Living Better with Dizziness

A Guide to Approaching, Accepting, and Understanding Vestibular and Balance Impairments

Matthew Bjelac, PT, DPT, NCS
Anatomy Review
Sensory Systems for Balance

- Vestibular
- Somatosensory & Proprioception
- Vision

Arrows indicate interactions between the systems.
The Balance Process

SENSORY INPUT
- Vestibular equilibrium
  spatial awareness
  rotation
  linear movement
- Visual sight
- Proprioceptive touch

INTEGRATION OF INPUT
- The cerebellum coordinates and regulates posture, movement, and balance.
- The cerebral cortex contributes higher level thinking and memory.
- The brainstem integrates and sorts sensory information.

MOTOR INPUT
- Vestibulo-ocular reflex
- Motor impulses to control eye movements
- Motor impulses to make postural adjustments

BALANCE

© 2020 Vestibular Disorders Association
Brain Processing

Input from balance systems is integrated and processed by the brain.

Feedback is sent to the eyes to help maintain steady vision and to the muscles to help maintain posture and balance.

If there is damage or impairment of any of these systems vestibular symptoms may occur.
Let's review some terminology...
What symptoms can be vestibular?

- Dizziness
- Vertigo
- Lightheadedness
- Imbalance
- Disequilibrium
- Motion Sickness
- Tinnitus
- Vision impairment
- Hearing loss
- Nausea
- Psychological changes
- Brain fog
Dizziness

Non-specific term encompassing feelings of imbalance, spinning and lightheadedness.
Vertigo

Dizziness characterized by a sense of spinning.
Lightheadedness

Feeling of faintness.
Imbalance

Unsteadiness or loss of equilibrium that is often accompanied by spatial disorientation.
Disequilibrium

Subjective sense of unsteadiness.
Motion Sickness

The nausea, disorientation and fatigue that can be induced by head motion.
Tinnitus

Abnormal noise perceived in one or both ears or in the head.
Vision Changes

Trouble focusing eyes or tracking.

Discomfort from busy visual environments.

Sensitivity to light and/or difficulty walking in the dark.

Poor depth perception.

Link between the vestibular system and vision, **vestibulo-ocular reflex (VOR)**.
Hearing Changes

Hearing loss.

Distorted or fluctuating hearing.

Sensitivity to loud noises or environments.

Sudden loud sounds may increase symptoms.
Nausea

Feeling of sickness with an inclination to vomit.
Psychological Changes

Unpredictable nature of symptoms and the chronic fatigue of most disorders, can lead to or increase anxiety and/or depression.
Brain Fog

When the brain is dedicating a great deal of energy to maintain equilibrium and stay steady, activities such as recalling details or short-term memory may become more difficult, and thinking might seem “slow”.
How you or your loved one may feel

Symptoms can be mild, moderate, or severe, and vary at any given time.

Some people feel movement internally, while others feel like the environment surrounding them is moving.

Symptoms can come and go or be more constant (daily, weekly, monthly, or yearly).

Many problems are chronic and may affect an individual for life.
How you or your loved one may feel

Some symptoms have triggers (car, computer, food, stress). Others have no warning.

Because there is a focus on staying upright and controlling their vertigo, individuals are often very fatigued and tired. This should not be confused for laziness.

Vestibular disorders can be complex even to the medical community.
Why does this matter?
Some Facts

Approximately **40% of the population** in the United States will experience some form of dizziness or balance difficulty over the course of a lifetime.

**15% of those with mild TBI** experience prolonged post concussive symptoms.

Including: Vestibular problems and nonspecific dizziness.

These are greatly affect clinical and quality of life outcomes following head trauma.
The Truth

Epidemiology of vestibular problems and dizziness has incomplete data, due to nature of reported symptoms and data mainly from specialized care settings.

Conditions negatively impact their ability to maintain employment, family relationships, and a social life.
TBI and Vestibular Impact

TBI is one of the most common causes of disability in those under 40 years of age.

50% of TBI patients at 5 years have vestibular complaints.

Accurate diagnosis = effective treatment
Earlier is Better

Earlier treatment relates to less dizziness and better quality of life outcomes.

People with peripheral vestibular problems who did rehab within 6 months of onset had much better long term outcomes than those who did rehab after 6 months.

Early vestibular exercises in an acute vestibular disorder resulted in better:
  - Symptom based outcomes
  - Less anxiety
  - Less reliance on visual cues
  - Better walking.
Disclaimer

This presentation is provided only for educational purposes. It is not to be interpreted for self-treatment and does not take the place of seeing a medical professional if you were to experience any vestibular related problems or dizziness.
What does the process look like?

**Problem:**
New onset spinning/vertigo dizziness with rolling over in bed and sitting up in the morning.

Dizziness comes on slow and stops after about 30 seconds.

Comes and goes throughout the day but only when moving up/down and rolling.

Often the first thought – Google? Webmd?

BE CAREFUL!
Recommended process

Seek Immediate medical attention if symptoms are severe.

**Initial steps:**
Reach out to Primary Care Provider, or Physical Therapist, PM&R physician, Neurologist, or ENT if established.

Emergency room/urgent care is often where people go but often some things can be treated out of office if they are not severe.
First things first

Additionally, before testing or treating someone with dizziness, the healthcare provider should perform the following:

Thorough neurological scan.

Evaluation of the neck.

Safety-related investigations to determine if certain elements of the procedure need to be modified or avoided.

Review of medications.
In this situation

Positional testing.

Observing eyes for:

**Nystagmus**
Involuntary, alternating, rapid and slow movements of the eyeballs
Benign Paroxysmal Positional Vertigo (or BPPV) is the most common cause of vertigo, which is a false sensation of spinning.

**Benign** – it is not life-threatening

**Paroxysmal** – it comes in sudden, brief spells

**Positional** – it gets triggered by certain head positions or movements

**Vertigo** – a false sense of rotational movement
Treatment

Canalith Repositioning Maneuver

Usually 1-3 times per session.

Maneuvers vary per canal

May need multiple treatment sessions.
Relevance to TBI

Traumatic BPPV accounts for 8.5–20% of all BPPV cases.

Multiple neurological deficits can be occurring.

Establishing a diagnosis of BPPV is beneficial since it is treated by relatively simple physical maneuvers without need for additional testing or drug therapy.

**Bottom Line:**
Listen to your body to be able to describe symptoms and follow up with a health professional.
Beyond BPPV

**Problem:**
Sudden onset of severe dizziness developing abruptly during routine daily activities.

- Symptoms do not subside
- Vomiting/nausea
- Feel like the world is moving even at rest

First thought – seek immediate medical attention
Recommended Process

Seek Immediate medical attention if symptoms are severe.

**Initial steps:**
Reach out to Primary Care Provider, or Physical Therapist, PM&R physician, Neurologist, or ENT if established.

Usually advised to go to Emergency Room or speak/consult physician immediately to rule out anything severe.
Remember

Additionally, before testing or treating someone with dizziness, the healthcare provider should perform the following:

- Thorough neurological scan
- Evaluation of the neck
- Safety-related investigations to rule out severe concerns.
- Review medications
In this Situation

Eye observation for nystagmus

Perform various vestibular tests:

Gaze holding

Gaze stabilization

Head Thrust Test

Dynamic Visual Acuity
Treating the Problem

Medical Management

Symptoms of nausea/dizziness

Steroid/anti-viral/antibiotics depending on suspected cause.

Management of dizziness.

Vestibular Rehab
Vestibular Rehab

Gaze stabilization exercises

Balance

Postural exercises

Aerobic exercise

Functional strengthening for return to baseline
Treating in chronic stages

If the Vestibular nerve has been damaged symptoms can persist.

Eventually you may observe that everyday activities are fatiguing or uncomfortable.

Symptomatic Activities:
- Walking around in a store
- Using a computer
- Being in a crowd
- Standing in the shower with their eyes closed
- Turning head to talk with another person while sitting or walking
Back to the beginning

The better you are able to describe your symptoms the faster you will receive help.

Focus on these components:

Associated Symptoms

Timing

Triggers
Gaze Stabilization Exercises

Give it a try!

**VORx1**
Hold your thumb in front of you and turn head left and right keeping eyes on the target.

**VORx2**
Hold your thumb in front of you and turn head left and move thumb right. Keep your eyes on your thumb.
Vestibular Rehab Components

**Habituation** - An acquired tolerance gained by repeated exposure to a particular stimulus

**Substitution** – Using other coordinated eye movements and systems to compensation for loss of equilibrium.

**Posture Stability** – Reduce visual dependence and use challenge to balance and proprioceptive systems.
How can I help myself in Vestibular rehab

Be patient.
Do your home exercises.
Focus on how you feel in the big picture rather than short duration.
Even though exercises can cause symptoms, focus on function over symptoms first.
Embrace movement.
Ask questions!
Just an Introduction

There is so much more to Vestibular Rehabilitation.

Benefit to speaking and working with someone who understands the symptoms you experience or the symptoms that believe your loved one to be experiencing.

Vestibular rehabilitation is about empowering you to understand what makes you experience such debilitating symptoms and helping you to create a framework/plan to improve function.
## Tips for Caregivers/Family

**Do**

- Be a good and active listener
- Reach out for support
- Go to appointments
- Keep Things Simple
- Be Patient
- Have empathy, not sympathy

**Don't**

- Give Advice
- Minimize or Compare Our Symptoms
- Get Upset or Take It Personally
- Be Afraid To Be Real
- Say... “It’s all in your head”
- Say.... "Really, you are still sick?"
Vestibular Rehab Locations

**Outpatient Rehabilitation**  
**Martha Morehouse Outpatient Care**

2050 Kenny Road  
Pavilion 2nd Floor Suite 2134  
Columbus, OH 43221  
614-293-4523

**Outpatient Rehabilitation**  
**Outpatient Care New Albany**

6100 North Hamilton Road  
1st Floor, Suite 1F  
Westerville, OH 43081  
614-366-0722

**Outpatient Rehabilitation**  
**Hilliard YMCA**

6048 Woodview Way  
Hilliard, OH 43026  
614-293-6384

**Outpatient Rehabilitation**  
**Powell YMCA**

7798 N. Liberty Road  
Powell, OH 43065  
614-366-7028
Vestibular Team Continuum

**Acute Vestibular Team (AVT):**
UH – Doan
UH – Rhodes
Brain and Spine
Ross
James
OSU East
OSU ED at UH/Main
  7 days/week

**Additional Locations with Team Members:**
Lewis Center Sports Medicine
Jameson Crane Sports Medicine Institute
OSU Outpatient East Hospital
Dodd Inpatient Rehabilitation
Take Home Messages

Know the symptom terminology.
Write down how you are a family member feel when feeling symptoms.
Remember that vestibular impairment is part of TBI.
Understand that TBI can delay symptom recovery but be patient.
Seek medical attention and support if concerns arise.
Once problems identified, movement and targeted plan for your problems is key.
Be an advocate for your needs and your family.
Remember OSU has a network of providers that can deliver great outcomes for you.
Questions?
Thanks!
Presentation Materials/Resources

https://vestibular.org/
https://vestibular.org/article/what-is-vestibular/vestibular-symptoms/
https://vestibular.org/glossary/
https://vestibular.org/article/coping-support/family-support-network/
https://journals.lww.com/headtraumarehab/Fulltext/2020/05000/Association_of_Traumatic_Brain_Injury_With.8.aspx
ps://www.ncbi.nlm.nih.gov/pmc/articles/PMC6765474/#CR2
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6127059/
https://dizziness-and-balance.com/
Presentation Materials/Resources

https://www.hopkinsmedicine.org/health/conditions-and-diseases/anatomy-of-the-brain
https://www.grepmed.com/images/10519/bppv-testing-dixhallpike-physicalexam-signs
https://www.semanticscholar.org/paper/The-Epley-manoeuvre-for-benign-paroxysmal-review.-Hilton-Pinder/4bc3a6d59bf6e18997597d7c53f2d116d882077
https://www.livescience.com/33828-spinning-dizzy.html
https://www.express.co.uk/life-style/cars/974849/Motion-sickness-car-travel-cause
https://www.cdc.gov/traumaticbraininjury/index.html
https://www.mentalhealthtoday.co.uk/blog/teach-me-well/a-defence-of-self-diagnosis
https://glacialridge.org/what-to-do-when-it-feels-like-the-room-is-spinning/
https://www.medicalnewstoday.com/articles/321392#poor-circulation
https://ptandme.com/vestibular-physical-therapy/
https://www.vkf-renzel.com/general-warning-sign-10836.html
https://www.cdc.gov/diabetes/basics/symptoms.html