

# **HEARING SOLUTIONS SIG**

**Sun City Texas Computer Club**

**February 9, 2017**

# Dizziness and Imbalance

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# What is the difference between DIZZINESS and IMBALANCE?

## Dizziness and Vertigo

- Ver·ti·go  
'vərdəgō/  
**a** : a sensation of motion in which the individual or the individual's surroundings seem to whirl dizzily  
**b** : a dizzy confused state of mind  
"Vertigo." Merriam-Webster.com. Merriam-Webster, n.d. Web. 31 Jan. 2017.
- Characterized by a spinning sensation and the PERCEPTION of movement, either by the individual or surroundings
- May be short-lived, recurrent, acute, chronic... in any presentation, it's disconcerting

## General Imbalance

- Im·bal·ance  
im-'ba-lən(t)s\  
lack of balance : the state of being out of equilibrium or out of proportion  
"Imbalance." Merriam-Webster.com. Merriam-Webster, n.d. Web. 31 Jan. 2017.
- Characterized as unsteadiness or a loss of equilibrium
- May be chronic and affect everyday gait and mobility



# General Statistics

- In the U.S., falls are the leading cause of injury-related death and injury for people 65 and older ([National Safety Council](#)).
- In 2005, nearly 16,000 older adults in the U.S. died from falls; 1.8 million were treated in emergency departments; and 433,000 were hospitalized ([Centers for Disease Control](#)).
- The [National Institutes of Health](#) (NIH) statistics indicated that balance-related falls cause nearly half of accidental deaths in the population over the age of 65.
- More than five million people consult with their doctors EACH YEAR with complaints of dizziness ([Vestibular Disorders Association](#)).
- Dizziness is the number one malady for people older than 70 ([Vestibular Disorders Association](#)).
- Eighty percent of people aged 65 years and older have experienced dizziness, and BPPV, the most common vestibular disorder, is the cause of approximately 50% of dizziness in older people ([Vestibular Disorders Association](#)).



# Questions to Answer Today:

- 1) How does a normal vestibular system work? In other words, how are we able to maintain our balance?
- 2) What can cause an impairment to the vestibular system?
- 3) Are there other common disorders that may cause dizziness or imbalance?
  - Hint: YES ;)
- 4) How are vestibular disorders managed?
  - There IS help out there!
- 5) How can fall risk be reduced at home?



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# Three systems work together to assist us in maintaining balance...

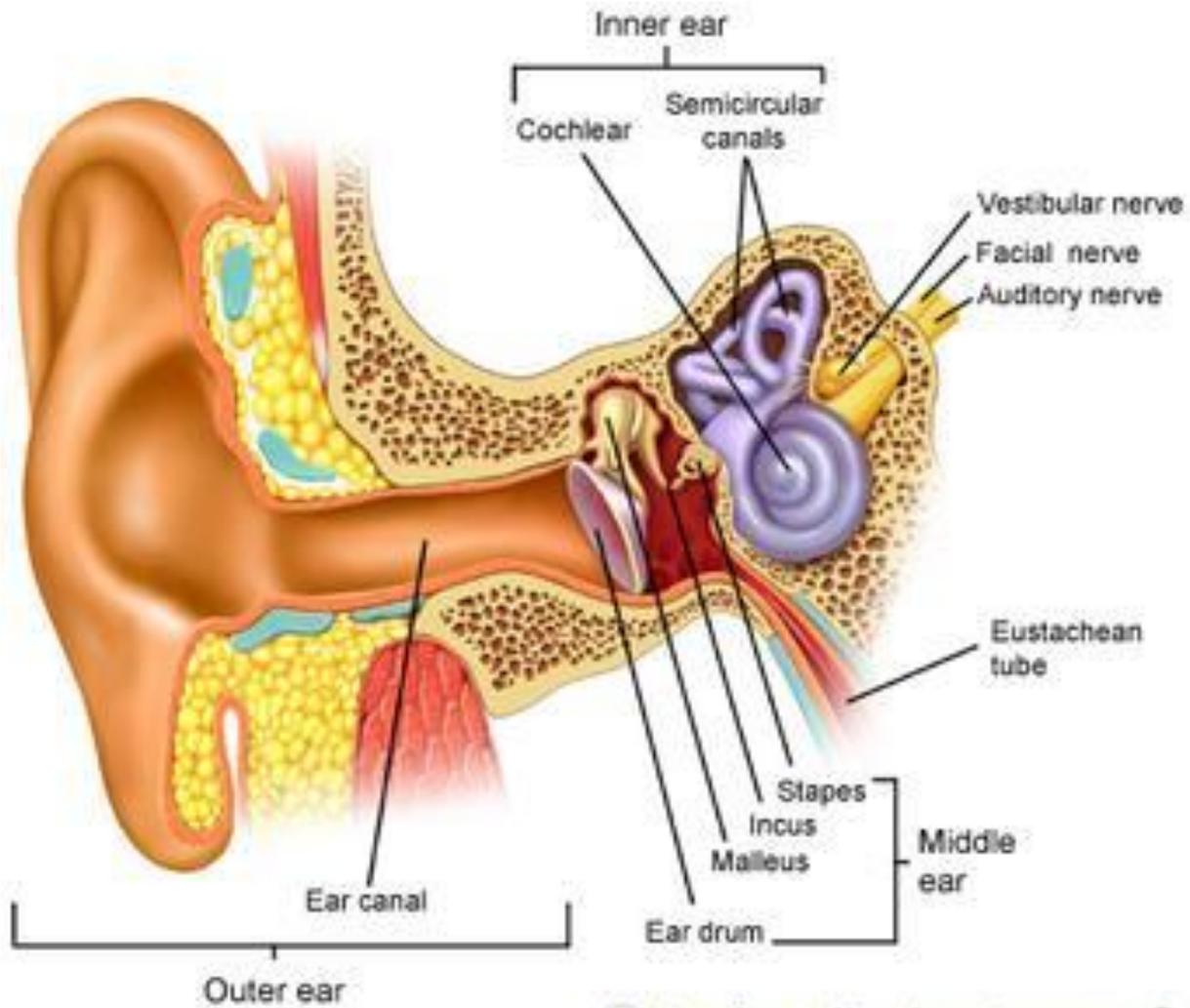
- 1) Vestibular System
  - 1) Input from your inner ears and semicircular canals allows specialized areas in your cerebellum and brainstem to process head movements
- 2) Visual System
  - 1) Utilize visual input to know if you are moving, or if your surroundings are moving
  - 2) Allows you to maintain visual fixation while moving
- 3) Somatosensory System
  - 1) Utilize sensory input to allow brain to perceive touch, pain, pressure, position, movement, vibration, etc.



So how does our  
vestibular system  
work?!



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## Anatomy of the Ear

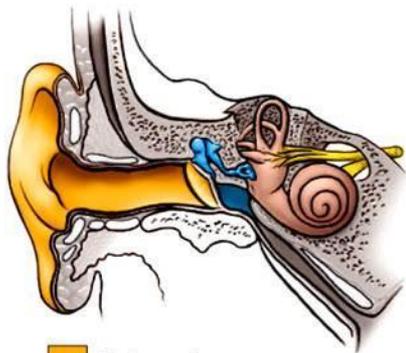
Outer Ear  
Middle Ear  
Inner Ear

Vestibulocochlear Nerve

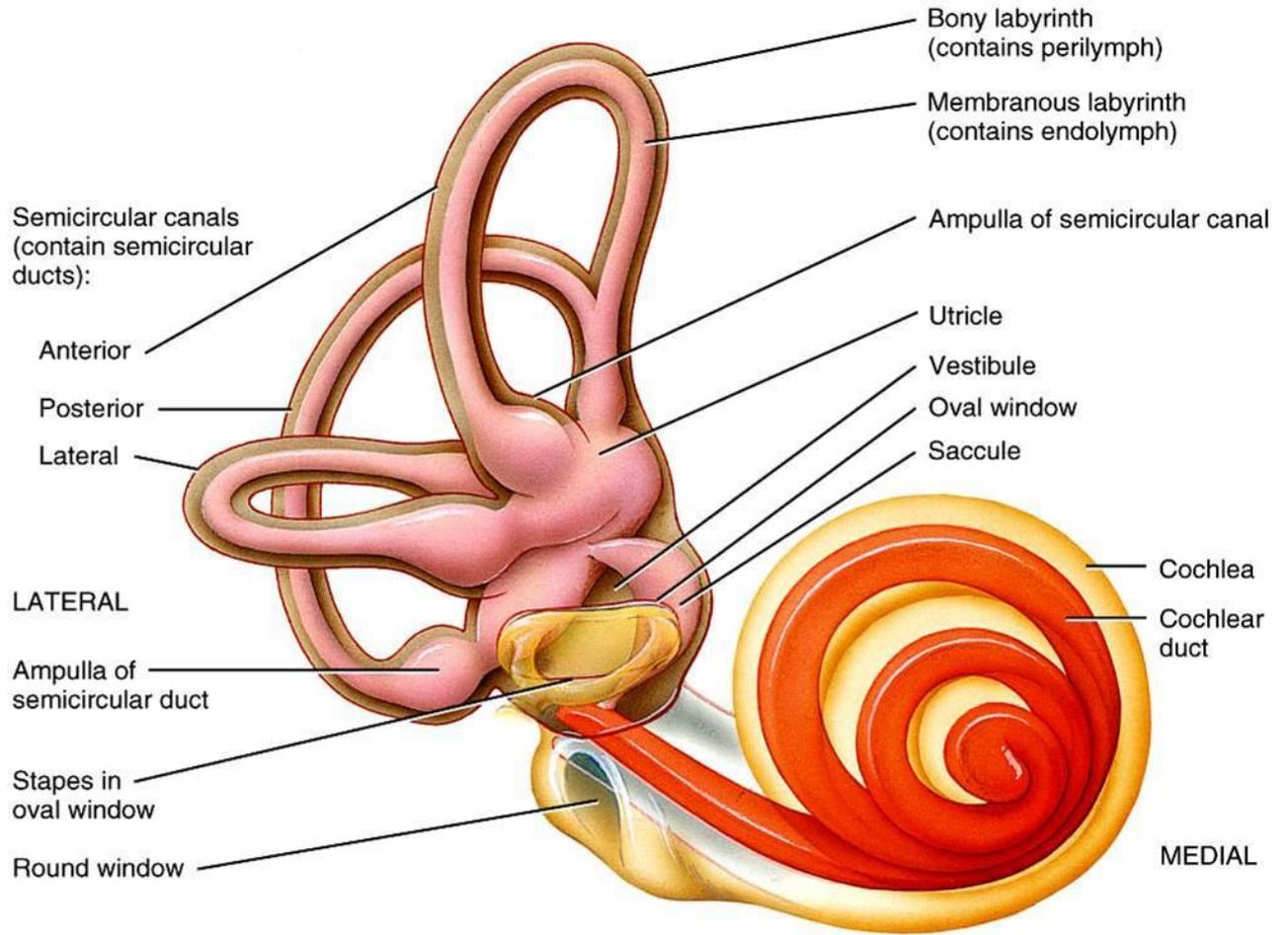
ENTER

[virtualmedicalcentre.com](http://virtualmedicalcentre.com)





- External ear
- Middle ear
- Internal ear



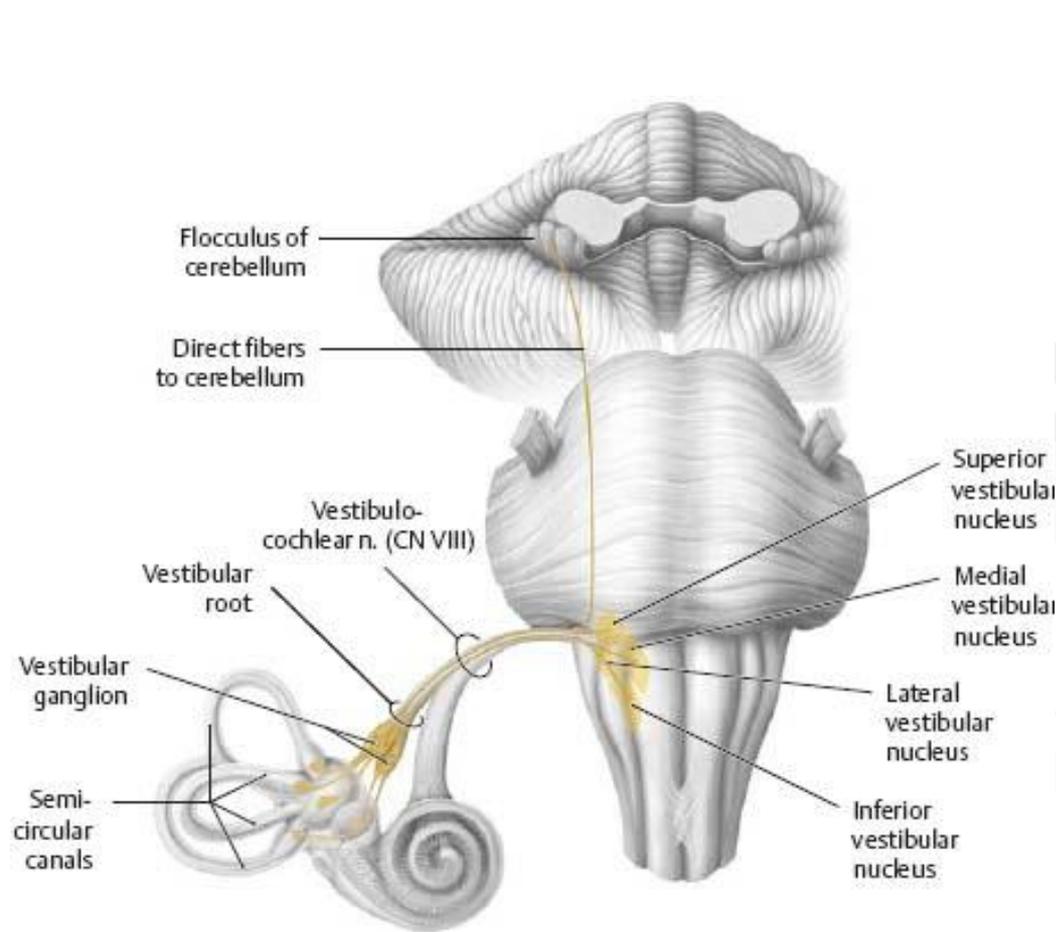
## Anatomy of the Vestibule

- 2 Otolith Organs
- 3 Semicircular Canals

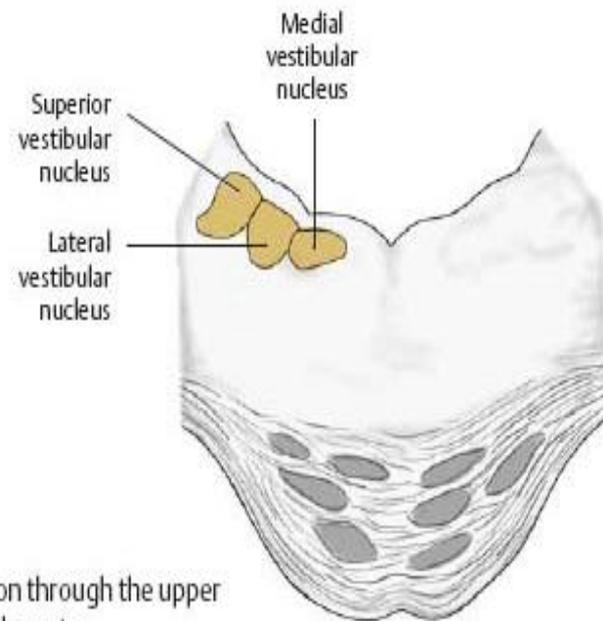
(a) Components of the right internal ear

Figure 17.20 Tortora - PAP 12/e  
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**A** Anterior view of the medulla oblongata and pons with cerebellum.



**B** Cross section through the upper medulla oblongata.

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[Anatomy of the Brainstem & Cerebellum](#)



## Common Vestibular Impairments

- BPPV
- Meniere's Disease
- Vestibular neuritis or labyrinthitis
- Acoustic neuroma and vestibular schwannoma
- Mal de Debarquement
- Postural Perceptual Dizziness
- Concussion

## Common Disorders that may cause Imbalance

- Diabetes
- Certain medications
- Nervous system disorders
  - Peripheral neuropathies, Parkinson's, Multiple Sclerosis
- Visual disturbances
  - Macular degeneration, poor visual acuity, etc
- Cardiovascular disorders
  - Aneurysms, arrhythmia, atherosclerosis
- Dehydration

# How do we MANAGE Vestibular Disorders and Imbalance?

...it depends.

- Medication
  - Meclizine for Meniere's flare ups
  - Antihistamines for motion sickness
  - Anti-anxiety medications
- Surgical intervention
  - SSCD
  - Shunts for Meniere's
  - Vestibular nerve resection and/or labyrinthectomy
    - WORST CASE SCENARIO
- Manage underlying cause of dizziness or imbalance
  - i.e. manage blood pressure, keep neurological disorders managed per physician, alter diet
- Repositioning maneuvers for positional vertigo
  - Epley
  - Log Roll
- VESTIBULAR REHABILITATION
- GAIT and BALANCE THERAPY



# Vestibular Rehabilitation and Gait Training

## Vestibular Rehabilitation

- Goal: alleviate primary and secondary problems caused by vestibular disorders
- Exercise based program
  - Designed to reduce vertigo and/or dizziness, alleviate instability, and reduce fall risk
- Compensation
  - May occur naturally over time
  - Visual and somatosensory skills substitute for vestibular deficit
- Habituation
  - Used for dizziness that is produced by self-motion or visual stimulus, NOT spontaneous events
  - Reduce dizziness with repeated exposure of dizziness-provoking stimuli

## Balance and Gait Training

- Goal: improve steadiness to allow for successful completion of daily activities
- Exercised based program
  - Designed to be challenging and manipulated for individual underlying balance problems
- Appropriate intervention to improve overall balance function and reduce fall risk
- NOT appropriate for individuals with BPPV or acute vertigo attacks without an underlying imbalance issue



# FYZICAL... Spelled different because we ARE different.



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# Tips to Reduce Fall Risk at Home

- **STAY ACTIVE**
  - Conditioning programs that challenge your balance and cardiovascular systems
  - Strengthening programs to improve musculature and assist with core strength
  - Walking tasks to assist with gait
  - Tai chi and yoga are good examples of something that is not only physically challenging, but also challenges your cognitive skills
- Keep your home safe
  - Maintain adequate lighting
  - Remove clutter on the ground
  - Remove area rugs that may cause you to trip
  - Ensure railings are secure along stairs
  - Keep items you need on a regular basis in an easy-to-reach location
- Keep YOURSELF safe
  - Utilize proper footwear
  - Refrain from wearing pants or slacks that are too long or baggy and may trip you up



# No Meeting in March

## Next Meeting

# April 13, 2017



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