

Vestibular Rehabilitation Therapy

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Speaker Disclosure

Nothing to Disclose

Vestibular Rehabilitation Therapy

- Vestibular Rehabilitation Therapy is a specialized form of rehab designed to:
 - Decrease symptoms of dizziness/disequilibrium/visual vertigo
 - Improve walking and balance
 - Decrease fall risk
 - Improve tolerance and performance of household, work and recreational activities



Vestibular Rehabilitation Therapy

- First described by Cawthorne and Cooksey in the 1940s --- all patients were given the same protocol regardless of their specific diagnosis
- In the 1990s, treatments became more individualized based on diagnosis as more became known about the disorders and the CNS ability to compensate

Vestibular Rehabilitation Therapy

- Exercise based
- Three categories of exercises. The type prescribed depends on the symptoms and diagnosis.
 - Adaptation exercises for unilateral inner-ear deficits
 - Substitution strategies for bilateral peripheral deficits
 - Habituation exercises for any dizziness provoked by a specific movement, or visual vertigo symptoms
- Evidence based - proven to be effective for treating patients with balance and vestibular disorders

Vestibular Rehabilitation Therapy

“With a better understanding of the function and adaptation of the vestibular system, a customized vestibular rehabilitation therapy program adapted to suit the specific needs of the individual became widely accepted in the 1990s and has become the primary modality of treatment for a large number of patients with dizziness”

• Vestibular Rehabilitation Therapy for the Dizzy Patient, *Ann Acad Med Med Singapore* 2005

Vestibular Rehabilitation Therapy

- Exercises are prescribed based on the patient's diagnosis
- Patients are typically seen 1x/every 1-2 weeks
- Home exercises are given and progressed throughout treatment
- Exercises combine the use of visual, somatosensory and vestibular cues to improve ability to stabilize gaze with head movements, improve postural stability, and decrease dizziness

Common Diagnoses

Common Diagnoses referred for VRT include:

- BPPV
- Unilateral or Bilateral Vestibular Hypofunction
- Post surgical patients (acoustic neuroma)
- Multi-factorial disequilibrium/presbyastasis
- Vestibular migraine
- Concussion/Brain Injury
- Cervicogenic
- Mal de Debarquement Syndrome
- Persistent Postural Perceptive Dizziness (3PD)



Treatment: Unilateral Hypofunction

- **Adaptation Exercises:** the primary approach for patients with unilateral hypofunction
 - Vestibular neuritis
 - Acoustic neuroma
 - Quiescent Meniere's disease
- Focus on getting the CNS to compensate for the "weakness" or hypofunction present.
 - Decrease the retinal slip or oscillopsia, improve postural stability, and decrease symptoms.
 - Gaze stabilization exercises are given with progression to standing, walking, near/far targets and busy backgrounds.

Treatment: Bilateral Hypofunction

- **Substitution Exercises:** Alternative strategies to replace lost or compromised function
 - medication toxicity
 - bilateral vestibular neuritis
 - autoimmune inner ear disease
- Promote central re-programming to stabilize gaze
 - active eye-head movements
 - corrective saccades
 - gaze stabilization exercises

Treatment: Central Vertigo

- **Habituation Exercises:** a long term reduction of a response to a noxious stimulus (usually a specific head or body movement) brought about by repeated exposure to the stimulus
- Used with positional dizziness and visual vertigo symptoms, typical in patients with Vestibular Migraine
- In other words, patients practice the activities that cause dizziness in order to make their symptoms improve
 - Exercises are prescribed on an individual basis, related to movements that cause the patient dizziness
 - Choose a "moderate" stimulus to help with compliance. Once that movement no longer causes symptoms, we can instruct them in other movements
 - Persistence is key

Treatment: Cervicogenic Dizziness

- Patients typically describe feeling "off" or "swimming/floating" vs vertigo or spinning
- One hypothesis: inflammation/irritation of the cervical roots or facet joints lead to a mismatch among vestibular, visual and cervical inputs, leading to symptoms

Treatment: Cervicogenic Dizziness

- Proprioceptive exercises to help decrease symptoms of dizziness
- Soft tissue work/manual therapy/modalities to treat the cervical pain, ROM, any joint limitations, muscle weakness and posture if needed
- Stabilization/strength exercises for Cervical spine

Balance

The brain takes information from all 3 systems to maintain balance in various situations.

Somatosensory Information

Visual Information

Vestibular Information



Vestibular therapy helps retrain the brain to use all the senses in appropriate conditions.

Balance Assessment

- PT will design a treatment plan and home exercise program and progress it accordingly
- Objective measures of balance/gait stability
 - Timed Up and Go Test
 - Berg Balance Scale
 - Dynamic Gait Index/Functional Gait assessment
 - mCTSIB (Modified Clinical Test of Sensory Interaction in Balance)
 - Computerized Dynamic Posturography
- PT evaluation findings
 - Strength
 - Flexibility
 - Sensation



Balance Training Progression

- Narrow base of support
- Head turns horizontal, vertical, diagonal
- Eyes closed
- Foam cushions
- Busy visual environments
- Cognitive challenges



Gait Activities

- Focus on safety and evaluate for appropriate assistive device.
- Correct gait deviations including gait speed.
- Progression to various surfaces, incorporating head movements and busy visual environments.



References:

- Herdman SJ, editor. Vestibular Rehabilitation. 3rd ed. Philadelphia: F.A. Davis Co.;2007.
- Vestibular Rehabilitation Competency Course, April 2008 Emory University and American Physical Therapy Association
- Advances in Vestibular Rehabilitation-A Competency Renewal Course, July 2014, Duke University and American Physical Therapy Association