

# Physical therapy for dizziness and balance issues

HLAA Santa Fe Chapter  
June 15th 2019

Presented by  
Morgan Fry DPT  
Doctor of Physical Therapy

# Albuquerque Hearing and Balance Physical Therapist

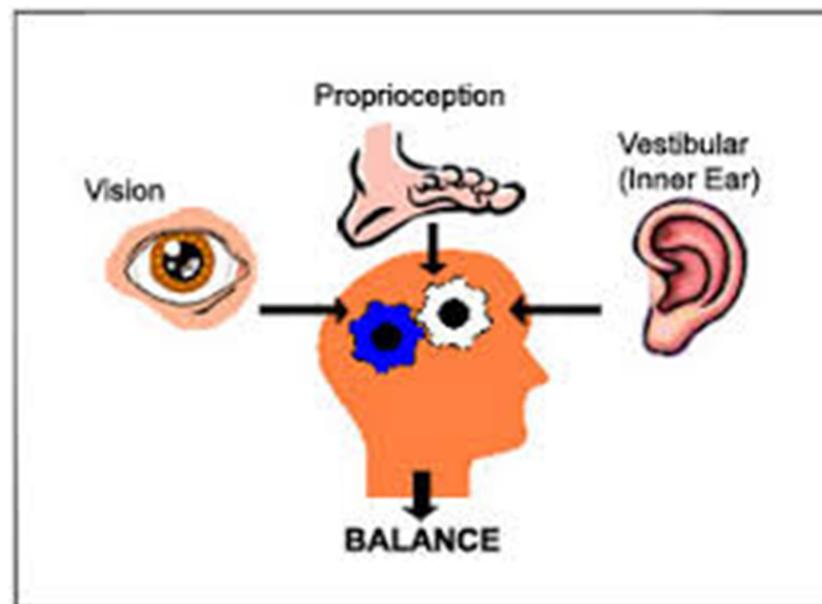
- ▶ Undergraduate from University of Utah in 2010
- ▶ Doctor of Physical Therapy from University of the Pacific in 2012
- ▶ Specializing in Vestibular Rehabilitation since 2017
- ▶ Emory/Duke Vestibular Rehabilitation course April 2019



ALBUQUERQUE  
HEARING AND BALANCE

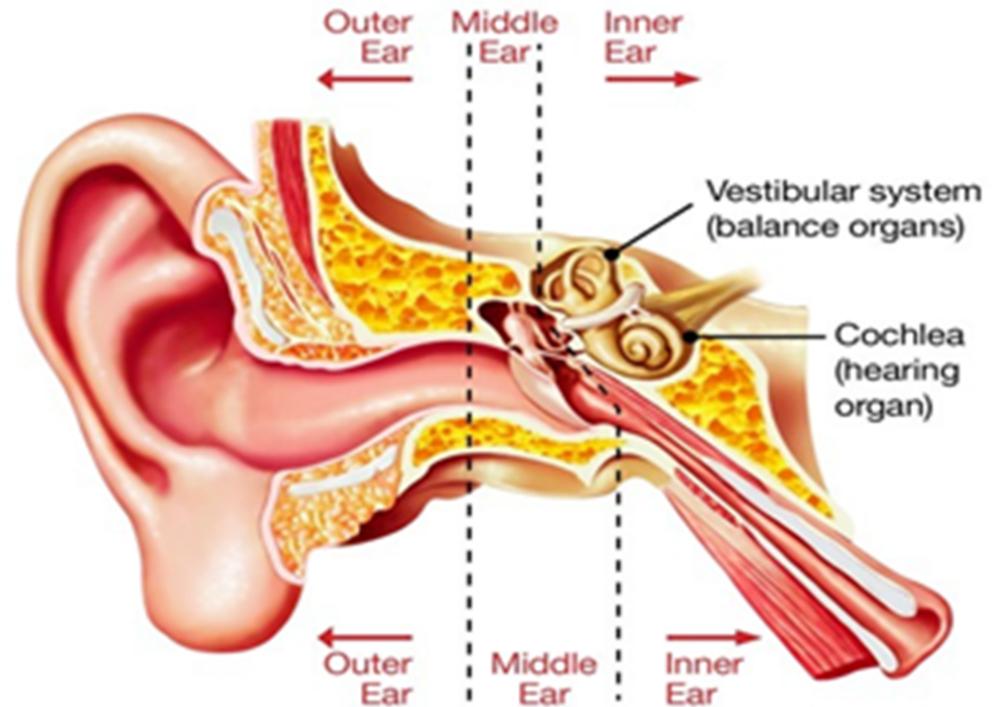
# What is Balance Anyway?

- Balance is a general term for maintaining posture under a base of support
  - The three components that provide balance information are
    - Vision
    - Somatosensation (proprioception)
    - Vestibular (inner ear)
- Balance should be automatic



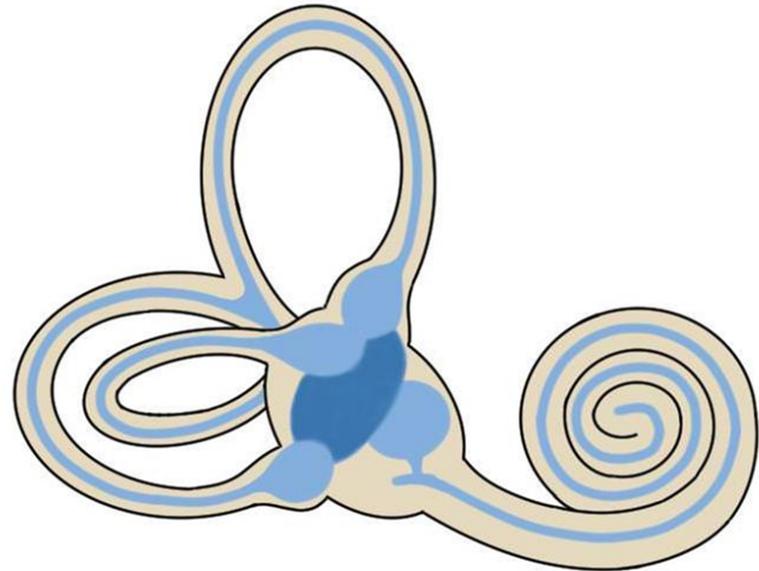
# Getting to Know Your Ear

- The outer ear
  - Pinna
  - Ear canal
- The middle ear
  - Ossicles (ear bones)
  - Eustachian tube
- The inner ear
  - Cochlea
  - Vestibular system



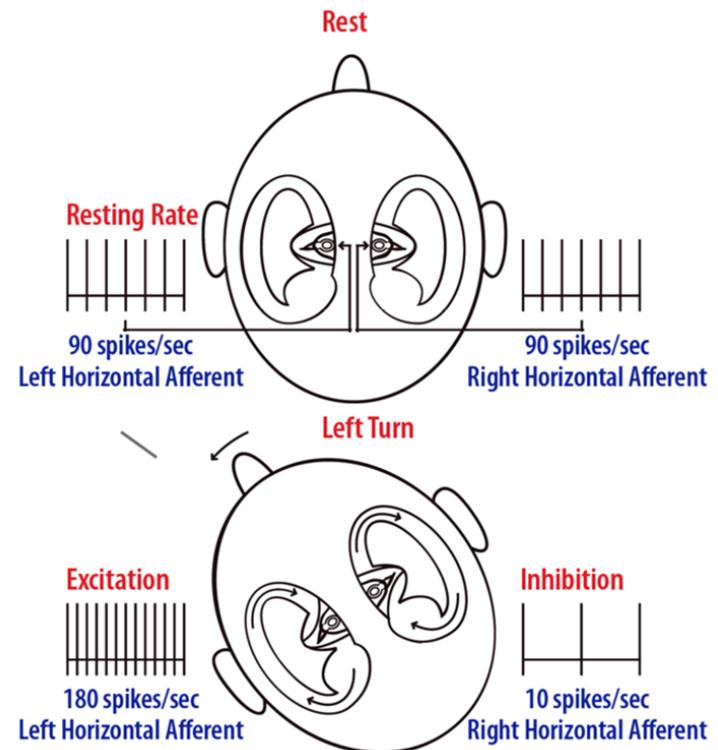
# The Inner Ear

- Cochlea
  - Where Hearing is processed
- Vestibular system
  - Otoliths organs- Sense acceleration in the horizontal and vertical planes
  - Semi Circular Canals- Sense a rotational motion



# How the Vestibular System Senses Motion

- When the head is not moving, the vestibular system is “telling” your brain that your head is not moving (about 90 times/second)
- When you turn your head, the side that you turn to sends more signals to the brain
- The other side sends less signals



# I'm Dizzy....

- Dizziness is not specific. It's subjective meaning it can feel different for everyone
- Dizziness and Vertigo are not a Diagnosis they are symptoms
  - Better Terms for Dizziness
    - Unsteadiness- This is the sensation of being off balance or not being able to walk in a straight line
    - Vertigo- Any sensation of movement when no movement is occurring
    - Dizziness- This is everything else that is not unsteadiness or vertigo
      - This can be feeling lightheaded or brain fog

# Vertigo

True vertigo usually is caused by a problem in the vestibular system

Just like hearing loss you can also have a loss of vestibular function

- ▶ Common causes of vertigo
  - ▶ Benign Paroxysmal Positional Vertigo (BPPV)
  - ▶ Vestibular Neuritis or Labyrinthitis
  - ▶ Meniere's Disease

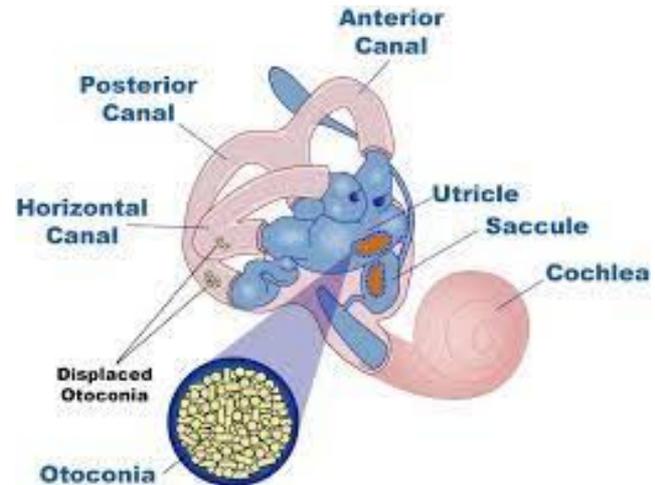


# Benign Paroxysmal Positional Vertigo or BPPV

- ▶ Have you ever heard of crystals in the ear that make you dizzy?
  - Calcium Carbonate Crystals from the otolith organs accidentally get into the semi circular canals.
- ▶ This is a mechanical problem of the inner ear and once it is treated the vertigo usually completely resolves, however it can reoccur.
- ▶ So what is it??

- <https://youtu.be/Xx5dUvtUGbE>

- ▶ Most common cause of vertigo



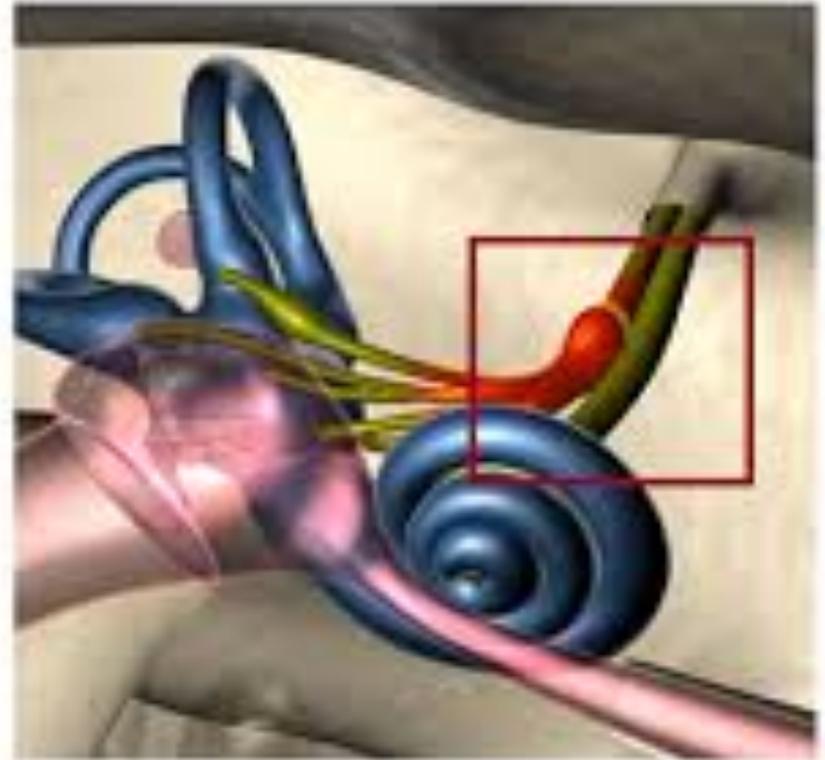
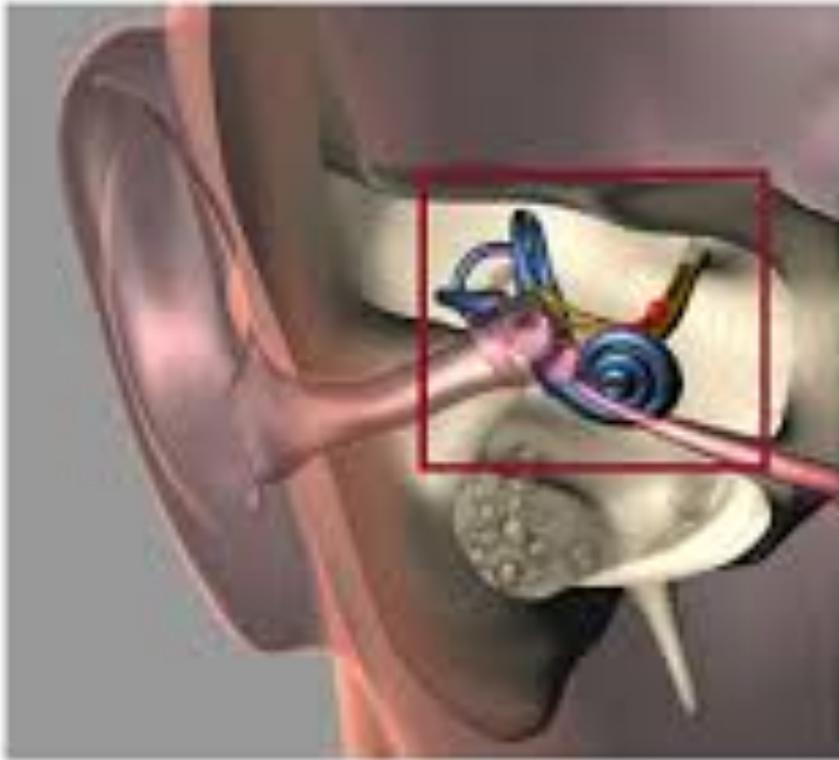
# How Physical Therapy can Treat BPPV

- ▶ Most can be treated with the Epley Maneuver
  - ▶ A series of 4 head and body positions aimed at using gravity to remove the crystals from the canal.
  - ▶ Even untreated it will resolve on its own, but treatment only takes 5 minutes. So why not treat it??
  - ▶ Sometimes you will need a follow up appointment.
  - ▶ There are other treatments, but all are aimed at moving the crystals out of the canal that they are in.

# Vestibular Neuritis

- ▶ Inflammation of the nerve supplying the balance system in the inner ear
- ▶ When the nerve is inflamed or infected (usually from a cold or flu) this can damage the nerve going to the vestibular system
- ▶ Asymmetry or a mismatch in vestibular function
  - Left ≠ right
  - One ear is giving the brain more information than the other, the result is vertigo!

# Vestibular Neuritis



ALBUQUERQUE  
HEARING AND BALANCE

# What does it feel like to have Vestibular Neuritis

- ▶ Usually you will have a sudden severe episode of true room spinning vertigo.
  - This will subside within a few hours to a few days.
- ▶ After the vertigo has resolved you can feel like every time you move your head you are still moving or off balance for a few seconds after the movement.
- ▶ You can develop motion sensitivity
  - Both self motion and motion around you



# Physical Therapy for Vestibular Neuritis

- ▶ Once there is damage to the nerve, generally the damage is permanent
  - Don't worry that doesn't mean you have to live with being dizzy
- ▶ Vestibular Rehabilitation is aimed at getting your brain to compensate for this loss
  - Teaching your brain that the current function level is the new normal
  - Habituation, Adaptation, and Balance exercises
- ▶ Generally outcomes are good and you can return to normal activity
  - You don't have to continue performing the exercises once you have compensated.

# Meniere's Disease

- ▶ Meniere's can cause recurrent episodes of vertigo.
  - Symptoms during a Meniere's attack
    - Tinnitus
    - Vertigo
    - Hearing loss
- ▶ Symptoms appear to be a result of a build up of the fluid in the inner ear, however we are not entirely sure what causes this.
- ▶ In the early stages the symptoms typically only occur during episodes and will fully resolve.
- ▶ In later progression of the disease the hearing loss, vestibular loss, and tinnitus can become permanent.

# Physical Therapy for Meniere's

- ▶ Generally Meniere's disease should be addressed medically first to manage the attacks
- ▶ Once the episodes have resolved or subsided then vestibular rehab can be beneficial
  - ▶ Why not start with vestibular rehab??
    - Rehab is not very beneficial with active bouts of vertigo as there is a fluctuation of vestibular function
      - The brain does not compensate well to a "moving target"
- ▶ Usually the vertigo episodes will stop after about 10 years even when untreated
  - This is a progressive process so it will lead to damage to both hearing and vestibular function, so don't leave it untreated.

# Outcomes of Vestibular Rehabilitation

- ▶ BPPV
  - ▶ Usually full resolution in one or two treatments
  - ▶ Common to have recurrences
- ▶ Vestibular Neuritis or Meniere's Disease and other vestibular injuries
  - ▶ If the loss is stable then outcomes are generally good
  - ▶ Some people will be left with a slight sense of movements or imbalance when they move quickly depending on the amount of damage
  - ▶ Other causes of vertigo are treatable but can vary in how well they respond to vestibular rehabilitation

# Other Causes of Vertigo/Dizziness

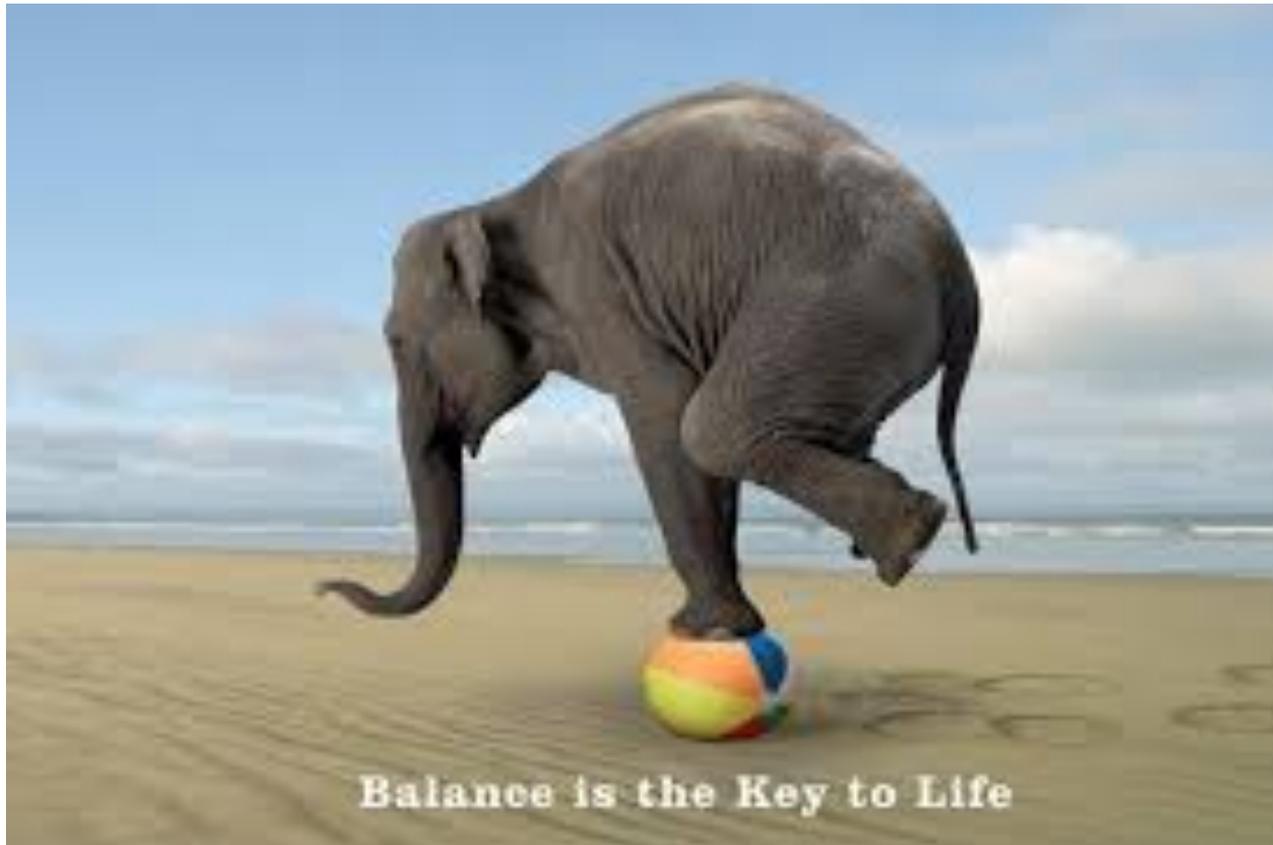
- ▶ Vestibular Schwannoma/Acoustic Neuroma
  - Benign tumor on the 8<sup>th</sup> cranial nerve
- ▶ Migraines
- ▶ Ototoxicity
  - Medication that causes damage to the inner ear.
    - Gentamicin and Cisplatin.
- ▶ Traumatic Brain Injury
- ▶ Stroke

# Physical Therapy for Balance

- ▶ If you do have problems with your balance the good news is that for the most part no matter whatever is causing it you can still improve your balance
  - ▶ There are other things that can cause balance issues
    - ▶ Vision problems ie. Cataracts or macular degeneration
    - ▶ Numbness in the feet ie. Diabetic neuropathy
    - ▶ Muscle weakness in the legs (ankle weakness)



# Questions?



# Thank you !



"It says right here, Mr. Dumpty, may cause dizziness and affect balance."