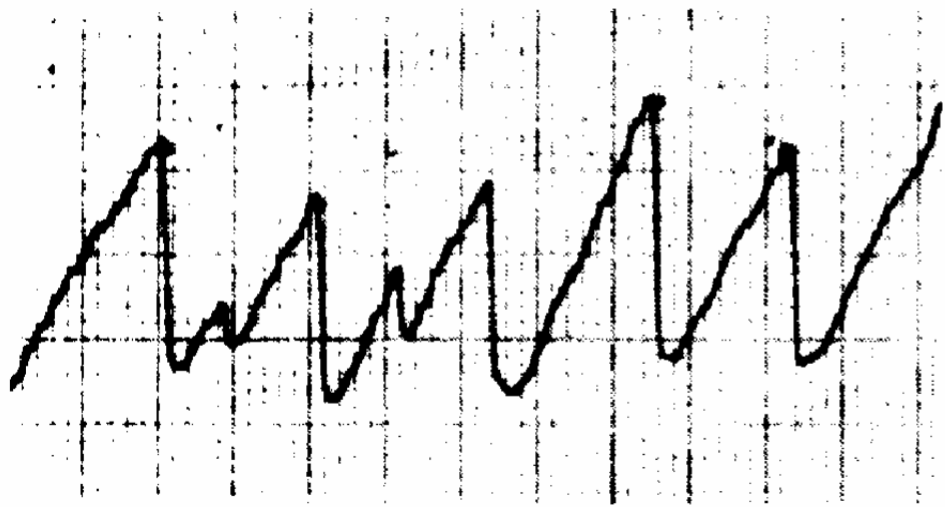
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SAN DIEGO · LONDON

# ENG measurements based on the presence of the *corneoretinal potential*

Cornea has a positive pole Retina has a negative pole







Essentially ENG consists of 3 parts

- oculomotor evaluation
  - Calibration
  - Gaze
  - Fixation
  - Saccade
  - Tracking (Pursuit)
  - Optokinetic
- positioning/positional testing
- caloric stimulation.

## History

- Stop all medications 24-72 h prior to testing
- 72 hours Alcohol (agonist or antagonist )
- Any medications taken should be clearly noted on the test results
- limit food intake prior to examination
- arrange for transportation after the examination

A decorative orange graphic element consisting of two overlapping, irregular shapes that resemble a stylized leaf or a torn piece of paper. The top shape is larger and more complex, while the bottom shape is simpler and more pointed.

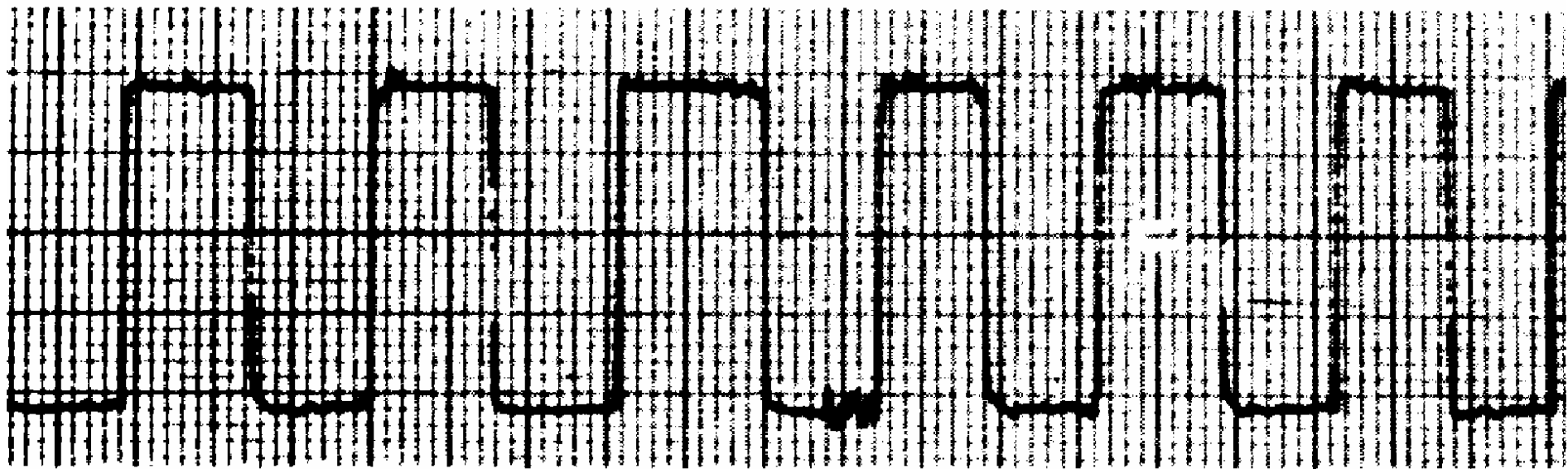
- Large perforations

- increase air stimulation above expectation
- cooling effect for warm (evaporation).
- cerumen must be removed
- Middle ear fluid affects stimulation



## Saccades (calibration)

- Dots on the wall or ceiling
- center and  $10^\circ$ ,  $20^\circ$ , and  $30^\circ$  off center
- patient to look back and forth between the dots
- head fixed



## Gaze

*spontaneous nystagmus*

~~nystagmus in the absence of stimulation~~ \_\_\_\_\_

- presence or absence of spontaneous nystagmus
- presence, absence, or exacerbation of nystagmus with addition of off-center gaze
- fixation suppression of spontaneous nystagmus

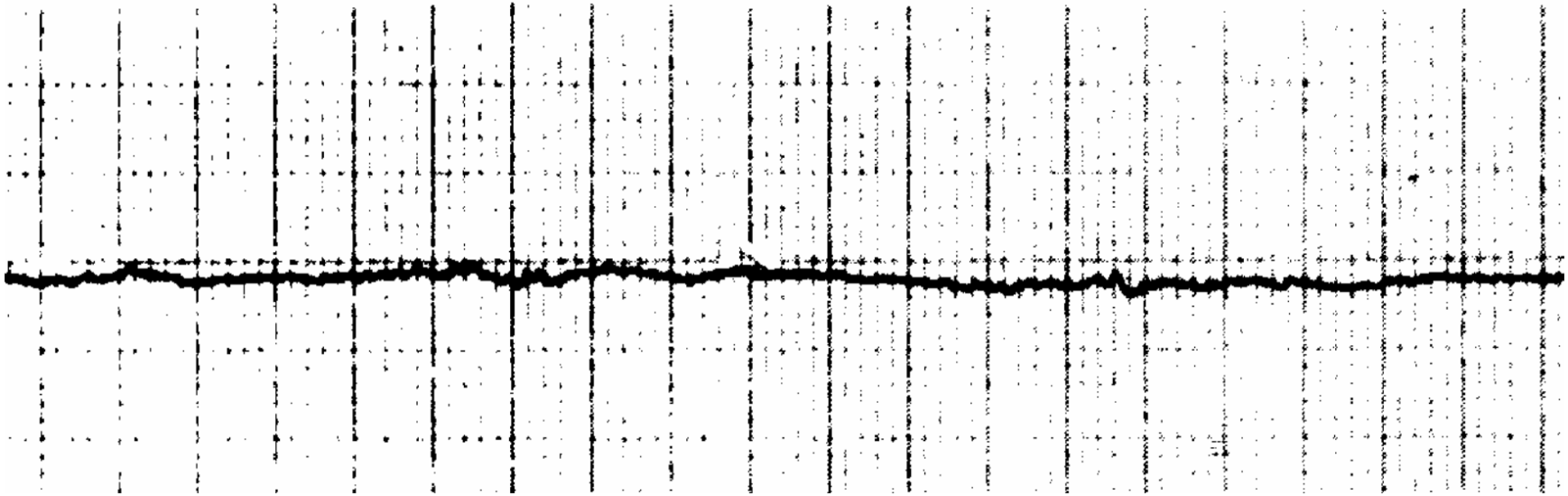
## Gaze Test

- Nystagmus present with eyes open and enhanced by eye closure - lesion is peripheral
- Nystagmus is enhanced with ocular fixation and reduced by eye closure - lesion is central

- For gaze testing
  - the patient is instructed to look straight ahead and then to fixate on a target  $30^\circ$  to the right, left, up, and down.
  - Fixation is maintained for approximately 30 seconds in center gaze and 10 seconds in eccentric gaze.
  
- Spontaneous nystagmus (eliminating suppression )
  - eyes open in a dark room
  - eyes closed.
  - mental tasks (eg, answering questions, counting by twos).

## Gaze

- Normal gaze position - patient is able to maintain position with eyes open and closed



## Spontaneous nystagmus

- Either central or peripheral pathology.
- with eyes open is always diagnostically significant.
- Peripheral indicators
  - Horizontal or horizontal rotary
  - Suppressed by visual fixation
  - Nondirection changing
  - Exacerbated by gazing in the direction of the fast phase\*
- Central indicators
  - Vertical
  - Not suppressed by fixation
  - Direction changing

## Alexander's law

- Nystagmus increases when the patient gazes in the direction of the fast phase.
- Nystagmus decreases or disappears when the gaze is in the direction of slow phase.
- This pattern is often seen in peripheral vestibular disorders and occasionally in central disorders.



*Unilateral gaze-paretic nystagmus*

- Nystagmus only occurs with eccentric gaze in one direction.
- Elicited nystagmus beats in the direction of the gaze.
- consistent with CNS pathology

Bilateral gaze-paretic nystagmus

- right gaze @ right-beating nystagmus
- left gaze @ left-beating nystagmus
- suggests CNS pathology

## Bruns nystagmus

- Combination of
  - Unilateral gaze-paretic nystagmus
  - Vestibular nystagmus
- Asymmetrical nystagmus in both directions of a gaze
- associated with extra-axial mass lesions on the side of the gaze-paretic nystagmus

## Ewald law

- Eyes always move in the plane of the canal being stimulated and in the direction of endolymph flow
- Ampulopetal in HSCC causes greater response than ampulofugal
- Ampulofugal in vertical SCCs cause greater response than ampulopetal

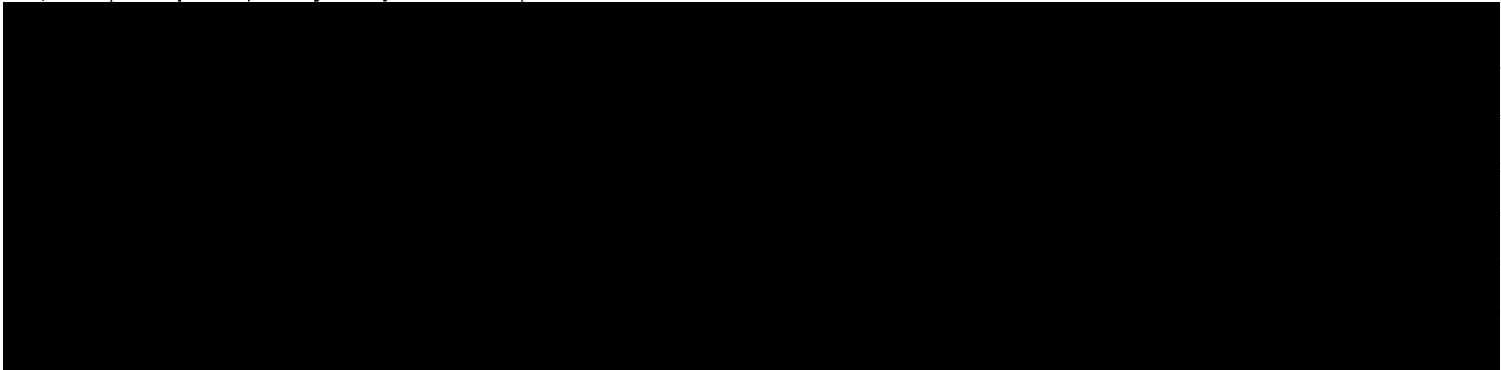
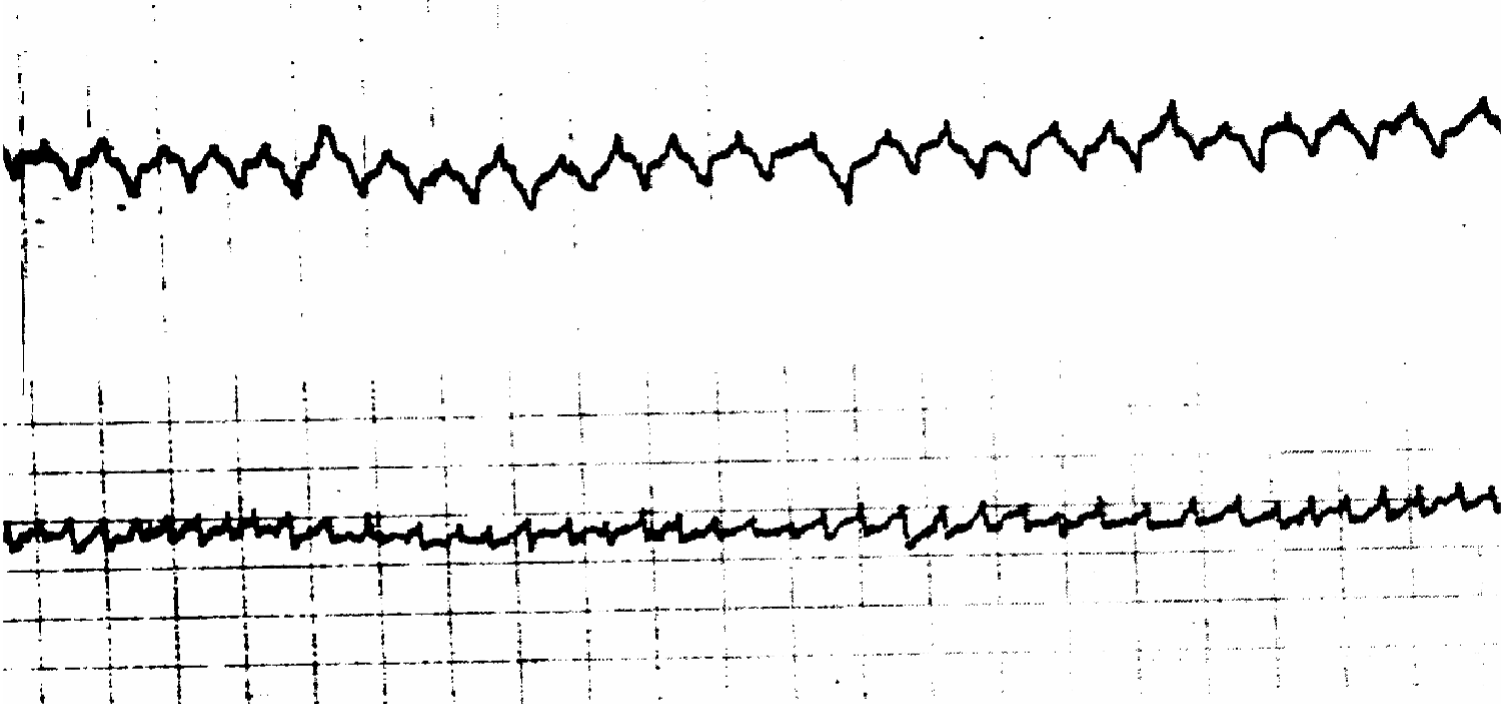
## Fixation

- Congenital nystagmus
- Gaze-Evoked Nystagmus
- Rebound nystagmus
- Square-wave jerks

## Congenital nystagmus

- Spiky appearance
- increases with lateral gaze.
- decrease in velocity or completely disappear with eyes closed

Congenital Gaze Findings



# Gaze-Evoked Nystagmus

- Drift of the eye which is only present for certain directions of gaze
- EOG recordings, any persistent nystagmus for ocular displacements  $< 30$  degrees is abnormal
- **Causes of Gaze-evoked nystagmus**
  - Medication
  - Brainstem or cerebellar disorder
  - Normal variant
  - Ocular muscle fatigue
  - Congenital nystagmus



## Rebound nystagmus

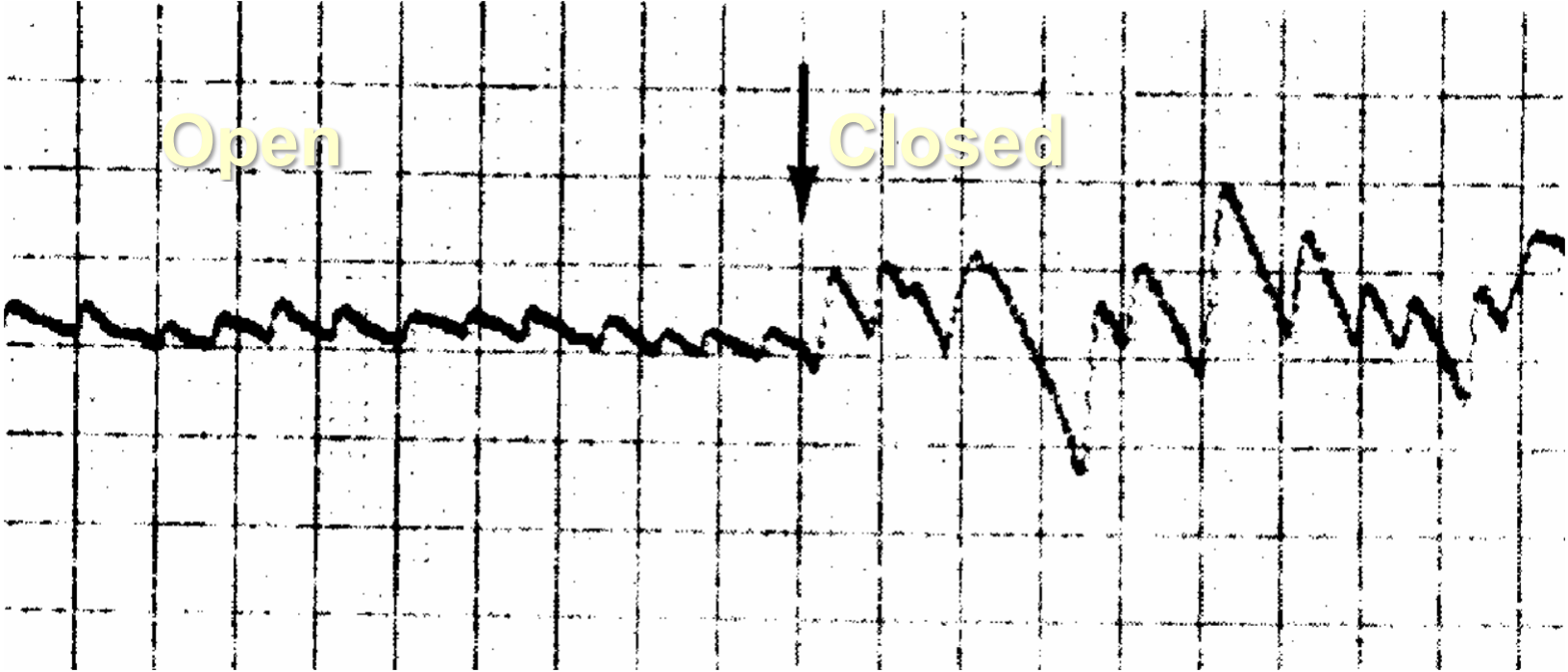
- **Burst of nystagmus**
- **begins when the eyes are returned to center gaze.**
- **lasting 5 seconds**
- **brainstem or cerebellar lesions**

- the most common abnormality with eyes closed.
- healthy patients
- increasing frequency with increasing age.
- abnormal if
  - In young patients
  - more frequently than 1 per second
  - eyes open.
- suggestive of a cerebellar disorder.

## Fixation suppression

- For peripheral lesions, nystagmus that is evident with eyes closed or in the dark should be suppressed by visual fixation.
- If not CNS pathology is possible.

Peripheral Gaze Findings

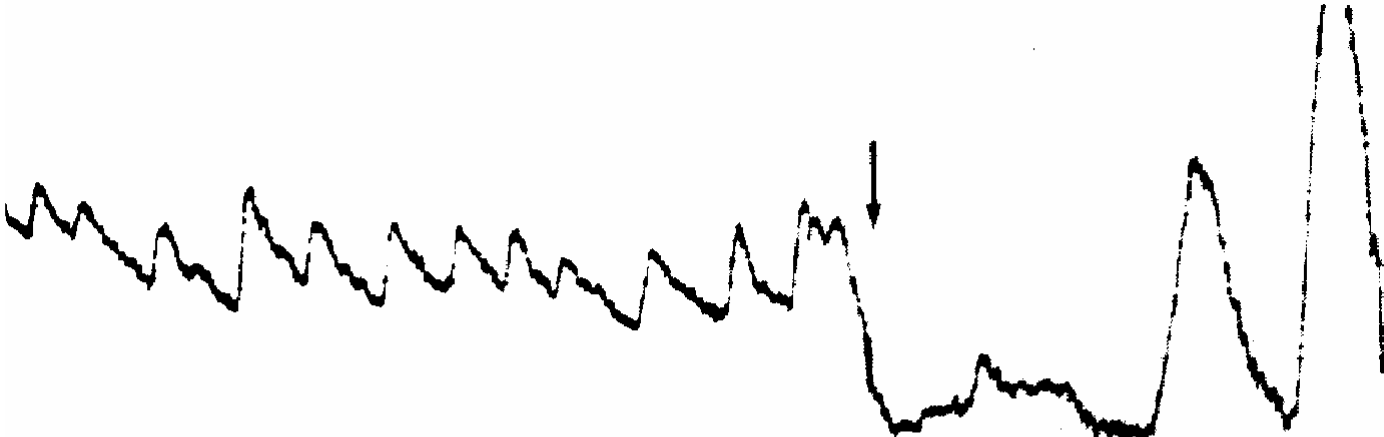


# Gaze Findings With CNS Lesion

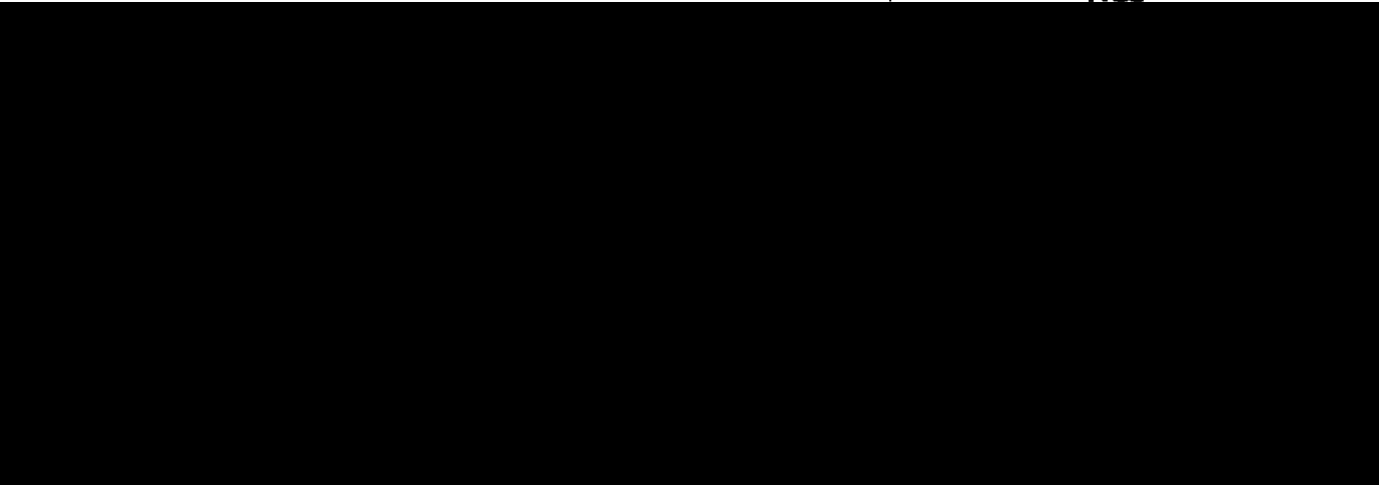
- Nystagmus may be horizontal, vertical, rotatory
- May demonstrate variation in amplitude
- If caused by a stable pathology, it declines slowly in time
- Enhanced by ocular fixation
- If horizontal, most often bilateral (bidirectional)

CNS Gaze Findings

R



L



# Saccades Interpretation

- Accuracy
- Latency
- Velocity

# Accuracy

- Normal or basal ganglia pathology
  - Hypometric – undershoots
- CNS pathology
  - Ocular flutter - spiky overshoot
- Cerebellum
  - Hypermetric overshoot then a correction.
  - Multistep saccades undershoots then multiple saccades
  - Postsaccadic drift (Glissade) eye drifting after saccade.
- PICA
  - Pulsion :pulling to left or right after vertical saccades.

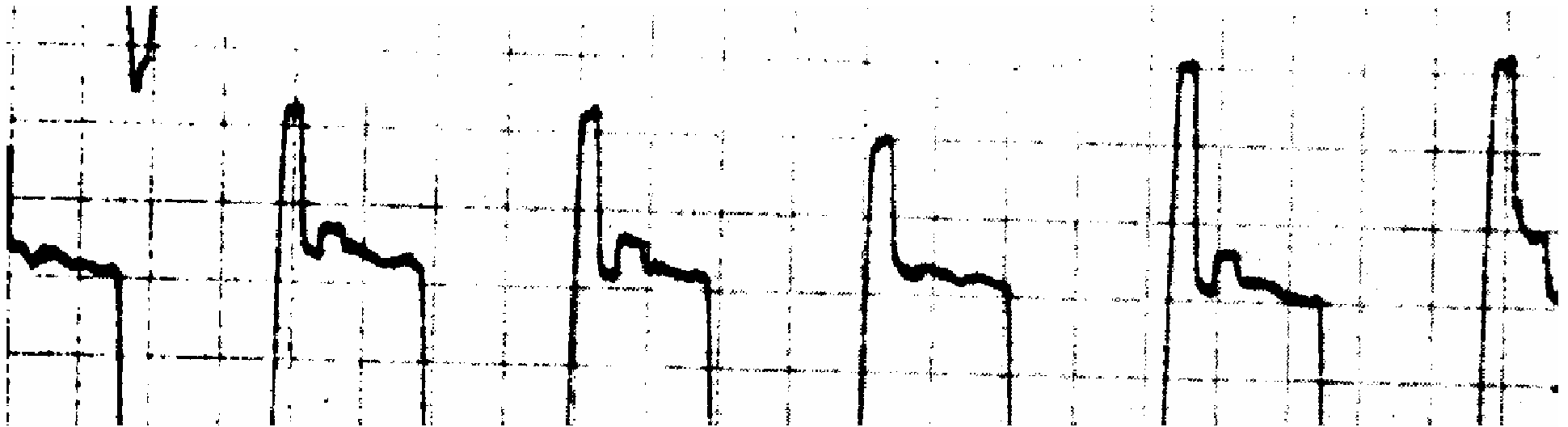


- Short latency
  - artifact
  - patient anticipating the position of the target.
  - suggestive of CNS pathology.
- Asymmetrical latencies
  - occipital
  - parietal cortex.

- **Saccadic slowing**
  - drug effects.
  - CNS degenerative conditions, basal ganglia pathology, and cerebellar disorders.
  - ocular disorders, including oculomotor weakness,
  
- **Abnormally fast saccades**
  - artifact and may be due to technical difficulties.
  - CNS
  - ocular pathology
  
- **Asymmetrical velocity - between the eyes or between directions.**
  - ocular nerve
  - muscle pathology (ie, lesions or palsies).
  - CNS pathology may also be indicated. A lesion in the MLF

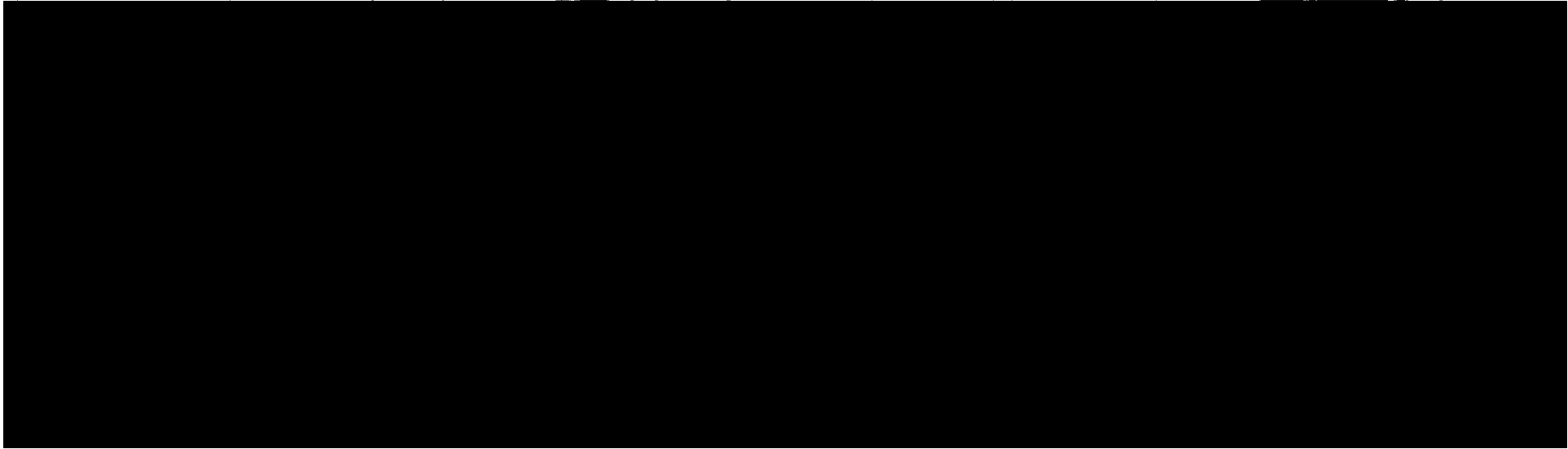
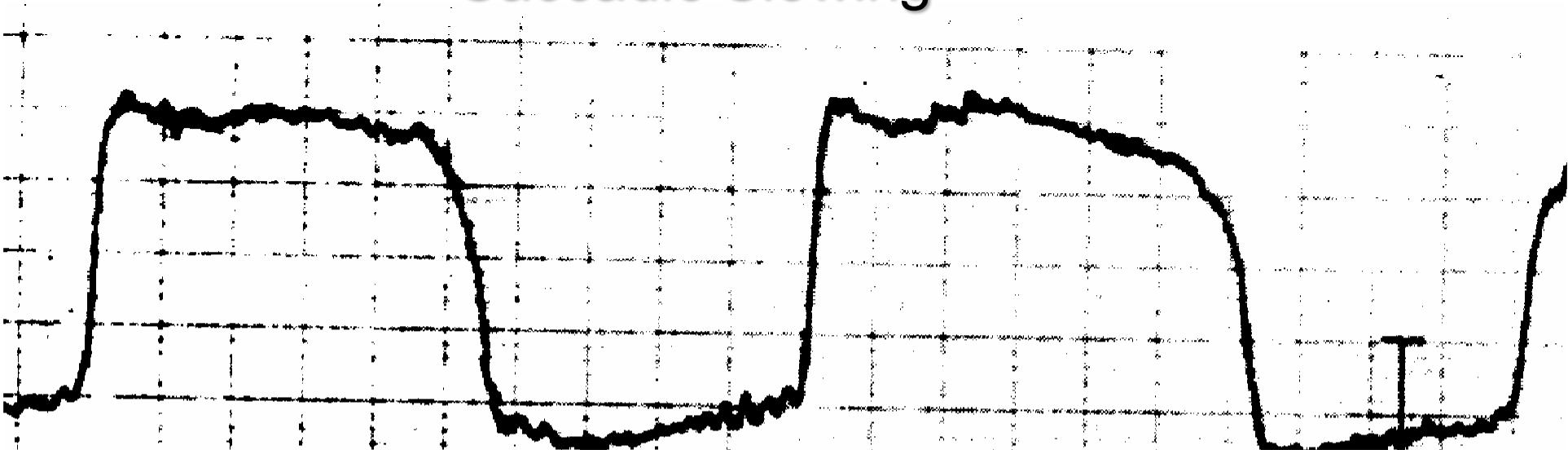
# Saccadic Abnormalities

## Overshoot



Saccadic Abnormalities

# Saccadic Slowing



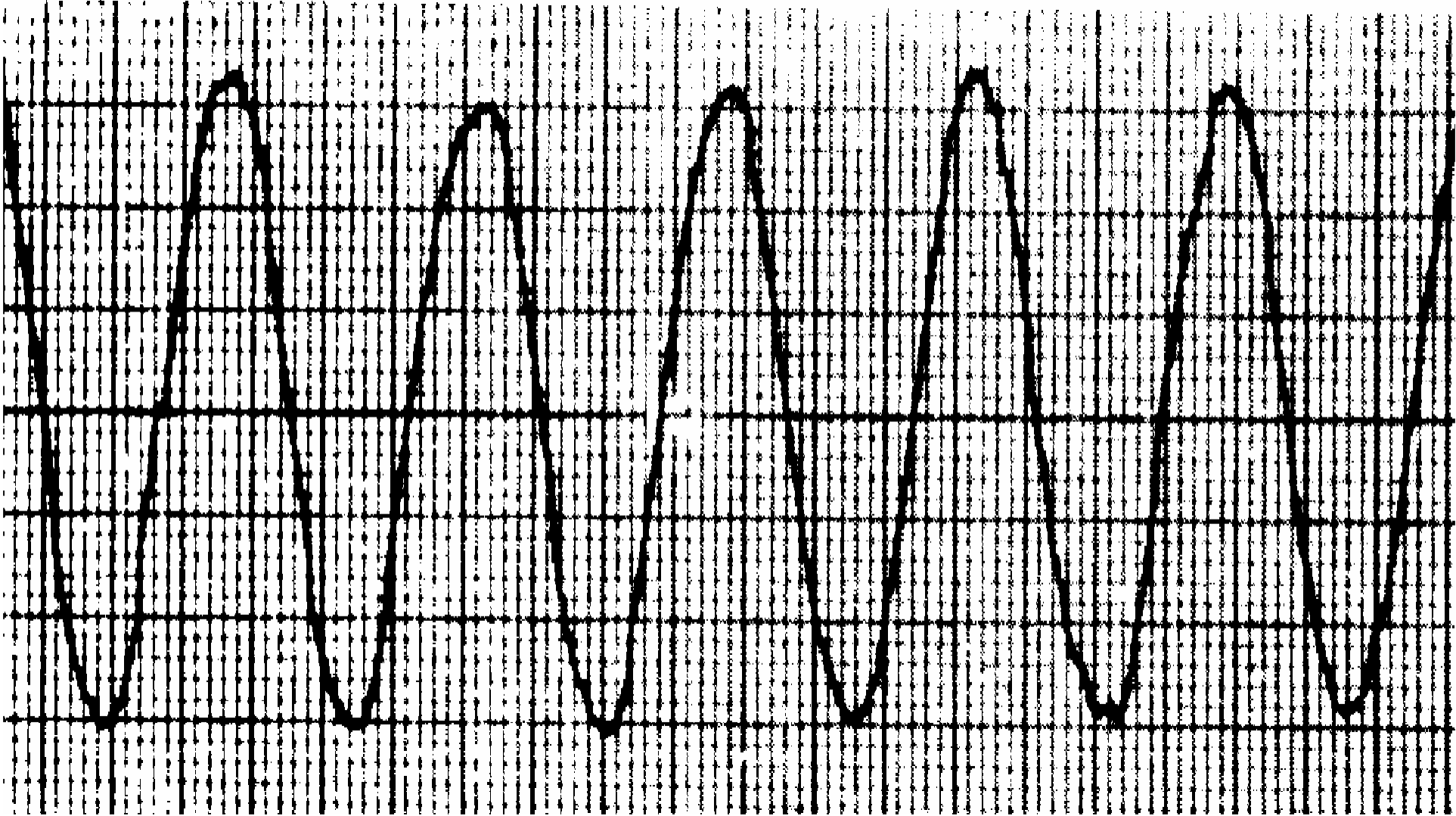
## Smooth pursuit tracking

- follow a sinusoidal moving target with eyes only.
- Tracking targets within the visual field
- interpreting with care in geriatric and pediatric
- affected by attention and patient cooperation.

### *Interpretation*

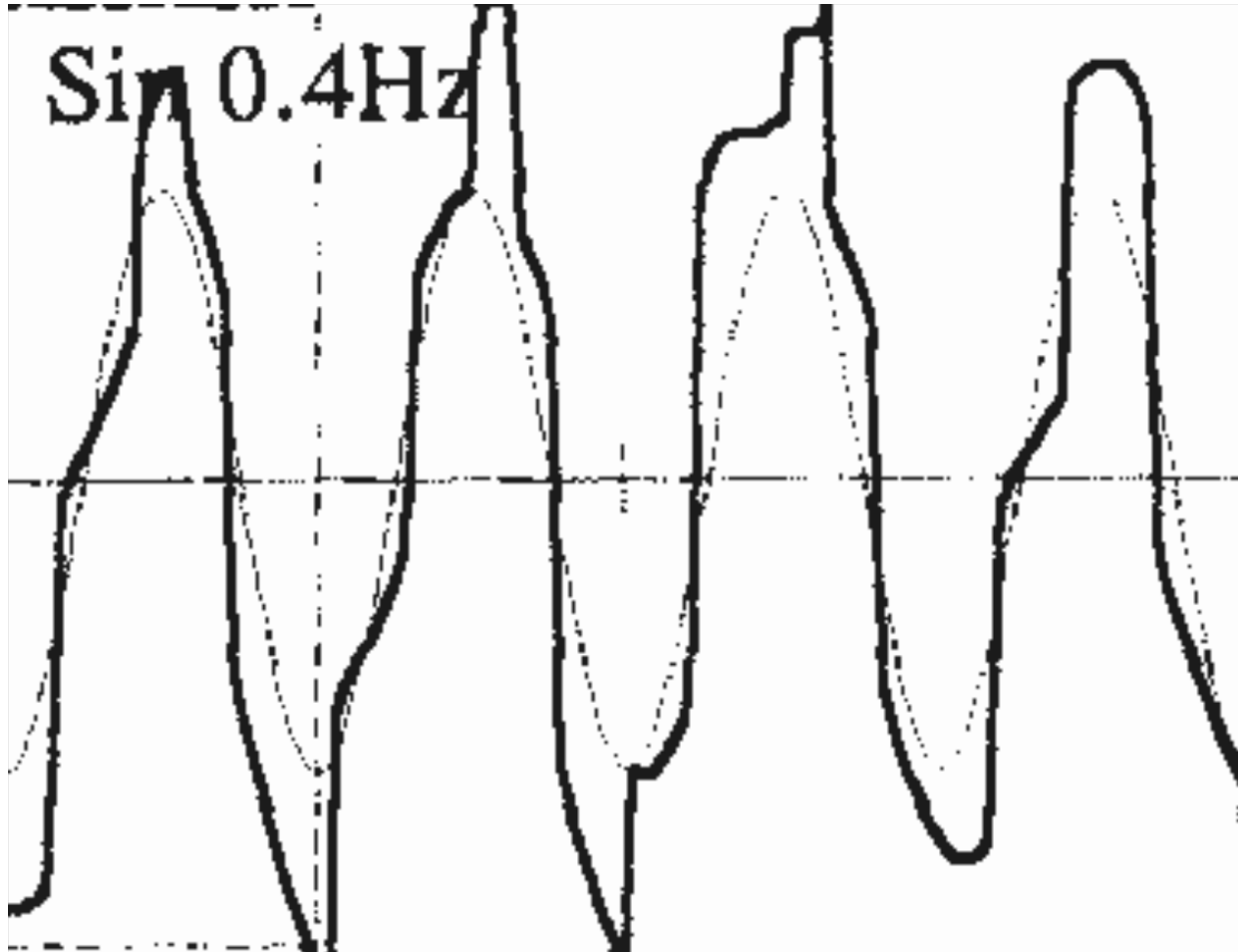
- results should resemble a smooth sinusoid.
- Breakup of movement @ CNS pathology.

Tracking Test: Normal





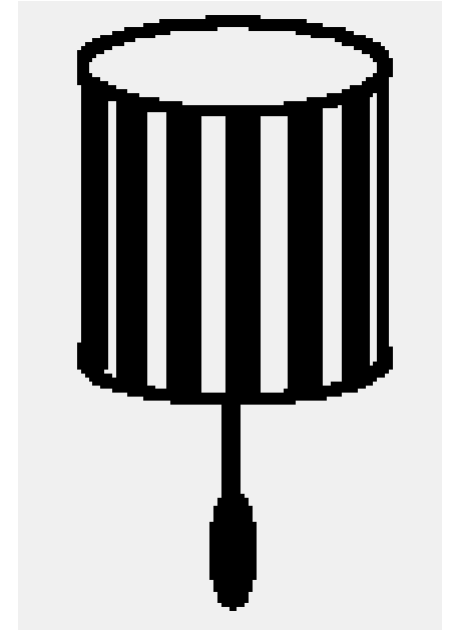
*impaired pursuit in patient with a cerebellar lesion*

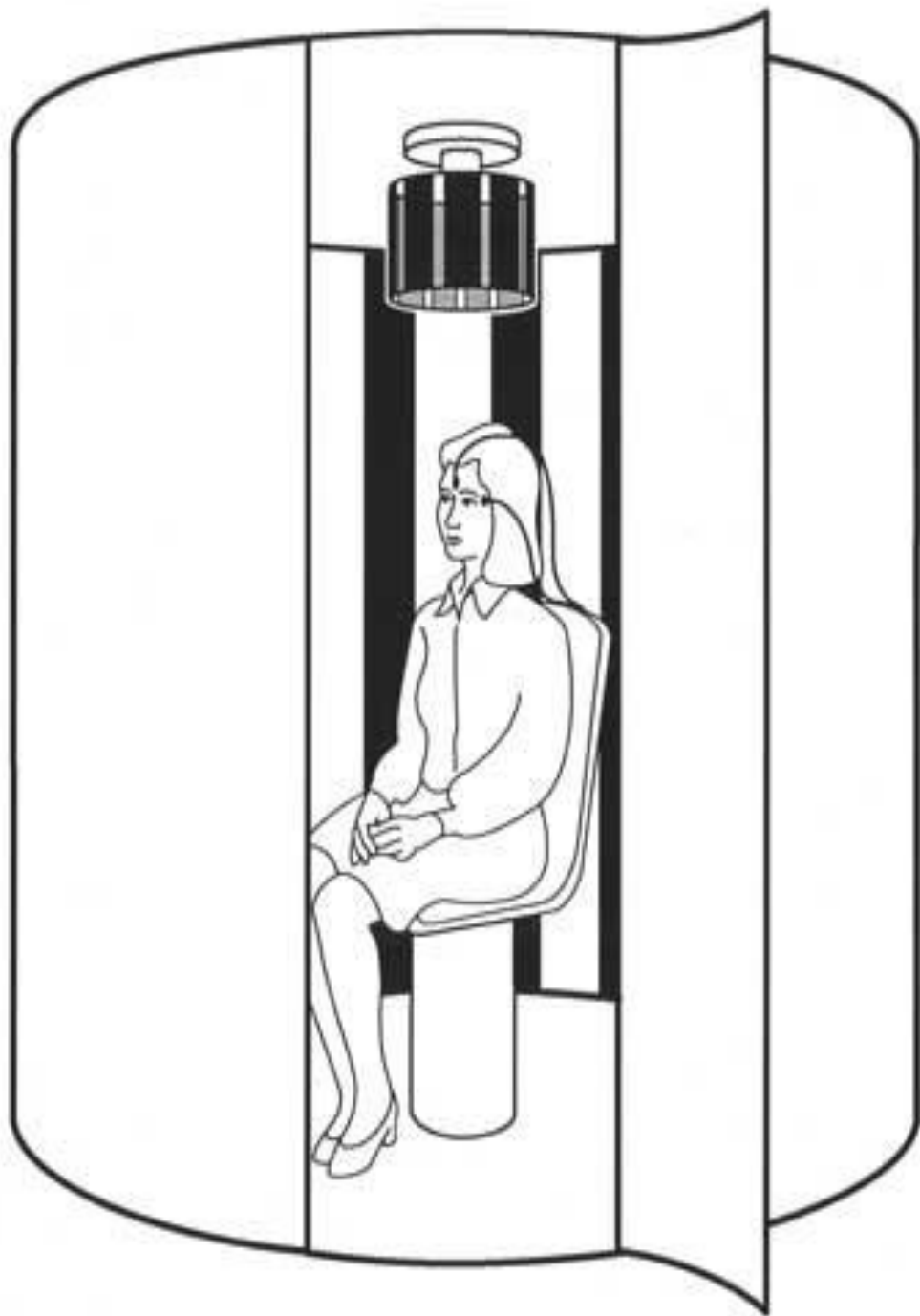




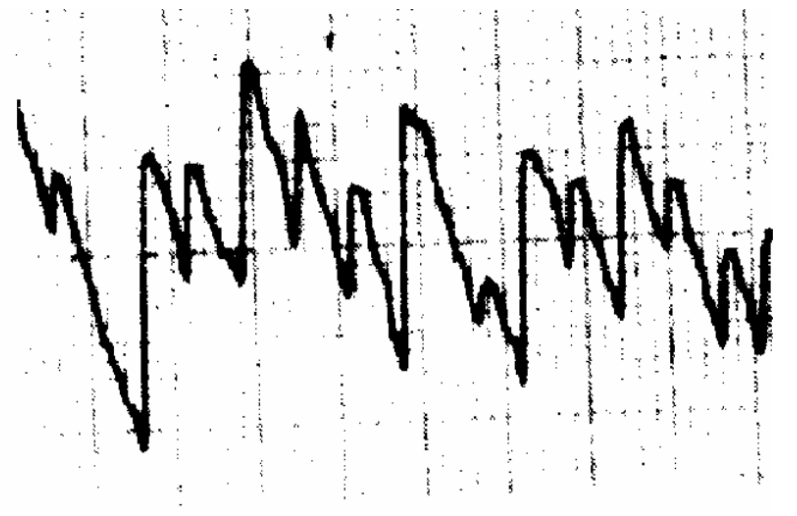
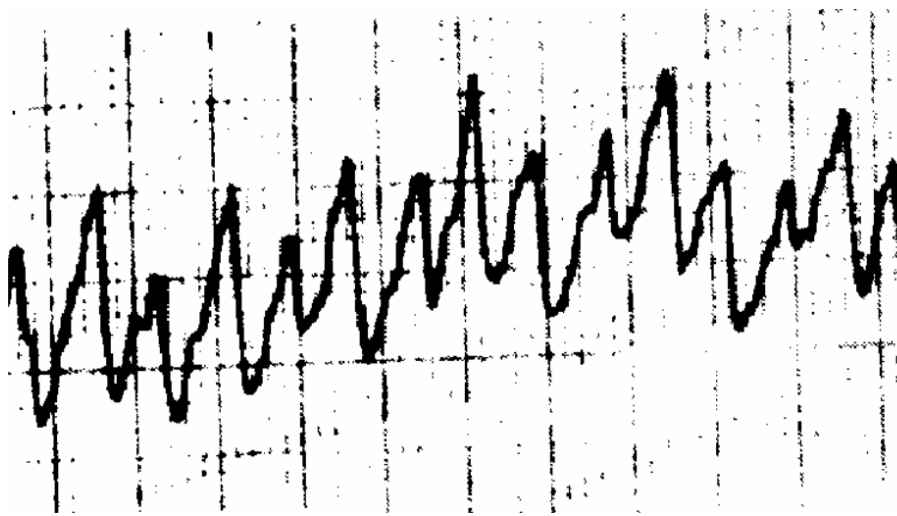
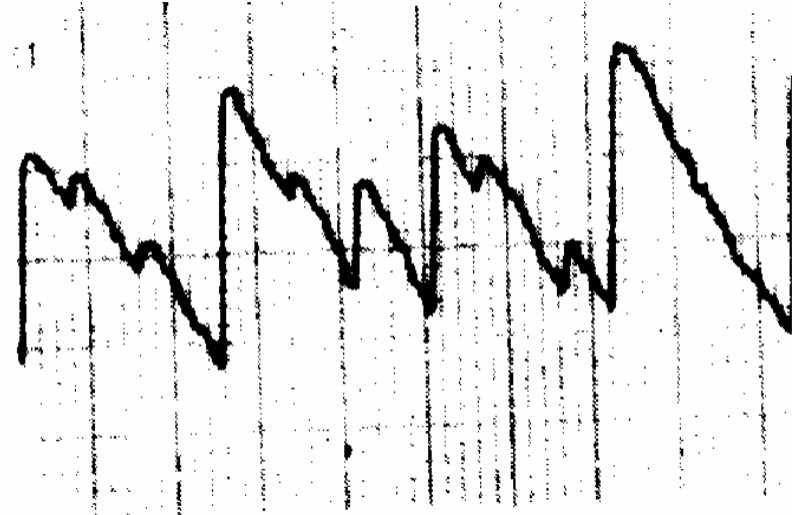
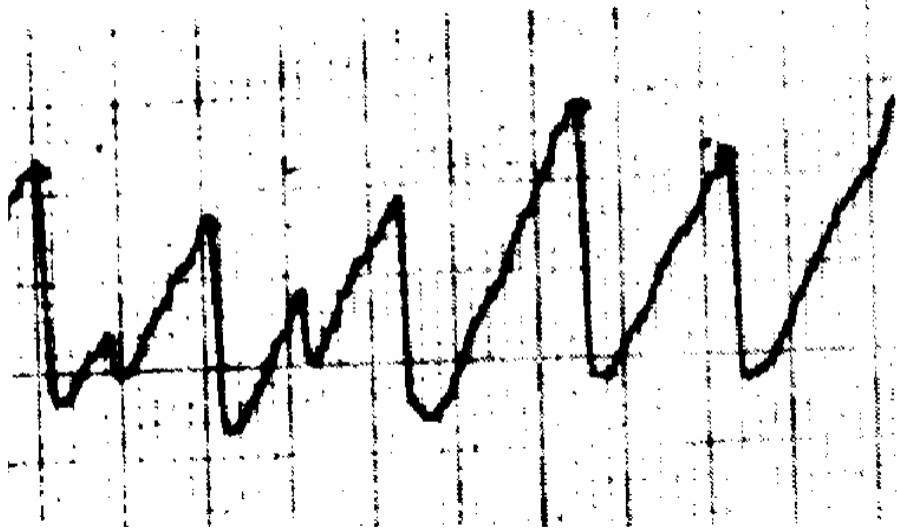
## Optokinetic

- tracks multiple stimuli.
  - stripes on a rotating drum
  - stream of lighted dots across a light bar
  - full field array of moving stars or trees.
- moved at 300, 400, or 600 per second
- asymmetrical responses @CNS pathology





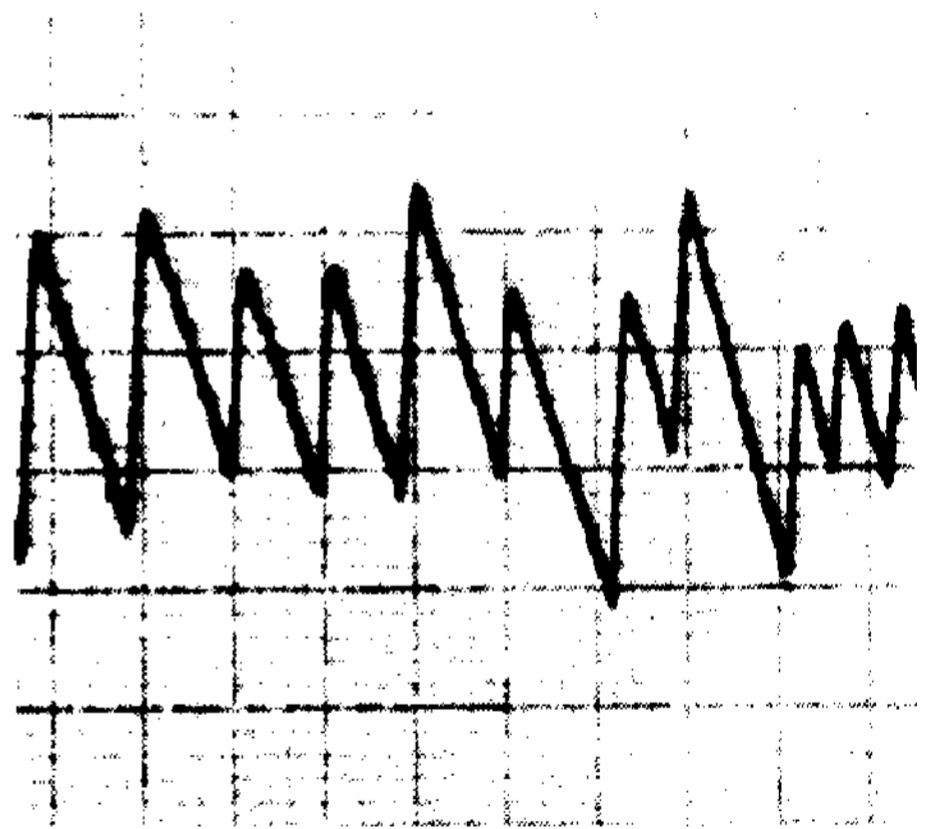
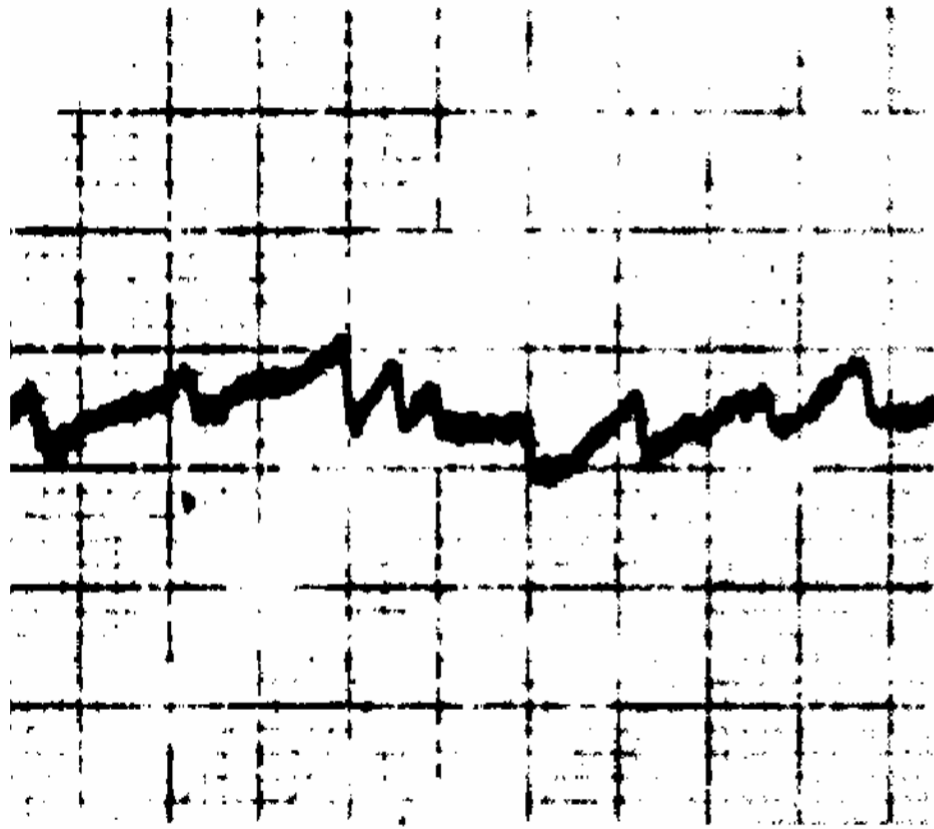
symmetry



Opokinetic

**Test: Abnormal**

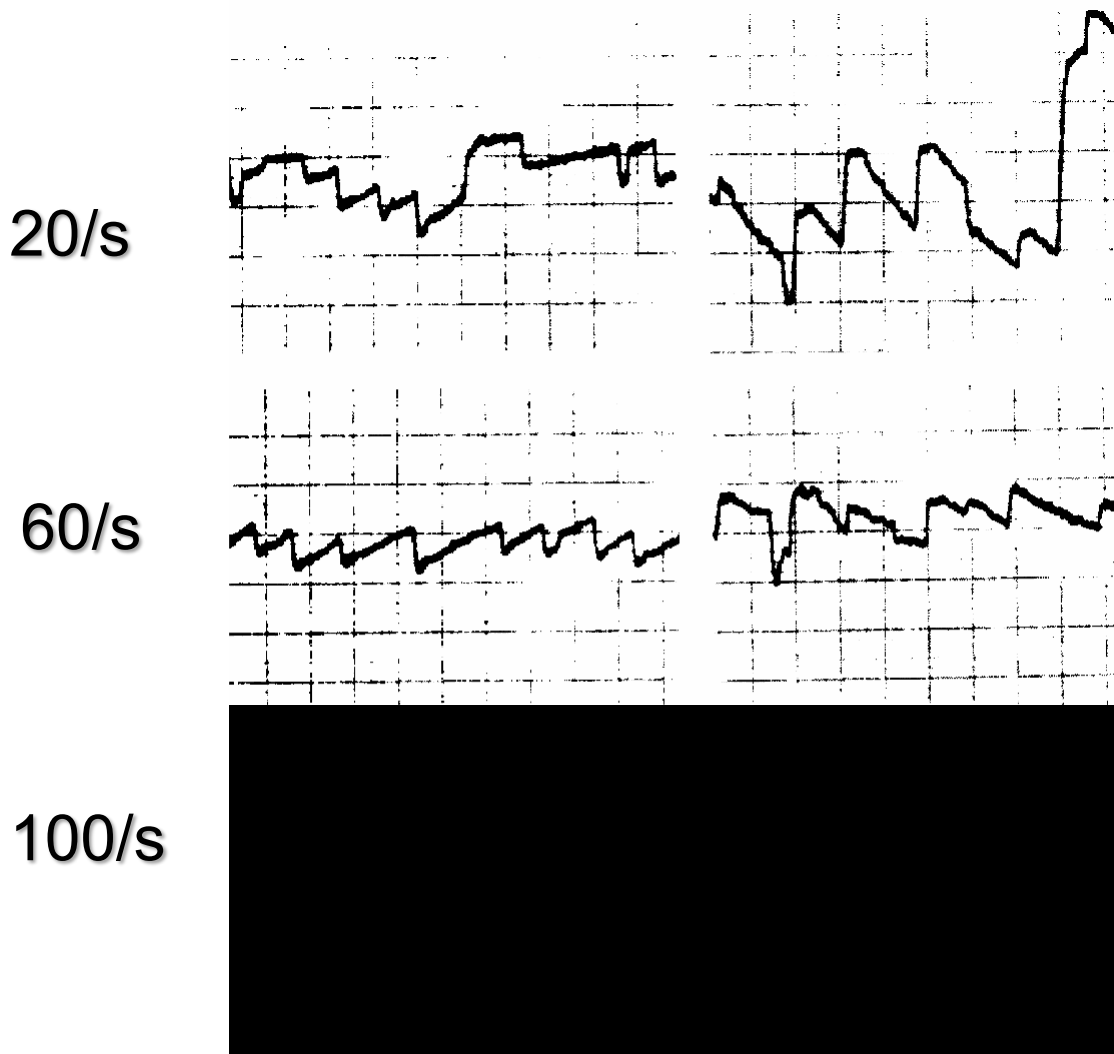
Asymmetry



Opokinetic

**Test: Abnormal**

# Declining Response Intensity



### Dix-Hallpike maneuver

- should be completed prior to any other positional testing.
- Delayed onset - observe patient for at least 20 seconds
- Transient burst of nystagmus - Lasts about 10-15 seconds
- Subjective report of vertigo
- Fatigability

## Positional tests

- minimum of 20-30 seconds
- Mental tasking infrared goggles or with the patient's eyes closed with electrodes
  - Head hanging
  - Supine
  - Supine, head right
  - Supine, head left
  - Lateral right
  - Lateral left
- considered abnormal
  - exceed 60 per second
  - change direction in any 1 position
  - persist in at least 3 different positions
  - intermittent in all positions



## Positional tests

- Peripheral indicators include the following:
  - Direction-fixed
  - geotropic direction changing in different positions, *horizontal SCC variant of BPPV*
  - Latency of onset
  - Fatigable
- Central indicators include the following:
  - ageotropic direction changing in different positions,
  - Direction changing in a single position,
  - Immediate onset
  - Not fatigable

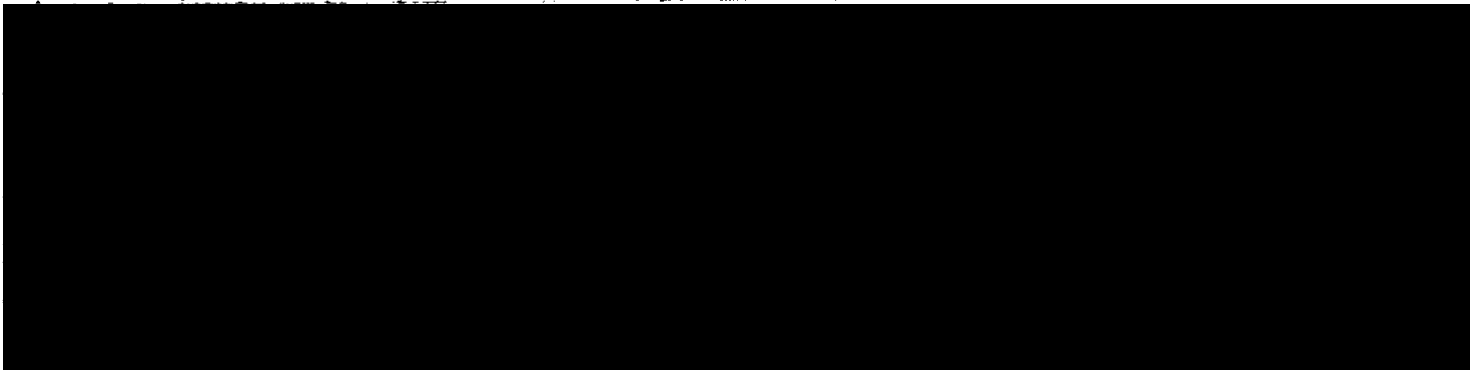
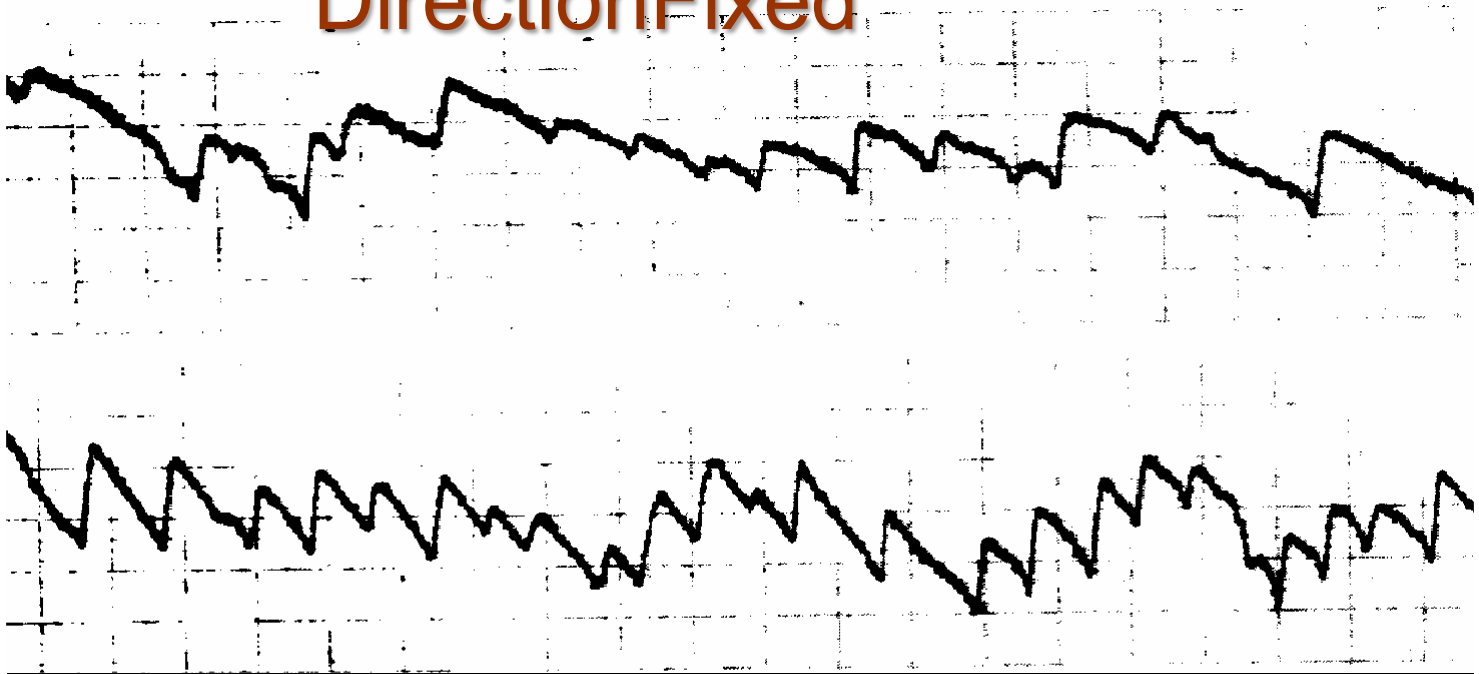
Positional Test: Abnormal Peripheral

RL

Direction Fixed

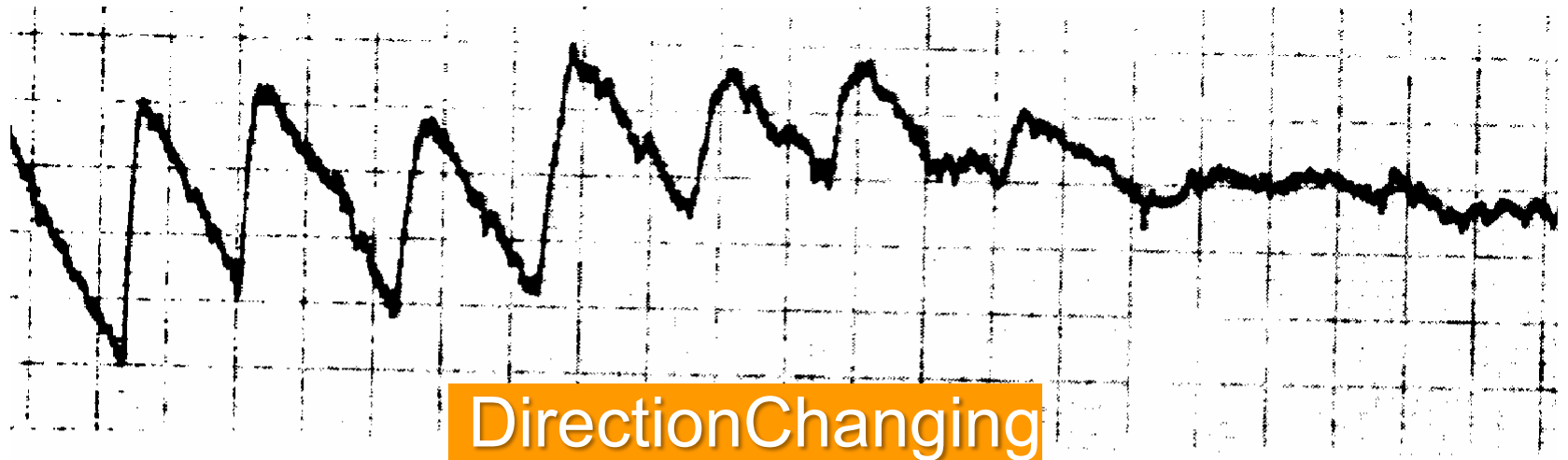
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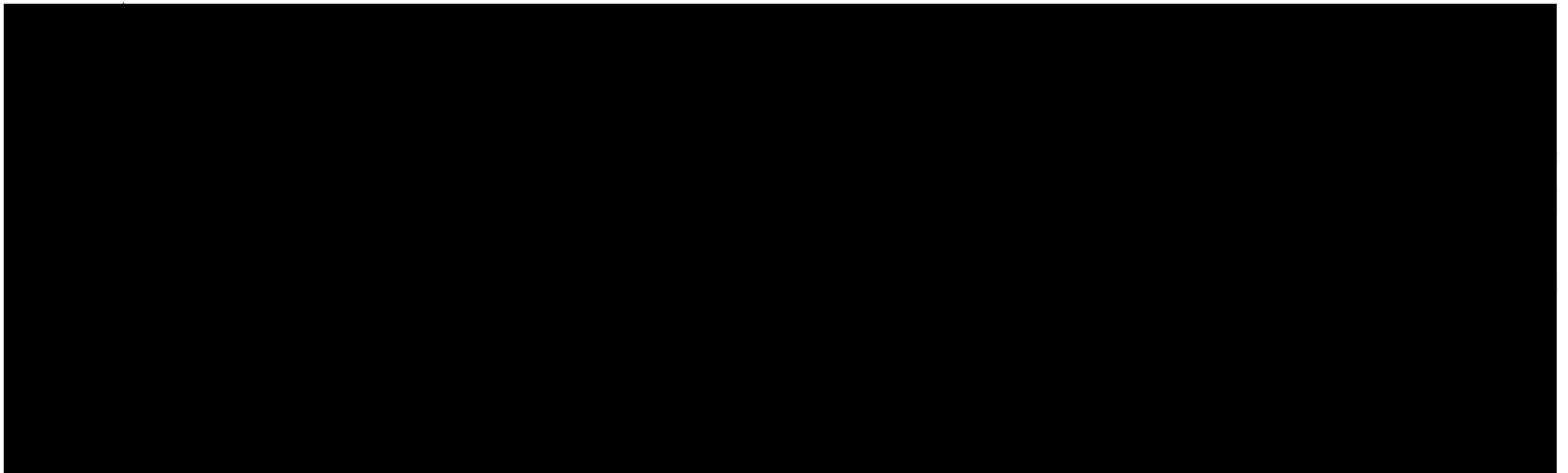


Positional Test: Abnormal Most Often CNS

RL



LL



## Caloric stimulation

- The most informative ENG subtest
- water, air, and closed-loop cuff
- Water calorics provide a strong stimulus
- air, and closed-loop cuff used with PET or perforation of TM
- cool = 30 C      warm = 44 C
- Response pattern follows the form of COWS

## Caloric test disadvantage

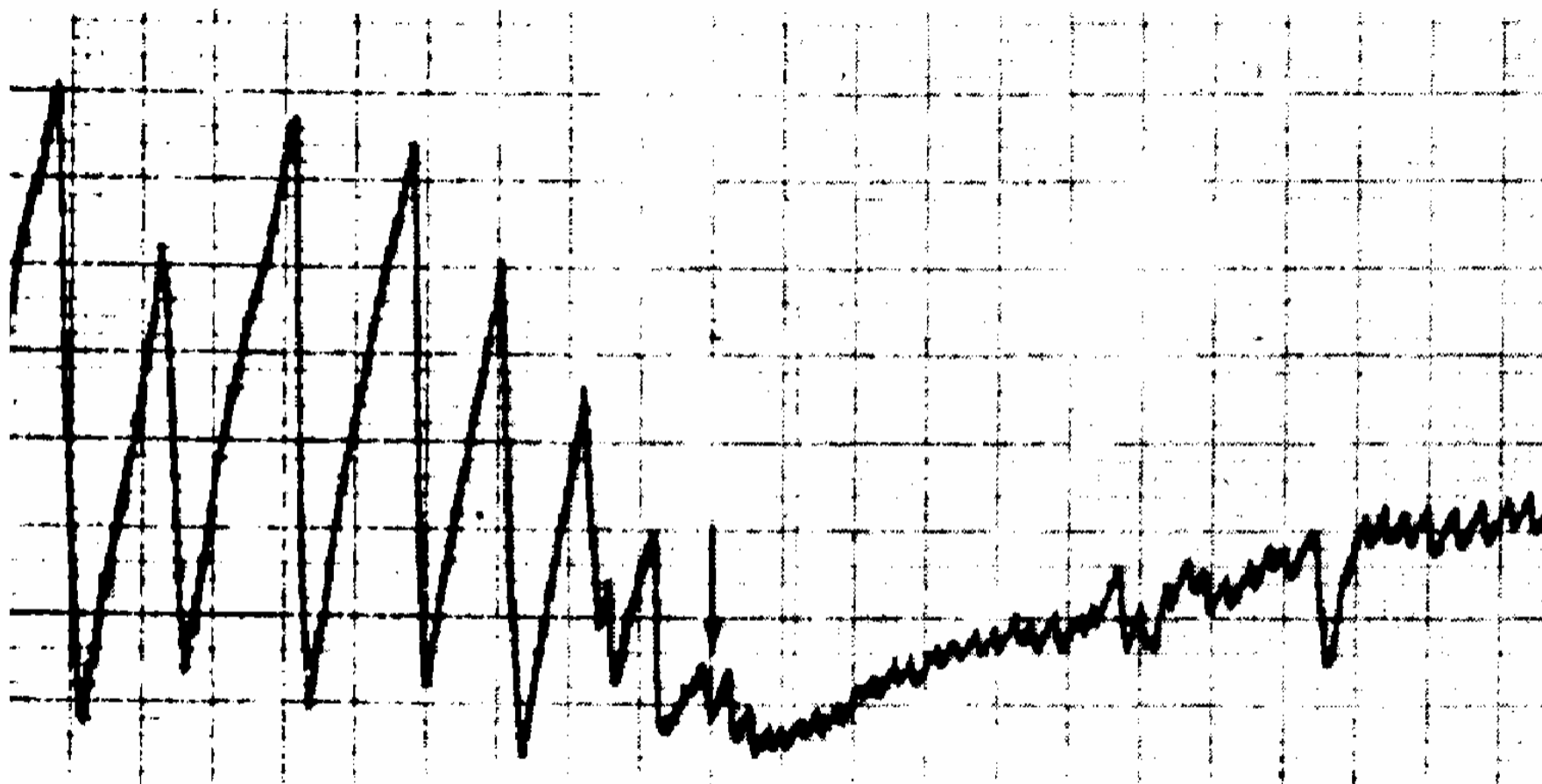
- Low frequency(0.003 Hz)\* = PTA @125Hz
- Indirect ( depend on heat transferring capacity of EE+ME)
- Lateral SCC
- LOC

### *Caloric stimulation*

- head at an angle of 30°
- LSCC in the vertical plane
- spontaneous nystagmus is evaluated 1<sup>st</sup>
- Bilateral weakness
  - Average responses of <60/s
  - bilateral peripheral or central
  - drug effects should be excluded
- Fixation after each test
  - R/O CNS No reduce nystagmus
  - Fast recovery .
- no response@ Ice water for residual

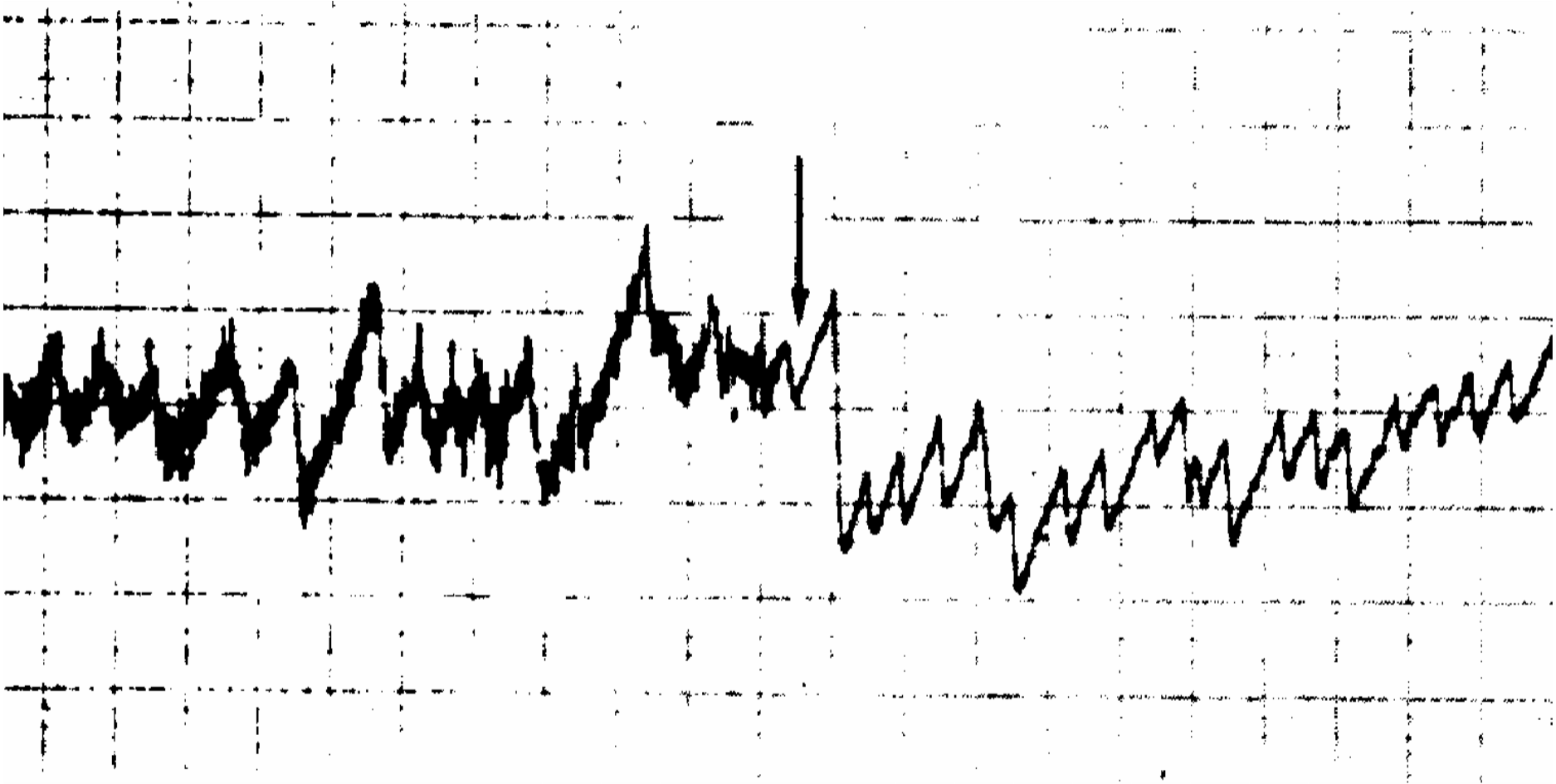
Caloric Test: Normal

Fixation Suppression



Caloric Test

Failure of Fixation Suppression

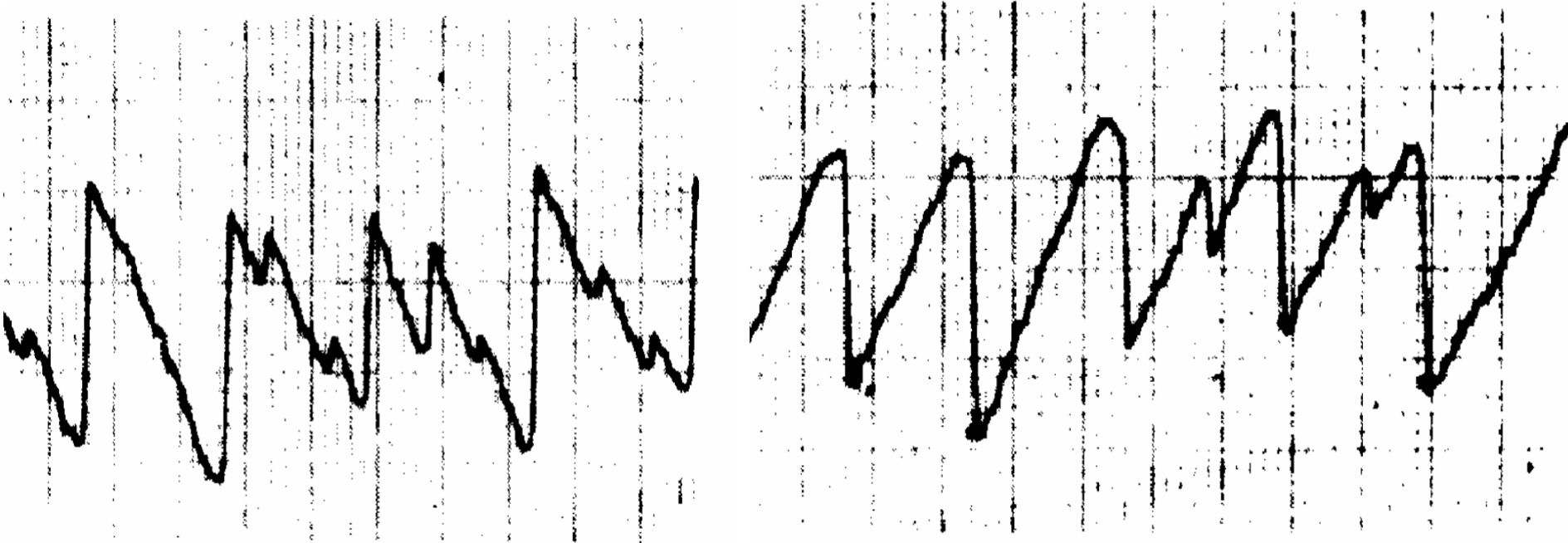




*Caloric stimulation*

- **Unilateral weakness (UW) Labrynthine preponderance (LP)**
  - evaluate symmetry
  - > 25% is significant.
    - =  $[(RC + RW - LC + LW)/(RC + RW + LC + LW)] \times 100$ .
  - peripheral lesion (nerve or end-organ)
  - lesion in the side of the weakness.
  
- **Directional preponderance (DP)**
  - with spontaneous nystagmus
  - >20-30% is considered significant.
    - =  $[(LC + RW - RC + LW)/(RC + RW + LC + LW)] \times 100$

Which direction?





Annexure 2  
Bharath Institute of Higher Education and Research  
SLIMS

1	U16MB289	EDA SAI VENKATA TEJA
2	U16MB290	GAURAV KUMAR
3	U16MB291	GOKUL SRIRAM .D
4	U16MB292	GOLLA SRUTHI
5	U16MB293	GOMATHI .M
6	U16MB294	GRACELIN RINI .J
7	U16MB295	GUNASUNDARI .M
8	U16MB296	GUNTI YAGNA NARAYAN
9	U16MB297	HANEESHA PALETI
10	U16MB298	HARIHARAN .J.K
11	U16MB299	HARIPRIYA .T
12	U16MB300	HARISHKA.S
13	U16MB301	HARITHA SHREE
14	U16MB302	HARSHITHA CHOWDARY
15	U16MB303	HEMAPRIYA .G
16	U16MB304	JADHAV MAHESH MOHANRAO

ANNEXURE 3  
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL  
SCIENCES  
PUDUCHERRY

TOPIC: Electronystagmography (ENT11)

STUDENT NAME:

UNIVERSITY NO:

1. A 34 years old patient complains of sudden attacks of loss of balance lasting for hours. He has the sensation that the surrounding environment is spinning. His loss of balance associated with nausea and vomiting. Nothing unusual is observed in his physical examination. This sensation is called:
  - a. Vertigo.
  - b. Dizziness
  - c. Disequilibrium.
  - d. Unsteadiness.
  
2. A 56 years old female wakes up in the morning with severe vertigo lasting for seconds that returns frequently with any head movement. Her cranial nerves and ear examinations are normal. The maneuver that is used to confirm the diagnosis called:
  - a. Epley's Maneuver.
  - b. Dix-Hallpike.
  - c. Hallpike
  - d. Epley-Dix-Hallpike
  
3. A 78 years old diabetic and hypertensive female suffers severe headache, loss of consciousness and dizziness. In the emergency room, she has the following vital signs: BP 190\120, pulse: 97 and GCS 12. Which of the following is least likely in the differential diagnosis?
  - a. Migraine
  - b. Transient ischemic attack
  - c. BPPV
  - d. Cerebrovascular accident
  
4. A 66 years old Saudi patient complains of left ear hearing loss, fullness, tinnitus, headache and drainage for one year. These symptoms are concurrent most of the time. The ear exam reveals left eardrum perforation. The weber test lateralizes to the left ear, and the Rinne test is negative in the left ear and positive in the right ear. Your working diagnosis is peripheral vestibular system disease. All of the following symptoms support your diagnosis except:
  - a. Hearing loss
  - b. Tinnitus
  - c. Headache
  - d. Ear fullness
  
5. A 24-year-old female has episodes of ear fullness and increasingly severe vertigo. Her tympanogram was normal and an audiogram revealed low-frequency hearing loss. Which one of the following is the most likely diagnosis?
  - a. Otosclerosis
  - b. Tympanosclerosis
  - c. Meniere's disease
  - d. Migraine
  
6. A 24-year-old male with vertigo and tinnitus has Meniere's disease. He has fallen many times and injured his body. He refused operative intervention, but agrees to a trial of medication. During the trial phase, his peptic ulcer worsened. Which one of the following substances is most likely to be prescribed?
  - a. Betahistine
  - b. captopril
  - c. Lasix
  - d. Valium
  
7. Fitzgerald caloric test is used at temperature
  - a. 30 and 44
  - b. 34 to 41
  - c. 33 and 21
  - d. 37 and 41

8. cold caloric test stimulates

- a. cochlea
- b. LSCC
- c. PSSC
- d. all of the above

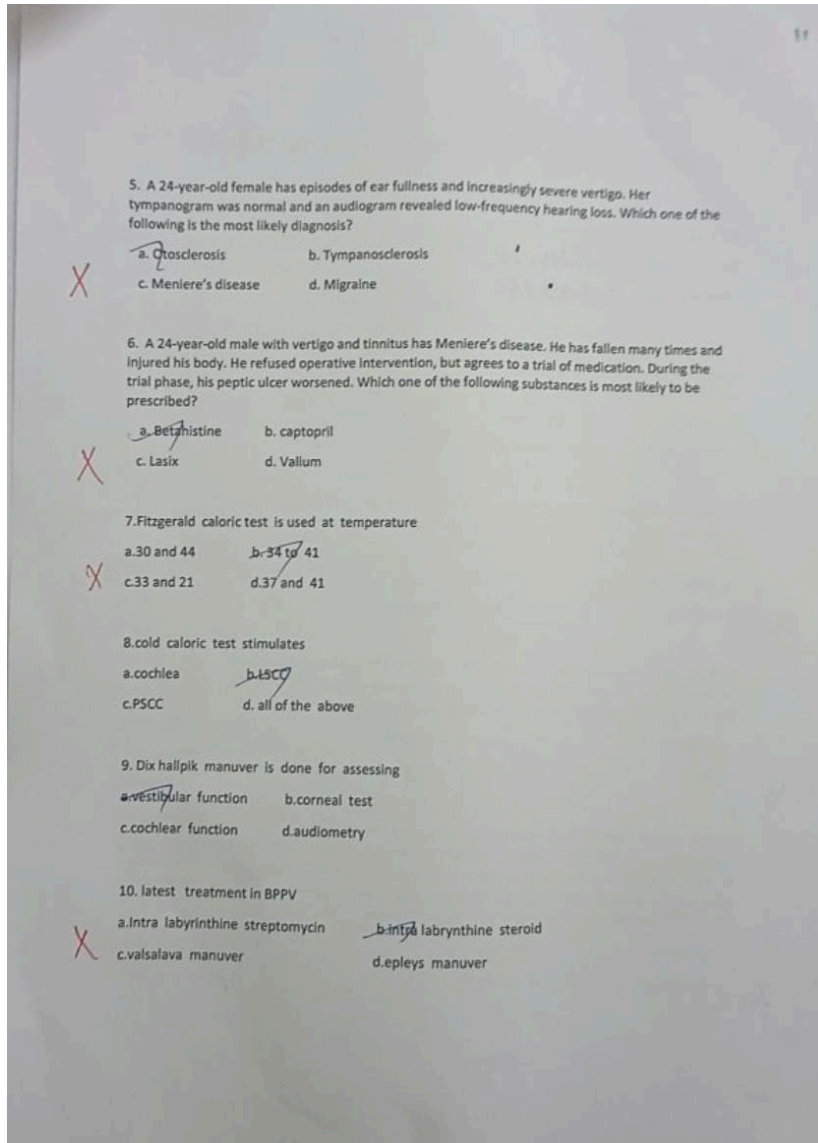
9. Dix hallpike manuver is done for assessing

- a. vestibular function
- b. corneal test
- c. cochlear function
- d. audiometry

10. latest treatment in BPPV

- a. Intra labyrinthine streptomycin
- b. intra labrynthine steroid
- c. valsalava manuver
- d. epleys manuver

PRE TEST



ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: Electronystagmography (ENT11)

STUDENT NAME: Gomathi. M

UNIVERSITY NO: U16MB293

3

1. A 34 years old patient complains of sudden attacks of loss of balance lasting for hours. He has the sensation that the surrounding environment is spinning. His loss of balance associated with nausea and vomiting. Nothing unusual is observed in his physical examination. This sensation is called:

- a. Vertigo.                      b. Dizziness  
c. Disequilibrium.              d. Unsteadiness.

2. A 56 years old female wakes up in the morning with severe vertigo lasting for seconds that returns frequently with any head movement. Her cranial nerves and ear examinations are normal. The maneuver that is used to confirm the diagnosis called:

- a. Epley's Maneuver.              b. Dix-Hallpike.  
c. Hallpike                          d. Epley-Dix-Hallpike

3. A 78 years old diabetic and hypertensive female suffers severe headache, loss of consciousness and dizziness. In the emergency room, she has the following vital signs: BP 190/120, pulse: 97 and GCS 12. Which of the following is least likely in the differential diagnosis?

- a. Migraine                           b. Transient ischemic attack  
c. BPPV                                d. Cerebrovascular accident

4. A 66 years old Saudi patient complains of left ear hearing loss, fullness, tinnitus, headache and drainage for one year. These symptoms are concurrent most of the time. The ear exam reveals left eardrum perforation. The weber test lateralizes to the left ear, and the Rinne test is negative in the left ear and positive in the right ear. Your working diagnosis is peripheral vestibular system disease. All of the following symptoms support your diagnosis except:

- a. Hearing loss                       b. Tinnitus  
c. Headache                         d. Ear fullness



5. A 24-year-old female has episodes of ear fullness and increasingly severe vertigo. Her tympanogram was normal and an audiogram revealed low-frequency hearing loss. Which one of the following is the most likely diagnosis?

- a. Otosclerosis
- b. Tympanosclerosis
- c. Meniere's disease
- d. Migraine

X

6. A 24-year-old male with vertigo and tinnitus has Meniere's disease. He has fallen many times and injured his body. He refused operative intervention, but agrees to a trial of medication. During the trial phase, his peptic ulcer worsened. Which one of the following substances is most likely to be prescribed?

- a. Betahistine
- b. Captopril
- c. Lasix
- d. Valium

X

7. Fitzgerald caloric test is used at temperature

- a. 30 and 44
- b. 34 to 41
- c. 33 and 21
- d. 37 and 41

8. cold caloric test stimulates

- a. cochlea
- b. LSCC
- c. PSSC
- d. all of the above

9. Dix hallpike manuver is done for assessing

- a. vestibular function
- b. corneal test
- c. cochlear function
- d. audiometry

10. latest treatment in BPPV

- a. Intra labyrinthine streptomycin
- b. intra labrynthine sterold
- c. valsalava manuver
- d. epleys manuver

X

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

3

TOPIC: Electronystagmography (ENT11)

STUDENT NAME: Haripriya T

UNIVERSITY NO: U16MB299.

1. A 34 years old patient complains of sudden attacks of loss of balance lasting for hours. He has the sensation that the surrounding environment is spinning. His loss of balance associated with nausea and vomiting. Nothing unusual is observed in his physical examination. This sensation is called:

- X
- a. Vertigo.
  - b. ~~Dizziness~~
  - c. Disequilibrium.
  - d. Unsteadiness.

2. A 56 years old female wakes up in the morning with severe vertigo lasting for seconds that returns frequently with any head movement. Her cranial nerves and ear examinations are normal. The maneuver that is used to confirm the diagnosis called:

- X
- a. Epley's Maneuver.
  - b. ~~Dix-Hallpike.~~
  - c. Hallpike
  - d. Epley-Dix-Hallpike

3. A 78 years old diabetic and hypertensive female suffers severe headache, loss of consciousness and dizziness. In the emergency room, she has the following vital signs: BP 190/120, pulse: 97 and GCS 12. Which of the following is least likely in the differential diagnosis?

- X
- a. ~~Migraine~~
  - b. Transient Ischemic attack
  - c. BPPV
  - d. Cerebrovascular accident

4. A 66 years old Saudi patient complains of left ear hearing loss, fullness, tinnitus, headache and drainage for one year. These symptoms are concurrent most of the time. The ear exam reveals left eardrum perforation. The weber test lateralizes to the left ear, and the Rinne test is negative in the left ear and positive in the right ear. Your working diagnosis is peripheral vestibular system disease. All of the following symptoms support your diagnosis except:

- X
- a. Hearing loss
  - b. ~~Tinnitus~~
  - c. Headache
  - d. Ear fullness

POST TEST

5. A 24-year-old female has episodes of ear fullness and increasingly severe vertigo. Her tympanogram was normal and an audiogram revealed low-frequency hearing loss. Which one of the following is the most likely diagnosis?

- a. Otosclerosis
- b. Tympanosclerosis
- c. Meniere's disease
- d. Migraine

6. A 24-year-old male with vertigo and tinnitus has Meniere's disease. He has fallen many times and injured his body. He refused operative intervention, but agrees to a trial of medication. During the trial phase, his peptic ulcer worsened. Which one of the following substances is most likely to be prescribed?

- a. Betahistine
- b. captopril
- c. Lasix
- d. Verium

7. Fitzgerald caloric test is used at temperature



- a. 30 and 44
- b. 34 to 41
- c. 33 and 21
- d. 37 and 41

8. cold caloric test stimulates



- a. cochlea
- b. LSCC
- c. PSSC
- d. all of the above

9. Dix hallpike manuver is done for assessing

- a. vestibular function
- b. corneal test
- c. cochlear function
- d. audiometry

10. latest treatment in BPPV

- a. Intra labyrinthine streptomycin
- b. Intra labyrinthine steroid
- c. valsalava manuver
- d. epleys manuver

8

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: Electronystagmography (ENT11)

STUDENT NAME: Haripriya .T

UNIVERSITY NO: U16MB299 .

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- c. Disequilibrium.
- d. Unsteadiness.

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- ~~c.~~ Headache
- d. Ear fullness

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- b. Tympanosclerosis
- ~~c. Meniere's disease~~
- d. Migraine

6. A 24-year-old male with vertigo and tinnitus has Meniere's disease. He has fallen many times and injured his body. He refused operative intervention, but agrees to a trial of medication. During the trial phase, his peptic ulcer worsened. Which one of the following substances is most likely to be prescribed?

- a. Betahistine
- b. captopril
- c. Lasix
- ~~d. Valium~~

7. Fitzgerald caloric test is used at temperature

- ~~a. 30 and 44~~
- b. 34 to 41
- c. 33 and 21
- d. 37 and 41

8. cold caloric test stimulates

- a. cochlea
- ~~b. SSCC~~
- c. PSCC
- d. all of the above

9. Dix hallpike manuver is done for assessing

- ~~a. vestibular function~~
- b. corneal test
- c. cochlear function
- d. audiometry

10. latest treatment in BPPV

- a. Intra labyrinthine streptomycin
- b. Intra labrynthine steroid
- c. valsalava manuver
- ~~d. epleys manuver~~

1a

ANNEXURE 3

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

PUDUCHERRY

TOPIC: Electronystagmography (ENT11)

STUDENT NAME: Gomathu. M

UNIVERSITY NO: U16MB292.

1. A 34 years old patient complains of sudden attacks of loss of balance lasting for hours. He has the sensation that the surrounding environment is spinning. His loss of balance associated with nausea and vomiting. Nothing unusual is observed in his physical examination. This sensation is called:

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- a. Migraine                          b. Transient ischemic attack  
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- a. Hearing loss                      b. Tinnitus  
~~c. Headache~~                        d. Ear fullness



## Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



### CERTIFICATE OF MERIT

This is to certify that \_\_\_\_\_ has actively participated in the Value Added Course on **ENG-An modern era for vertigo evaluation- A value added course** held during Sep 2019 – Dec 2019 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. R.Venkataramanan  
RESOURCE PERSON

Dr.R.Nithish Timothy  
COORDINATOR



# Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research  
(Deemed to be University under section 3 of the UGC Act 1956)



## CERTIFICATE OF MERIT

This is to certify that Dr.Harishka.S (U16MB300) has actively participated in the Value Added Course on **ENG-An modern era for vertigo evaluation- A value added course** held during Sep 2019 – Dec 2019 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. R.Venkataramanan  
RESOURCE PERSON

Dr.R.Nithish Timothy  
COORDINATOR



**Annexure 5**  
**Course/Training Feedback Form**  
**Student Feedback Form**

Course Name: Preventing Medical Errors in Audiology

Subject Code: **ENT11**

Name of Student: \_\_\_\_\_ Roll No.: \_\_\_\_\_

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

*\* Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Annexure 5

Course/Training Feedback Form

Student Feedback Form

Course Name: Preventing Medical Errors in Audiology

Subject Code: ENT11

Name of Student: Gracelin Rini Roll No.: U16MB294

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful		✓			
7	The level of the course			✓		
8	Overall rating of the course	1	2	3	✓	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Very good course

Annexure 5

**Course/Training Feedback Form**

**Student Feedback Form**

Course Name: Preventing Medical Errors in Audiology

Subject Code: ENT11

Name of Student: Harishka . S Roll No.: U16MB300

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				/	
2	Course contents met with your expectations					/
3	Lecturer sequence was well planned			/		
4	Lectures were clear and easy to understand					
5	Teaching aids were effective		/			
6	Instructors encourage interaction and were helpful				/	
7	The level of the course			/		
8	Overall rating of the course	1	2	3	4	5

\* Rating: 5 - Outstanding; 4 - Excellent; 3 - Good; 2 - Satisfactory; 1 - Not-Satisfactory

Suggestions if any:

Course was very useful

ANNEXURE 6

Date : 15/12/2019

From  
Dr. Venkataramanan. K  
Dept of Otorhinolaryngology,  
SLIMS  
Bharath Institute of Higher Education and Research,  
Puducherry.

Through Proper Channel

To  
The Dean,  
SLIMS,  
Bharath Institute of Higher Education and Research,  
Puducherry.

**Sub: Completion of value-added course: ENG-An modern era for vertigo evaluation reg.**

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **ENG-An modern era for vertigo evaluation** on Sep 2019 to Dec 2019. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. Venkataramanan.K



Dr. R. VENKATARAMANAN, MS.  
Reg. No: 72549  
Professor ENT  
Sri Lakshmi Narayana Institute of Medical Sciences  
Osudu, Kudapakkam, Puducherry-605 502.





**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**Osudu, Agaram Village, Koodapakkam post, Puducherry - 605502**

**Date:12.08.2019**

From  
Dr.G.Somasundaram  
Professor and Head,  
Department of Pharmacology  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

To  
The Dean,  
Sri Lakshmi Narayana Institute of Medical sciences  
Pondicherry

**Sub: Permission to conduct value-added course: Medical writing**

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: **Medical writing on Sep 2019 to jan 2020**. We solicit your kind permission for the same.

Kind Regards

Dr.G.Somasundaram

---

**FOR THE USE OF DEANS OFFICE**

Names of Committee members for evaluating the course:

The Dean: Dr.Balagurunathan HOD: Dr.G.Somasundaram Expert: Dr.Jaikumar,Dr.Santhanalakshmi

The committee has discussed about the course and is approved.

Dean

Subject Expert

HOD

07/8

**DEAN**

**SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES**  
**OSUDU, AGARAM VILLAGE,**  
**KOODAPAKKAM POST,**  
**PUDUCHERRY - 605 502**

**PROFESSOR & HOD**  
**DEPARTMENT OF PHARMACOLOGY**  
**Sri Lakshmi Narayana Institute of Medical Sciences,**  
**OSUDU, AGARAM VILLAGE - 605 502**