

Vestibular Rehabilitation and Diagnosis

Information to study and learn for the board examination

Anatomy:

There will be questions as it pertains to the anatomy, function and possible related pathologies of these areas.

- Anatomy of the inner, middle and outer ear
- Anatomy and understanding of the cochlea
- Anatomy and understanding of the vestibule
- Anatomy and understanding of the semi circular canals
- Anatomy and understanding of the otolithic organs
- Anatomy and understanding of the vestibulocochlear nerve
- Anatomy and understanding of the brainstem (All levels)
- Anatomy and understanding of the cerebellum and related disorders
- Anatomy and understanding of basic cortical function and Brodmann's areas
- Anatomy and understanding of all the vasculature of the head and neck

Vestibular related physiology:

- Physiological understanding of the cupula / canals and otoliths
- Physiological understanding of endolymph and perilymph
- Physiological understanding of action potentials and vestibular nerve function
- Neuron theory, central integrated state and basic concepts of neuronal plasticity and gene responses
- Vestibular adaptation and habituation

Conditions:

Know how to differentially diagnose through all of these conditions.

- BPPV (Horizontal and posterior canal varieties)
- Cupulo- and canalithiasis
- Labyrinthitis (All related conditions)
- Perilymphatic fistula
- Meniere's (Hydrops)
- Otosclerosis
- Vestibular neuronitis
- Acoustic neuromas
- Medullary related disorders
- Pontine related disorders
- Mesencephalic related disorders
- Cerebellar related disorders
- Multiple sclerosis
- Arnold Chiari Malformations
- Cerebellar systems and ataxia
- Autoimmune vestibulopathy
- Cervicogenic dizziness
- Bilateral vestibular loss
- Basilar migraine
- Basal ganglionic lesions
- Vestibular migraine
- Anxiety and psychogenic related dizziness
- All strokes of the brainstem (medulla / pons / mesencephalon)

- Strokes of the cerebellum
- Common tumors of the brainstem and cerebellum
- Motion sickness
- Vestibular epilepsy
- Unilateral vestibular impairment
- Mixed peripheral and central pathologies
- Ototoxicity
- Disequilibrium
- Syncope / Drop attacks
- Ramsey Hunt Syndrome
- Congenital inner ear pathologies
- Ocular tilt reactions
- Congenital nystagmus
- Superior semicircular canal dehiscence
- All systemic conditions (Ex: Thyroid, diabetes etc)

Ocular system:

- Eye muscles and related movements
- Yoked mechanisms in regards to canals and eye muscles
- Know the cranial nerves and all related pathologies
- Know the pupils and lids and related pathologies
- Spontaneous eye movements. This includes nystagmus and oscillations
- Vestibulo-ocular responses
- Cervico-ocular responses

Auditory system

- Understand the physiology of hearing
- Understand sensory neural hearing loss (SNHL) and conductive hearing loss.
- Understand tinnitus

Special testing

- Understand posture testing - this includes stability, fatigue, adaptation and balance
- Understand peripheral somatic sensory pathways and their integration
- Understand Saccadic testing
- Understand tracking (Pursuit) testing
- Understand Gaze testing
- Understand fixation and spontaneous testing
- Understand all positional testing
- Understand all provocative testing
- Understand OPK / OKN testing
- Understand VOR testing, VOR suppression testing
- Understand brainstem auditory evoked responses
- Understand all therapeutic maneuvers (Epley's, Bar-b-que roll etc..)
- Understand basic serological laboratory studies used routinely as it relates to vestibular conditions
- Fukuda step tests
- Dix-Hallpike testing
- Understand calorics

- Understand cerebellar related physical examination tests

Rehabilitation

- VOR enhancement exercises
- Ocular motor exercises
- BPPV related exercises and post repositioning exercises
- Exercises to improve gait
- Exercises to improve balance
- Nutritional and dietary therapy

Books and references:

1. Vestibular Rehabilitation Third Edition (Susan Herdman)
2. Vestibular Rehabilitation Therapy for the Patient with Dizziness and Balance Disorders (Girardi)
3. Neurology of Eye Movement (Leigh and Zee)
4. Clinical Neurophysiology of the Vestibular System Third Edition (Baloh / Honrubia)

Content of the written test:

1. Anatomy
2. Physiology
3. Differential diagnosis
4. Reading graphs and vestibular related studies
5. Case studies
6. Information on therapy and application

Practical Examination:

1. Perform related vestibular tests
 - a. Answer questions related to that test. An example would be perform a Hallpike and be able to answer questions related to that test.
2. Any portion of any part of the neurological examination can be asked of you to perform during the test.
 - a. Your techniques will be graded and you will be asked questions related to the test. An example would be to examine the abducens nerve. Be able to answer questions related to any condition with that nerve.
3. Watch a video and determine the pathology present.
 - a. Answer questions related to that visualized pathology. An example would be observing and dysconjugate eye movement and being able to answer questions related to that observed pathology.
4. Observe graphs and recordings and determine pathology.
 - a. Answer questions related to those recordings. An example would be observing a graph of nystagmus and being able to answer questions about that graph.